ECONOMICS OF SHIFTING FROM TOBACCO CULTIVATION

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Economics of Shifting from Tobacco : Micro Level Study and Action Programme

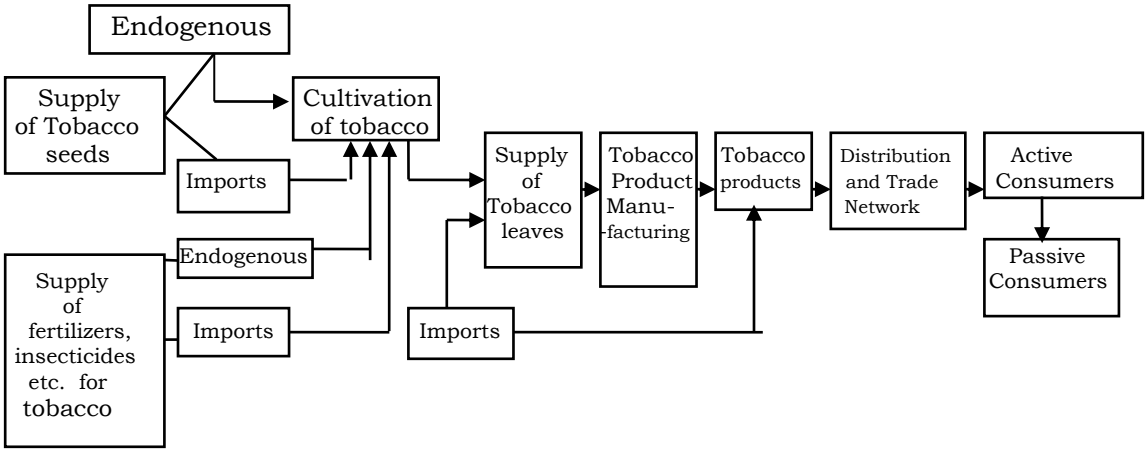
Executive Summary

The Problem

Tobacco presents a puzzle for analysts and policy makers. It is one of the important sources of regular revenue receipts for the government. However, consumption of tobacco is a serious health hazard. In India itself it is estimated that nearly 10 lakhs deaths take place every year on account of tobacco related diseases. In this background, any approach towards tobacco control has to be designed with great care and concern for the subtle implications of any change visualized with reference to it. All the same, it is universally agreed that tobacco has now assumed a proportion of an epidemic. It is a hazardous communicable disease. It is desirable that the policy of control should address to the control of not only the demand side but also the supply side of tobacco.

In the policy discussions relating to tobacco, largely the demand side controls are emphasized. Tobacco eminently brings out the classical dictum that 'supply creates its own demand'. Hence, extending this adage as control of supply would control its own demand, can provide a useful basis for tobacco control policy. Keeping the spirit of this adage in mind, the study on economics of shifting from tobacco cultivation has focused on the supply side controls of demand for tobacco. The following flow chart brings the control point of supply of tobacco and pinpoints the focus of the present study.

Flow Chart of Process of Tobacco Supply Indicating Control Points of Supply



Objectives:

The study has the following objectives :

1. to understand the economic compulsions of cultivators for their decision to cultivate tobacco rather than other crops.

2. to study the marketing and other activities relating to tobacco cultivation, which might act as constraints or inducements for tobacco cultivation itself.

3. to bring out the costs of cultivation and returns to cultivation of tobacco with the empirical data collected specifically for the purpose. To bring out the relative economic advantages or disadvantages of tobacco vs. other crops in order to highlight whether the farmers' decision to cultivate tobacco is guided primarily by the economic considerations or the considerations extraneous to such economic aspects.

4. to suggest to the tobacco cultivators, the alternative crops or alternative economic activities, which might be economically quite viable.

5. to demonstrate by the Center's action intervention, that the alternative suggested in place of tobacco can be an effective and an attractive proposition for the erstwhile tobacco cultivators.

6. Based upon the analysis of the experiences from the action intervention to develop a replicable strategy for shifting from tobacco cultivation, which may be tried out in other tobacco regions of the country.

How has the study addressed to these objectives ?

The study primarily deals with the following three aspects relating to economics of tobacco cultivation and shifting from tobacco.

a. After presenting the situation analysis of tobacco production, area under tobacco and yield from tobacco cultivation in the tobacco producing countries of the world and in India, the study briefly outlines the linkages of tobacco agriculture with marketing and tobacco industry engaged in production and sale of tobacco products,

b. Analysis of the field reality relating to tobacco cultivators and tobacco cultivation in one of the tobacco dominant regions of Karnataka is then presented.

c. Analysis of the experiences from action intervention using the strategy derived from (b.) above is presented at the end.

For the reasons of expediency, and time & resource considerations, the study focused on Belgaum district of Karnataka (in the southern part of India), which is known in the country for its Bidi tobacco production. A systematically drawn sample of 2000 farm households in 50 villages of three talukas of Belgaum district provided the needed database for the analysis of tobacco cultivators. As many as 83 percent of the sample households were found to be tobacco cultivators in the region indicating the dominance of tobacco in the agriculture of the sample talukas of Belgaum district.

Findings:

The data about the major tobacco producing countries of the world show that in the developed countries tobacco production and area are fast coming down though the yield is rising. **In developing countries, however, the tobacco area and production are rising, which is the cause for concern.** Though the production and area under tobacco are not showing signs of any sustained decline in India in recent years, and the revenue advantages from tobacco are not very much encouraging, tobacco continues to be considered as the haven for the tax levying authorities. The area replacement indices for different countries have shown that tobacco has replaced area under food crops and even other useful crops too. In this macro background, micro level analyses of tobacco cultivation assume a great significance. It should be emphasized however, that the micro level realities may vary from one region to another. The present study aims at providing one sample of micro level reality to show that the disaggregated perspective about 'this social and economic menace' and a 'catastrophic health hazard', may throw light on the instrumentalities for tobacco control.

Following are the main **findings of the analysis of the empirical realities** in the sample region :

1. Even in the sample region **tobacco is found to have replaced area under food crops.** Though the area under tobacco is highest, its yield is found to be lower than in the case of many cash crops. The gross return and net return comparison from tobacco cultivation shows that the **net returns are much lower for tobacco than in the case of other crops,** indicating that the farmers are carried away by the gross returns when they consider tobacco as the most

attractive cash crop. Tobacco also experiences decreasing returns to scale, which fact is also not clearly known to the farmers. In order to persuade farmers to shift from tobacco, it was therefore found necessary to educate them about these economic disadvantages from tobacco.

2. Though tobacco cultivation is considered to be a source of large employment for agricultural labour, it was also noticed from the field data that there is much exploitation of both family labour and hired labour particularly women and children, engaged on tobacco cultivation. In any case, the employment opportunities involved in tobacco cultivation cannot make a **merit bad into a merit good.**

3. Frequent use of chemical fertilizers and pesticides required for tobacco more than in case of other crops, not **only affects the fertility of soil** by causing depletion of soil nutrients but it also **causes water shortage** for other uses (as use of fertilizers and pesticides requires plenty of water) and also **leads to health hazards** for the workers engaged for the spray of these poisonous chemicals.

4. **The frequent touch of tobacco plants and leaves, the spray of chemicals etc. the storage of tobacco in the residential premises of farmers, all have their adverse health effects.** Because of the aroma of tobacco, alleged to be spoiling the fresh food in the kitchen of the houses, the chemicals causing **respiratory ailments, skin irritation and allergy,** problems of **reduced appetite, nausea and headache,** etc. are reported particularly **among the children and women** of the tobacco cultivating households. Such **'black symptoms'** reported in the tobacco region elsewhere, were noticed in the sample region of out study also.

5. Despite the relatively low net economic returns from tobacco and decreasing returns to scale from its cultivation as compared to other crops and high health hazards associated with its cultivation, the farmers in the sample region have been persisting with tobacco cultivation due more to the **non economic considerations rather than pure economic considerations.** The economic considerations also seem to be giving a **negative vote in favour of tobacco rather than an emphatic positive vote,** as the farmers consider no other crop suitable in the region and the cultivation of tobacco as less difficult as compared to other crops etc. This aspect needs to be kept in mind while designing a strategy for effecting a shift from tobacco cultivation. **Tobacco cultivation in the sample region was found to be more a result of an inter-generational legacy rather than the result of a calculated decision-making. It was also noticed that large farmers, educated farmers, farmers belonging**

to upper socio-economic status were more prone to tobacco cultivation and less willing to shift from tobacco.

6. It was also clearly brought out that the **majority of the farmers from the sample region were readily willing to shift from tobacco cultivation with or without incentives.** Of course, they were more enthusiastic to shift, if, suitable financial assistance, technical advice and the irrigational and other necessary inputs for the alternative crops and economic activities were made available to them. Interestingly, the present practice of the **government authorized banking system lending to tobacco cultivators for tobacco cultivation appeared self-contradictory** to a proclaimed policy of the government to restrict tobacco consumption. Though tobacco farmers were not found to consume their own tobacco output leaving a large marketable surplus, the fact that this amounts to shifting the hazards to somebody else does not speak well of a state which proclaims to have a concern for welfare of all the people.

CMDR's Action – Intervention

7. In the background of this understanding about field reality, the Centre's action programme was initiated for the purpose of effecting a shift from tobacco cultivation. The experience of action intervention would provide an important insight about the **process of socio - economic change at the micro level.** The experience suggested that **any change in a well established framework is likely to be slow and gradual and the intervention programme needs to exercise atmost restraint and patience for realizing the desired change.** The action intervention brought out that the farmers have their own rationale, the change from which requires an innovative and unconventional approach on the part of the strategy for effecting the change.

Components of Action:

8. The action intervention focused on a tobacco producing (adopted) village – Sidnal in Belgaum district (about 16 kms. away from Nippani, a major tobacco trading Centre of the district), provided the necessary quality seeds of an alternative crop (Soya bean) to the farmers, facilitated financial assistance from the local rural banks, the lead bank and also the Centre itself, for the purpose of an alternative economic activity in place of tobacco cultivation (dairy farming) and organized the farmers for their tying up with an established milk cooperative in the region.

Outcomes of Action:

The outcomes of this action intervention were overwhelmingly encouraging in the following respects :

a. In the very first year of intervention, there was a 50 per cent reduction in the area under tobacco cultivation and 54 per cent of the farmers had shifted from tobacco to alternative crops / activities**. This indeed is a remarkable dent in a region which had held tobacco cultivation firmly to its chest over the last several generations !** One should however, be well advised not to be overwhelmingly elated at this euphoric response of the farmers. The wise say that any change which is endogenously induced and gradual is likely to be more sustained in the long run. The truth of this is realized by the evidences collected by the action research team for the next period of action intervention, as the reduction in tobacco area was to the order of 15 percent during the reference year as compared to 50 percent in the earlier year. In any case, the fact that, the number of farmers who have shifted has remained constant and there is also a trend of reduction in area under tobacco should be considered as a positive out come of the action intervention.

b. The farmers who were the target of action intervention, strongly expressed a desire that for sustaining the shift, the intervention has to be for a longer period than just 2 to 3 years. It was also felt that making a significant dent into the tradition-entrenched agricultural system of the region, a **'big push comprehensive intervention' is desirable as compared to a moderate and narrowly focused intervention.** Such a comprehensive package of intervention should consist of not only the supply of inputs for agricultural operations but also creation of supplementary institutional mechanisms to help the farmers of alternative crops or activities in realizing adequate returns for their efforts put in. Thus, there was a demand for suitable transportation facilities, storage and marketing facilities, agricultural extension services, etc. in connection with these alternatives. The Centre could not cover a greater mileage in respect of such supplementary support.

c. It was also felt that as the villages in such a region are characterized by what may be termed as the 'demonstration effect', the target group of intervention should be as large as possible in a particular village in order not to give scope for the risk of a backlash from the few more influential tobacco-growing farmers on the majority of the shifters. The message for shift should make a firm dent into the mind of tobacco cultivators. In this background the Centre had instituted certain prizes and incentives for school children of the tobacco shifting parents of the region in order to carry the message of shift from the young children to the older farming community. Children are obviously more effective carriers of the message to the

mind and heart of the parents. Frequent meetings of the Tobacco Control Mission of the Center were held in the schools and residential premises of the tobacco farmers themselves, for the same reason. All these measures seem to have borne some result, though their sustainability needs to be watched and further strengthened.

d. Analysis of the **focus group discussions with those farmers who had already shifted without the incentives from the Centre's action intervention brought home the same truth more emphatically that if the farmers realized the economic problems associated with tobacco cultivation, then, the shift would be autonomous and self propelling without a requirement of any external incentive mechanism.** It was also brought out that availability of irrigation facility has facilitated the shift from one cash crop of tobacco to another cash crop of sugarcane. A word of caution needs to be stated here that if irrigation facilities are not adequate enough for sugarcane cultivation, then, there is a risk that these facilities may as well be used for tobacco cultivation itself ! From the long term point of view, a shift to sugarcane cultivation is also not advisable as per the researches of the agricultural scientists of the region because too much of water logging for the purpose of sugarcane cultivation degenerates the soil, reduces the soil fertility and increases the salinity of the soil, making the land area barren in the long run. This has been witnessed in the adjoining sugarcane districts of Maharashtra.

In Sum

The micro economic analysis of tobacco farming and the alternative economic activities under action intervention suggested that the supply side controls would be certainly more effective than the demand side controls on tobacco. **The supply side controls are likely to be more enduring, if, we bring home the point that tobacco plant is not only a killer plant from the point of view of the health hazards concomitant to the consumption of its leaves or their products but it is also an economically nonviable plant.** The general belief that supply side controls would not be effective to a significant extent was belied by the results of our action. Since controlling demand amounts to controlling the psyche of the consumer the measures for controlling demand are likely to be less successful, or success of which is less predictable. On the other hand, the supply side controls, very closely connected with economic non-viability of tobacco and higher economic viability of other crops or activities can be considered to be more manageable and more predictable in their effectiveness. From this point of view, the study advocates adoption of supply side controls at the base point of supply viz, cultivation. It recommends a judicious blending of supply side controls with demand side controls for the purpose of effective tobacco control.

A close study of tobacco cultivation in different countries brought out that if global tobacco control has to be effective, then, the supply side controls should be rigorously implemented **in all the countries** concurrently without giving scope for one tobacco producing country to exploit the other countries, which have shifted from tobacco through its tobacco exports. For safeguarding the interests of the erstwhile tobacco farmers for their action of reducing area under the cash crop of tobacco and thus risking high gross returns in the short run, there should be a scheme of decoupled income support for such farmers with the help of international cooperation in the interest of global tobacco control. The micro study undertaken by the CMDR team for **Tobacco Control Mission** strengthened such perspectives for the national and global tobacco control policy.

C h a p t e r - I

ECONOMICS OF SHIFTING FROM TOBACCO A MICRO LEVEL STUDY AND ACTION PROGRAMME

A BACKGROUND:

For a student of economics and a policy maker poses a painful puzzle. Its production by the farmer makes himself and other vulnerable to health hazards, for its grower is also generally its consumer. Its production also facilitates a large marketable surplus, exports and fairly good foreign exchange earnings. It also provides opportunities for paid jobs for many a poor people in the activities of its cultivation, manufacture of a number of its products etc. Tobacco is a highly labour intensive activity. In an economy in dire need of foreign exchange earnings, the gains from the export potentials of tobacco cannot be ignored. Also, in a country with low levels of industrialization and economic activity and consequently with low job opportunities, the gains from labour intensive nature of activities associated with tobacco cannot be overlooked.

Thus, tobacco raises issues relating to the value system that we wish to adopt : should the society prefer the long term gain in terms of avoidance of health hazards of shifting from tobacco production and tobacco consumption, or should the short term gain of export earnings and job opportunities for the poor, associated with tobacco production and tobacco consumption, be preferred ? In other words, should health gains be preferred to immediate economic gains and vice versa ? Of course, health gains give rise to long-term economic gains as well, as our ongoing study with IDRC on resource costs of morbidity has shown. However, it should also be admitted that the above- mentioned economic gains may also have, in turn, positive long term health effects.

This raises another set of issues of policy significance. For example, if tobacco production and consumption give rise to negative health effects and positive economic effects, is it possible to introduce measures which would maximize gains and minimize losses ? If 'avoidance costs' of health hazards from tobacco are larger than economic gains, then obviously tobacco production and consumption have to be discouraged. Thus, construction and maintenance of cancer hospitals, TB hospitals etc. may be necessary to avoid or minimize the costs of health hazards from tobacco. The costs of hospitals may be larger than the economic gains from job opportunities and export prospects. In fact, the avoidance costs and cost of diseases from tobacco (in the case of those who cannot avail of the medical facilities because of poverty or inadequacy of facilities), <u>together</u> are likely to be larger than the economic gains. It is from this point of view that economists have termed tobacco as a <u>'merit-bad'</u> (an

opposite of merit good), suggesting that tobacco is (de) meritorious and needs to be controlled by the 'collective' intervention into the sovereignty of its producers and consumers. But the question is how far would this collective control of tobacco be effective ? Would case by case micro approach be more expedient and cost effective than the macro- 'collective' approach ? This seems to be an empirical question.

The collective intervention in the case of this merit bad (tobacco) can take different forms:

i. Discourage consumption of tobacco either through heavy taxation or through methods of moral suasion – (statutory warnings about adverse health effects from tobacco consumption).

ii. Discourage production through direct controls or price control.

In most of the countries including India, tobacco and tobacco products have been the target of heavy indirect taxation. The government of India levies heavy additional excise duties on tobacco in lieu of sales taxation of the State government. Though such a levy is on the producer, in view of relatively inelastic demand, the tax is entirely shifted on to the consumer (purchasers) of tobacco. Thus, though the smoker, snuffer and chewer are heavily taxed under the Government of India budget every year, the smokers continue to smoke despite the high price of cigarettes, bidies and chuttas (mostly used by the poor).

Some studies show that demand for cigarettes is price elastic particularly for the poor. It has to be seen empirically whether rise in the price of cigarettes would cause a shift to the inferior forms like bidies and chuttas, etc. oblivious of the potential health hazards.

The value of total private consumption of tobacco and its products increased in India from Rs.5.6 billion to Rs.80 billion during 1960-92. This increase is even more than the increase in the money value of consumption of medical care and health services. As of 1991-92, the latest year of which data are available tobacco's share in total private final consumption expenditure was equal to that of even education ! (at 1980-81 prices). Private final consumption expenditure on tobacco and its products had registered even a higher rate of growth than that on protein yielding pulses during 1951-92. Thus, despite heavy taxation and statutory warnings (even printed on pack of cigarettes and bundles of bidies), which are ritualistically followed, tobacco habit does not seem to be waning. In fact, the ritualistic warning and anti-tobacco consumption education initiated by the government and some of the NGOs are effectively countered by the tobacco companies and producers (particularly the former) by counter-propaganda using systematic and subtle but effective methods. Under such a situation the indirect taxes levied on tobacco and its products are likely to be shifted fully: price sensitivity of

tobacco consumption, it is sometimes argued, is not universally low for all income groups and all age groups. For the poor and for children demand for tobacco products (bidies, cigarettes, snuff, chewing tobacco, 'pan masala' etc.) is likely to be elastic, until consumers get addicted to them. Such issues need to be examined empirically, and hence for developing insights about the problem a detailed empirical study for a selected region may be useful. The stratification of demand for tobacco for different socio-economic groups would help our understanding of whether price of tobacco products can be considered as an effective instrument of control of tobacco consumption.

Users of tobacco are thus doubly hit initially by the immediate price hikes and fuller absorption of taxes in higher prices paid by these users and also in the long run by inviting the health hazards.

The interventions through the fiscal measures or general measures for awareness (such as statutory warning) do not seem to have any significant influence on the production of tobacco either. India has the dubious distinction of being the third largest producer of tobacco in the world ! Tobacco production in the country increased to 0.58 million tones from 0.36 million continue to get approved for reasons of employment potentials and they provide (for details see Statistical outline of India, 1994-95. Tata Services Limited, Bombay, Oct. 1994).

The area under tobacco cultivation has actually increased in India during the post-independence period from 330,000 hectares in 1951-52 to 420,000 hectares in 1991-92. This is a larger quantum of increase than in the case of some food gains like Bajra, which is the staple food of the poor in some parts of the country. The tobacco companies, with small and large scale of activities continue to make profits as is revealed by their profit ratios. Whether the actual growers of tobacco in the rural areas have a share in these profits is not clear. It is generally felt that the middle men and whole sale business corner these profits leaving the farmers in the same 'dependency syndrome' and low economic conditions.

Whenever the organized wholesale agents and manufacturers of cigarettes and bidies feel the threat from the anti-tobacco campaigns, they immediately reorganize themselves and take counter measures. In a recently concluded conference of the International Tobacco Growers' Association (ITGA) at Bangalore a number of resolutions were reported to have been passed to this effect (see the reports in Economic Times (Bombay) 10-11-1995, 18-11-1995, 23-11-1995, Times of India 17-11-1995, and Business Line (Bangalore) 16-11-1995.) The resolutions range from measures to increase productivity through adoption of new technology and improved farm practices to a veiled warning of entering into legal battles against anti-tobacco propaganda. The Chief Executive, ITGA is reported to have observed, `In the absence of any concrete evidence that established a correlation between advertising and tobacco

consumption, the effectiveness of such enforcements remains questionable'. The Association also seems to question the validity of the correlation, between the incidence of diseases and tobacco consumption. The tobacco lobby is so strong that the task of bringing out a report on tobacco has apparently been taken away from WHO which was highly critical of tobacco, and the task of bringing out a report on tobacco has apparently been taken away from WHO, which was highly critical of tobacco, and the task now vests with the UNCTAD (see Business Line, 16-11-1995). The lobby also employs the trump card of concern for the poor and poor countries saying that developed countries have no authority to take away the right to grow tobacco of the farmers of poor, which are the important tobacco growing regions of the world, through adoption of new technology and improved farm practices.

All the above observations go to show that aggregative-macro-measures to indirectly control tobacco production generally get countered systematically so that the production continues to grow and as the adage goes **– 'supply creates its own demand' –** the consumption also continues to grow unabated in response to the supply.

If structural adjustments with suitable inflation controls being introduced in recent years bring about prosperity and price stability then the demand for tobacco might increase and supply and production of tobacco and tobacco products would also expand, being induced by the demand. In the face of such multiplier – accelerator interactions, the fiscal measures might swell the government revenues and the foreign exchange earnings possibly inducing the policy makers to be 'pragmatic' and 'rational' in not pressing hard for the anti-tobacco drive also! [It was this 'pragmatism and rationality', it may be recalled, which forced some states in India to abolish prohibition, (prohibition is the term used to describe measures to ban consumption of hard drinks), so that easy availability of the hard drinks could fetch large revenues to the exchequer]. **This is a vicious circle of a 'plight' of the vulnerable smokers, chewers and snuffers**: because of tobacco consumption there is a heavy incidence of deadly disease; to control these diseases the governments need to strengthen the medical care system by starting costly special hospitals, all of which require huge resources; this induces the policy makers to charge heavy levies on tobacco; unless the tobacco control measures are relaxed or not rigorously implemented this cannot happen ; this keeps the tobacco users where they were. This vicious circle needs to be broken and temptations for short term revenue gains should be resisted.

For this purpose two approaches seem to be necessary: first, the measures for controlling tobacco consumption have to be effectively integrated with the measures needed to control production of tobacco; and second, the aggregative measures to be replaced or supplemented by the micro measures involving case by case tackling of tobacco consumers and tobacco producers.

It appears that policy making with regard to tobacco problem has laid more emphasis on aggregative approach and direct or indirect control of consumption of tobacco. At the level of cultivation itself there does not appear to be an effective policy or effort to induce farmers out of conviction to shift from tobacco. Preference or preparedness to shift from tobacco to other crops obviously depends upon the personal circumstances of the farmers, the agro-climatic factors and incentives to shift in the case of equal or better economic returns from alternatives to tobacco cultivation. Since majority of tobacco growers are also either smokers, chewers or snuffers, **measures to control tobacco use need to be integrated with the measures to control production,** all at the individual level. This we may call as the **micro-economics of tobacco control**. We also propose to undertake a micro level study of the economics of shifting from tobacco (production and consumption) with micro level interventions. We also propose to integrate the conceptual, empirical and action research methodologies in this micro-economic study. The results from the study may help evolve an integrated methodology of tobacco control.

The proposed study might be considered as a modest attempt to fill in the gap that exists in the available literature about economics of tobacco. The micro economics of tobacco shifting might be considered as a useful initiative and a pioneering contribution to the literature in the Indian context.

A Brief Literature Review:

A significant amount of thought has been given to the problem of tobacco in different countries by social scientists, medical scientists, activists, policy makers, legal experts, etc. Tobacco indeed has emerged as a subject for multi-disciplinary thinking. Some of the major issues in this connection have been covered in the columns of important news papers and magazines apart from the major professional research journals. The multi-disciplinary literature is so vast that it may be difficult to review all the literature in few paragraphs. Some of the recent literature covered in the news papers is presented in one of the appendices of the present study (Content Analysis about News Paper Reports on Tobacco). In another appendix (Tobacco in Ancient Indian literature) to this study an interesting account is presented about what the ancient Indian literature has to say about tobacco and its use. In fact, many of the current beliefs and practices relating to tobacco can be explained in terms of what the ancient literature says. The Appendix covers only the literature in Sanskrit, which is India's the most ancient language of hoary antiquity.. However, the rich literature in more than 10 major regional languages and the oral traditions in several hundreds of the dialects in different parts of the country do consist of interesting references to tobacco and tobacco related practices. We could not cover this literature at all in this study. This is a subject matter for a separate study in itself, providing rich anthropological and

historical insights about the tobacco related practices, understanding of which might be useful in designing a strategy for controlling consumption and cultivation of tobacco.

A quick scan of the important literature on the subject shows that the serious contributions of high research are very few on the subject and they belong to both pro and anti tobacco camps. Most of the literature is having activist connotations for or against tobacco consumption. The literature for tobacco consumption is mostly promoted by strong tobacco lobby, mainly highlighting that the so called disadvantages reported in the literature from tobacco consumption are normally exaggerations without having strong scientific base. The anti-tobacco literature, on the other hand, has tried to muster all scientific evidence from different micro level studies to bring out the adverse health effects from tobacco consumption. These are based upon clinical research by medical scientists supported sometimes by the field level evidences compiled by the social scientists.

On tobacco cultivation, however, there are very few economic studies in particular and studies with social science orientation in general. Ronalt Watts and Theresa Watts (1933) succinctly summarize the favorable factors for tobacco growing. They also contest the contention of International Tobacco Growers' Association that 'rapid and widespread substitution of tobacco production is neither possible nor desirable from an economic or social stand point by showing how diversification of cultivation instead of tobacco is economically more advantageous because of relatively higher costs of tobacco cultivation, higher degree of risks in realizing returns from tobacco, particularly because tobacco is export oriented and international trade is always a risky business. They demonstrate in concrete terms how diversification is possible with examples for Zimbabwe. Such experiences are worth using in the Indian context also. They also clearly show, in addition, the adverse health effects of tobacco consumption in Zimbabwe.

On adverse health effects from consumption there are a number of studies in the Indian context. The Tata Institute of Fundamental Research organized in 1990 an international conference and the studies presented there clearly bring out the consequences of tobacco on oral health, cancer and general health with illustrations from India mostly based upon clinical studies (Prakash Gupta et, al (ed) 1992). In an earlier publication of Tata Memorial Centre (L.D. Sanghavi and Perin Nothani, 1989) consisting of papers presented in a workshop on Tobacco or Health, the studies show how tobacco is related with diseases like cancer, and disease of pregnancy and reproductive system. The other set of studies in these volumes also relate to the clinical aspects of tobacco consumption, components of tobacco causing various diseases, tobacco control measures, etc. The studies clearly emphasize and there is a need for studies on tobacco economics. Sanghavi and Notani (1989) conclude – 'in the long run, tobacco economics should receive serious attention and the possibilities of

alternative uses of land and labour involved with tobacco cultivation and manufacture of tobacco products should be investigated'. This plea, however, does not seem to have received adequate research attention from either the economists or the medical experts in India. There are however, occasional observations and concerns expressed by the researchers, which are reported in the newspapers (reference to Content Analysis about News Paper Reports on Tobacco is again invited). Some of these are referred to in the previous paragraphs.

Abroad, however, a number of important contributions are made on the economic aspects of tobacco, particularly relating to tobacco industry, tobacco consumption, tobacco taxation, etc. (See Appendix B) H. Barnum (1993) charts a distinct course in this family of contributions, in that he attempts to apply the concepts and principles of economics to the question of tobacco and shows that the global costs of tobacco consumption and production are larger than global benefits and hence on strict economic grounds alone tobacco is not a desirable proposition. In another study (1994) he presents clear evidence to show that tobacco consumption provides a net economic loss and anti tobacco policies are a cost-effective way to save lives and benefit the economy. In the currently introduced structural adjustments and liberalization, however, control of tobacco consumption through heavy taxes may not be favoured because they would introduce artificial distortions and hence may obstruct realization of the objectives of allocative efficiency (Rohinton Medhora et.al 1994). One also doubts whether the fiscal measures would at all be effective in tobacco control and what would be the equity effects of heavy taxation, as, the tobacco (bidi) smokers and chewers are largely relatively less prosperous [for a debate about fiscal measures of control, see also, Harris J.E. (1980), Chapman S and J.Richardson (1990) Philips C.E. (1988), Warner K (1990)]. In this background alternative methods of transition from tobacco assume a special significance.

As a part of the alternative strategies we may consider the micro level interventions into consumption and tobacco cultivation. So far as micro intervention for control of consumption is concerned, a longitudinal study (P.C. Gupta at al 1992), relating to tobacco and cancer brings out clearly the disease vulnerability of tobacco users. What needs to be highlighted is the economic aspects of tobacco in these micro interventions so that the message is clearly carried home and the shift from tobacco consumption is realized in practice. About micro-interventions into tobacco cultivators, no major effort seems to have been made both with regard to intervention and with regard to a study of such an intervention.

Before developing the research proposal for undertaking the present study, we conducted a short pilot study in a village in a tobacco growing district of North Karnataka. This pilot study helped specification of the scope of the study, as outlined below. Details of the pilot study are given in Working Paper No.1.

B. SCOPE OF THE STUDY:

The aim of the study consists of mainly evolving a methodology for shifting from tobacco cultivation to other productive activities. We may also incidentally make some observations about controlling tobacco consumption among tobacco growers and tobacco consumers of the selected region.

Specifically, we will attempt to :

i) understand the socio-economic background of the tobacco growing and tobacco consumer families in a sample region.

ii) understand the level of awareness among the tobacco growers and tobacco consumers about the adverse effects of tobacco both for health of other plants and health of themselves and others in their company. In order to improve this awareness it is proposed to estimate the direct and indirect costs of morbidity and mortality possibly from tobacco use and involvement in tobacco related activities, particularly using the results of another study conducted by CMDR in this connection..

iii) study the current practices relating to marketing of tobacco bringing out in sharp focus how tobacco growing farmers are exploited even by the middlemen in the prevailing marketing practices and thereby build a pressure group among farmers themselves against tobacco. Depending upon the availability of the material in this connection, an attempt will also be made to emphasize the differential advantages in this connection from the relevant alternative activities (From the literature scan in India about tobacco trading practices, it is noticed that this aspect has received very little attention and hence inadequate documentary evidence is available on the issues relating to tobacco trading).

The question of profitability of tobacco cultivation and middlemen exploitation of farmers, etc. can be studied on the basis of the experiences of respondent farmers from the sample survey and here differences in the roles and experiences of men, women and children will be highlighted.

It is proposed to study, depending upon the availability the relevant material, whether opening up of the Indian economy would influence the decision making of the tobacco cultivators about shifting from tobacco.

iv. understand which tobacco farmers in the region are willing to shift from tobacco cultivation to other crops or other activities and whether they need any supplementary inputs and incentives to effect this shift.

v. improve awareness of the women and children in particular about the ill effects of tobacco and about their exploitation in the process of tobacco cultivation and production of tobacco products, thereby build an internal pressure group against tobacco.

vi. evolve an integrated methodology consisting of package of measures, for shifting from tobacco cultivation and tobacco consumption with a micro level intervention programme particularly focusing on a sub sample (explained under the section on methodology).

vii. examine the effectiveness of various measures such as price, taxation of tobacco products, anti-tobacco publicity, etc in tobacco consumption. The effectiveness of general measures and specific (target oriented) measures would be examined, if the relevant data would be available.

C. RESEARCH METHODOLOGY

For examining the behaviour of tobacco producers and tobacco consumers, their socio-economic background, their awareness of the effects of tobacco, reasons for tobacco production and consumption, their preparedness to shift from tobacco, etc. may be studied with the help of a detailed check list and personal discussions with the members of the selected households. The different socio-economic characteristics such as age, gender, income, caste etc., and effectiveness of various instruments of control can be studied for these various categories of sample population. This would help identifying dependable instruments of control.

The empirical study in this connection will be conducted in a selected district of Karnataka. Karnataka is one of the main tobacco growing states in India. It stands sixth in rank of tobacco yield in the country. Karnataka is one of the states where literacy levels are not very high. In terms of the per capita income, the state is a medium developed region of the country. Hence, the results from a study for this state may be broadly relevant for other similar regions though special features of different regions cannot be overlooked while considering the question of relevance of results of a specific study.

Of the (then) 20 districts of Karnataka, Belgaum district happens to be the most productive district from the point of view of tobacco production. Belgaum district ranks first in the state so far as the area under tobacco cultivation, and production of tobacco are concerned. About 50 percent of area under tobacco in the state is part of tobacco area

is this district itself. Also, more than 50 percent state's tobacco production is grown in this district itself. In terms of yield both Belgaum district and Dharwad district show similar performance (1027 kgs per hectare) and this yield is more than the state's average yield. But Dharwad district has a small hectarage for tobacco whereas Belgaum district has more than 10 times the Dharwad district's area under tobacco. From all these points of view **we have chosen Belgaum district in Karnataka for the empirical study.**

In Belgaum district also, three talukas of Chikodi, Hukkeri and Gokak claim major share in the area under tobacco cultivation. There are in all about 350 villages in these three talukas The details of the choice of villages and households in the sample villages, etc. are given in Chapter V.

For the purpose of the present study, we selected two types of samples from the above three talukas from Belgaum district.

a) one, for a detailed study of behaviour of tobacco producers and consumers, and

b) another sample for action and research analysis of action involving interventions for shifting from tobacco production to other crops.

The study would also examine on the basis of the same sample survey, the marketing practices and returns for the farmers and the nature of exploitation by the middlemen, etc. The individual experiences of the sample cultivators and consumers would form the basis for this study.

This study has borrowed from the experiences of another IDRC sponsored study completed in 1996, on *Resource Costs of Morbidity*, while highlighting costs of tobacco consumption. In this sense, the present study is in continuity of CMDR's research thrusts, which are promoted by IDRC.

With the help of agricultural scientists an attempt would be made to highlight how tobacco cultivation is likely to be damaging to the other crops wherever other crops are grown in alternative seasons and how full shifting from tobacco cultivation is beneficial. The sample study of farmers would be helpful in this connection, as it captures the farmers thinking on this issue.

D. ACTION-INTERVENTION

Action research study of intervention would be the other component (b) of the study, which would follow the conceptual and empirical study of part (a) above. Two approaches may be followed in this connection. In the first approach, a sample of cultivators/consumers about whom willingness to shift from tobacco is confirmed from part (a) can be the focal group for

action and development of replicable methodology for shifting. Alternatively, a focal group altogether different from the surveyed sample of farmers can be chosen for the purpose of intervention. This would imply that the lessons learnt from the empirical study (a) above will have to be tried out in a new situation of tobacco farmers. From our field experience and also in the interest of achieving tobacco shifting we preferred the latter approach. It is also useful to study the behaviour of the farmers who have already shifted from tobacco cultivation without the action intervention under the present study.

Originally, it was proposed to purposively select 50 tobacco cultivators from the tobacco growing villages for the purpose of action intervention. As the study progressed, it was noticed that many more tobacco cultivators are interested in shifting and a larger number of tobacco cultivators should be covered under the action intervention. It was also realized that this intervention should be introduced in the region, which was not covered under the empirical study of tobacco farmers in order to widen the influence of the study on tobacco farmers. Even while collecting the data from the tobacco farmers for the empirical study, the investigators had adopted an approach of discussing with farmers about the adverse effects of tobacco cultivation so that there was an indirect effect on their mind to shift from tobacco cultivation. Utmost care was taken in the course of such discussions that the compiled information objectively reflected the view points of the farmers.

A set of motivators closely interacted with the target group of tobacco producers who were potential shifters from tobacco. A motivator is one who intimately interacts with the target group, acquaints the people about the bad effects of tobacco and motivates them for and speeds up the process of shifting from tobacco. He acts as a mediator for change. These motivators would assess how enduring would be the interests of these producers to shift, what resources they can command on their own to effect the shift, how much supplementary inputs, of what type, would they need for the purpose, etc. Once supplementary inputs and assistance are provided, the motivators would closely monitor the efficient use of these inputs to effect the shift on an enduring basis. They would also assess the effects on the socio-economic status of these producers in the post-shift period, focusing on the status of women and children and health and educational status of the members of the family.

Obviously the action-intervention would have to be spread over a reasonable period of time in order to ensure stability of the shift, and not fall back into the 'tobacco-trap' once again. In view of time and resource constraints, we could restrict our intervention only to selected farmers and to only three seasons, i.e,. eighteen months only, though this period of intervention was realized too short for realizing firm and enduring results of change in the ethos of tobacco cultivation in the region.

Nature of Interventions:

Interventions might be of the following types:

a. *Awareness interventions:*

These might involve publicity against production and consumption of tobacco, educating the people about the adverse effects through person to person contact by the 'motivators' distribution of simple literature, showing of visuals and films in the sample region, etc. Distribution of the literature, interactions and discussions, etc. have to be target-population-specific. For women and children, for working population, for children, for the aged, for example, the methodology and contents of interactions have to be different. The motivators would be so trained as to mould their interactions suitably according to the target group.

b. Support Interventions:

Some cultivators of tobacco might be continuing their cultivation because alternative crop requires better irrigation facilities, which are currently not available in the region. The results from the pilot study (See Appendix to this study) show that in a small village of Belgaum taluka, a large number of tobacco farmers were prepared to shift but for irrigation facilities. Under such circumstances, support- interventions would consist of providing incentives to the potential shifters to have the bore-wells dug, or to help from irrigation co-operatives' so that group of farmers can have the benefit of irrigation facilities from a common bore-well or construction of a bund for storage of rain water, etc., for which the money incentives may be provided to the co-operatives of farmers.

Similarly, monetary help may be provided for the purpose of supplementary inputs like purchase of better seeds of alternative crops, fertilizers, etc.

The exact nature of interventions would obviously depend upon the interactions with the respondents of the sample survey.

That is how the two components of the study viz, the empirical survey analysis of survey data and action interventions are interlinked.

Macro interventions are the interventions which are of a general nature and which are not specifically targeted to a particular group amongst the sample population. For example, programmes for general awareness against the adverse effects of tobacco may be cited as macro interventions. Statutory warning is a macro intervention. Micro interventions on the other hand, are designed keeping in mind the special background and information about the specific groups of the sample population. For example, for women the interventions might be in terms of

providing support to ameliorate the adverse effects of tobacco use on reproductive systems and child health. Similarly, financial support for digging the borewell, or purchase of pump sets, etc. would depend upon which households need these for the purpose of shifting from tobacco to alternative crops.

Financial support for forming the irrigation-cooperatives, or to the existing cooperatives for strengthening the irrigation facilities, etc., is a mix of micro-macro interventions.

Obviously, the words micro and macro are relative terms. The essential feature of these terms is that while the former refers to the specific groups the latter refers to no such specific groups. The thrust of the proposed study is that the interventions have to be target group specific in order that they are effective and designing such specific (micro) interventions, requires detailed information about the target group. This information has to be based upon a detailed field investigation and also motivator's interactions with the sample population.

To summarize the methodology of this project, first we would conduct an empirical study of about 2000 randomly selected cultivator/consumer households, from 35 villages (purposively selected on the basis of tobacco production) from 3 tobacco growing talukas of Chikkodi, Hukkeri and Gokak of Belgaum district which tops the list of tobacco producing districts of Karnataka. The needed information would be collected with the help of a structured questionnaire and also the interactions of motivators. The second aspect of the methodology would consist of following interventions with not less than 50 potential shifters selected on the basis of the motivators' perceptions about the shift-possibility. Close monitoring of the process of shifting in the case of these cultivators with the help of a set of measures (consisting of awareness campaigns, discussions, supplementary inputs etc.), to be tried out with trial and error, would help evolve a methodology for shifting and speeding up its process. For example, in a family with a large number of female members, the awareness programme may adopt a different approach (highlighting gynac problems from tobacco consumption) as compared to a family consisting of majority of male members. Similarly, in a family with a large number of literate members, the written literature (in simple language), motivator's discussion with a slightly higher level of delivery, may have to be adopted. Such micro level variations in the alternative measures would be more effective than the uniform packages at macro levels.

E. USERS AND BENEFICIARIES FROM THE STUDY:

The results of the study would be useful for NGOs and governmental functionaries in evolving a package of measures to control and shift from tobacco consumption and production.

Improvement in the awareness about the adverse effects from tobacco would help develop internal pressure groups within the family against tobacco cultivation and tobacco consumption.

This study of economics of tobacco cultivation and tobacco consumption would be a modest attempt to add to our understanding about the role of the socio-economic factors in the decision making about tobacco. As such, the study would benefit the researchers in the field.

F. OUTPUTS AND DISSEMINATION

The expected outputs from such a three pronged project would be the following:

a. Regular meetings of the project advisory committee, consisting of researchers, governmental functionaries, particularly officials from the department of health and medical care and social and political leaders of the region, would help sensitize people about the tobacco problem.

b. At the end of the study, it is proposed to bring out a comprehensive project report, which can be considered as useful material for researchers and policy makers. This can serve as a volume on Economics of Shifting from Tobacco providing useful micro level analytical material for designing strategy for tobacco control policies.

c. The project team also would bring out a few occasional papers on the specific aspects of the study.

G. CHATPER SCHEME :

The study adopts the following plan of discussion :

After presenting the executive summary at the beginning, ***Chapter I*** as presented above, outlines the problem and its importance in the context of Indian economy in particular.

Chapter II presents an introductory account about tobacco as a crop in agriculture. This account would be helpful in understanding the agricultural practices relating to tobacco in India and other countries in order to design the an intervention package for the control of tobacco cultivation.

Chapter III presents an analysis of the macro level international data relating to cultivation of tobacco with a focus on its socio-economic determinants. The chapter also briefly outlines attempts of some countries

for control of production of the intoxicants and addictive goods like poppies and tobacco.

Chapter IV presents a socio-economic analysis of macro level data relating to tobacco and tobacco cultivation in the Indian context. The chapter also highlights what importance tobacco assumes in the Indian economic situation highlighting in particular its contributions to the fiscal revenues, foreign exchange earnings, employment, national income, etc. Such a macro level analysis would present tobacco cultivation in a context, helping suitable design of measures to control tobacco cultivation. The chapter facilitates reader's interest to graduate from macro perspectives to the micro perspectives which would be extremely necessary for introducing any effective strategy for tobacco control. A discussion is also presented about tobacco marketing and industry which are considered to be crucial link factors with tobacco cultivations.

Chapter V presents a micro level study of tobacco cultivation in the sample region of Karnataka, using detailed survey data relating to sample villages in the tobacco region and also relating to 2000 households there. Rich data about nearly 1700 tobacco cultivating households are subjected to close statistical analysis focusing on the socio-economic determinants of tobacco cultivation.

Chapter VI is devoted to documenting the action intervention experiment of the research project for controlling tobacco cultivation the selected project region, where a village was adopted for the purpose of action research. The chapter outlines in the main the stages in the process of socio-economic change at the micro level when it describes in detail the experiences of hope-frustration-success-hope cycle in the action programme. The experiences about action so documented would make an interesting reading for any student of the process of social change. They also helped the project to design a package of intervention, which can be replicated with suitable modifications in other contexts for the purpose of control of tobacco cultivation. **The chapter also highlights the need for intensive efforts of pursuit for the purpose of sustained shifting from tobacco cultivation.**

Chapter VII analyses the process of change from tobacco cultivation to cultivation of alternative crops or alternative economic activities in a tobacco growing village of Sidnal, which was adopted by the Centre for the purpose of Action – Intervention.

Chapter VIII presents a brief summary of major policy oriented conclusions of the study.

In the appendices to the study, not enclosed with the main Report, but brought out separately, supporting material for understating economics of shifting from tobacco is presented. This supplementary

material is in the form of Working Papers. In all,seven Working Papers have brought out so far. They are :

Working Paper No. –1	***Economic Aspects of Tobacco Cultivation and Consumption. (a pilot study)***
Working Paper No. –2	***Tobacco in Ancient Indian Literature.***
Working Paper No. –3	***Content Analysis of News Paper Reports on Tobacco.***
Working Paper No. –4	***Control of Tobacco Cultivation : Action and Reaction are Equal and Not Opposite.***
Working Paper No. –5	***Tobacco related diseases : So for so bad.***
Working Paper No. –6	***Agricultural Diversification as A Tool of Tobacco Control (Paper presented at WHO Conference)***
Working Paper No. –7	***Some Aspects of Tobacco Cultivation : Empirical Evidence from Village level data.***

C h a p t e r - II

TOBACCO CROP: A GENERAL INTRODUCTION

Tobacco has been one of the important commercial crops grown in many countries including India. China, USA, India, Brazil, Turkey, Zimbabwe, Malawi, Italy and Greece are the major producers of tobacco. India is the third largest producer of tobacco, producing about 587 million kg. of tobacco annually from an area of 391 thousand ha. which, accounts for about 9 per cent of world tobacco area and 9 per cent of world production.

Though tobacco accounts for only about 0.25% of the total cropped area in the country, it has gained importance as exports of tobacco earn nearly Rs. 850 crores by way of foreign exchange and it contributes Rs. 6000 crores as excise revenue to the government.

ORIGIN OF TOBACCO :

The origin of tobacco has attracted great deal of controversy. It is believed that Christopher Columbus discovered the narcotic qualities of tobacco by accident in the course of his American voyage in 1492. He was offered some dried leaves by the inhabitants of Arawaks. He introduced it to Europe. Though there are references that Chinese were also growing and using tobacco much before Columbus invented America, there are no crucial evidences to its existence during that period in China (Killebrew and Myrick,1897). The expansion of its cultivation is ascribed to the Spanish and Portuguese in the continents of Europe, Africa and Asia. Tobacco is said to have been introduced into India in early 17th century by Portuguese. It was used as intoxicant and as a cure for all kinds of ills and paying homage to deities (Gopalachari, N.C., 1984). According to Beaton, J.D., tobacco has been produced in India since 1508.

Red Indians according to another version used tobacco for both medicinal and ceremonial purposes. They used to inhale its smoke from burning leaf through the nostrils by means of a hollow forked cane and the name of the instrument was given to the plant which came to be known as ‘Tobacco’. Jean Nicot, French Ambassador to portugal introduced it to French Court. The botanical name ‘Nicotina’ and the word ‘Nicotine’ have been derived from his name.

VARIETIES OF TOBACCO AND ITS CULTIVATION IN INDIA :

Tobacco belongs to the solanaceae group of plants (Garner,W.W.,1951) chiefly tropical in origin. Herbs, shrubs, chilly, potato are included in this group. Out of nearly 60 species of tobacco only two species Nicotiana tabacum and Nicotiana Rustica are cultivated extensively. N.Persica an another variety is grown in Iran. India grows more of N.tabacum. N.rustica requires cooler climate.

N.tabacum varieties known as ‘desi’ types have tall plants with broad leaves and have usually pink flowers. N. rustica varieties known as ‘vilayati’ and ‘Calcutta’ have short plants with round puckered leaf and yellow flowers. Hardly 5-6% of the total area under tobacco in India is under rustica varieties. While N.rustica is used only for hookah,

chewing and snuff purposes, N.tabacum is used for all purposes i.e., smoking, chewing and snuffing.

N.Tabacum varieties like flue cured Virginia (FCV) and Natu are grown in Karnataka and A.P. This accounts for about 21% of India's total production of tobacco. Natu tobacco is used in the manufacture of cigarettes and tobacco mixture for pipes. Nearly 40% of the VFC tobacco is used for domestic cigarette industry while the rest is exported to different countries. Traditional virginia tobacco used to be cultivated in black soil areas. With the increasing preference for light bodied leaf with less nicotine/tar content in the world market, the cultivation of VFC is said to be extended to the light soil areas also.

Bidi tobacco is grown in Gujarat, Karnataka and Maharashtra. Bidi tobacco grown in Nippani area of Karnatak is considered to be of superior quality. More than 85% of the world's bidi production is accounted for by India. Bidi tobacco occupies 30-35% of the total area under tobacco in the country.

Cigar tobacco is grown in W.B. and T.N. Cheroot tobacco is grown in T.N and Andhra Pradesh. Hookah tobacco is grown in U.P. W.B. (Jati), Bihar, Assam and Orissa.

N.Rustica tobacco used for chewing and snuff is in U.P., W.B., Assam, Bihar, T.N. and Orissa, Kerala and Gujarat. Motihari variety grown in W.B. is strongest hookah tobacco. For chewing and snuffing , leaves with thick texture, bitter aroma, dark colour and biting taste are used.

SOIL AND CLIMATE:

Experience of tobacco production in the world shows that soil and climate are very important factors which determine the suitability of a region for commercial cultivation of tobacco crop. That is how the world's finest types of tobacco like flue-cured leaf of America and Rhodesia, Cigar wrapper leaf of Sumatra, cigar filler leaf of Cuba and oriental leaf of Turkey have been localised.

Tobacco grows best on Sandy lumpy surface soil and a finer sub-soil having ample internal drainage, good aeration and high moisture holding capacity. As for climate, a frost-free growing season of 100 to 120 days with a mean temperature of about 26.7^0 C and a liberal and well distributed rainfall from 8.8 to 12.5 cm per month are ideal requirements for tobacco crop (Garner, 1951). The relative humidity may vary from 70 to 80% in the morning to 50 to 60% at mid-day. However in actual practices, when the ideal conditions of soil and climate are not available,suitable cultural practices are devised to make up the deficiencies.

Generally light soils tend to produce a large and thin leaf, light in weight and colour, mild in strength and weak in aroma whereas leaf produced on heavy soils is usually thick and heavy, dark coloured, strong and aromatic. For flue cured tobacco, soil, should be free-draining and kept well aerated throughout the growing period and fertility status of the soil should not be high. In fact nitrogen starvation condition should prevail at the times of maturation of leaf.

IRRIGATION/WATER REQUIREMENT:

For the expansion of the leaf and to meet transpirational losses of moisture from its leaf area, tobacco plant needs considerable amount of water. On the other hand, tobacco plants are very sensitive to flooded / water logged condition of soil because of deprivation of oxygen in soil essential for development of fibrous and vigorous root system. Hence heavy clay soil are ruled out for tobacco cultivation in Monsoon. Light soils can be used for taking a rain fed crop. But heavy rain may result in diseases like leaf-spot and therefore, the yields, sometimes are not comparable with that of America and Zimbabwe. The irrigation requirements vary with not only the deficiency in soil moisture and atmospheric acidity but also with the different types. About 80-85% of the plant weight is water but it can tolerate drought more than excess of moisture as it has a fairly deep and vigorous root system. Generally 5 to 7.5cm rainfall is received during the crop growth and giving one or two irrigations between the 30^{th} and 50^{th} day is helpful in increasing yield.

Seeds : Tobacco seeds are very small and egg shaped with thick seed coats. There are 11000-12000 seeds per gram. Average weight of the seed is 0.08 to 0.09 mg in N.Tabacum and, in N. Rustica, the seed is larger and about 3 times heavier. The tobacco seed readily germinates in 4 to 5 days after growing under suitable conditions. The seed remains viable for 10-15 years if properly stored.

Nursery and Seedlings : Tobacco seeds are tiny and delicate and unsuitable for sowing directly. They are sown in small nursery areas and are transplanted in the main field. It is desirable to change the nursery every year or it can be reused for sterilizing by rubbing. Nitrogen, Phosphorous and potash and magnesium are the nutrients required. The normal practice is to use a combination of organic and inorganic manures (Akehurst, 1981).

Once the seed is sown it is necessary to keep the surface bed moist till germination and watering is essential. Bomboo mats, jute-stick, polythene film, tobacco stems are used. It is said that initially in U.S.A., beds were covered with cheese cloth and later plastic sheets were used against cold. Normally seedlings are ready for planting at the end of 7^{th} week.. Seedlings are transplanted at a spacing of 100 cm x 100cm.

Diseases/Pests/Insects: Though tobacco is said to be sturdy crop resisting to diseases and pests and not requiring large quantity of water, there are certain insects and disease that particularly affect the crop, in nursery and main field.

The crop is mainly affected by caterpillar, stemborer and whitefly both in nursery and field. Caterpillar feeds on leaves at night (loss 80 - 100% in nurseries), stem borer makes holes in stem resulting in stunting and abnormal branching (appears like broom) of seedlings, and whitefly are seen under the leaves and suck the cell sap from leaves (serious menance in FCV).

Ground beetles, aphids and capsule borer are found on planted crop. Groundbeetles cut the stem of tender plants and Aphids suck the leaves and devitalise the plant.

Cigarates beetle is a pest which affects stored tobacco. They feed on leaves making galleries. In case of severe infestation the tobacco is turned into powder. Since FCV is exported use of pesticides has to be monitored carefully. Godowns have to be kept clean, the produce redried and godown has to be sprayed with relevant chemicals before storing the product. Apart from these tobacco is affected by diseases caused by fungi, viruses and

bacteria. Damping off causes 80 - 100% death of seedlings. Other field diseases are frog-eye-spot (on burley tobacco during monsoon), brown spot (on Motihari tobacco in W.B.), and powdery mildew (white powdery growth occurs on both sides of leaf and leaves dry up) found on FCV tobacco and Lanka tobacco in Karnataka and AP respectively.

Topping & Suckering : The operation of topping consists of removal of the terminal bud just before or after emergence of flower head. Following topping the axillary buds become active and put forth shoots known as suckers. Removal of these is called desuckering. The objective is to divert the nutrients of the plant to the leave instead of flowers and seeds, thus increasing the yield and quality of tobacco.

Harvesting: Cigarette tobacco is harvested by priming ie., two or three leaves which have grown and are turning from green to yellowish green/yellow are detached from the plant. Consequent priming are done in about 6-7 days intervals. Harvested leaves are taken to shade and strung in bunches on to bamboo sticks about 1.5m long and petioles of the leaves are tied on the upper side. Leaves are loaded into the barn before the evening of the same day.

Cigar, cheroot, chewing and hookah tobaccos are harvested by the stalk cut method and left in the field overight.

Bidi tobacco is harvested usually by stalk-cut method and is left in the field for sun-curing for 10-15 days.

TOBACCO RESEARCH:

Considering the harm resulting from tobacco use, Government is trying to curtail Tobacco consumption. To encourage alternative crops to tobacco, other uses of tobacco and manufacture of only good quality (light tobacco with low Nicotin content), the research centers/Agricultural Universities were directed by the, Ministry of Agriculture, GOI, to find out of technology for project experiment on Alternate cash crops in place, of Tobacco with reference to, the recommendations of Xth Lok Sabha Committee on Sub-ordinate Legislation (paragraphs 5.16 to 5.18) regarding rules/regulations framed under cigarettes (regulation, production, supply and distribution) Act, 1975.

But most of the tobacco research centers in the country are concentrating on research in cultivating improved and good varieties of tobacco with lower nicotine content, pesticides for controlling pests and new techniques of cultivation.

For bidi tobacco Nippani Research Center on Tobacco has done research on alternative crops and the results of 3 year experiment (1992-95) have shown that, out of 9 cropping systems the combination of groundnut and rabi-jawar yield highest gross income of Rs.39384/ha. Tobacco and groundnut yield only Rs.31696/ha. If only tobacco is grown the yield would be only Rs.13680/ha.

However, further research in this direction is necessary to know the economic viability of the alternative crops.

Facts about bidi and FCV tobacco

Bidi Tobacco	FCV tobacco
1. Rabi crop (August-JanauarY)	Monsoon crop (May-Septembet)
2. Rainfed	Raibfed
3. Black snady soil	Light and soils-sandy loams
4. Thick and large leaves	Thin and long leaves
5. Leaves-Greenish yellow colour at maturity, Golden yellow after curing/aging/ storage	Cured leaves bright lemon to colour
6. Plant height – 100-120 cm.	150 cm.
7. Topping is done at 15-16 leaves to increase nutrient content of the leaves (Leaves become thick and nicotine content increase)	Topping is not done.
8. Leaves hard.	Leaves can be streached as sugar
9. High nicotine content	Content is high. Low nicotine content (1-2%)
10. Harvesting is done at a time (stalks Are cut down and dried)	3-4 leaves per week are harvested, Which is contined for 6-7 weeks.
11. Sun curing in the field for 10-15 days and the leaves are crshed	Leaves are weaved and put on Bamboo sticks are cured in Barn in smoker / hot air

	at 100 F to 160 F.
12. Curing cost is less as it is done in Sun light.	>24% of the cost on curing as wood/coal is Is required for heating.
13. Used for Bidi manufacture, Zarda, Chewing and as raw leaves.	Used for cigarette manufactue and Export.
14. Price – fixed on the basis for forces of demand and supply under free market condition. Not under control of Got. agency (marketing)	Production and marketing has been regulated by Tobacco Board established under the Ministry of commerce. Board has introduced auction sale of FCV from 1984-85 Marketing season.

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C h a p t e r - III

TOBACCO CULTIVATION: AN INTERNATIONAL PERSPECTIVE

Tobacco is a killer plant. Unfortunately humankind has spent so much of the scarce resources for the promotion of this killer plant. The main objective of the present paper is to examine whether supply-side measures can be effective in controlling the tobacco menace, and if so, which measures are needed. Classical economists believed in the philosophy that ***supply creates its own demand***. In this background the ***control of supply should control its own demand.*** The analysis of international data relating to tobacco control and also the experiments of CMDR regarding tobacco control suggest that supply side measures can be only long term measures to eradicate the tobacco epidemic. It also suggests that demand side measures can get strength if they are supplemented by supply side measures.

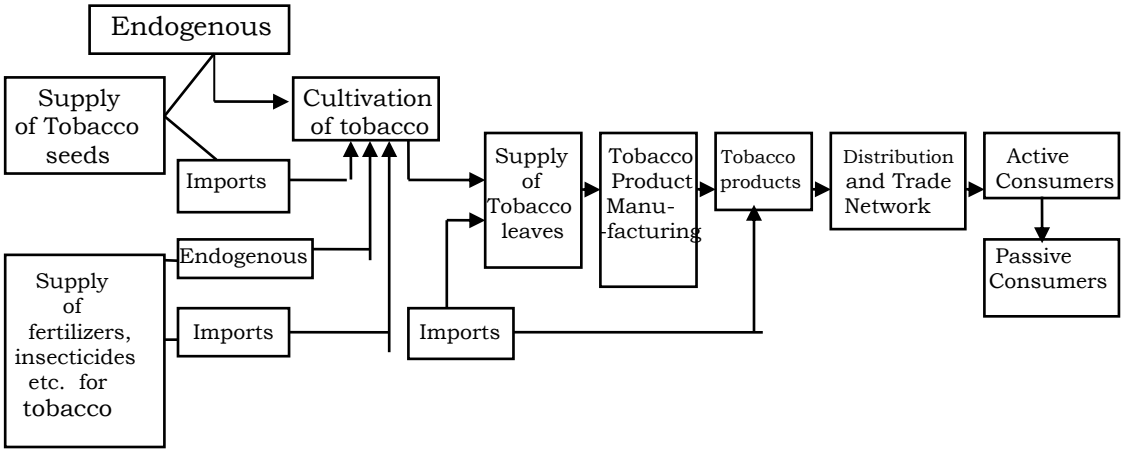
The supply side controls on tobacco industry may take two forms

(a) complete elimination of supply of tobacco, thereby affecting the supply of tobacco products.

(b) gradual reduction in the supply of tobacco, thereby influencing the supply of tobacco products.

The following flow chart presents an idea about how supply and consumption of tobacco are linked, and which can be the action points for the policy maker for the purpose of control of supply.

Chart 3.1
Flow Chart of Process of Tobacco Supply Indicating Control Points of Supply



Since the supply of tobacco products including the supply of cultured tobacco leaves is a function of tobacco cultivation within the country and/or imports, the control of supply has to be directed towards these two aspects.

The objective of the present Chapter is to briefly outline the macro international aspects of tobacco cultivation indicating experiences of countries with regard to control of tobacco cultivation. Since some of these experiments are generally conducted at a micro level (such as that by CMDR under the present project) a brief account of these is also presented.

2. HOW MUCH OF LAND AREA IS DEVOTED TO GROWING THIS KILLER PLANT ?

Nearly five million hectares of world's land is devoted to cultivating this plant. Facts and figures show that the world area under tobacco is expanding and that sustained decline in the tobacco area is not within sight in all the countries. It is shocking that area under the killer plant is expanding in developing countries though they are under the grip of poverty, hunger and unemployment. Such disturbing trends are brought out from the following charts.

Chart 3.2

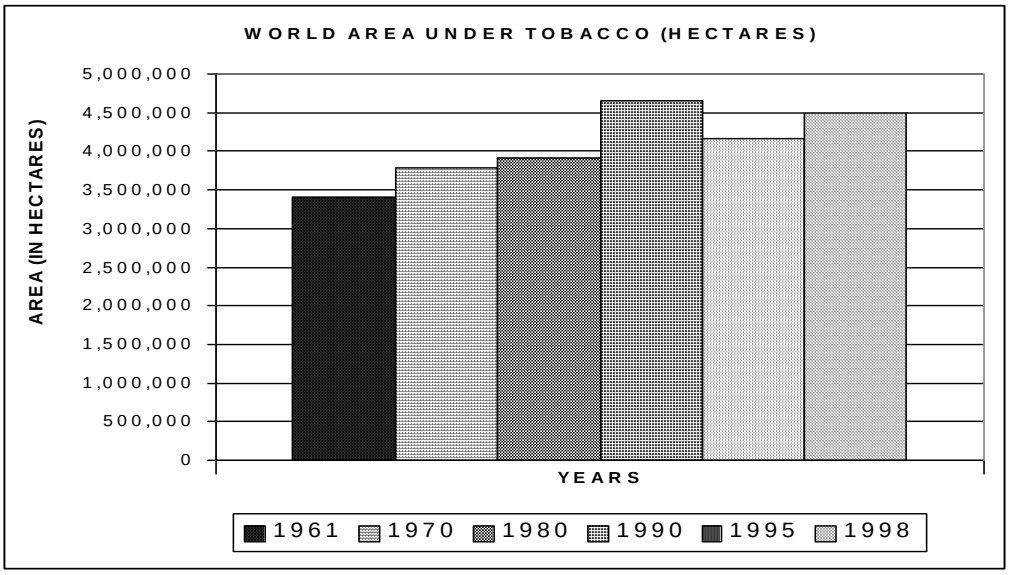
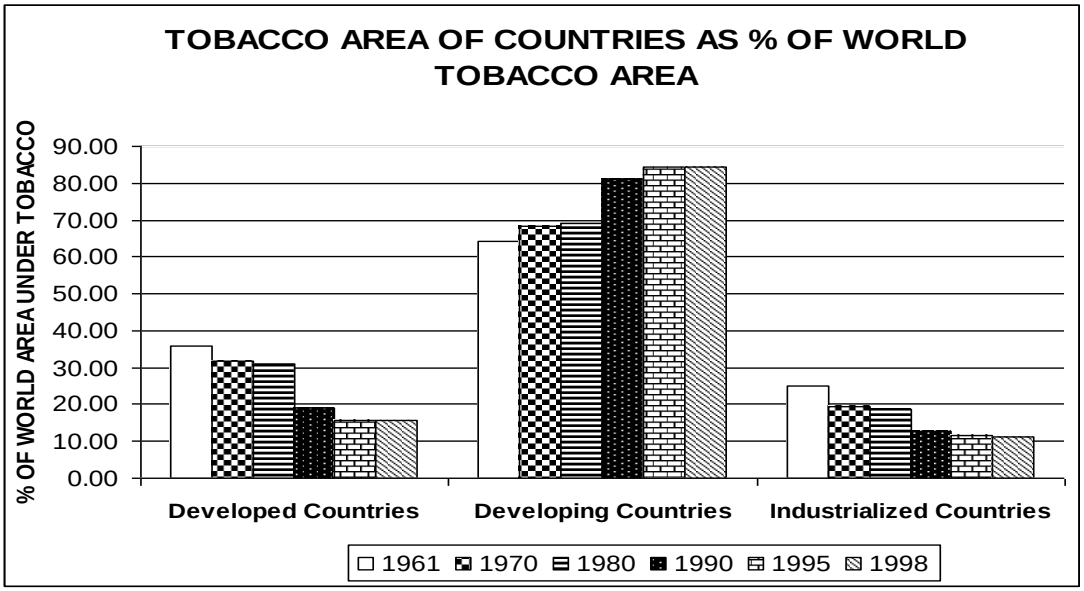
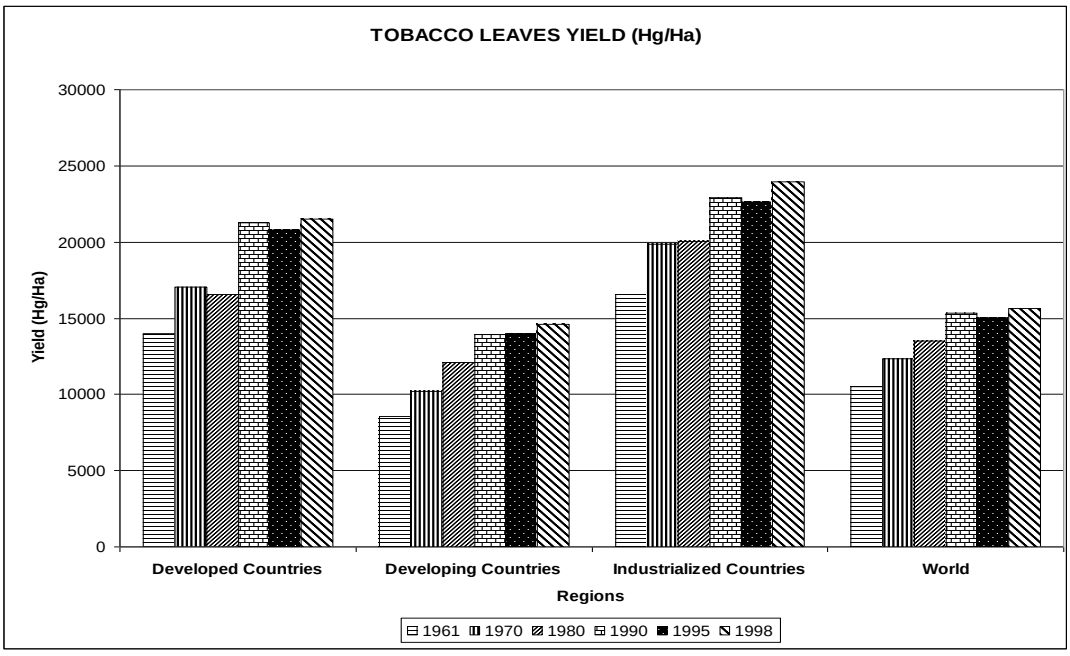


Chart 3.3



Tobacco yield (production per hectare) is highest in developed and industrialized countries. Yield is increasing in all categories of countries and also in the world. This is shown in the following chart.

Chart 3.4

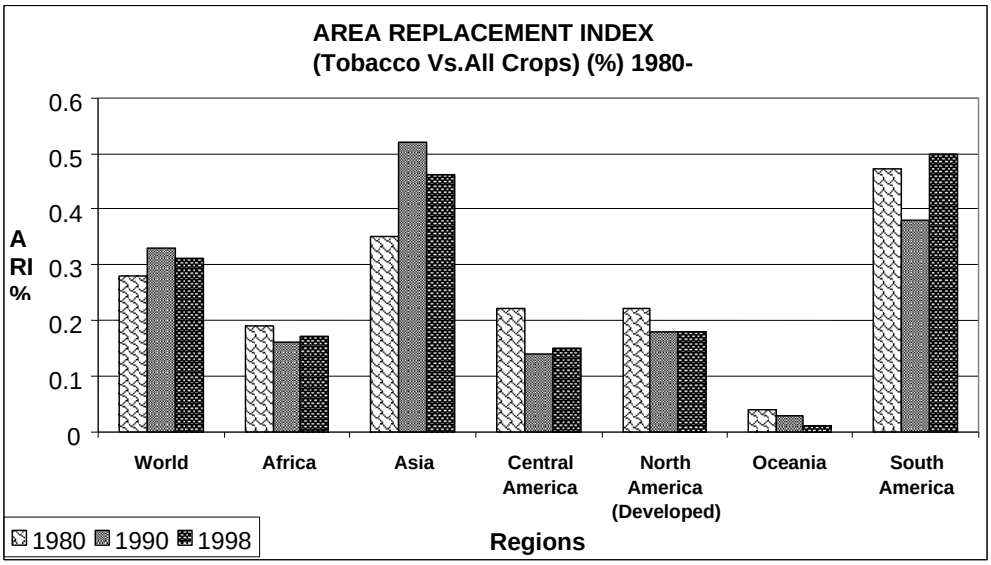


This shows that the scarce resources of the countries are being diverted to researches for discovering new high yielding varieties of tobacco, appropriate fertilizers etc. It is enigmatic that on the one hand, the countries declare their commitment to control tobacco menace and on the other hand, they also promote it !

3. IS THIS KILLER PLANT REPLACING AREA UNDER FOOD CROPS AND OTHER COMMERCIAL CROPS ?

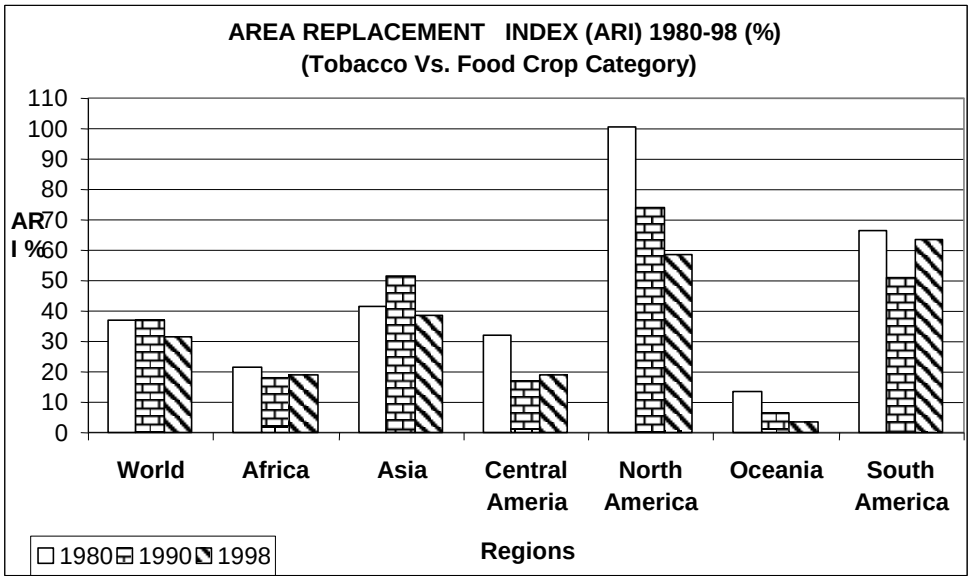
Area Replacement Index (Tobacco Area as per cent of total land area), shows that over the past thirty years tobacco has replaced other crops in the world, except in Asia and South America, in particular, tobacco is found to have replaced other crops significantly, as brought out from charts 3 and 4.

Chart-3.5



There are indications that tobacco has replaced food crops and even other commercial crops in some countries. That some of the non-tobacco producing countries like Bhutan in Himalayas, have taken to tobacco cultivation in recent years augurs badly for environment and human health.

Chart-3.6



3. WHAT ARE THE DETERMINANTS OF TOBACCO CULTIVATION ?

Understanding the determinants of tobacco cultivation and of non cultivation of tobacco would help identifying the instrumental variables for tobacco control.

In the present study this question was examined at two levels; (a) Using macro international data and (b) Using micro level household data in India.

The following chart presents a summary of the results of general analysis and the results of more than *100 regression exercises* using tobacco area, tobacco production and tobacco yield as dependent variables and several socio-economic variables as independent variables. The nature of causality among variables was first derived on the basis of logical reasoning and then the statistical analysis was attempted. These statistical exercises used both macro and micro level data. The details of these statistical exercises are reported in one of the Working Papers (No.6). Here, only the general insights coming from these exercises are reported.

Chart 3.7
Determinants of Tobacco Cultivation

Variables that promote tobacco Cultivation	Variables which discourage tobacco cultivation	Variables about which no firm conclusion is possible
i. Export price	i Favourable Gender ratio	i. Irrigation
ii. Import value	ii. Guidance about alternative crops.	ii. Export Earnings
iii. Price of tobacco and tobacco products	iii. Support for alternative activities	iii) Yield
iv. Fertilizer Subsidy	iv. Rate of Return for alternative activities.	
v. Size of land holdings	v. Mixed cropping	
vi. Luke-warm initiative from the government about tobacco control	vi. Crop Insurance for alternative crops.	
vii. Exaggeration of employment, revenue and foreign exchange gains from tobacco		

4. WHY DO SOME FARMERS NOT CULTIVATE TOBACCO ?

A brief study of such farmers in southern part of India showed that economic hazards dissuaded these farmers from tobacco cultivation.

5 SUGGESTED APPROACHES FOR AGRICULTURAL DIVERSIFICATION AND SHIFTING AWAY FROM TOBACCO CULTIVATION.

a. **Phased shifting from tobacco cultivation** with supplementary measures for rehabilitating all the affected parties in the backward linkage and forward linkage framework.

b. Mixed cropping :

i. Tobacco with sugarcane where irrigation is available
ii. Tobacco with Soybean where irrigation is not available.
ii. Tobacco and Rabi Jawar where irrigation is not available.
iv. Garlic and potato where irrigation is not available.

**These alternatives have been suggested considering the rates of return and economies of scale in cultivation of the respective crops*

c. Single crop alternative :

Sugarcane, Soybean, Rabi Jawar, Cotton, Onion, Sunflower, Groundnut.

**These alternatives have been suggested considering the rates of return and economies of scale in cultivation of the respective crops*

d. Horticulture and Floriculture as alternatives :

Zimbabwe's experience has brought out economic superiority of these alternatives to tobacco.

e. Dairy farming and Sericulture as alternatives to tobacco cultivation.

Interaction with farmers in Karnataka – India has suggested dairy farming as a more remunerative alternative to tobacco, as has been brought out by the CMDR action research study.

6. CMDR ACTION RESEARCH ON ECONOMICS OF SHIFTING FROM TOBACCO :

Action Research sponsored by International Development Research Centre (IDRC), Canada, and undertaken by Centre For Multi Disciplinary Development Research, India, showed that majority of 2000 farmers in surveyed region of India were willing and keen to shift if they were guided about the alternative crops/ alternative activities despite at the cost of repetition we outline below, though briefly, some of the interesting insights developed from our action research study regarding tobacco control. The details are discussed in the relevant chapters later.

i Endogenously evolved reforms are obviously more likely to be effective than exogenously imposed reforms.

ii. This action research has revealed that **micro level interventions in different regions might probably help realize the objective of agricultural diversification away from tobacco.**

7. **A brief study of agricultural diversification in other countries for control of other merit bads** suggests that a concerted action with a package of measures might be helpful in achieving the objective. Educating farmers about the economic hazards of tobacco would be the dominant strategy of this package of measures.

8. In the following chart the main elements for inclusion in Framework Convention for Tobacco Control (FCTC), initiated by WHO are outlined. These elements are derived from a number of statistical exercises reported in the Working Paper referred to above (No.6) and also CMDR action research.

Chart 3.8
Elements for inclusion in FCTC

Elements	Agency for Action	Any Formal Framework needed for the initiative ?
a) **National Initiatives** i. Developing **Micro level Information Bank** about a) **Determinants of tobacco cultivation and** b) About the factors for not cultivating tobacco.	a) Action oriented Research Institutions b) Tobacco farmers. and others.	MoUs with Action Research Agencies for developing a micro level information bank
ii) **Sensitizing tobacco cultivators** about the ill effects of such cultivation.	a) NGO's b)Women's Organizations. c)Agricultural Scientists. d) Medical experts. e) Tobacco farmers and f) Religious leaders.	
iii) **Educating tobacco farmers** about agricultural diversification away from tobacco – alternative crops. And / or about nonagricultural activities. **Phased shifting from tobacco.**	a) Tobacco farmers and Farmers who have already shifted from tobacco. b) Innovative farmers of other crops. c) Agricultural Scientists,- Soil experts, c) NGO's and grass root level voluntary organizations. e) Religious leaders.	**Agreements to be reached between governments and tobacco cultivators for phased shifting from cultivation of the merit bad incorporating the deadline for complete shifting.** b.)NGO's and farmers' organizations to be involved for monitoring strict implementation of agreements.
iv) **Educating farmers** about economics of tobacco cultivation and cultivation of other crops, **highlighting lower net returns for tobacco**	a)Tobacco farmers and other farmers b)Agricultural economists.	

Elements	Agency for Action	Any Formal Framework needed for the initiative ?
v) Deterrent indirect taxes on tobacco leaves and tobacco products.	a) National and State governments.	a) Suitable amendments to the National Constitution wherever necessary. b) Tax Laws to be passed. c) Strict implementation of Laws to be ensured. d) Farmers' organizations. NGOs, Grassroot level voluntary organizations, etc., to be involved in monitoring i)implementation of Tax Laws, ii) Income Support Schemes, iii)Regulations on tobacco trade and smuggling. iv)Other suggested measures.
vi) Regulating Prices of tobacco leaves.	-do-	-do-
vii) Withdrawl of all types of subsidies to tobacco farming.	-do-	-do-
viii) Stoppage of grants for tobacco promotional research.	-do-	-do-
ix) Income support to tobacco farmers for reducing tobacco output / complete shifting from tobacco cultivation. x) Cross subsidization of erstwhile tobacco farmers from indirect taxes on tobacco products.	-do-	-do-
xi) Debt liquidation of tobacco cultivators and alienating them from traders.	-do-	-do-
xii) Phased reduction in exports and imports of tobacco leaves and tobacco products	-do-	-do-
Xiii) Control on smuggling		
b) Initiatives from developed countries.	-do-	-do-
i) Phased reduction in R & D expenditure relating to tobacco farming and use the amount so saved to provide income support to farmers who have shifted from tobacco in developing and developed countries.	-do-	-do-

Elements	Agency for Action	Any Formal Framework needed for the initiative ?
ii) Stop export of tobacco leaves and tobacco products to other countries.	National Governments of developed countries and governments of tobacco dependent developing countries.	-do-
Iii) Stop imports of tobacco leaves and tobacco products from other countries.Mere import restrictions invoking social clause (because child labour is involved in tobacco cultivation and tobacco product manufacturing) would be unfair and would amount to overlooking the intense poverty of households involved in such actions. This should be supplemented by income support programmes	National Governments of different countries.	International Agreements on Cooperation for Tobacco Control (IACTC)
iv) Assist those tobacco dependent countries for R&D of alternative uses of tobacco. Motivate tobacco multinationals for starting plants in such countries for alternative uses such as protein extraction from tobacco plant and others medicinal uses.	a. Governments b.Tobacco multinationals.	a) Legal arrangements with multinationals for approved uses of tobacco, to be overseen by WHO. b) International Monitoring mechanism through WHO for ensuring strict adherence to the agreements.
c.Initiatives from Tobacco Dependent Developing Countries		-do-
i.)Forming Regional Associations of Tobacco Dependent Developing Countries	Governments NGO's and Activists	
ii. Levy Uniform and deterrent tax on transactions in tobacco products (the incidence to fall on the dealers and purchasers)	a. National Governments b. Farmers' Associations	
iii. Present a common front before developed countries for a.) Not exporting tobacco leaves And tobacco products b.) Not providing implicit support to tobacco multinationals c.) Providing financial assistance for de-coupled income support to shifting farmers d.) Providing assistance for starting plants for alternative approved uses of tobacco	National Governments National Governments International bodies like WHO, IMF, World Bank	International trade agreements Memorandum of Understanding (MoU) to be signed by developing nations with agricultural diversification from tobacco as the main clause of MoU

It is presumed that WHO has initiated action in different countries for controlling tobacco from the supply side.

C h a p t e r – IV

ECONOMIC ASPECTS OF TOBACCO INDUSTRY AND TOBACCO MARKETING

In the previous Chapter we presented a general background about tobacco cultivation and control over tobacco cultivation using the international data and also micro level experiments to control tobacco production. Control of tobacco supply has to be considered with reference to not only control of tobacco cultivation but also of other points in the channel of supply like industry to manufacture tobacco products, channel of tobacco trade and also of the governmental machinery, which uses tobacco as a major source of revenue. In the present chapter, an attempt is made to outline the salient aspects of these supply points, focusing particularly on the Indian data.

India is the third largest producer of Tobacco and eighth largest exporter of tobacco in the world. The availability of varieties of tobacco has enabled the establishment of large number of bidi and cigarette industries in the country. Tobacco industry in India comprises of manufacturing of cigarettes, bidis, cigar, cheroots, hookah, tobacco paste, dry tobacco and snuff. The gross product value of manufactured tobacco is estimated to be Rs. 3600 crores. In India there exist about 17 factories and 11 companies producing cigarettes. They are providing employment to nearly 5 lakh people and indirect employment to lakhs of people who are dependent on its sale and also to farmers who cultivate cigarette tobacco. Cigarette manufacture which was 89 billion pieces in 1993 increased to 90 billion pieces in 1994.The main cigarette manufacturer in India is the Indian Tobacco Company(ITC) which partially owned by British American Tobaco Company. Other main companies are Vazir Sultan Tobacco Ltd.(VST), Godfrey Philips and GTC.According to a study conducted by NCAER, Indian Tobacco Industry has the potential to export Rs.7.5-10 bn. of Tobacco and contribute Rs. 60 bn. to exchequer by way of excise duty by the year 2000(India Infoline.com/sect/ftob).

Bidi is of Indian origin. India is said to be the largest producer of Bidi producing 85% of the total world bidi production. Bidi industry provides employment to 50 lakh people. Every year more than 55000 crore pieces of bidis are said to be produced in India. Other countries like Bangladesh, Nepal, Pakistan, Sri Lanka, Singapore and Malaysia also produce bidi. Bidis are produced mainly in Karnataka, Maharashtra, Madhya Pradesh, Tamil Nadu and Andhra Pradesh. Apart from these States Orissa, U. P. and W.B. also have bidi manufacturing units. Annual sales of bidi according to Bidi-Industry Federation in India are around $1.4 billion. Exports account for less than 1% of the sales. Bidi tobacco export is 0.25% of total bidi production. Bidi is reported to have gained

popularity among American youth. Bidis exported to USA are packed in colourful cartons with variety of flavours viz. vanilla, strawberry and chocolate. Each pack contains 20 bidis. Shiv, Ganesh and Sher are some of the brands sold on internet.

Cigar and Cheroot industry which is said to be one of the oldest tobacco industry in India requires 10 million kg. of raw tobacco annually. Cigar is manufactured in T.N., A.P., Orissa and W.B. Hookah manufacturing units are found in Allahabad, Moradabad, Saharanpur, Kanpur and Meerut in U.P., Ahmedabad in Gujarat, Chandigarh, Delhi and Calcutta. Hookah smoking is said to be prevalent in North India and Gujarat. Snuff producing units are mainly found in T.N., Gujarat, U.P., Rajastan, Karnataka, Maharashtra and Punjab. Major part of snuff tobacco is produced in T.N. Tobacco is chewed in an another form which has been widely prevalent in India. Tobacco coated beetle nuts with added scents are available in pouches known as gutkha. Many industries producing different brands of gutkha are emerging all over India. Gutkha consumption has become a craze and its production has marketing potentials in the country. Tobacco industry sector information in Internet reports that gutkha segment is growing at 25% p.a. Leading Companies producing pan products are Kothari Products with net profit of Rs.245.8 mll., Raghunath International with 0.6 mll. and Virat Crane with 2.3 mll. net profit(India Infoline Sector Reports, 2000).

DIFFERENT PRODUCTS OF TOBACCO:

Tobacco is being used for purposes other than consumption and several industries have been established in India to produce different products using tobacco and its by- products. Tobacco seed oil industry is located in Andhra Pradesh(Prakasam district). It is reported that this production is confined to untopped virginia tobacco grown in Andhra Pradesh. The soap and paint industry in India are said to be using the entire production of tobacco seed oil and there is no export of seed oil from the country. As per the reports of the Directorate of Tobacco Development the average production of seed received for crushing is estimated to be 4.5 lakh kg to 5 lakh kg.

The National Chemical Laboratory (NCL) located at Pune extracts Nicotine from tobacco which is used in the manufacture of Nicotine Sulphate. This chemical is sprayed on tobacco plants to control insects. About 600 tonnes of Nicotine Sulphate amounting to Rs.12 crores are said to be exported to Japan, UK and few countries in Europe. It is said to be used as pesticide for apple cultivation and grape cultivation in Japan and Southern Europe respectively. Solanesol present in tobacco leaf is used by Pharmaceutical industry which is said to be used in the manufacture of drug. Solanesol worth Rs.1.84 crores is said to be exported to Japan and USA.

There are many reports highlighting on the alternative uses of Tobacco viz. protein preparation, nutrition supplements, preparation of manure etc. But the details about its production and exports are not available.

Table 4.1
Excise collections on tobacco use(per kg.):

Year	On cigarette tobacco (Rs.)	On other tobacco (Rs.)
1951-52	4.03	1.42
1961-62	4.41 (9.4%)	1.87(31.69%)
1971-72	27.19 (516.5%)	3.55(89.83%)
1981-82	79.59 (192.7%)	4.70(32.39%)
1993-94	415.09 (421.5%)	11.44(143.4%)

Excise duty on cigarettes has been increasing at higher rates as compared to bidi and other tobacco products. In India bidis and other products which are equally harmful are not taxed in proportion to cigarettes. There are many factors associated with it viz. bidi industry is one of the cottage industries, provides employment to lakhs of rural population,bidis are hand made etc.

Excise duty from tobacco is one of the major sources of revenue to Government. They account for about 10% of the total excise revenue collections.Excise revenue from cigarettes which was Rs. 1203.24 crores in 1987-88, increased to Rs. 2688.48 crores in 1994-95(123.43%). Revenue from bidis increased to Rs. 219.91 crores from Rs. 152.12 crores (44.56%).In the same period, revenue from other products increased from Rs. 43.21 crores to Rs. 537.43 crores(1143.76%). The revenue from other products has increased at a faster rate than revenue from cigarette and bidi. This implies that more and more products in non-cigarette and bidi sector are coming under excise control. Bidi sector is considered as cottage industry and enjoys certain benefits of small scale sector. Moreover, unbranded bidis also enter the market and are not licenced. It is difficult to bring them under excise purview.

Excise duty on tobacco is said to be introduced in the year 1943. Though all types of tobacco leaf was covered under excise duty, only cigars, cheroots and cigarettes were covered under manufactured goods. After 1975, other products were also brought under excise duty. Excise duty on unmanufactured tobacco was withdrawn in 1979.

The Excise policy for tobacco in India is on the perception that demand for cigarettes is inelastic to prices and income. The duty on Cigarettes is 155 % (1999) of the price net of excise . It is 3% and 6% on bidi and others respectively. As a result industries report that there is stagnation in cigarette industry growth. Contrary to this Ms. Sanchita Sharma reports (E- mail News Letter, Aug.25, 2000) Cigarette marketing

is growing in India. With reference to this, she quotes ITC the main Cigarette producing company which recorded 31% growth in pre-tax profits in 1999-2000, making a profit of Rs. 1229 crore. In the same period there was 4.3% growth in bidi industry where it is said that costs are economised by using child labour and women. In bidi manufacturing there is said to be maximum exploitation. Employees are paid very low wages. In 1997, wages paid were only Rs. 36.47 per 1000 bidis excluding dearness allowances whereas Government order was for Rs. 42. There is no fixed wage rate and there is bargaining in wages. For spoilt bidis payment is deducted. Children who roll bidis get less than half of what women get. Bidi industry provides employment indirectly to women who collect tendu leaves used for wrapping bidis. Women who have to work for nearly 12 hours a day get low price of Rs. 40 for each 100 leaves bundle.

Tobacco Institute of India urged the Government to include non-smoking tobacco under tax net largely as they comprise 80% of tobacco industry. The 1999 budget levied excise duty on MRP basis on pan masala industry products to check evasion of tax by understatement of value. Pan masala is taxed at 40% (24% basic duty + special duty of 16%).

Marketing of Bidi Tobacco in India

Flue cured virginia (FCV) and non-virginia tobacco are the two categories of tobacco grown in the country. Bidi tobacco, Natu tobacco, Cigar and Cheroot, Hookah, Chewing, Snuff and Burley tobacco are the non-virginia tobacco grown in the country. FCV tobacco is grown in A.P. and Karnataka while, non-virginia tobacco is grown and marketed in Karnataka, A.P., Gujarat, Maharashtra, Tamil Nadu, Kerala, Orissa, U.P., Bihar and West Bengal.

The production and marketing of FCV tobacco is statutorily regulated through the Tobacco Board established in 1976 under the Ministry of Commerce. Marketing reforms have been introduced for the sale and production of tobacco in Andhra Pradesh and Karnataka since 1984-85 marketing season. Earlier to 1984, there were no regular assembling centres and markets for both the varieties of tobacco. But non-virginia tobacco growers particularly bidi –tobacco growers continue to face problems in marketing their produce at profitable prices. The main function of Tobacco Board are to regulate the production of VFC tobacco ensuring fair and remunerative prices to growers, standardisation of grading at farm level, maintenance and improvement of existing markets and development of new markets for Indian tobacco outside the country. It makes arrangements for making payments to growers within a stipulated time and fixation of minimum support prices.

But the marketing of non-virginia tobacco in the country is not done on scientific basis. There is no regulation of marketing or auction sale and

marketing is not under the control of any government agency. Growers sell their produce to the merchants mostly in the village itself without proper grading. The Agricultural produce Market Committees (APMC) which undertook marketing of bidi tobacco in the past in Karnataka, Gujarat and Maharashtra have become defunct due to a Supreme Court Judgement in 1985 which ruled out the levy of market fee on tobacco by the Market Committees holding that all varieties of tobacco, virginia as well as non-virginia tobacco are covered by the Tobacco Board Act, 1975 as per section 2 of the Act (Status Paper, Directorate of Tobacco Development). Since then no effort has been made to create regulated market for Bidi tobacco. APMC did not introduce auction sales and standard practices for production. It collected tobacco cess and did some administrative procedure for sale of tobacco. The Growers Federation estbalished in the name of Akkol Tambaku Utpadak, Shetkari Sahakari Sangh and the Karnataka State Tobacco Marketing and Processing Co-operative Ltd could not gain the confidence of farmers. The co-operative societies have also not been able to make any progress in organising their sale. The National Co-operative Tobacco Growers Federation Ltd., Anand which was sponsored and established by the Government of India in 1983 in order to protect and promote the interest of non-virginia tobacco growers discontinued its tobacco marketing activities since April 1988.

The method of marketing of tobacco differs from variety to variety and from State to State. As per the prevailing practice farmers sell their produce after curing at the village itself. As a result farmers are unable to reap the benefit from the sale of their crop.

In Gujarat, bidi tobacco and chewing rustica tobacco are grown and the marketing season commences in February and ends by June. Bulk of the produce is said to be sold by farmers in the village itself to the merchants or commission agents who fix the price by testing lamina portion.

In Bihar Hookah and chewing are the two types of tobacco grown. Marketing season commences in March-June. Tobacco is graded on the basis of size, thickness, colour, taste and aroma. 4 grades are made. Bulk of the produce is sold in the field in green leaf form. The private traders purchase the tobacco on credit basis and pay the cash after months time.

Hookah and chewing types of tobacco are grown in U.P. Tobacco is marketed at the villages due to lack of transport facilities. Tobacco is purchased by the traders through their middlemen/commission agents. Generally, the price is decided by the buyers.

In W.B., Motihari (N.rustice) and Jati (N.tobacco) used for hookah and chewing purposes are the main types of tobacco grown. A small quantity of cigar tobacco is grown in the state. Marketing commences from mid February. Motihari and Jati types are graded into good, medium

and third quality. The growers take their tobacco to weekly market and sell the produce. Few traders dictate the terms and prices. Sometimes the growers take loan from the merchants before planting the crop for which they have to sell the produce to the same merchants at uneconomic prices.

In Orissa, the produce is mainly used for chewing and cheroot making. It is also used in the preparation of bidi and Gutkha. Tobacco paste made out of a mixture of tobacco and molasses is said to be widely used as a tooth paste in Orissa. Farmers sell their produce to the local merchants.

In T.N., Chewing, Cigar and Cheroot tobacco are mainly grown. Marketing season commences in February and continues till June. After curing the leaves are graded on the basis of wholesome leaves, length and uniformity. Farmers sell the produce to the local traders at prices dictated by then in the village.

In A.P., Lanka and Burley tobacco are the main types of tobacco grown. There is good demand for burley tobacco. The entire production is purchased by manufactures.

In Karnataka both FCV and bidi tobacco are grown. FCV tobacco enjoys the facilities of regulated market. But the marketing of Bidi tobacco grown in Nippani belt is in the hands of traders, commission agents and manufactures. Since our study is specified to Bidi tobacco, the system and the problems and prospects of bidi tobacco marketing in Karnataka (Belgaum District) are discussed in detail below.

Though there is no standard system of grading at growers level, the bidi tobacco is valued on the basis of its physical characteristics viz. Colour, thickness, lusture, spangling, smoking and burning qualities. Bulk of the produce sold by the farmers is in the form of broken leaf (Pure lamina portion). Grading varies according to merchants, manufactures and also from place to place. Bidi tobacco is processed and processing is done in two stages. The raw tobacco known as “Anagad” tobacco is processed into “Jarda” and “Jarda” is processed into “Jardi”. Though the Governments of Maharashtra, Karnataka and Gujarat including Government of India have accepted the score card system recommended by the Task Force under the chairmanship of the Agricultural Marketing Adviser to the Government of India, in actual practice these grade specifications are not adopted at primary level.

What do the farmers say?

To understand the problems and prospects of bidi tobacco marketing we had discussion about the marketing system with 25 tobacco traders/commission agents in Nippani market area. In addition

information was gathered from 1652 tobacco growing farmers (during the household survey) regarding the cost and problems in marketing system.

It was found that majority (65%) of the farmers sell their produce to the middlemen or commission agents many of whom are also the traders. 31% of the farmers sell the produce directly to processors or manufactures. Earlier middlemen were the only link between traders/manufactures and the farmers. But now manufactures are sending their representatives to village to select the produce, fix the price and buy in bulk. 4% of the formers have sold the produce to large farmers in the village who again sell it to commission agents or process the tobacco and sell it to manufactures.

Farmers (70%) have said that they need the services of middle men to sell their produce. It is very unfortunate that farmers are losing a major portion of the return in the name of commission. Farmers (95% of those who have taken help) take the help of middlemen mainly to easily dispose of their produce. 4% of them have felt that middlemen can get them higher prices. 30% of the farmers do not need the services of the middlemen. While, nearly half of them feel that middlemen indulge in malpractices the other half feel that they get lower prices due to the interference of middlemen.

Farmers (33%) are ignorant about the marketing system. 33% of them are not even aware of the regulated market. Farmers who are aware of regulated market feel that it paves way for easy marketing. They expect that they would get, fair prices in regulated market as there is manipulation in weight by middlemen. But 10% of the farmers are not in favour of regulated market due to fear of middlemen.

The availability of institutional finance has reduced the role of traders and middlemen in cultivation as well as marketing. 77% have received credit from banks and co-operatives. Only 4% have received assistance from money lenders and traders of tobacco.

The average cost of marketing for the 1652 households in the sample region during the year 1997 was Rs.1200. Packing of the produce constitutes 73% of the cost. Transport (11%) is also a major item of marketing cost. Other costs constitute 10% and payment of commission to middlemen is nearly 5% of total cost. Farmers do not spend much on storage as the produce is stored in their own houses.

Farmers feel that getting good prices for the product, lack of demand for their produce and loss in weighing the product are the main problems they have to face in the process of selling their produce.

What do the traders say?

Type of Traders : There are mainly 4 types of traders in Nippani area (Covering Gokak, Chikkodi and Hukkeri).

a. **Commission Agents** - They get indent / orders from bidi manufacturers and sell processed tobacco as per their requirement. Price of tobacco includes the purchasing value plus the processing Cost. They usually get a profit of 6% as commission on total orders.

b. **Traders** accompanied by middlemen visit farmers, fix the rate and purchase tobacco on spot. The product is generally processed at home and sold in wholesale and retail market. Few traders purchase cured/ crushed tobacco from farmers, semi-process (clean, dust, strings & mud) the product and sell it to small Bidi / Zarda manufacturers on commission basis.

c. **Growers cum Traders :** Some of the large farmers who are tobacco traders also, purchase the produce from small farmers in the village and use it either for resale to manufacturers, commission agents or retail marketing.

d. **Manufacturers** who have their units in Nippani area send their representatives to purchase tobacco with the help of traders who take commission to deal with farmers. The prices are fixed with the approval of these representatives.

Most of the traders (more than 50%) are in tobacco trading for more than 20 years. For them it is a family business for 70-100 years. Traders get produce from traditional sellers(farmers). Only 16% of them have entered the market in recent years (less than 10 years). For 80% trading was the main occupation among nearly 80% of the trades. Others are large farmers whose family business is tobacco trading. While, 90% of the traders sell only tobacco 10% sell jowar, soya and ground nut also.

The economic status of most of the traders in Nippani seems to be very good. 16% of those interviewed had an income of more than 50,000 p.a., 64% earned up to 2,00,000 p.a. and 20% earned more that 2 lakhs p.a. All the traders are happy with tobacco trading. Only 20% have suffered marginal losses only once when the prices were very low. None of them want to give up tobacco trading.

Traders purchase the tobacco on the basis of demand for tobacco from manufactures and availability of finance and their storage capacity. They have never faced the problem of unsold stock.

PRICE OF RAW TOBACCO:

Traders say they fix the price of tobacco on the basis taste, smoking/burning quality, colour and also on the basis of demand for tobacco in the national market. Traders usually purchase raw tobacco and process it. Traders/commission agents buy 500 kgs to 20 lakh kgs. But they receive from individual farmers even 1 bodh which weighs 60 kgste. Though traditionally, it is the leaf colour, ash colour, burning quality, aroma which determine the price, taste of the tobacco smoke is the main factor used in fixing the price. Even if the colour of the ash is slightly black, traders may prefer the product if the taste is good.

The price may vary from Rs.35 per K.g. to Rs.12 per K.g. The rates vary from year to year. If more ribs/strings, mud & dust are found in the produce the price may be less. For example, in Kapsi area of Chikkodi Taluka more strings/mud are mixed. As a result higher deduction is made per bodh. The product of Akkol area has got high price due to quality and taste.

Price variation is said to be dependent upon :

1) area

2) farmer (size of produce, contact with trader or middlemen, traditional seller, etc.)

3) Season (February-June or October-November)

For every bodh normally 5 Kg. is deducted to account for air, dust, mud and stings. To buy the produce, along with middlemen and traders, testers and representatives of the principal buyers/manufacturers visit the village. However, this is not strictly followed.

Processing : Once the sun cured/crushed tobacco is purchased from farmers, processing is done as per the requirements of the manufacturers.

i) only clean the cured and crushed tobacco and send it to bidi/zarda manufacturers.

ii) Clean and further crush it finely to send it to bidi & zarda manufacturers.

iii) Clean and crush to make zarda and sell to retail traders and zarda manufacturers.

Processing cost per k.g. = Rs. 1 to Rs. 1.25 is the normal cost per kg. There is loss of 10 k.g. (appex.) per 100 k.g. after processing.

Storage : Farmers store the produce from one month (February) to 10 months depending on their financial requirement and price for their produce.

Traders buy from February to May and also during Diwali if there is demand from manufacturers.

Tax : At present there is no special tax on tobacco produce, tobacco marketing and sale at the processing level.

Manufacturers say that earlier there was state entry tax of Rs.3.52 per kg of tobacco. This has been cancelled as Indian Tobacco Committee protested. But, now there is bidi cess at the rate of Rs.2 per '000 bidis. There is also basic excise duty of Rs. 3.60 and additional excise duty of Rs. 2.40 per '000 bidis(Excise Office, Dharwad). This amounts to Rs.8 per '000 bidis. Tax rate is different for scented tobacco, packed zarda and snuff tobacco.

Marketing System:

A. Commission agents/traders want Central Excise Control to be imposed on tobacco sale. This they feel brings in control on sale as only those traders who have 1. Licence 2. Godowns and, 3. Transport permission only can buy and sell tobacco.

   At present any body can buy and sell cured tobacco. There is no control. Farmers buy produce from areas where the quality/price is low and sell it in villages where the prices are high for example, Akkol in Nippani area.

B. Generally farmers seem to be satisfied with the present tobacco marketing system. The produce is collected at the doorstep of many of the farmers and hence there is no transport cost and time loss. Few farmers wait for price or sell it to local large farmers cum traders to avoid middlemen's commission.

Regulated market or entry of Tobacco Board is not preferred by 10% of the farmers as they feel that

1. profit is less as they quote low prices.

2. there is uncertainty of auctions.

3. they have to pay rent on storage if the auction is cancelled.

4. they have to bear transport cost.

But when we discussed with farmers about the cost of cultivation, the marketing system and alternate crops, it was found that they were not keen on growing tobacco. They realize that they are getting much lower prices than compared to what the traders quote to the manufacturers. Since the cultivation is being carried out for many years farmers are adjusted to its production and marketing. Though traders come to village and collect the produce,it should be noted that it is not at the advantage of farmers. Traders come to door step so that farmers will not have any option but to sell to that trader as it is very easy to dispose the produce.

The entirely un-organised market for non-virginia tobacco in the country necessitates regulation of this tobacco by brining it under the purview of tobacco Board. Area and Production of non-fcv should be restricted as per demand for domestic consuption and also export requirements to avoid excess production resulting in ghut in the market. Farmers cultivating non-virginia tobaccos in unsuitable areas should be discouraged so that quality of produce could be maintained and remunerative price is assured to the cultivators. Grading and storage facilities are also necessary.

The tobacco products made from non-fcv (bidis, hookah, chewing) have good demand in the country and abroad. Indian bidis are said to have an edge over other products in Arab, middle east, Europe, USA, Canada and Japan. But the export promotion in this regard at present is not fully achieved. Recently USA has banned the import of bidis from India for using child labour in making of bidis. Exploitation of women in bidi making is also an issue that has been raised by western countries.Such measures do affect thousands of poor households and farmers dependent on bidi industry if other countries also follow the same principle.

The other difficulty faced by growers is the lack of adequate finance, particularly by small farmers. Most farmers depend on the merchants and their commission agents and other money lenders for financial requirements during the agriucltural operations and are forced to sell their produce to them at uneconomic prices.

CONCLUSION

The accurate information regarding the production, investment and sales in cigarette, bidi and other products is not readily available in India. Considering the harm that tobacco causes to human health the tobacco industry is likely to face restrictions in advertisements, production and sales. Tax rates may show a continuous increasing trend. Industries using tobacco for alternative purposes are still in infant stage. Government should encourage research studies focusing on alternate uses. This will save thousands of cultivator families dependent on tobacco crop.

It would therefore be beneficial to farmers if they grow alternate crops in addition to tobacco. Food grains and other crops can be sent to different regions and different traders. Prices vary according to market demand. But in tobacco there are limited number of buyers and the produce can be sent to only certain specified places. More than market forces, it is the middlemen, traders and representatives of the manufacturers who are few but influence in fixing the prices. Moreover, with India entering into the Framework Convention for Tobacco Control it is expected that the restrictions on production and marketing may be more stringent and not encouraging. There is also national and international movement against tobacco. Considering these aspects, farmers need to be educated and motivated to gradually shift to other crops.

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C h a p t e r – VI

ACTION PROGRAMME

After the field survey of the households we tried to understand the data to focus on the intervention programme with an ultimate plan of controlling tobacco cultivation. As discussed earlier the lessons were quite useful for us to go further in our task. However it would be useful to take stock of the field survey results in a brief manner as a prelude to have clear understanding of the intervention schema which emerged out of our interactions with the farmers of the project village.

The main thrust of the study is to understand the difficulties of the tobacco cultivators and how best we can overcome these difficulties and make a progress in controlling tobacco cultivation. The action intervention was obiviously tried out in Belgaum district of Karnataka State, where in we had earlier conducted the base line survey of tobacco growers. The below given maps show the location of Belgaum district in Karnataka state and location of Chikkodi taluk (where the project village is located) in Belgaum district.

Belgaum district is in the north west corner of Karnatka State. It is frontier district of the state and is bounded on the southwest by Goa; on the west, northwest and north by the districts of Ratnagiri, Kolhapur and Sangli of Maharashtra State; on the east by Bijapur district and on the south by districts of Dharwad and Uttar Kannad. The landscape of Belgaum district mainly consists of vast stretches of plains studded with solitary hills, most of which are flat topped and are adorned with fortifications. The Krishna, the Ghataprabha and Malaprabha are the principal rivers which flow across the district from west to east. In addition to these three major rivers, the district has several small rivers and streams of considerable importance. Markandeya river , which rises near Bailur in Khanapur taluk, is an important tributary of Ghataprabha. Dudhganga, which originates in the Western Ghats is joined by Vedganga and finally flows into the Krishna river. These two rivers flow in our project area.

Belgaum district receives an average annual rainfall of 748.7 mm. The amount of rainfall decreases, as one moves from west to east. At Khanapur in the west, the average annul rainfall is 1683.6 mm whereas at Raybag (part of the project area) in the east, the average annual rainfall is 509.5 mm. The average number of rainy days too decreases as one moves from west to east. About 68 per cent of the annual rainfall precipitates during the southwest monsoon season, which lasts from June to September. July happens to be the month with the heaviest downpour. In the western portion of the district the rainfall is reliable and seasonal conditions are fairly good and are helpful to agriculturists. Such favourable conditions do not exist in the project area.

The detailed analysis of the data gathered by canvassing the questionnaire of **2000 households** is presented elsewhere in the study report. These households were spread over **50 villages** in the selected three taluks. Based on the information gathered from the questionnaire the possibility of shifting from tobacco cultivation was considered. The responses of the farmers with regard to shifting helped us to classify the villages into the following categories.

- **villages where shifting was considered possible,**
  Examba Khadaklat Hirekudi Karoshi Barwad
  Nanadi Gandikoppi Kamaknur Kurni
  Akkatangirahal

- **villages where shifting was considered difficult**
  Borgaon Chikalwad Bennihalli Jatrat
  Nevalihal Yarnal Kothali Shirgaon
  Kannur Soundalga Bambalwad Hanchinal
  Bedukihal Adi Bhivasi Galatga
  Benadi Honnahalli Hitni Ammangi

- **villages where shifting was considered very difficult**
  Pattankudi Akkol Kodni Chinchani
  Hunnargi Gavan Shiraguppi Shendur
  Lakhanapur Rampur Padlihal Mamdapur
  Nainglaj Baad Dumratti

- **villages where no tobacco cultivation was found**
  Karadaga Mangur Jainapur

LESSONS FROM FIELD STUDY:

Before undertaking the intervention programme of making the farmers to shift from tobacco cultivation a careful analysis of the data was made. Such an analysis was useful for getting the clues in designing the intervention package.

The message that was obtained from the field survey data revealed that,

- The field survey was quite useful in giving us insights in shopping the intervention package for the control of tobacco cultivation. The survey of tobacco growing farmers opened up many weaknesses of tobacco as a commercial crop which came in quite handy for us in pursuasing the farming community to give up tobacco cropping. The major issues which have come out of our analysis of field data are as below.

- Tobacco seems to be the major non-food crop in all the selected taluks for the study, as a result large proportion of the area under cultivation is under tobacco.

- Even though the area under tobacco is the highest the productivity which is the real indicator of profitability is not the highest in selected taluks.

- Tobacco crop engages the land for a longer period in comparison to the other crops.

- The labour use pattern for each crop reveals that the utilization of labour (mandays) in tobacco is the highest irrespective of the farm size.

- More labour is required for tobacco for operations like, preparation of nursery, tilling, topping, desukering, weeding leaf cutting and harvesting, curing etc.

- The use of bullock labour also seems to be higher for tobacco.

COSTLINESS OF THE CROP:

- Our field survey also revealed that due to economies of scale the cost of production is declining as the form size in increasing.

- Unit cost of production for tobacco is found to be highest among the marginal farmers and stands second as for as small and medium formers are concerned.

- This only indicates that though the farmers are not gaining much from tobacco cultivation, they still grow it. This may probably indicate that economics of tobacco crop per se may not be the driving force for the cultivation of tobacco.

- If we look to the cost of cultivation of crops from the point of view of acrage, it is noticed that the cost of production per acre is highest for sugar cane followed by tobacco. If the costs of depletion of nutrition of soil, using the scarce water to this crops will certainly shoot up the cost of tobacco.

COST VERSUS GAINS OF CROPS.

High costs does not necessarily mean that cultivation of a particular crop is not economically viable. To understand this we tied to ascertain net return for the crops in the selected region.

Though the net returns for tobacco seem to attractive in comparison to Cotton, Soybean and Groundnut but in view of price fluctuations and vulnerability of the crop to natural factors, the net return may not actually accrue to the farmers.

Willingness of the farmers to shift from tobacco cultivation.

- Considering the problems associated with the cultivation of tobacco and the proportionate returns from it majority of the farmers surveyed were willing to shift from tobacco cultivation

- Across different size holdings it was found that the number of farmers willing to shift from tobacco cultivation is inversely related to farm size. This probably indicates that the **'Tobacco Shock'** is very high on small and marginal farmers.

- Major determinants of tobacco are considered to be size of the land holdings, irrigated area and literacy of the farmers.

- Infrastructure development also affects tobacco cropping cross the villages.

- Analysis of village wise data shown as that irrigation as well as infrastructure development could be the factors with some significance to motivate the cultivators for shifting from tobacco.

- Two important conclusion that have emerged from the village level data are,

I.Partial shifting of Tobacco	**Combination of crops**
With irrigation	Without irrigation
Tobacco and Sugar cane	Tobacco and Soya been.
II.Complete shifting of Tobacco.	**Combination of crops.**
With irrigation	Without irrigations
Sugar cane & Soybean	Soybean & Groundnut

- Coupled with the problems related to the cultivation of tobacco, the farming community faces yet another challenge with regard to the marketing of the produced tobacco.

- As the marketing of beedi tobacco is not regulated, there are many problems associated with it. For example there is no systematic

grading of the produce, the current arbitrary grading by middlemen has proved detrimental to the interests of tobacco cultivators.

- Very few locally operating traders control bulk of the trade. The defacto cartel, which has emerged in the Nippani town, dictates terms to the farmers. These farmers always are at the mercy of the traders due to the fact that the traders are financing most of the agricultural operations, and the clutches of the debt are always squeezing the farming community.

- Added to this the cultivators of tobacco, like other cultivators are less organised and thus they are not able to help themselves by having their own storage facilities to store their produce, which may help them to get favourable price.

- In the event of provision of systematic information about alternative crops, other non-farm activities and provision of necessary inputs for operationalising this information, the farming community would be desirous to make a gradual shift from the tobacco cultivation to other crops/activities.

ABOUT CHOOSING THE PROJECT VILLAGE

After taking stock of the message that emerged from the field survey, we tried to probe further into the issue of shifting from tobacco cultivation in the project area.

At the outset our task was to select a village for implementing our intervention strategy. With an open mind we started holding discussions in all the above listed villages as well as those villages which were not part of our baseline survey. As a prelude to this we contacted Agricultural Research Center (ARC) based at Nippani, which is a satellite campus of the University of Agricultural Sciences, Dharwad. The focus of this Center is to develop newer varieties of tobacco plants and other issues related to the plant pathology. Thus, it acts as a nerve center of tobacco promotion in the Nippani area. However, the head of this Center was very much appreciative of the noble cause of our study and he provided technical inputs for several aspects of our intervention. The research findings of his center were useful in understanding the weaknesses of the tobacco plant which was a useful input for us in the initial meetings with the farmers to convince them to give up tobacco cultivation.

A SAGA OF HOPES AND DISPAIR :

The initial meetings were held in a village called **Galatga**, where a group of young progressive farmers evinced interest in participating in our intervention program. As we started holding successive meetings in the village along with agricultural scientists and other social activists we could

notice that the village was divided across two groups. Mounting tension within the village was a pointer to the fact that the rival group may destabilize the process of intervention aimed at shifting from tobacco cultivation. The chances of both the groups participating in the intervention program were quite bleak. In the background of this development we thought of withdrawing from this particular village. Our experiences with regard to this initial phase of intervention are valuable in themselves, in that they bring out how the processes of socioeconomic change are complex and formidable

Next village where we had useful meetings with the villagers was **Akkol**. This village is known for the finest variety of tobacco grown in **Nippani** area and the growers of tobacco also seemed to be quite organized. Initially they pleaded for the supply of support facilities and necessary inputs in the form of lift irrigation from the nearby river which is about four kilometers away from the village, credit facilities etc.,. According to the villagers; enhanced and assured supply of water would facilitate automatic shift of the farmers towards cultivation of sugarcane, which is supplied to the locally placed sugar factory. Though the argument was quite convincing we were feeling skeptical about their real intentions. This is because in the present day context, inspite of the fact that tobacco is a rain fed crop, farmers may tend to grow tobacco itself with doses of irrigation, as the region receives uncertain and scanty rainfall. From the intense discussions with the farmers, we were apprehensive of the success of interventions, in this direction as suggested by the tobacco farmers. We could sense from the discussions with the farmers that they were interested in just getting some incentives out of our intervention package without any seriousness about shifting from tobacco cultivation. Thus the case of **Akkol** was also ruled out and we started looking towards some other village where we could make headway with regard to the implementation of intervention package.

LESSONS FROM FAILURE OF INITIAL ACTION:

These meetings with the villagers were helpful in some respects, and we were able to understand many issues related to the empirical aspects of tobacco cultivation. In the first instance, **we could learn from the farmers that it is not pure economics, which is the guiding factor for the cultivation of tobacco.** Farming community keeps cultivating tobacco in the Nippani area just because the habit has descended from their ancestors. They consider tobacco cultivation as a way of life and logical reasoning seems to be having no impact in making the decision about tobacco sowing. There is also a strong feeling in the farming community (it is just a belief which is not substantiated by scientific findings) that rotation of tobacco crop once in three years would increase the soil fertility.

Whenever the initial phase of monsoon rains fail or there is an expectation of unfavourable price for other crops, farmers would be prompted to go in for tobacco cultivation.

In his background our effort to identify a more receptive village in the region was on. Our discussions with the farmers of Sidnal village were quite fruitful. In the initial meeting itself they were quite interested in parti cipating in our project. They also explained to us about the inter state water sharing problems faced by the farmers in this region of Karnataka State and other related matters in connection with the control of tobacco ultivation. Based on these discussions we were inclined to select this as the village for our intervention experiment. One more reason for this was that the progressive farmer of that village who had left tobacco cultivation for economic reasons as well as health hazards of tobacco came forward to strengthen our efforts to shift from tobacco cultivation.

Inter-state River Flow and Shifting Proposals:

The discussions with the farmers also revealed that flow of rivers across the state have a bearing on the cultivation of tobacco in this particular area.

The Vedadaganga river which flows around most of these villages should have been a boon for tobacco cultivators since it is the source of irrigation through which they can shift to other crops. In this context one important aspect which needs elaboration is that one more river named Doodhganga, which flows in from the neighboring State of Maharashtra has been the source of concern for iter-state distribution of water resources. A dam is constructed on this river in Maharashtra and the water is released according to the needs of the farming community of that state. The river flows into Karnataka for some kilometers and again enters Maharashtra. Vedaganga river, which also flows in the same fashion finally, joins Doodhganga river and flows into Maharashtra. The water from the reservoir of Doodhganga which is released through a canal from the Maharashtra Irrigation department during summer season no doubt caters to the needs of some of the villages of Karnataka before finally serving the needs of villages of Maharashtra. The water so released serves as backwater for the river basin of Vedaganga river which helps few villages of Karnataka. The quantum of such water depends largely on the water release by the Maharashtra state. In case very little water is released, the backwater situation may not arise and the farmers of Karnataka may not get water for their standing crop. The below mentioned map explains the position of the project village in Chikkodi taluk and the rivers flowing across the taluka.

With regard to the inter state sharing of water resources the experiences of the project team needs a mention here. The farmers of the village mentioned to us about the fact that the Karnataka government is required to pay Rs.1 crore to the Maharashtra State for ensuring sustained water supply to the Vedaganga River.As this payment was not made during the intervention period there was acute water shortage for the farmers of Karnataka. CMDR took up this issue and the representation, which was made by about 100 farmers regarding the release of water to Karnataka was brought to the notice of Planning Commission. In this regard as the water sharing mechanisms are the fallout of Central Water Commissions' Bachawat Awards, the issue needs a

DESIGNING ACTION INTERVENTION

To chalk-out the intervention package we called a meeting of select farmers, motivators, agricultural scientists,

bankers and agricultural insurance functionaries, social activists and artists.

- Farmers were invited to present the difficulties involved in the cultivation and marketing of tobacco,
- Agricultural scientists were to present the bio-tech aspects of tobacco cultivation, wherein the emphasis was placed on weaknesses of tobacco crop and possible alternative crops suitable to the weather and soil conditions of the project village,
- Senior bank officials of Malaprabha Grameena Bank and Resident in-charge of the NABARD (National Bank for Agriculture and Rural development) were invited to explore the role of banks in participating in this project,
- Representatives from insurance companies were invited to explain the range of insurance policies available to the farmers for protecting their crops as well as other agricultural assets and animals,
- Social activists and motivators were requested to design the programmes to bring a change against tobacco in the mind-set of the farmers for alternative crops or other alternative activities.

In this context two video films were produced by CMDR. The first one was on health hazards of tobacco consumption, which was an educative documentary highlighting the ill effects of cheweing tobacco and Gutkha-an addictive powder of beetlenuts and tobacco with other attractive ingredients.. The second one was the outcome of the skit written by the Project Leader Dr.P.R. Panchamukhi, focussing on the cultivators of tobacco. Various anti tobacco slogans were also written,for being distributed to the school children and the general public not only in the project area but in other places as well.

The deliberations of the meetings were quite useful and the paved the way for meaningfully evolving the intervention package. Scientists from ARC Nippai and University of Agricultural Sciences, Dharwad presented their research findings related to the cost and benefits of tobacco cultivation, the vulnerable aspects of tobacco crop, alternative use of tobacco crop etc., Some of their findings actually supplemented the results of our detailed field survey. In the opinion of the scientists, if the farmers prefer to grow tobacco the harmful effects of tobacco can be eliminated for the benefit of the society as whole. This can be made possible by not allowing the crop to mature fully and instead it has to be harvested before it is fully ripe. The experiments have shown that before tobacco is ripe it contains good amount of proteins, which can be used fruitfully for preparations of medicines and nutritive foods etc, Though the suggestion was quite useful and worth trying we could not pursue the idea due to financial and time

constraints. Another useful information was in relation to the alternative crops, which can be grown based on soil and weather conditions of the area. Though farmers were aware of some of the crops, the newer varieties of such crops as elaborated by the scientists was a crucial information to them. The first best alternative suggested was Sugar cane. But in view of the shortage of assured year round irrigation facility, the farmers as well as research team felt that this option can be considered only when some measures are taken to help the farmers with regard to the lift irrigation system. This is possible only when there is an assured water supply from across the Maharashtra State. Other alternative crops suggested were,

- Soybean,
- Groundnut,
- Onion and
- Sunflower.

Our field survey analysis of responses of 2000 farm households had already reached similar conclusion about such alternative crops to tobacco.

Bank officials were very much appreciative of the noble cause of the project. They assured the project team as well as farmers that as agriculture happens to be the priority sector for the lending operations of the banks they would come forward to assist the farmers in shifting from tobacco cultivation. Apart from the crop loan, which is usually given for pre sowing financial requirements of the farmers, the banks would also assist in undertaking non-farm activities. Such activities can be carried on in lieu of tobacco cultivation, which sustains income-earning opportunities for the farmers. Representatives of the insurance companies explained to the farmers about various crop insurance schemes available to the farming community. Along with this the schemes which cover other assets and implements and also the cost involved therein were discussed in detail.

Social activists and artists discussed about educating the rural community about giving up tobacco cultivation and consumption. Street play, AV Shows, Posters and awareness camps were planned. A meeting with a highly influential religious leader of the region was held to request him to highlight the importance of shifting from tobacco cultivation in his discourses in the region.

OPERATIONALISING INTERVENTION

In the light of the discussion of this meeting we progressed further with the task of facilitating of shift from tobacco cultivation. **The village of Sidnal where the environment for initiating the intervention package was found to be conducive became our project village.** Our immediate task was to hold one more meeting with villagers to chalk about the

further course of action. Thus a meeting on a much bigger scale was held in the village itself where about 30 to 40 farmers attended the meeting. The meeting was held in the house of the progressive farmer, a non-grower of tobacco who was also co-opted as one of the motivators in the Project. Earlier to this, professors and students were tried as motivators. A non-farming activist was tried as a motivator. Finally a farmer has been tried as a motivator – which has proved somewhat more encouraging. **This also suggests that the agents of sensitization should be drawn from within the people towards whom intervention is targeted.**

Therefore, **endogenization of the reform process is needed for effective change.** Involvement of farmers in evolving intervention strategy, making them responsible in the process of implementation of the strategy, introduction of mid-course correctives, etc is important. **The NGOs have to be only facilitators of change rather than 'imposers' of change.**

In response to the oral notice spread out in the village the farmers gathered in the motivators' house. At the outset we explained the nature and objective of the project to them. The idea was effective in arousing the interest among them and they started slowly unfolding their mind about shifting from tobacco cultivation. **The common mood was such that the farmers were really fed up of tobacco cultivation.** They expressed their concern about the vulnerability of the crop to the vagaries of nature as well as problems associated with its marketing. Coupled with this the labour intensiveness of the crop has made farmers to spend most of their as well as hired labourers' time on the field at the cost of looking after other crops and other activities. They voluntarily agreed to participate in our project. A scientist from ARC Nippani also attended the meeting. The prolonged discussion concentrated on the following issues,

- Systematic knowledge about the cultivation of tobacco
- Problems associated with the availability of pre sowing inputs for tobacco
- Newer varieties of tobacco and their associated problems
- Marketing mechanism of tobacco crop
- Lack of complete knowledge about alternative crops
- Availability of inputs for cultivating alternative crops
- Need for Agricultural extension services
- Provision of lift irrigation facility from the nearby river

During the course of meeting, members of C.M.D.R. gave an idea of taking up dairy farming, which can act as good alternative activity by giving up tobacco cultivation. The idea behind this was to drag away excess labour, which was engaged in the cultivation of tobacco. One more objective here was to provide monetary insulation to the farmers who face the risk of losing income due to their shifting from tobacco. This idea was received well by the farmers, due to the fact that the dairy farming is a

good income earning activity in the neighboring villages. These milk co-operatives are selling milk to the various milk processing units of both Maharashtra and Karnataka. Thus a three pronged strategy of controlling tobacco emerged out of this meeting.

- The first input of the intervention was to provide the information about the various alternative crops with newer varieties suitable to the weather and soil conditions of the village. In this regard it was decided to get the expertise of Agricultural Scientists and Progressive Farmers from other regions of the state, who have the know-how of cultivating such crops. The project team also considered providing seeds of such crops to those farmers who were ready to shift from tobacco cultivation.

- Second option was to get the financial assistance from the commercial banks to help farmers to undertake dairy activities. As the bankers had already assured of their willingness to participate in our intervention package, we started negotiating with senior executives of the banks, which have the branches in the project region.

- The third instrument of tobacco control was to examine the possibility of providing lift irrigation facility again through the assistance of banks. The only hurdle here was that of the perennial water flow in the adjoining Vedaganga river due to the above explained inter state water sharing problems.

Based on the feelers received from this meeting, we called in the progressive farmers from Gadag region of the Karnataka State, which is a non-tobacco growing area. These farmers had the expertise in cultivation of Onions, Soybean, Groundnut, Chillies and Cotton. One of these, was recipient of the State Award for cultivating highest quantity of Chillies per acre. Another farmer apart from his agricultural operations was diversifying into Wormiculture. He had also participated in a coference on Wormiculture at Beijing, China and his visit to China was sponsored by the I D R C which has sponsored the CMDR study also. In their initial meeting with the project team at CMDR, they were briefed about the objectives of the study and the intervention programme at the project village. They explained to us about various details about agricultural operations , regarding the above listed crops of their specialization. They also felt that they would like to meet the farmers of the project village to get a first hand feel about the problems faced by the farmers in the project village. Accordingly, we arranged to take these farmers to Sidnal (Project village) where a good deal of interaction took place about the technicalities of growing alternative crops to tobacco. The farmers from Gadag told their counterparts at Sidnal that, they would develop the Onion seeds and give them for sowing in place of Tobacco. This suggestion was made in the background of the fact that the humid environment of Sidnal is not

conducive for seed preperation. A good amount of exchange of information took place regarding Wormi-culture. In the same meeting we had one more important guest on that day. The motivator had sent a word to the local representative of the State Legislative Council (M L C) and he promptly attended the meeting. Members of CMDR appraised him about the nature of the project and intervention process to be launched in the village. The issue of inter-state sharing of water resources also figured in the discussion and he promised that the matter would be taken up the Irrigation Ministry of Karnataka State. On the whole this meeting proved to be useful in bringing the farmers of two regions to discuss and exchange ideas about different ways of controlling tobacco cultivation.

DECISIVE PHASES OF ACTION

After this meeting we intensified our efforts to operationalize the intervention process. Mahatma Phule University of Agricultural Sciences, Rahuri, Maharashtra was contacted to get the Onion seeds for the Rabi season of 1999. This season starts in the moth of October 1999. But before that, the monsoon season (the usual rainy and sowing season of India) was nearing and hence we were keen that farmers take initiative to shift in this seasons itself. This is because, the Monsoon starts in the moth of June and most of the crops are sown during the second or third week of June. The sowing of tobacco starts in the second and third week of August. So we wanted that the sowing of alternative crops must be done during June so that farmers can spare no land for the tobacco crop. In this regard we speeded up the procurement of Soybean seeds to distribute freely to the farmers. Soybean was chosen by CMDR as the alternative crop on the basis of the suggestions from the participating farmers.

Our efforts to involve banks into the intervention process were in progress simultaneously. And by this time, there was a change in the top brass of the Malaprabha Grameena Bank, which had a new Chairman. Our efforts to establish a rapport with him took sometime and the responses were quite encouraging. In the same fashion, we also took into confidence the senior executives of the Syndicate Bank's Regional office at Belgaum. Both these banks have branches in the project area if not in the project village. We requested both of these banks to assist the farmers to buy the milch buffaloes for starting the dairy activity in the project village. A series of meetings took place between the project team and the bank officials to finalise the credit facility for the farmers. Finally the directions were sent by the banks to the respective branches in the project area, which are adjacent to Sidnal. The branches participating in the intervention are,

Malaprabha Grameena Bank (MGB) at Benadi,
Syndicate Bank at Akkol.

We approached the branch managers and explained the objective of the project and their role in the intervention. In both the places the response was good and they came forward to assist the farmers. The branch manager of Syndicate bank and the Field Officer of MGB, accompanied us to the project village and attended the meeting of farmers.

The bankers wanted to assess the village situation with regard to the availability of veterinary services in the village and about the marketing of the milk. They also used this opportunity to probe the probable creditors with regard to the repayment capabilities and their seriousness about undertaking dairy activity. Farmers were really sincere and convinced the bankers about the repayment of the loan. The prospective shifters of tobacco also made a suggestion that they would get the buffaloes from a place called Mehasana in the State of Gujrat. The breed, which hails from this place, gives highest liters of milk per day (about 10 liters in the morning and 10 liters in the evening) and hence is economically viable.

After about 5 to 6 sittings with the farmers the bankers were able to identify the eligible farmers who were to receive credit for buying the buffalo. These farmers were part of the list, which CMDR had finalised during our intense discussions with the villagers before approaching the bankers. **Thus, those who had volunteered themselves, to participate in our intervention programme were chosen by the banks.** About 100 farmers had expressed their willingness to join our effort in controlling tobacco cultivation. The modalities of extending the credit were worked in minute details Bankers handed over the list of documents that were required to avail of the loan. As per the requirement of the bank, CMDR took initiative to make a tripartite agreement between the bank branches concerned, the milk union which would buying the milk from the farmers and the farmer who is availing of the loan. The objective of this agreement is to safeguard the interest of the banks. The conditionalities of this agreement stipulate that, the milk union , which buys the milk from the farmers, is required to deposit the money in the concerned account of the farmer instead of paying to him directly. By this arrangement the bank can withdraw the equal monthly installment (EMI) from the farmer's account and adjust the same towards his loan account. The initial willingness letter of the Shri Gopalakrishna Dudha Utpadak Sahakari Sangha Ltd., Kunnur, (Shri Krishna Milk Producers' Co-operative Union Ltd., a dairy which is in operation in the region) to be a party to such an agreement was obtained and handed over to the respective bank branches. Thus the bank is assured of its repayment of the loan advanced to the farmer. At this juncture CMDR also thought of providing some incentive for the farmers directly as well as to bankers indirectly. We assured the farmers that as they go on reducing the cultivation of tobacco from season to season CMDR would paying Rs 250/-(Two Hundred Fifty only) per month upto a period of 12 months for all those who are buying buffalo. That is about 50 farmers would be benefited by this incentive payment. A written communication was also made to the respective branches in this

regard. At this phase we had finalised about the dairy farming option in place of tobacco.

Our next task was to cater to the needs of other farmers who did not avail of the bank loan. Hence our efforts to obtain seeds for the approaching sowing season were intensified. Various seed companies and vendors were contacted for procuring quality seeds of Soybean, Sunflower and Groundnut. But as most of the farmers expressed their willingness to go in for Soybean, we finally searched for the best quality seeds of this crop. The Karnataka Oil Federation, (KOF) a government of Karnataka supported co-operative organisation supplies quality oil seeds. The objective of KOF is to supply the oil seeds to promote the cultivation of oil seeds. It also buys the produce from the farmers to extract and refine the oil from the seeds, which is ultimately sold in the market at very competitive prices, for the benefit of consumers also. The KOF was selling the same brand of seeds which was suggested by agricultural scientists as well as by the farmers of Sidnal. In this background we bought the seeds of Soybean sufficient enough for about fifty acres of land. These seeds were to be distributed to the farmers free of cost, sufficient for one acre of land, to each farmer irrespective of the total land holdings of his family. This was the incentive from the project for farmer's gradual shifting from tobacco.

As the bank formalities were over and seeds were also bought, we thought of holding a function to mark the beginning of intervention scheme. On June 11th of 1999 the function was held in the School premises of Sidnal village.

The meeting was attended by more than 250 villagers. At the outset, project leader Dr.P.R.Panchamukhi gave an introduction about CMDR, nature of its activities and the focus of the ongoing project on "Economics of Shifting from Tobacco Cultivation". The health hazards of tobacco consumption and cultivation were highlighted during his speech and he stressed the need for rooting-out tobacco from our society. He appreciated the initiative taken by the farmers of Sidnal in joining this project, which aims at gradual reduction of tobacco cultivation in this particular village. He made it clear that whatever lessons the project team learns from this experiment would be the guiding forces for replicating the same effort in other regions as well on a much bigger scale. Incidentally, CMDR had organised a press meet prior to this function. As a result, the leading national dailies like **The Times of India, Deccan Herald and Prajavani,** brought out details about the study and intervention scheme on the day the function was held in the village. This was followed by the remarks by Chairman of the MGB and Regional Manager of the Syndicate Bank who equivocally supported the noble cause of the project and again reassured their respective banks' whole-hearted support for the farmers who have come forward to participate in the project.

In the same function, the cheques to the farmers whose loan applications were cleared by the respective banks, were distributed. This facilitated the farmers to buy the buffaloes. In all 30 farmers have bought buffaloes through the assistance of banks. CMDR has provided Soybean seeds to 46 farmers i.e. the seeds would cover 46 acres of cultivable land in the village.

AFTERMATH OF ACTION

After this CMDR team started carefully monitoring the ground situation. The progress of the intervention was satisfactory, and the farmers had significantly reduced the area under tobacco. The dairy activity picked-up well and bankers were happy to say that the repayment status of the loan advanced to the farmers was quite good.

As the dairy activity has proved to be quite good in maintaining the family incomes coupled with dragging away the crucial input of labour from the tobacco cultivation, it deserves a further support in such intervention programmes. A milk processing unit in the village with good transportation facility would spread the diarying activity across the village, which means that the farming community would hold on to this, giving little attention to tobacco crop. Availability of transportation facility would also prompt them to grow more vegetables, which can be reached to the nearby markets quickly.

The above experiment has shown us that, the processes, which operate in bringing about a change to give up tobacco cultivation are quite complex.. We feel that the sociology of tobacco is much stronger than economics of tobacco. But nonetheless if proper and sincere efforts are made, we can bring about a gradual and lasting change, which can sustain shift from tobacco cultivation. Good agricultural extension service with regard to the alternative crops, ways and means of strengthening irrigation facilities (including uninterrupted electric supply), good network of storage and marketing facility for alternative crops can effectively manage and sustain the change.

While interventions to reduce demand for tobacco are likely to succeed, measures to reduce its supply are considered less promising and they are looked upon with an air of skepticism. This may be because, if one supplier is shut down, an alternative supplier gains an incentive to enter the market. Added to this, we must also take note of the fact that I T G A (International Tobacco Growers Association) has been raising its voices against control of tobacco cultivation. It says that it is prepared to combat idiotic crop substitution programmes , and it has plans to influence W H O and F A O to protect its interests. Thus the challenge of controlling tobacco cultivation has broader dimensions, which calls for a unified and well co-ordinated efforts in meeting this challenge.

C h a p t e r - V

MICRO ECONOMICS OF TOBACCO CULTIVATION : A VILLAGE LEVEL AND HOUSEHOLD LEVEL DATA ANALYSIS

In chapter III and IV above, issues relating to tobacco cultivation, tobacco products industry and tobacco trade were briefly analyzed using international data and the data for India as a whole. Such a macro-level analysis might provide only broad insights about the factors responsible for tobacco cultivation and tobacco supply. However, such a macro analysis would not be able to highlight the subtle aspects of the decision making for tobacco cultivation. The decision making in agriculture is essentially individual specific. Possibly, the individual farmers in a particular village may take a decision to cultivate a particular crop after mutual consultations within the village. All the same, each farmer is free to assess and he does assess in actual practice, individually, the relevant factors like suitability of the soil for a particular crop, compatibility of climatic conditions, adequacy of irrigation, risk of pests and insects affecting the crop, the need for pesticides and insecticides, quantity of manure and chemical fertilizers to be used, etc. in the case of each individual crop. Thus, the international and national perspectives about tobacco cultivation need to be supplemented with the village level and household level data analysis for the purpose of understanding the factors responsible for tobacco cultivation. It is in this background that the present chapter propose to analyse the issues relating to tobacco cultivation using the village level data and the household level data. The discussion follows the plan as stated below :

Part I of the Chapter deals with village level analysis. At the outset, the sampling methodology for the purpose of empirical investigation is presented.

Subsequent part of this chapter analyses the village level data relating to tobacco cultivation in particular.

Part II of the chapter, which is in continuation of this discussion of micro level data of sample villages presents household level data analysis highlighting the factors responsible for farmer's decision making regarding tobacco cultivation. The questions like who cultivates tobacco and why, are farmers willing to shift and why, etc. are the subject matter of the analysis here.

SAMPLING DESIGN AND METHODOLOGY

For examining the behaviour of tobacco producers, their socio-economic background, their awareness of the effects of tobacco, reasons

for tobacco production, their preparedness to shift from tobacco, etc. may be studied with the help of a detailed check list and personal discussions with the members of the selected households. Different socio-economic characteristics such as age, gender, income, caste etc., and effectiveness of various instruments of control can be studied for these various categories of sample population. This would help identifying dependable instruments of control.

The details of sampling design for tobacco producers

i) **The state of Karnataka has been selected for the study** as it is a medium developed state and it occupies the third position in the country so far as the area under tobacco production is concerned. Primarily two types of tobacco (i.e. bidi tobacco and FCV tobacco) are grown in different districts of Karnataka. Across the districts, it is found that Mysore is the highest producer of FCV tobacco and Belgaum is the highest producer of Bidi tobacco. Some other types of tobacco are also produced in the state, which are not that significant like bidi and FCV variety.

ii) Across the districts, the area covered under tobacco production is found to be the highest in **Belgaum district** i.e. more than 52 per cent of the total area of the state under tobacco production is found in Belgaum district only. So, we have selected this district for our sample.

iii) **Three talukas of Belgaum district** where the concentration of tobacco cultivation is the highest have been purposively selected. **These are Hukkeri, Chikkodi and Gokak talukas.** The details regarding tobacco cultivation in different talukas of the district, on the basis of which the sample talukas have been selected, are given in the table (Table 5.1)

Table –5.1

Taluka-wise Area (hectares) under Bidi Tobacco in Belgaum District

Sr. no	Talukas	1983-84	% to total	1996-97	% to total	1997-98	% to total
1	Athani	155	0.60	16	0.06	85	0.34
2	Bailhongal	147	0.57	346	1.2	330	1.30
3	Belgaum	----	----	9	0.03	6	0.02
4	Chikkodi *	18625	71.70	20447	70.97	18128	71.49
5	Gokak *	2937	11.30	3963	13.76	2660	10.49
6	Hukkeri *	4020	15.48	3964	13.76	4077	16.08
7	Khanapur	----	----	-	-	-	-
8	Raibag	65	0.25	-	-	-	-
9	Ramdurg	26	0.10	-	-	-	-
10	Savadatti	----	----	65	0.23	71	0.28
	TOTAL	**25975**	**100.00**	**28810**	**100.00**	**25357**	**100.00**

***Source**: District Statistical office,Belgaum.*

iv) **The next stage of the sample is the villages from each of the selected talukas**. The selected three sample talukas consist of 330 villages and we have taken about 15 percent of the villages for our survey i.e. 50 villages have been chosen.

v) From the respective Taluka office we have collected the list of villages which are the main tobacco growing villages covering maximum area under tobacco cultivation. Next, the tobacco growing villages in each taluka are arranged as per the area covered under tobacco in ascending order as we intend to select the main tobacco producing villages in these three talukas. The number of villages covered for our sample survey was finalized after verification regarding the villages which are largely tobacco growing, from the records of the village accountant and the statistical inspector of the respective villages. The number of villages are distributed among the three talukas as per the proportion of the area under tobacco.

The number of villages selected for the study is mainly based on the density of area under tobacco cultivation in the selected talukas. In Chikkodi, the villages as well as the area under tobacco cultivation are found to be the maximum (20,354 hectares or 82.95 percent of the total area under tobacco) among the three talukas, so we covered the highest number of villages from this taluka. Next in rank is Hukkeri taluka in respect of area (3,184 hectare or 12.98 percent of the total area). The last position is occupied by Gokak taluka (i.e.1000 hectares or 4.07 percent of the total area under tobacco). Accordingly, 7 villages from Hukkeri, 41 villages from Chikkodi and 2 villages from Gokak taluka were selected.

(f) **The next stage of our sample is the households.** Keeping in mind the objective of generating the quality data within a short period, we decided to cover 2000 producer households in our survey. These households are on the basis of the total number of households in the selected villages of respective talukas. Thus, we have decided to cover **239 households from Hukkeri, 1683 households from Chikkodi and 78 households from Gokak taluka.**

(g) The selection of the households has been made in two stages. **(i) First we collected the information from the selected villages with regard to whether the household is a cultivating household ; (ii) In the second stage, the sample of the households is drawn following simple random sampling method.**

The table below summarizes the details of sampling break up as explained above. The enclosed charts further exhibits the sampling design.

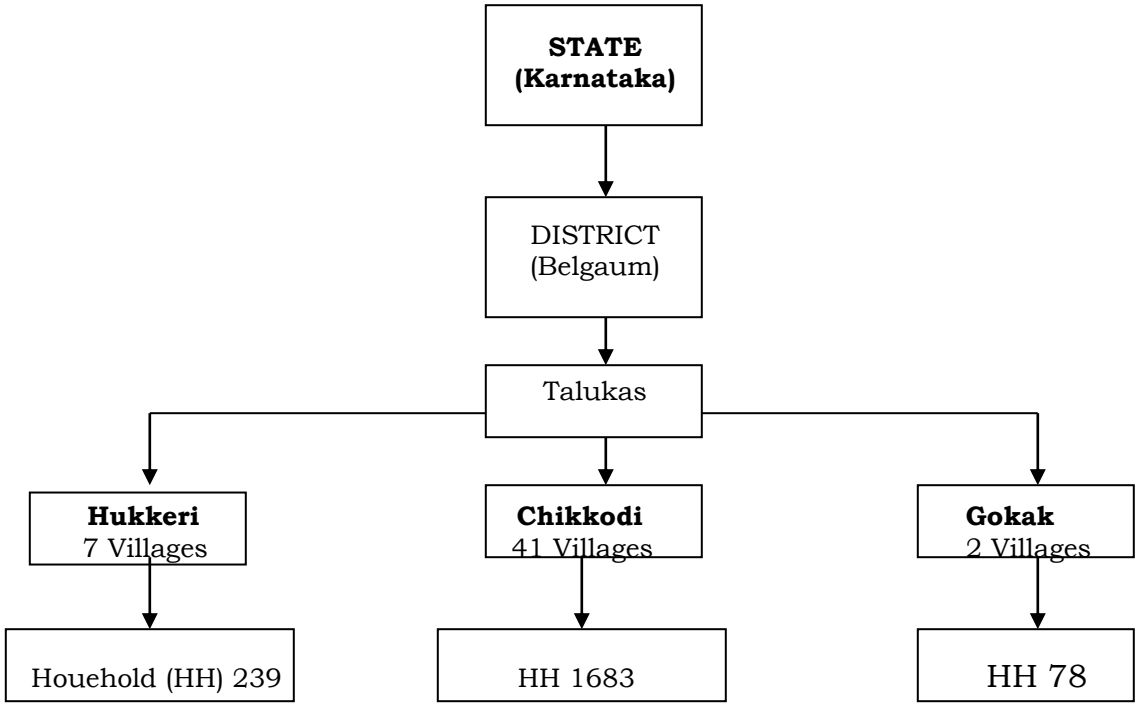
Table-5.2
Sampling Break up of the Study

Name of selected Talukas	Total No. of villages (1991 census)	Sample of villages selected	Area under tobacco cultivation (Ha)	% of tobacco area to total tobacco area	Total no. of HHs in slected talukas	Total no.of HHs in selected villages	% of HH to total HH in selected villages	Sample of producer Households
Hukkeri	120	7	3184	12.98	47500	2437	11.95	239
Chikkodi	103	41	20354	82.95	72546	17162	84.15	1683
Gokak	107	2	1000	4.07	55006	796	3.90	78
Total	**330**	**50**	**24538**	**100**	**175052**	**20395**	**100.00**	**2000**

HH = Household,
15 percent of total number of villages in the 3 talukas is = 50 villages

Chart 5.1

SAMPLING DESING FOR TOBACCO PRODUCERS



State : Karnataka
District : One
Talukas : 3 talukas
Village : 50
Households :2000

PART I : VILLAGE LEVEL DATA ANALYSIS

The Geographical Profile

The area covered under tobacco cultivation was 83.64 percent, 12.23 percent and 4.13 percent of the total tobacco area in the selected talukas of Chikkodi, Hukkeri and Gokak respectively. The total geographical area in Chikkodi is 135885.81 acres, 20204 acres in Hukkeri and 4478.38 in Gokak . The Hukkeri taluka covers highest cultivable area i.e. 91 percent followed by Chikkodi (85 percent) and Gokak (67 percent). The Geographical profile of the three talukas is given taluka in table below.

Table –5.3
Taluka - Wise Geographical Profile of the Selected Villages

Taluka	No of Villages	Total Area in acres	Total Cultivable area	% of Culti area to tot area	% of area Under Tobacco
Chikkodi	41	135885.81	115232.27	84.61	83.64
Hukkeri	7	20204.00	18373.87	90.94	12.23
Gokak	2	4478.38	3005.02	67.10	4.13
Total	50	160568.19	136611.16	84.92	100.00

THE DEMOGRAPHIC PROFILE

The demographic profile of the villages of three talukas indicate that the sex ratio was 985 in Chikkodi, 909 in Hukkeri and 989 in Gokak while the same is 954 in Belgaum district. The sex ratio in all the 50 villages is 976. In Hukkeri villages we found a low sex ratio indicating disadvantageous position of the women population in the villages of this taluka. The density of population of Belgaum district is 267 (1991) while the same is 375, 337 and 366 respectively in Chikkodi, Hukkeri and Gokak. It indicates that all the three talukas are densely populated.

The average family size of Chikkodi is 4 while the same is 6 in both Hukkeri and Gokak talukas. The average size of the family in Belgaum district is found to be 6 as per 1991 census. The family size of Chikkodi Taluka is found to be lower than the district average. This information is presented in table 5.4.

Table 5.4
Taluka-Wise Demographic Profile of the Selected Villages

Taluka	Total Population			Sex Ratio	Density of Population per sq.km	Family Size
	Male	Female	Total			
Chikkodi	102417	100842	203259	985	375	4
Hukkeri	14289	12989	27278	909	337	6
Gokak	3298	3263	6561	989	366	
Total	120004	117094	237098	976	370	6
Belgaum District Population	1834005	1749601	3583606	954	267	6

Literacy Profile

The literacy rates of the three talukas are presented in the table 5.5. It is found that Chikkodi taluka has the highest literacy rate both among males and females. Even it is higher than the district average. The literacy rate of Hukkeri and Gokak taluka is lower than the district average as well as for Chikkodi taluka.

Table 5.5
Taluka-wise Literacy Rate, 1991

Taluka	Literacy Rate (%)		
	Male	Female	Total
Chikkodi	70.59	39.65	55.55
Hukkeri	60.34	30.21	45.47
Gokak	55.02	23.29	39.42
Belgaum District	66.65	38.69	53.00

Source : District Census Handbook, Belgaum

Infrastructural Facilities

When we examine the availability of physical infrastructure in different talukas, it is found that the Chikkodi taluka is relatively more developed in infrastructure. Infrastructure includes irrigation, roads, post offices, health centres, educational institutions, marketing facilities etc. Chikkodi taluka has the advantage of enjoying the highest number of infrastructural facilities. The table 5.1A in appendix gives the details of infrastructural facilities.

Area under Cultivation and the Crop Calendar

If we observe the crop calendar of different crops in different talukas, it is found that there is not much variation in the sowing and harvesting

months for different crops in the respective talukas (Appendix table 5.2A). Further it is observed that both in terms of cropped area and cultivable area, tobacco covers the highest area among all the crops. All other crops have shown mixed pattern in terms of area in different talukas. One interesting feature to note here is that tobacco occupies the largest area under cultivation and keeps the land engaged for longer times than other crops with an exception of sugarcane.

Prices and Wages Prevailing in the study villages

In order to study the socio - economic status of the study villages it would be useful to know the prevailing prices of the agricultural products as well as the agricultural wage rates. It is found that there is a wide variation in prices for the same product in the villages in different talukas (Appendix Table 5.3A). For example, the average price of paddy varied from Rs 7.63 per kg in Hukkeri taluka to Rs 15.11 in Chikkodi taluka. Also the average price of jawar (a corn use for preparing bread) varies from a low of Rs.3.50 per kg in Gokak to a high of Rs. 5.94 in Chikkodi. The price of tobacco is found to highest in Chikkodi taluka and lowest in Gokak taluka. This price variation within a small geographical area may be due to the variations in quality of the produce. While the consumers may not distinctly notice subtle quality variations, the price variations do get noticed. Such price variations across the talukas indicate how **in the taluka having maximum production of tobacco, the prices of food products are also highest.**

Also there is a variation in wage rate by area and by sex. The wage rate both for human and bullock increased marginally in the year of survey over the previous year. The wage rate for both males and females varies. For males, the wage rate is found to be lower (Rs 22.50) in Gokak Taluka and higher (Rs 30.00) in Hukkeri taluka.

Area and production of different crops

Major crops grown in the study villages are: paddy, tobacco, sugarcane, jawar, groundnut and Soya been. Area under tobacco is the highest while the yield rate of sugarcane and the unit price of sugarcane seem to be the highest among the crops. The yield of sugarcane is as high as 39.29 tons in Hukkeri taluka and the lowest yield is 30 tons in Gokak. The lowest yield is seen for groundnut in all the Talukas. It varies from 2.25 quintals in Gokak to 5.33 quintals in Chikkodi taluka (Table 5.6)

Table 5.6

Taluka-wise Area and Production of Different Crops

Taluka	Total Cultivable Area	Tota Cropped Area	% of Total Cropped Area to Culti Area	Yield of Major Crops Tobacco	Soyabean	Groundnut	Sugarcane
Chikkodi	115232.27	82337.61	71.45	11.48(B)	6.97(Q)	5.33(Q)	38.61(T)
Hukkeri	18373.87	14349.52	78.1	11.81(B)	7.00(Q)	3.79(Q)	39.29(T)
Gokak	3005.02	2650.19	88.19	9.25(B)	6.00(Q)	2.25(Q)	30.00(T)
Total	136611.16	99337.32					

Crop -Wise Area and Irrigation:

The talukas in the study area are predominantly agricultural. The cultivable area in the villages of the three talukas varies from 67.1 percent to 90.9 percent. The cultivable area is found to be the highest in Chikkodi and lowest in Gokak. The percentages of the total cropped area to cultivable area are 71.5 percent, 78.1 percent and 88.2 percent respectively in Chikkodi, Hukkeri and Gokak. The area under tobacco in all the talukas is found to be the highest. About 63 percent , 41 percent and 35 percent of the total cropped area are respectively under tobacco cultivation in Gokak, Chikkodi and Hukkeri talukas.

The area covered under irrigation is very low in all the Talukas. Highest area under irrigation is found in Chikkodi followed by Gokak and Hukkeri. The area under irrigation varies from 11.7 percent in Hukkeri to 20.1 percent in Chikkodi. It indicates that the villages largely depend on rainfall for their agriculture (Table 5.4A). Also, irrigation facilities seem to be used for tobacco cultivation itself (as in the case of Chikkodi taluka)

Production, Cost and Net Return of major Crops

The details of yield, cost and net return are presented in Table 5.5A.

It is found that the yield of sugarcane is the highest among all the crops and there is a large variation in the yield rate between different talukas. It is about 38.61 tons in Chikkodi taluka while 39.29 tons and 30.00 tons in Hukkeri and Gokak talukas respectively. Tobacco ranks next position after sugarcane uniformly in all the talukas when we consider the yield rate. **One interesting pattern is clearly discernible here i.e., the area under tobacco is found to be the highest while the yield of sugarcane is found to be the highest and this pattern is found in all the talukas.**

When we estimate the return to these crops, it is found that the **return to sugarcane is the highest in terms of money value in all the**

talukas. The cost estimates also indicate that the cost of cultivation of sugarcane is the highest. In spite of the higher cost, the net return is also highest in the case of sugarcane. But when we estimate the net return, per Rupee of investment, the highest net return of sugarcane per rupee of investment is found in Hukkeri taluka only, and not in other two talukas.

Determinants of Tobacco Production

In the background of the above general discussion, we may now attempt to examine the variables which affect the production of tobacco vis-a-vis other crops. In the following discussion, some of the major socio-economic variables, which are presumed to be crucial determinants of production of all the crops in general and tobacco in particular, are considered.

Literacy

Educational level of the farmers and agricultural production are likely to be related, as has been documented by a number of studies. However, since the census gives only the information about the average literacy level of the village, we attempted to link the literacy level with agricultural production in the sample region of the study.

Table 5.7
Literacy Rate and Cropping Pattern

Taluka	Literacy Rate	% of area under Major Crops			
		Tobacco	Sugarcane	Soyabean	Groundnut
Chikkodi	55.55	41.40	11.24	9.06	19.13
Hukkeri	45.47	34.73	13.43	9.47	18.75
Gokak	39.42	63.47	12.67	--	--

It is found that Chikkodi taluka has the distinction of having larger number of literates than the district average. The other two talukas have recorded lower literacy rate than the district average and even of the average for Chikkodi taluka. **The inverse relationship between the literacy rate and the area under tobacco is found in the study villages.** In Gokak, the literacy rate is the lowest and the area under tobacco is the highest.

Irrigation

Irrigation is considered to be one of the crucial factors for the improvement of the yield in agriculture. The proportion of irrigation is not very high in our study villages (only 20 percent). The main sources of

irrigation available are well, borewell, river / pond, and canal. The canal irrigation is very much negligible as there is only one canal in one of the talukas (Chikkodi). About 76 percent of the area in Chikkodi, 92 percent in Hukkeri and 100 percent in Gokak are provided with water through well and bore well irrigation. The area covered under tobacco is found to be the highest in each taluka. But, we do not notice the same cropping pattern in different talukas. In Chikkodi, it is groundnut and sugarcane , in Hukkeri sugarcane, jawar and groundnut and in Gokak it is sugarcane and jawar, which occupy major proportion of cultivated land, next only to tobacco. It is clearly revealed that sugarcane is a common crop, which is grown in all the three talukas, which requires irrigation facilities. Since there are no assured irrigation facilities, the farmers grow mostly jawar, groundnut and to some extent Soya been with the available irrigation. These crops may be adopted as alternative crops to tobacco with the available irrigation (see Appendix Table 5.4A).

Land

Table 5.8 presents the details of area and return to different crops. The area under tobacco in Gokak taluka is the highest i.e. 63.47 percent and the net return per rupee of investment is Rs.2.11 while the lowest area is 34.73 percent and the return is also the lowest i.e, Rs.1.62. It implies that there is a direct relationship between the area and net return per rupee of investment of tobacco. This type of relationship is observed for all the crops. If we calculate the return for 1 percent of land, the picture is totally different. This is shown in table 5.8 :

Taluka	Return for 1 percent of cultivated land (in Rs.)			
	Tobacco	Sugarcane	Soya been	Groundnut
Chikkodi	0.040	0.173	0.232	0.035
Hukkeri	0.047	0.184	0.211	0.068
Gokak	0.033	0.095	NA	NA

Here Soya been is found to be the most profitable crop followed by sugarcane. Since Soya been and tobacco both are dryland crops, Soya been may be considered as an alternative to tobacco where there is no irrigation facilities. But with assured irrigation facilities, sugarcane may be taken up in the selected villages as an alternative to tobacco. **It may be due to the fact that the land is utilised more efficiently for these crops or it is better responsive to these crops rather than to tobacco.**

Infrastructure (Roads, Marketing Facilities) and Prices of Tobacco :

Good infrastructural facilities like roads and marketing facilities are likely to be important determinants of agricultural production. In the case of tobacco, which necessarily needs to be transported to tobacco factories, bidi factories, etc. the importance of such infrastructural facilities does not need over emphasizing. Similarly, the tobacco production is likely to be price elastic. Hence, the price also plays an important role in determining production.

Some of these details are presented in Table 5.9.

Table 5.9
Roads and Marketting Facilities and Net Return to Major Crops

Taluka	**Types of Roads (%)**			**Type of Markets (%)**			**Net Return per rupee of investment**			
	Kutchha	Pucca	Semi Pucca	Regulated	Wholesale	Retail	Tobacco	Soyabean	Groundnut	Sugarcane
Chikkodi	54.00	10.00	36.00	23.00	15.00	62.00	1.66	2.10	0.67	1.94
Hukkeri	57.00	--	43.00	--	25.00	75.00	1.62	2.00	1.28	2.47
Gokak	50.00	--	50.00	33.00	--	66.00	2.11	1.16	1.04	1.20

The villages in Chikkodi Taluka have the privilege of having better roads and better marketing facilities than the other two talukas. When we examine the prices of the products it is found that the price of tobacco is higher in Chikkodi villages. This may be due to the good quality of tobacco produced in this taluka. The price of Soya been is also higher due to these facilities in this taluka. But the price of groundnut and the price of sugarcane are not higher in this taluka. It is observed from the field experiences that the traders of tobacco play a vital role in reducing the price of sugarcane so that the producers of sugarcane will be discouraged and prefer to go for tobacco cultivation. It is noticed that the roads and marketing facilities in this area facilitate in fetching a good price for the product in the absence of other intervention.

Net Return to different Combinations of Crops

Since our main objective is to motivate the farmers for shifting from tobacco cultivation, we have examined the better alternative combination of crops. For this purpose we have estimated the net return for different combination of crops and presented the same in Table 13. Since we do not have the information on all the crops, we have estimated the return only for four crops, i.e. sugarcane, Soya been, groundnut, and tobacco. In all the three talukas, the combination of Soya been and Sugarcane together yield highest net return per rupee of investment. But this combination in practice is not possible. In this case one crop requires lot of irrigation i.e. sugarcane and the other one is a dry land crop, i.e. groundnut. When we combine different crops with tobacco, it is found that tobacco with

sugarcane in two talukas of Chikkodi and Hukkeri gives highest return while in Gokak tobacco with groundnut yields higher net return. But these combinations also are difficult to work because of the contrasting characteristics of the crops. The combination of tobacco and Soya been can only be possible as both are dry land crops. Also the net return per rupee of investment of this combination provides a good return in all the talukas (see table no. 5.10)

Table 5.10
Net Return to different Combinations of Crops

Combinations of Crops	Net Return per rupee of investment		
	Chikkodi	Hukkeri	Gokak
Tobacco	1.66	1.62	2.11
Soyabean + Groundnut	1.27	1.63	0.97
Soyabean + Sugarcane	1.97	2.39	1.19
Groundnut + Sugarcane	1.63	2.26	1.18
Tobacco + Soyabean	1.79	1.71	1.72
Tobacco + Groundnut	1.33	1.53	1.84
Tobacco + Sugarcane	1.83	2.15	1.42

The Regression Models

In the background of the general discussion above, we attempted a statistical exercise to to estimate the influence of these factors on the production of different crops in the study area. For this purpose we estimated multiple regression equation as below:

$$\mathbf{Ln\ Y = \alpha + \beta_1 Ln\ LAND + \beta_2 Ln\ IRR + \beta_3 Ln\ LIT + \beta_4 Ln\ COST + \beta_5 Ln\ INFRA + U_i}$$

This equation is in the log form. We also tried it first without log (Table 5.11). In this model the R^2 value as well as the coefficient values were very low as well as insignificant. The values of coefficients as well as the R^2 value showed improvement in the double log equation. For the purpose of interpretation, therefore, we have considered the double log equation.

In the above equation Y = the output of the crop
LAND = total land area under the crop
IRR = Irrigated area as percent to total cropped area
LIT = Total literacy rate
COST = The cost of cultivation of different crops
INFRA = The index of infrastructural facilities which includes the marketing and the road facilities. For this we have constructed a very crude index. Example: If regulated market exists then the weight = 3; wholesale market =2 and retail market = 1. Similarly if road is pucca = 3, semipucca = 2 and Katcha = 1. Then we have added up the numbers and got one number which has been included in the equation to represent the index of infrastructural facilities.

α, β_1 ..... β_5 are the intercept and respective coefficient values.

U_i is the error term.

Table 5.11
Crop-wise Village level Regression Results
(Dependent Variable = Output)

Crops	Coefficient Values of different variables						R Square
	Constatnt	Land	Literacy	Irri.area	Cost	Infra.	
Tobacco	7.26	0.03	-0.024	0.008	0.0005	-0.035	0.35
	(5.849)*	(3.383)*	(-3.124)*	(0.415)	(3.640)*	(-603)	(6.149)*
Sugarcane	11.47	-0.127	0.211	-0.039	0.0001	0.407	0.72
	(2.181)*	(-0.908)	(2.351)*	(-0.387)	(9.860)*	(1.490)	(28.79)*
Groundnut	4.49	-0.037	0.112	-0.018	0.0001	0.019	0.013
	(1.352)	(-0.590)	(1.110)	(-0.289)	(0.418)	(0.101)	(0.143)
Soyabean	-0.641	-0.075	0.235	0.164	0.0001	0.157	0.254
	(-0.205)	(-0.688)	(2.947)*	(2.942)*	(1.743)**	(0.910)	(3.827)*
N = 50							

* and ** indicate the level of significance at 1 % and 5 % level respectively

The Regression Results

The results of the equation for all crops are given in Table 5.12. Taluka wise regression could not be done due to the small number of observations. So we estimated the regression equation for all the 50 villages.

Table 5.12
'Village Level Regression Results(for all crops)
(Dependent Variable = Log of Output)

	Regression Co efficients of						
Equations	Constant	LAND	LIT	IRR	COST	INFRA	R Square
Equation 1	3.2587	0.5874	-	-	-	-	0.49
	(0.125)	(2.989)*					(49.00)*
Equation 2	1.0546	0.4957	0.3211	-	-	-	0.58
	(1.669)	(2.887)*	(2.668)*				(33.72)*
Equation 3	0.4587	0.3914	0.3847	0.1547	-	-	0.65
	(1.221)	(2.654)*	(3.558)*	(2.654)*			(28.51)*
Equation 4	2.154	0.3815	0.3547	0.2645	0.3344	-	0.69
	(5.157)*	(4.112)*	(3.994)*	(3.158)*	(3.998)*		(25.00)*
Equation 5	787.598	0.8331	0.5141	0.647	0.3978	0.3718	0.82
	(8.658)*	(3.998)*	(3.975)*	(2.968)*	(3.558)*	(4.110)*	(50.1804)*
D-W- Stat	1.7725	1.225	1.558	1.897	1.697	1.728	
N = 50							
* indicates the level of significance at 5 % .							

The values of regression coefficients have expected signs. About 82 percent variation in production is explained by these variables. Of the coefficient values land is found to be the highest. That is, if there is 1 percent increase in the land the output increases by 0.83 percent and it is statistically significant at 5 percent level. The other significant variables are irrigated area and literacy rate. We have run separate equations by including each variable (step - wise).

It is found that 49 percent of the variation in output is only due to land. This findings of our study is supported by many of the studies in India. Some of these are: Tadesse & Krishnamoorthy (1997), Ali and Chaudhury(1990), Bagi(1981), Battese & Corra (1977), Kalirajan (1981), Lau & Yotopoulos(1971), Meeusen & Broeck (1977).

We estimated the same regression model separately for each crop. This was done to examine the factors responsible for tobacco production vis-a-vis other crops. Since the information on all aspects for all the crops was not available at the village level we run the regression only for 4 crops i.e. Tobacco, Sugarcane, Soya been and Groundnut. The results are presented in Table 5.13.

Table 5.13
Village level Crop-wise Regression Results (Log Linear)
(Dependent Variable = Log (Output)

Crops	Constant	Land	Literacy	Irri. Area	Cost	Infra	R square
Tobacco	-0.3407	0.5330	-0.3524	0.0080	0.3024	-0.0720	0.3099
	(- 0.481)	(2.631)*	(-3.564)*	(1.115)	(3.827)*	(- 0.113)	(5.0538)*
	0.3257	-	-0.255	0.1241	0.2974	0.1254	0.25
	(1.541)	-	(-3.998)	(1.224)	(2.557)*	(3.215)*	(3.772)*
Sugarcane	0.3341	-0.0753	0.3147	0.0515	0.4079	-0.1079	0.8436
	(0.517)	(-1.046)	(3.664)*	(3.0505)*	(13.695)*	(- 0.0300)	(60.7011)
Soyabean	-0.4254	-0.0311	0.3121	0.0130	0.2286	0.1318	0.7337
	(- 0.921)	(-0.719)	(2.551)*	(3.103)*	(9.778)*	(0.834)	(30.9934)*
Groundnut	-0.0431	-0.0134	0.271	0.0032	0.1762	0.0161	0.2649
	(- 0.070)	(- 0.283)	(2.968)*	(0.056)	(3.815)*	(0.082)	(4.0535)*

* Significant at 0.05 level of significance.

The R^2 value for sugarcane is found to be the highest followed by Soya been. The lowest value is found in the case of groundnut. The variable land is found to be negative in case of sugarcane and groundnut. The explanation for negative value of sugarcane may be that in the case of sugarcane irrigation, infrastructure and cost rather than land matter much. Mere increase in the size of the land may not increase the production of sugarcane if these crucial factors are absent. The value of coefficient for literacy rate is found to be negative in case of tobacco. It implies that if the level of literacy increases by 1 percent the production decreases by 0.35 percent. This obviously is a significant result.

The regression models for each crop are found to be the best fit.

Concluding Observations :

The main findings of the village level analysis are:

i) the most significant factor influencing the production is land followed by irrigated area, literacy rate and infrastructure,

ii) the intra crop comparison indicates clearly that tobacco is associated in the positive direction by land while, in negative direction by the literacy level of the farmers. In contrast, sugarcane is negatively associated with land and positively associated with other factors.

To conclude, it may be said that the shifting from tobacco cultivation is possible if the farmers are provided with sufficient education individually. At the village level irrigation as well infrastructure development could be the factors with some significance to motivate the cultivators for shifting to other crops. Based on the village level

information the suggestions are as follows: **If partial shifting is recommended, the village level information suggests that farmers may be encouraged to grow tobacco with sugarcane where irrigation is available and tobacco with Soya been where irrigation is not available. If full shifting is recommended then the combination of sugarcane with Soya been with irrigation and Soya been with groundnut without irrigation may be accepted as alternative to tobacco cultivation.**

These results have to be obviously counter checked with the household level information. Such a micro level study using household level data might provide further insight about the problem of shifting from tobacco cultivation. Such a study using household level data is attempted in the next chapter.

PART II : MICRO-ECONOMIC ANALYSIS OF TOBACCO CULTIVATING HOUSEHOLDS

In the Part I of the chapter the village level data relating to tobacco farming in the sample talukas were analyzed with the help of statistical techniques. The objective of the chapter was to identify the macro level determinants of tobacco cultivation. It was noticed from the analyses that the micro level information about the tobacco farmers would be very much helpful in understanding the relative role of different determinants. As is obvious, the decision making of the farmers with regard to cultivation or non-cultivation of a particular crop is essentially individual specific. Hence, for the purpose of developing insights about which factors would be important in determining the decision making of farmers, we need to use micro level data pertaining to the farming households**. Part II of the present chapter therefore aims at analyzing the household level data collected from the field surveys in tobacco producing 50 sample villages of the three sample talukas of the district of Belgaum in Karnataka.** The survey was conducted during October 1997 to February 1998, a reference period of four months, which would cover the 1997-98 post-sowing season and harvesting season of bidi tobacco in Belgaum district***. The discussion deals with the issues relating to micro-economics of tobacco cultivation.***

The main issues relating to tobacco cultivation discussed in the chapter are the following :

ISSUES FOR EMPIRICAL STUDY :

i) Who are the tobacco growers from among the sample of farmers in the study region? What is the socio economic condition of the tobacco growing households ?

ii) What are the costs of tobacco cultivation ? What is the relative importance of different components of costs of tobacco cultivation ? Is tobacco cultivation costlier than cultivation of other crops ?

iii) Does tobacco cultivation involve exploitation of labour ?

iv) What are the negative aspects of tobacco cultivation ? Do farmers take note of these negative aspects ? If they do, then why do they continue to cultivate tobacco ? Which factors determine farmer's decision to cultivate tobacco ?

v) What is the net return to farmers from tobacco vis-a-vis other crops?

vi) Which factors determine the quantum of tobacco production ? Is the availability of financial assistance from traders, money lenders and

banking institutions an important factor in determining tobacco production ?

vii) Are tobacco cultivation and tobacco consumption related at the level of the households ?

viii) Are tobacco cultivators willing to shift from tobacco cultivation to other crops or other activities ? Do sources of financial assistance discriminate as between those who are willing to shift and those who are not willing to shift from tobacco cultivation ?

ix) What are the possible alternatives before the willing to shift farmers to replace tobacco cultivation ?

These and several other issues essentially relate to **micro-economics of tobacco cultivation**. The empirical facts relating to these aspects would be helpful in designing a feasible strategy for shifting from tobacco. ***. The field investigation also brought out that*** *there are many economic disadvantages associated with tobacco cultivation.* ***These disadvantages are normally not recognized by the farmers. However, while considering the economics of tobacco cultivation, these aspects are too important to be over looked. In the relevant section below, an attempt is made to focus on some of these important negative aspects of tobacco cultivation also.***

Plan of discussion is as follows :

Section I briefly recapitulates the sample design for field investigation.

Section II brings out the socio economic characteristics of the all the sample households focussing in particular, on the tobacco cultivating households. This descriptive account is important since finally we have to target the intervention strategy towards these households. Some of the currently non tobacco growing households were found to be tobacco growing households in the past and hence the description of all the households also would be useful.

Section III, which is a lengthy section of the chapter, deals with different aspects of micro economics of tobacco cultivation. The focus of the section is on land utilization pattern, utilization of labour in particular, costs of cultivation, returns from tobacco cultivation, sources of finance for tobacco farming, economic and non economic disadvantages associated with tobacco cultivation, etc. In the subsection of this Section, an attempt is made to analyse the linkages between tobacco production and tobacco consumption in the tobacco cultivating households.

Section IV develops a tobacco production function using the household level data.

Section V brings out the problems associated with tobacco cultivation as perceived by the tobacco farmers.

In Section VI, there is a brief analysis of why tobacco farmers have continued with tobacco cultivation despite their realisation of the problems associated with it.

In this background, ***Section VII*** analyses the responses of the farmers about their willingness or otherwise to shift from tobacco cultivation. A brief statistical analysis of the willing to shift farmers and not willing to shift farmers is presented highlighting in particular, the role that various socio economic factors including the availability of financial assistance play with regard to the current levels of tobacco production.

Section VIII presents the concluding observations.

I. SAMPLE OF HOUSEHOLDS FOR THE FIELD STUDY : A Brief Recapitulation

The study covers as stated in Part I of this chapter a sample of 2000 households for detailed enquiry. This sample of households would be little above 1 percent of the total number of households in the three bidi tobacco growing talukas of the district. These 2000 households were proportionately distributed among 50 villages of three talukas. Thus, 1683 households from Chikkodi 239 houseeholds from Hukkeri and 78 households from Gokak were selected for field survey.

II. WHO ARE THE TOBACCO CULTIVATING FAMILIES IN THE SAMPLE REGION ?

In this section, a descriptive account of the sample households is presented. II-A, presents an account of all the cultivating households in the sample region. II-B presents the relevant details in the case of tobacco cultivating households.

II-A A PROFILE OF 2000 SAMPLE HOUSEHOLDS:

In most of the villages of the sample region, majority of the households are cultivating households. Some of the socio-economic characteristics of the households prove to be crucial factors for determining the household's decision making about the cropping pattern, cultivating practices, trading practices, etc. Farmers belonging to the same caste, for example, are found following the same agricultural practices. Farmers of younger age group are found to be more risk taking type (or, other wise). Those who have had some schooling are likely to be more exposed to the written publicity material about fertilizers, pesticides, insecticides, etc and hence they might give a try to such things rather than others. Hence, we propose to focus below on some of the socio economic

characteristics of the sample farmers with a view to understanding the important determinants of farmer's decision making in agriculture.

Caste-wise distribution of the HHs indicates that more than three fourths of the households belong to the forward caste. The rest of the households belong to the disadvantaged caste category (table-5.14). This shows the upper caste dominance on agriculture in the villages of Belgaum district.

Table – 5.14
Distribution of Households As Per Castes

Name of the Taluk	SOCIAL GROUPS			TOTAL
	SC/ST	OBC	OTHERS	
HUKKERI	17	47	175	239
	(7.11)	**(19.66)**	**(73.22)**	**(100.00)**
CHIKKODI	133	226	1324	1683
	(7.90)	**(13.42)**	**(78.66)**	**(100.00)**
GOKAK	5	8	65	78
	(6.410)	**(10.25)**	**(83.33)**	**(100.00)**
TOTAL	155	281	1564	2000
	(7.75)	**(14.05)**	**(78.2)**	**(100.00)**

The demographic profile of sample households presents interesting aspects. The sample households comprise 45 percent of female members and 55 percent of male members in the study area. The sex ratio shows that there are 833 females per 1000 males. Age-sex composition of the population shows that about 24 percent of the members are below the age of 14 years and about 14 percent are above the age of 55 years. It is interesting to note that the proportion of females in the age group of 15-54 is higher than the proportion of males to the respective totals. The participation rate among females is lower than that of males, as expected. This implies that the overall dependency rate is higher among the sample households. The dependency rate of the females is obviously significantly high (table –5.6A).

The occupational status (table-5.15) **of the sample households,** shows that about 88 percent of the total number of families depend for their livelihood on agriculture. Across the talukas, it is found that about 90 percent of the households in Chikodi, 88 percent in Gokak and 80 percent in Hukkeri depend on agriculture for their livelihood. This pattern indicates that the traditional occupation of the majority is agriculture and not even rural based non-agricultural activities. This needs to be kept in mind while analysing the policies for facilitating shift from tobacco to other activities as agriculture is found to provide the livelihood to most of the households. And among these households**, tobacco is the most popular crop grown by a significantly large percentage. It is found that 83 percent (i.e. 1652 households out of the total 2000 households) covered under the survey grow tobacco in the three talukas.**

Table –5.15
OCCUPATIONAL STATUS OF THE HHs

Name of the Taluk	OCCUPATIONAL CATEGORY : NO OF HHs					
	CULTIVATION	PROF / TRADE / BUSSINESS	SERVICE	LABOUR	OTHERS	TOTAL
HUKKERI	191	3	11	17	17	239
	(79.91)	**(1.25)**	**(4.60)**	**(7.11)**	**(7.11)**	**(100.00)**
CHIKKODI	1499	19	27	27	111	1683
	(89.06)	**(1.12)**	**(1.60)**	**(1.60)**	**(6.59)**	**(100.00)**
GOKAK	69	2	3	2	2	78
	(88.46)	**(2.56)**	**(3.84)**	**(2.56)**	**(2.56)**	**(100.00)**
All taluk	1759	24	41	46	130	2000
	(87.95)	**(1.20)**	**(2.05)**	**(2.30)**	**(6.50)**	**(100.00)**

The educational status of the sample households indicates that about 70 percent (Table-**5.7A**) of the total population are literate. This should be contrasted with the low literacy rate for the Belgaum district as a whole and for the three selected tobacco growing talukas in particular.

The literacy rate among males is 79 percent and **among females** it is 59 percent. Across the talukas the highest literacy rate is found in Chikkodi. i.e.70 percent while in case of Hukkeri and Gokak the literacy rate is 67 percent and 66 percent respectively. Very few members of these households, however, have opted to get post secondary education.

The economic status of the households would refer to both the flow aspect of annual income and the stock aspect of asset holding of the households. On the basis of the yardstick of annual income, it is found that more than 35 percent of the households are in the category of income of more than Rs.2 lakhs per annum (**Table –5.16**). The households, therefore mostly belong to the upper-middle and highest income brackets in all the selected talukas. It is also worth noting that very small percentage of the households (i.e. less than 11 percent) live below poverty line as per official definition. About 5 percent of the households belong to the low-income bracket of annual income of less than Rs 20,000.

Table –5.16
Economic Status of the Family

Name of the taluka	No of Households					
	<=20000	**20000 – 50000**	**50000 – 100000**	**100000 – 200000**	**>200000**	**Total**
HUKKERI	16	41	49	38	95	239
	(6.69)	**(17.15)**	**(20.50)**	**(15.89)**	**(39.74)**	**(100.00)**
CHIKKODI	256	271	272	270	614	1683
	(15.21)	**(16.10)**	**(16.16)**	**(16.04)**	**(36.48)**	**(100.00)**
GOKAK	8	11	14	8	37	78
	(10.25)	**(14.10)**	**(17.94)**	**(10.25)**	**(47.43)**	**(100.00)**
All taluka	280	323	335	316	746	2000
	(14.00)	**(16.15)**	**(16.75)**	**(15.80)**	**(37.30)**	**(100.00)**

The distribution of households as per the size holding of land (Table-5.17) indicates that significantly large percentage of the households are large land holders. Less than 10 percent of the households possess less than one acre of land. About 60 percent of the households have more than 1 but less than 5 acres of land. More than 30 percent of the households possess 5 or more than 5 acres of land. The over all economic condition of the sample households indicates that majority of them are either middle class households or upper middle class households**.**

Table –5.17
Distribution of HH as per Land Size Holding

Name of the Taluk	No of HHs Size Holding				
	<=1	1 - 2.5	2.5 - 5	> 5	Total
HUKKERI	26	49	84	80	239
	(10.87)	**(20.50)**	**(35.14)**	**(33.47)**	**(100.00)**
CHIKKODI	153	463	555	512	1683
	(9.09)	**(27.51)**	**(32.97)**	**(30.42)**	**(100.00)**
GOKAK	7	17	23	31	78
	(8.97)	**(21.79)**	**(29.48)**	**(39.74)**	**(100.00)**
All taluk	186	529	662	623	2000
	(9.30)	**(26.45)**	**(33.10)**	**(31.15)**	**(100.00)**

II- B SOCIO – ECONOMIC PROFILE OF TOBACCO GROWERS: (1652 HOUSEHOLDS)

Since majority of the households in the sample region are tobacco-cultivating households, the above description would be generally valid in the case of these households also. There are however, special aspects of tobacco cultivating households, which deserve a special focus. These are presented in table 5.18:

The caste distribution of the tobacco growers reveals that **forward caste population (78 percent) (Table – 5.8A) dominates tobacco farming** in the tobacco -growing region of Belgaum district.

Table –5.18

Distribution of House Hold as per Social Groups

Sizeholding/ **All taluka**	SC/ST	OBC	OTHERS	TOTAL
<=2.5	69	83	406	558
	(12.36)	**(14.87)**	**(72.75)**	**(100)**
2.5 - 5	28	79	439	546
	(5.12)	**(14.46)**	**(80.40)**	**(100)**
5 - 10	15	54	292	361
	(4.15)	**(14.95)**	**(80.88)**	**(100)**
>10	7	21	159	187
	(3.74)	**(11.22)**	**(85.02)**	**(100)**
All Farm	119	237	1296	1652
	(7.20)	**(14.35)**	**(78.45)**	**(100)**

Figures in the bracket indicate percentage.

Since agriculture is the main occupation of these households, the land holding size of the households can well be assumed as one of the main indicators of **economic status of the households**. It is found **that majority (58 percent) of the backward caste households are marginal farmers with less than 2.5 acres of land holding**. Obviously, the percentage of families with larger holding size declines as the holding size increases. **The number of households declines with the increase in the size of the holding among all the groups of population, but the decline is sharper among the SC/ST and OBC categories of households. This indicates that there are inequalities within the tobacco growing households.**

The age-sex composition (Table –5.9A) of the tobacco growing households indicates that the **males dominate the households,** as, there are 830 females per 1000 males among these households. **The economically active population (in the age group 15 – 54) is about 62 percent.** The population in the age group of below 14 and above 55 is 38 percent indicating that the sizeable percentage of the members of the households constitutes dependent population.

The educational standard of the head of the family (Table – 5.10A) shows that about 78 percent of the cultivators are literate and rest of them (22 percent) are illiterate. Literacy percentage of the heads of the households is found to be highest among large farms (89 percent) and lowest among marginal farms (72 percent). Thus, it appears that it is more the size of the holding and advance caste status rather than tobacco cultivation, which might be a crucial factor for acquiring literacy among the farmers; for, the literacy rate increases with increase in the size of the

holding; also, as stated earlier, majority of the tobacco growers belong to advance social (caste) background. Further, 27 percent of tobacco farmers have primary education, 37 percent have secondary education, 10 percent have higher secondary education, while hardly 4 percent have technical educational qualifications.

The details about the **composition of the family** reveal that **the average size of the family is 6 with average size holding of 5-6 acres** implying that the holdings may get further fragmented in the future (Table –5.19). Participation rate of these families is 42 percent, implying high degree of dependency within the households.

Table – 5.19
Taluka-wise Socio-Economic Profile of Tobacco Producers as per the size holdings

Size Holding	Family Size	Average size of the farm (acres)	Participation rate (%)	Literacy rate (%)
CHIKKODI				
< 2.5	5	1.69	44.41	65.84
2.5 - 5.0	6	3.94	43.00	70.39
5.0 - 10.0	7	7.54	40.79	72.76
>10.0	8	18.82	35.19	76.75
All farms	6	5.57	41.7	70.57
HUKKERI				
< 2.5	5	1.64	44.98	61.10
2.5 - 5.0	6	3.84	42.76	64.38
5.0 - 10.0	7	7.46	42.5	70.94
>10.0	10	19.00	31.84	78.03
All farms	6	5.76	41.38	67.52
GOKAK				
< 2.5	6	1.66	49.19	62.91
2.5 - 5.0	6	3.84	41.22	67.94
5.0 - 10.0	6	7.67	58.88	67.29
>10.0	7	14.92	48.1	72.16
All farms	6	5.97	48.98	67.13
ALL TALUKA				
< 2.5	5	1.68	44.68	65.19
2.5 - 5.0	6	3.92	42.89	69.48
5.0 - 10.0	7	7.53	41.82	72.28
>10.0	8	18.59	35.37	76.70
All farms	6	5.61	41.98	70.03

Source : Own Survey

Not all the holdings in the sample region enjoy irrigation facilities. About 40 percent of the area is under irrigation among the sample farms. Proportion of irrigated area (Table –5.20) varies from about 33 percent in the case of marginal farms to 40 to 42 percent in the case of medium and

large farms. Well is the major source of irrigation in the sample farms, which accounts for about 59 percent of the total area under irrigation and its share is the highest (67 percent) among the small farmers and lowest (54) among the large farmers. River is the second major source of irrigation (as the river *Doodhganga* flows through some parts of the sample region) followed by bore well and canal, which are found to irrigate 27, 12 and 2 percent of total area of small, medium and large farms respectively. Taluka wise irrigation details are presented in Table 5.11A.

Table 5.20
Source Wise Irrigated area

Farm size	Irrigated area	Non-irrigated area	Total area	Proportion of Irrigated (%) area under different sources			
				Canal	River/Pond	Borewell	Others
All taluka							
<=2.5	308.70	628.75	937.45	5.50	90.80	21.16	191.24
	(32.92)	(67.07)	(100.00)	(1.78)	(29.41)	(6.85)	(61.95)
2.5 - 5	822.38	1317.65	2140.03	14.90	205.50	52.00	549.98
	(38.42)	(61.57)	(100.00)	(1.81)	(24.98)	(6.32)	(66.87)
5 - 10	1139.64	1579.89	2719.53	35.00	289.14	150.50	665.00
	(41.90)	(58.09)	(100.00)	(3.07)	(25.37)	(13.20)	(58.35)
>10	1401.25	2075.00	3476.25	20.00	404.50	223.00	753.75
	(40.30)	(59.69)	(100.00)	(1.42)	(28.86)	(15.91)	(53.79)
All farms	**3671.97**	**5601.29**	**9273.26**	**75.40**	**989.94**	**446.66**	**2159.97**
	(39.59)	**(60.40)**	**(100.00)**	**(2.05)**	**(26.95)**	**(12.16)**	**(58.82)**

Figures in the parentheses indicate percentages

Economic status of tobacco growers can be measured in terms of different indicators viz., annual income, asset value and occupational status. **The economic status** as measured by annual income according to size holdings (Table–5.21) indicates that about 8 percent of the households are below poverty line. About 38 percent of the households belong to middle income class with below Rs.1 Lakh annual income while 54 percent of the households are with more than Rs.2 lakh of annual income. Classification of the data according to occupational status of the households indicates that more than 87 percent of the households are cultivators in all the size holdings. **Thus, majority of the bidi tobacco growers in the sample region belong to upper social category and also to the category of upper economic status.** This fact needs to be kept in mind while designing the intervention strategy for shifting. Taluka wise details of economic status are presented in Table 5.12A.

Table 5.21

Economic Status of the Family According to Farm Size

Farm Size	Economic Status in Rs.						
	<=11500	11500 – 20000	20000 – 50000	50000 – 1 Lakh	1 - 2 Lakh	>2 Lakh	Total
<=2.5	86	58	135	129	81	70	559
	(15.38)	**(10.38)**	**(24.15)**	**(23.08)**	**(14.49)**	**(12.52)**	**(100.00)**
2.5 - 5	34	22	99	100	112	179	546
	(6.22)	**(4.02)**	**(18.13)**	**(18.31)**	**(20.51)**	**(32.78)**	**(100.00)**
5 - 10	6	3	27	41	59	225	361
	(1.66)	**(0.83)**	**(7.47)**	**(11.35)**	**(16.34)**	**(62.32)**	**(100.00)**
> 10	0	2	3	10	18	153	186
	(0.00)	**(1.08)**	**(1.61)**	**(5.38)**	**(9.68)**	**(82.26)**	**(100.00)**
All Farm	126	85	264	280	270	627	1652
	(7.62)	**(5.14)**	**(15.98)**	**(16.94)**	**(16.34)**	**(37.95)**	**(100.00)**

Figures in the parentheses indicate percentages

III. DIFFERENT ASPECTS OF MICRO ECONOMICS OF TOBACCO CULTIVATION

We may now focus on some of the micro economic aspects of tobacco cultivation brought out from the field data. The subsections below analyse some of the specific micro economic aspects.

III-A. LAND UTILISATION AND THE CROPPING PATTERN

The details of area, production and yield of tobacco and other crops grown in the sample region are indicated in Appendix Table 5.13A.

Among the non-food crops **the area under tobacco is the highest uniformly in all the three talukas.** A comparison of production and yield per acre of different crops shows that **sugarcane is the crop, which yields the highest production both in terms of quantity and value. The yield per acre is also higher in the case of sugarcane in all the talukas. Thus, the general belief that tobacco is the highest paying commercial crop is not brought out from the field data.**

Even though tobacco occupies the largest area under cultivation in the sample region, the productivity (yield per acre), which is the real indicator of profitability of production of a particular crop, is not the highest in its case in all the talukas. For example, productivity of tobacco occupies the third position in Hukkeri and Gokak while it occupies the second position in Chikkodi. It is also worth noting that the yield rate of cotton is found to be higher in relation to the area in two of the three sample talukas viz., Chikkodi and Hukkeri.

For all the talukas taken together, sugarcane is found to have the highest yield per acre, with maximum value of production. Though tobacco

has the second highest value of production, its yield per acre ranks 6th among 10 crops grown in the region. **Jawar, paddy , wheat, Soya bean have even higher yield per acre as compared to tobacco. Thus, the field data show that though the gross return from tobacco is high, yield per acre in its case is quite low among the crops grown in the sample region.**

Among the food crops jawar occupies the higher rank both in respect of area and production for all the three talukas. But, in respect of productivity, no uniform ranking for the three talukas for any crop is noticed.

It is found that **area under tobacco increases (**Table –5.22**) with increase in the farm size**. It is 33 percent among the households with less than 2.5 acres while 57 percent in the case of more than 10 acres of farm size. This pattern is found in all the talukas. Thus**, bigger farmers tend to take to tobacco cultivation more than others.**

Households in this region are generally found to grow tobacco. Jowar seems to be the crop next best to tobacco, since the number of households growing Jowar and the area under Jowar are the second highest in the region, next only to tobacco.

Data about Area, production, yield and value of production for different crops in the sample region as a whole, are summarized in the table 5.22:

Table 5.22

Crop – wise Area and Production / Yield

Crops	Area in acres	Production (in k.g.)	Yield rate / Per acre	Value of Production
Jawar	1662.87 (2)	1076255.00	647.23 (2)	3531.26 (6)
Paddy	112.50 (9)	60710.00	539.64 (3)	2921.18 (9)
Wheat	131.96 (8)	70105.00	531.26 (4)	3221.04 (7)
Pulses	157.76 (7)	35348.00	224.06 (9)	2263.70 (10)
Tobacco	3616.15 (1)	1573791.60	435.21 (6)	9724.37 (2)
Sugarcane	874.51 (4)	23876500.00	27302.72 (1)	18931.21 (1)
Cotton	93.36 (10)	31830.00	340.94 (7)	6557.99 (3)
Soyabean	580.70 (5)	270490.00	465.80 (5)	4352.58 (4)
Groundnut	1612.73 (3)	396878.00	246.09 (8)	2957.20 (8)
Chilly	215.06 (6)	347.97	1.62 (10)	3790.83 (5)

Note : Figures in brackets are rank orders.

Above discussion brings out **low ranking of tobacco in terms of yield per acre.** This is a major negative aspect of tobacco cultivation, which needs to be highlighted. Some of the other negative aspects of tobacco cultivation, which normally skip the notice of analysts, are outlined below.

III-B IMPLICATIONS OF THIS LAND USE PATTERN

This land use pattern in the sample region has its own implications for the tobacco cultivating families and others. Some of these implications highlight the negative aspects of tobacco cultivation. Such negative economic aspects of tobacco cultivation came to our notice from our discussions with farmers and also from their perceptions in response to the questionnaire. These negative aspects are briefly outlined below.

1. Highest coverage of land under tobacco means foregoing food grains production :

Tobacco production has used major proportion of cultivable land in the study area. These land holdings for tobacco cultivation have deprived the farmers from utilizing land for food grains production, which is the basic need of the people. Obviously, tobacco cannot be a substitute for food crops. In the ultimate analysis, using land for tobacco cultivation instead of cultivation of food crops, would be costly for the nation, as was pointed out in a study by Judith Mackay (1994). In the tobacco predominant countries like Malawi, Zimbabwe and China also, the area under tobacco is 4.3 percent, 2 percent and 1 percent respectively. But, this use of small percentage of agricultural land for tobacco is estimated to deny food for as many as 10 – 20 million people ! As a result, in these countries, food has to be imported. Because rich farmland is being diverted to tobacco production, the governments in these countries are said to bear the costs of food imports. **Working paper No. – 6 appended to this study** to this study presents other international evidence and data relating to India about how tobacco cultivation has been replacing area under food and other crops. **The Area Replacement Index presented there summarizes this effect of tobacco cultivation in different countries.**

The field data from our study also show that large percentage of cultivated area is brought under tobacco instead of food crops even though land is suitable for their cultivation. As stated earlier, bigger farmers tend to take to tobacco cultivation indicating that greed for more gross returns has guided their decision. For such farmers the food need is satisfied by the food purchases in the open market at higher prices, but their action would deprive others from adequate food grains supply. Also the high food prices in the open market would affect others adversely.

The Area Replacement Index (ARI) for tobacco vs. non-tobacco crops for different land holdings in the sample talukas and the sample region is presented in the table 5.23.

Table 5.23

Area Replacement Index in the Sample Region of Karnataka (Tobacco vs. Non-Tobacco Crops)

Taluka	<=2.5	2.5 - 5	5 – 10	>10	All farms
Chikkodi	50.57	79.63	113.41	138.93	68.08
Hukkeri	43.59	85.83	69.70	31.71	51.74
Gokak	47.27	199.09	0.00	0.00	183.82
All Taluka	**49.43**	**84.61**	**128.34**	**130.66**	**69.19**

***Source** : CMDR Survey*

In Gokak taluka, tobacco has totally replaced all the other crops to a maximum extent. This is followed by Chikkodi taluka. It is also worth noting that the big land holding farmers in these tobacco growing talukas tend to replace other crops by tobacco. For all talukas taken together, however, it is the big farmers who have more significantly replaced other crops by tobacco.

Area Replacement Index (ARI) for tobacco vs. each of other crops presented below table is also shows that the maximum replacement is in the case of crops like jowar and groundnut when data for all talukas are considered. . In the case of Chikkodi taluka also, which is the most tobacco growing region of the field area, similar picture is seen. (see appendix table 5.14A)

Jowar area has been replaced by Tobacco. This means people of that region have to depend upon outside supplies for their staple food requirements.

Smaller value of Area Replacement Index (ARI) might imply that soil condition of the area was quite suitable for a particular crop other than tobacco also. For example, sugarcane, Soya bean and cotton also could have been grown in the sample region. However, tobacco has replaced these crops also as is shown by the value of the ARI. It is also worth noting that the farmers with smaller holdings have gone in for tobacco cultivation replacing these crops. Since some of these crops provide rich food, the area replacement by tobacco would amount to deprivation of the members of these households of the self-grown sources of protein, starch and other nutrients. The details of ARI for all the sample talukas are presented in the following table. The taluka wise details are presented in the appendix table 5.14A.

Table – 5.24

Area Replacement Index (ARI) for Sample Region of Karnataka

(Tobacco vs. each of other Crops grown in the Region)

Crops	<=2.5	2.5 - 5	5 - 10	>10	All farms
All talukas					
Jowar	66.46	40.89	20.73	6.34	45.98
Paddy	5.37	2.47	0.00	0.00	3.11
Wheat	7.44	1.33	0.00	0.00	3.65
Pulses	6.85	3.00	2.37	0.00	4.36
Tobacco	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
Sugarcane	31.13	17.59	16.73	30.87	24.18
Cotton	5.43	0.71	0.00	0.00	2.58
Soyabean	22.68	14.58	6.66	5.92	16.06
Groundnut	56.95	37.63	31.43	33.40	44.60
All Crops	**302.32**	**218.19**	**177.92**	**176.53**	**244.53**

Source : CMDR Survey

2. Tobacco Keeps the Land Engaged For A Longer Time

That tobacco keeps the land engaged for longer periods than most of the other crops is its major demerit, meriting the attention of farmers. From planting to harvesting, tobacco needs at least five to six months, while other crops generally require a maximum of 3 to 4 months. Of course, sugarcane requires one year for harvesting of the crop, which is an exception. It should also be noted that sugarcane seedlings continue to be there on the land for 2 to 3 years, during which period, cane harvesting is possible facilitating income flow for the farmers.

3. Tobacco -Farming : Labour-Friendly or Labour-Exploitative ?

The labour use pattern for each crop reveals that the utilization of labour (man days) in tobacco is the highest in each category of farm except in the case of small farmers (cotton is highest). This clearly confirms the view that tobacco is labour intensive vis-a-vis other crops. In tobacco cultivation the operations like preparation of nursery, tillage, topping, de-suckering, spraying chemicals, weeding, leaf cutting and harvesting etc. account for highest labour use. The table below presents the labour use pattern of tobacco vis-à-vis other crops.

Table – 5.25

Crop - wise Human labour use per acre among different crops (man days)

	Farm size			
Crops	**Marginal**	**Small**	**Medium**	**Large**
Jawar	43.3	17.8	17.7	15.1
Paddy	50.0	20.8	--	--
Tobacco	**100.2**	**52.3**	**42.6**	**38.1**
Pulses	36.9	17.9	17.5	--
Wheat	52.7	20.3	--	--
Sugarcane	93.5	49.0	47.7	44.6
Cotton	87.3	61.0	--	--
Soyabean	41.5	22.5	19.2	17.1
Groundnut	47.1	20.4	20.3	19.7

Source: CMDR Survey.

Like human labour, the use of Bullock labour is also found to be equally necessary for the process of cultivation. The table below gives an idea about the bullock labour use pattern for each crop in the sample region.

Table 5.26

Crop-wise Bullock labour use per acre for different categories of farms (Bullock days)

Crops	**Marginal**	**Small**	**Medium**	**Large**
Jawar	4.69	2.09	1.98	1.07
Paddy	4.46	2.25	-	-
Tobacco	**6.37**	**3.28**	**2.74**	**1.96**
Pulses	3.23	2.24	1.56	-
Wheat	5.56	3.20	-	-
Sugarcane	5.75	2.41	2.31	1.19
Cotton	5.42	4.87	-	-
Soya bean	4.59	2.53	1.76	1.43
Groundnut	4.33	2.94	1.39	1.66

Source : CMDR Survey

The use of bullock labour is the lowest for marginal farmers and highest for large farmers in the case of almost all the crops. Across the crops, the use of bullock days seems to be the highest in the case of tobacco in all the size holdings with an exception of cotton among small farmers. In all other cases **tobacco uses more of bullock labour as compared to other crops.**

It may be argued from the above analysis that tobacco provides employment opportunities to many. However, since availability of

agricultural labour is becoming increasingly difficult in rural areas, the dependence on such labour can be construed as the major handicap in the case of tobacco cultivation. However, one tends to ignore that **tobacco cultivation is highly exploitative of labour.** Wages paid to agricultural workers who are hired, are much below the minimum wage decided by the government. **Family labour, which is more predominant in the case of tobacco cultivation, is not paid any wages or rewards at all.** In fact, it is considered improper to think of any reward for this category of labour even in cost calculations relating to tobacco cultivation (also in all farm occupations). Since tobacco crop requires very careful rearing all through from sowing stage to harvesting stage, workers have absolutely no respite in the case of tobacco as compared to some of the other crops. Frequent spray of chemicals required in the case of tobacco means health hazard for the workers on the tobacco field. It was also noticed that for this work most often the hired labour is used rather than members closely related to the head of the tobacco-growing household. It should be noticed that whatever wage is paid, reported to be somewhat better than in the case of other crops, is not adequate enough to protect the tobacco workers from the health hazards that they face. **Tobacco workers are reported to suffer from health problems such as skin diseases, respiratory diseases, liver disorders, etc. about which more intensive scientific investigation is needed.** Our field study has only highlighted these exploitative aspects of tobacco cultivation.

4. Is cultivation of tobacco costly ?

Estimates of costs of Cultivation of tobacco and other crops

It is not just that tobacco cultivation is harmful and exploitative only for the workers coming in frequent contact with tobacco plant in different stages of its growth. **That it is dis-advantageous even for the tobacco farmers in general is very little known.** Our field study brought some of these aspects. We present below briefly some of these aspects of tobacco cultivation focusing particularly on costs of tobacco cultivation.

In the case of organized economic activity, the concepts of costs and returns would have a special operational significance. The detailed books of accounts maintained in the case of such activities do provide a clear idea about how and how much of the scarce resources are used in the activity and how much returns are obtained from the use of such resources. In the case of unorganized sector, however, the concepts of costs and returns do not seem to be explicitly noticed and they are normally not used for taking operational decisions. The decisions in the unorganized sector seem to be taken in a casual way without much connection with the costs of operation and returns from such an operation. It appears that for this reason, no conscious efforts are made to systematically develop the statements of accounts for the activities in the unorganized sector. In the case of agriculture, most of the decisions are

taken in a stride, as a matter of convention or traditional practice. Since agriculture in India depends upon highly uncertain factors, any attempt to list down systematically the costs and returns is taken to be an impractical and unnecessary exercise. It is surprising that even in the case of commercial agriculture, the art and science of accounts keeping has not developed as an integral part of agricultural operations. This does not mean that the farmers do not have any idea about the costs and returns from their agricultural operations. Even though they have such an idea, they give less importance to their systematic recording since agriculture is an uncertain business. However, if an attempt is made to highlight the costs associated with agricultural operations and returns from such operations, this would surely educate the farmers about the economic dimensions of their own activities.

Even where some perceptions about costs are formed very rarely all the relevant cost items are considered. Most often, the farmers have a tendency to consider only those items of costs which are tangible and which are of immediate significance. Similarly, the concept of returns in the minds of farmers is one of tangible gross returns only without taking into account the returns net of the tangible and intangible costs. Thus, while the payment to the hired labour is considered as an item of costs, the farmers hardly consider the value of time that they themselves and the members of their family are putting in for the agricultural operations. Similarly, the money that they get at the time of harvest is considered as the return from the agricultural activity. However, the amount of direct and indirect costs associated with such an activity do not appear to occur to the farmers as important while considering the return from their agricultural operations.

From all these points of view, it was felt necessary to develop detailed estimates of costs of agricultural operations in the case of tobacco and other crops in order to show to what extent tobacco is more or less costly as compared to other crops.

We have included the following items in our cost estimation.

i. **Labour Costs** : Wage payment reflects the labour costs. The market wage rate prevailing in the area is used for working out the labour costs.

Two types of labour are involved in agricultural operations viz.,

a. Human labour (8 hour per day) both hired and family labour,

b. Bullock labour (bullock pair days)

Family labour was charged at the same wage rate as charged for hired labour while estimating the labour cost of cultivation. **Since the farmers do not generally value family labour, the present**

exercise would help understanding the extent of total labour costs for tobacco and other crops.

ii. **Expenditure on Seed, Fertilizer, Pesticides, Manure, etc.** (evaluated at the price prevailing in the village or the price quoted by the sample households)

iii. **Irrigation Charges** (as stated by the farmers)

iv. **Rent on Hired Implements** (as stated by the farmers)

v. **Marketing Cost** (cost of storage, transportation and processing etc) as reported by the farmers.

vi. **Land Revenue:** It was estimated at the rates levied by the government. We collected such information from the Dept of Land Revenue, Government of Karnataka and estimated the land revenue accordingly since the farmers had not maintained any systematic records about the same.

vii. Rental Value of Land - It was estimated at 10 percent of the gross income (from agriculture) in case of irrigated area and 5 percent of the gross income in the case of dry land. This basis was used as per the norms suggested in the farm management studies. About this item also farmers do not maintain systematic records.

In the following paragraphs an attempt is made to present the estimates of different cost items in the case of tobacco and other crops in the sample region. These estimates are based upon the responses of 1652 tobacco farmers and also of the remaining farmers in the sample who do not grow tobacco or grow other crops also along with tobacco*.

Human and Bullock Labour Use in Tobacco Cultivation

As observed earlier, tobacco cultivation is a highly labour intensive activity. Its labour intensity is much higher than in the case of other crops as can be seen from table 5.27.

* Item wise costs for different crops are estimated.

Table 5.27

Labour Intensity of Different Crops

Crops	Male Man days / acre	Female Workdays / Acre	Man day / acre	Bullock days / Acre
All talukas				
Jowar	18.72	14.83	33.55	3.70
Paddy	22.60	17.84	40.4	3.91
Wheat	27.73	21.32	49.05	5.29
Pulses	16.59	12.85	29.44	2.85
Tobacco	**38.87**	**30.21**	**69.08**	**4.44**
Sugarcane	43.80	24.34	68.14	4.16
Cotton	45.17	39.92	85.09	5.38
Soyabean	18.29	14.48	32.77	3.69
Groundnut	18.06	15.64	33.70	3.45
All Crops	**29.72**	**22.55**	**52.27**	**4.03**

Source : CMDR Survey

Thus, tobacco is the second largest user of human labour next only to cotton. Even sugarcane, more remunerative than tobacco, has a slightly smaller labour human intensity. Another significant point to be noted is that female workers are predominantly employed in the case of tobacco cultivation next only to cotton. The bullock labour also is used more intensively in the case of tobacco than in the case of even sugarcane and most of the food crops.

The human labour used consists of both hired labour and family labour**. The following table presents the break-up of these kinds of labour used for different categories of farmers, classified according to size holdings.**

Table 5.28

Use of Family Labour and Hired Labour in Tobacco Per Acre

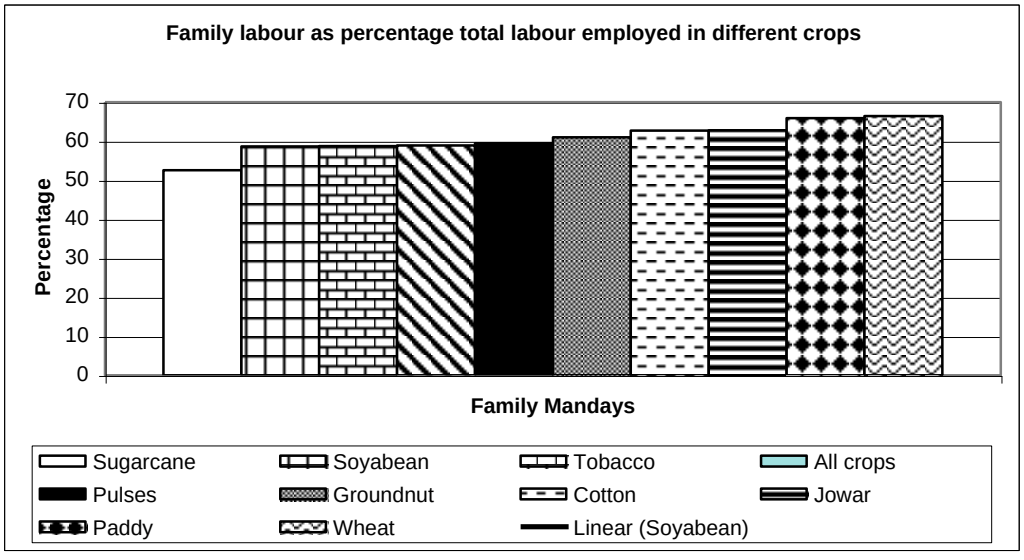
Categories of farm	Family Labour		Hired Labour		Total Labour	
	Man days	%	Man days	%	Man days	%
Marginal	69	69.0	31	31.0	100	100.0
Small	26	49.1	27	50.9	53	100.0
Medium	16	38.2	26	61.9	42	100.0
Large	6	15.8	32	84.2	38	100.0
All farms	**41**	**58.6**	**29**	**41.4**	**70**	**100.0**

The labour use in tobacco cultivation is found to be the highest (100 man days) among marginal farmers and lowest (38) among large farmers. For farmers with smaller size holdings, the proportion of family labour in total labour is higher for obvious reasons. The large farmers engage more of hired labour than the family labour.

Considering all types of holdings, tobacco uses significantly larger percentage of family labour as compared to hired labour**. Thus, 59 percent of total labour used in the case of tobacco farming is from family itself. In this sense,** tobacco agriculture is likely to be vulnerable to the problem of disguised unemployment, since family labour is not generally valued when the farmers develop an idea about the cost of cultivation. **This problem of disguised unemployment has a greater incidence in the case of marginal farmers than in the case of large farmers. This also suggests that labour, particularly family labour, is likely to face exploitation as no money value is attached to it. When such family labour is supplied to compete with the hired labour, predominance of family labour might lead to lower wage payment for hired labour as well. This means exploitation of hired labour also. In this way,** tobacco farming may be said to exploit all types of labour. The prevailing wage rate in the region was found to be around Rs.26 per day for male labour and Rs.22 per day for female labour. These rates are much less than the officially declared minimum wage rate.

The labour use pattern of tobacco vis-à-vis other crops **reveals that** family labour-intensity of tobacco cultivation is much higher than that in the case of some of the other crops **such as sugarcane and Soya bean. This is brought out from the following chart.**

Chart 5.2



When we consider the total family labour employed in different crops, the share of tobacco was found to be distinctly maximum in the case of all size holdings. It is also noticed that the total man days (family + hired) employed for tobacco cultivation was also found to be maximum among all the crops cultivated in the sample region. This is natural in a tobacco predominant region of the field survey. This is brought out from the following table.

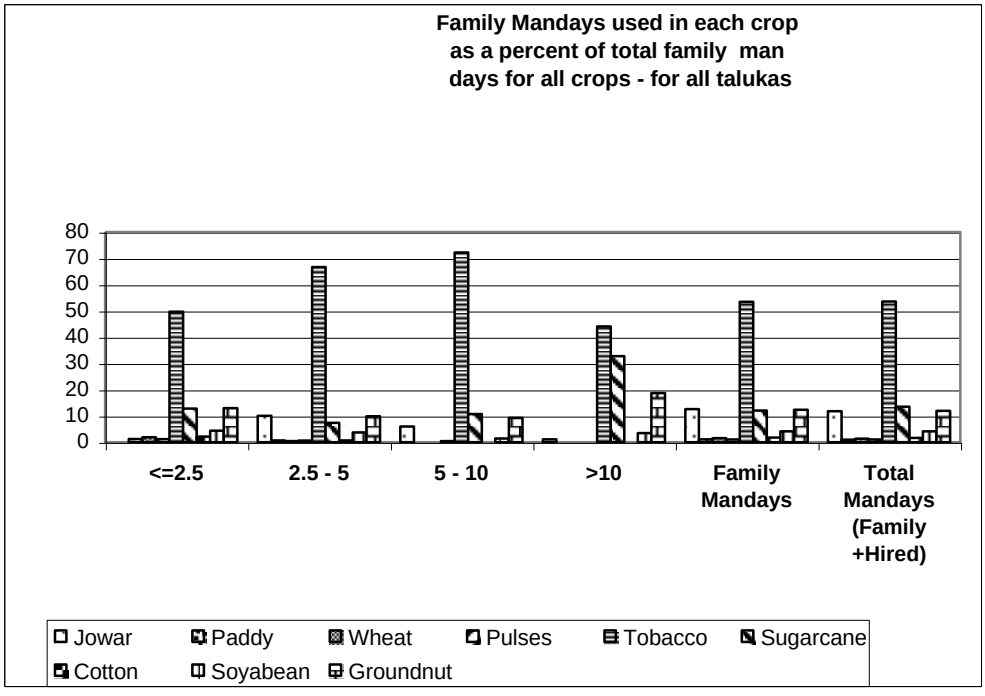
Table –5.29
Family Mandays used in each crop as a percentage of total family man days for all crops - All talukas

Crops	Holding Size (Acres)					
					All farms	
	<=2.5	2.5 – 5	5 - 10	>10	Family Mandays	Total Mandays (Family + Hired)
Jowar	13.75	10.05	5.97	1.07	12.61	11.83
Paddy	1.24	0.66	0.00	0.00	1.07	0.96
Wheat	1.88	0.44	0.00	0.00	1.54	1.36
Pulses	1.17	0.63	0.43	0.00	1.03	1.02
Tobacco	49.66	66.64	72.21	44.05	53.44	53.59
Sugarcane	12.78	7.34	10.74	32.72	12.05	13.50
Cotton	2.15	0.65	0.00	0.00	1.78	1.67
Soyabean	4.40	3.70	1.37	3.46	4.12	4.13
Groundnut	12.97	9.89	9.27	18.69	12.36	11.93
All crops	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source : CMDR Survey

This information is presented in the following chart, wherein the bar for tobacco is the tallest indicating maximum use of family labour.

Chart 5.3



Total cost of production inclusive of labour and other costs **for different crops shows that cultivation of tobacco is highly costly as compared to other crops. These details are discussed below :**

Cost of production (inclusive of all items of costs) of different crops per one kg of production is summarized in the following table .

Table - 5.30
Cost of Production Per Kg. *(in Rs.)*

Crops	Size Holding			
	Marginal	Small	Medium	Large
Jowar	4.3	3.8	3.0	1.8
Paddy	5.3	4.4	0.0	0.0
Wheat	6.7	4.8	0.0	0.0
Pulses	9.9	6.3	27.2	0.0
Tobacco	**17.3**	**12.2**	**12.3**	**10.5**
Sugarcane	0.4	0.3	0.3	0.2
Cotton	16.9	15.2	0.0	0.0
Soya bean	7.4	5.0	5.6	5.8
Groundnut	10.9	9.2	9.5	11.0

Thus, **the cost of production per kg of output is maximum in the case of tobacco.** Since sugarcane is not valued in kg the above figures of costs of production per kg in its case may not be strictly comparable**. By and large, cost of production of tobacco is around two to two and half times the cost in the case of Soya bean, another cash crop, which can be grown in the sample region.**

It is found that the cost of production per unit of production is higher among marginal farmers **and it declines with the increase in farm size with an exception of pulses (there is only one farmer in the sample). It may be due to the economies of scale in the process of cultivation for all crops. While examining the unit cost of production of tobacco and other crops, it is found that among the marginal farmers the tobacco cost is the highest. Among the small farmers, cotton is found to be more costly than tobacco. Among the medium farmers, pulses are found to be most costly to cultivate and tobacco is in the second position**. On the whole, cost of production of tobacco is the second highest among all the crops of the region.

The break up of cost of cultivation according to different cost items for different crops brings out some of the other important aspects of micro-economics of cultivation. These details are presented in the table on the next page. The details are presented in terms of per acre cost of cultivation and per kg. cost of cultivation (production) for different crops in the sample region.

Table 5.31

Per Acre Cost of Cultivation for different crops in Sample Region (in Rs.)										
Crops	**Labour**	**Irrigated**	**Seeds**	**Fertiliser**	**Manure**	**Insecticides**	**Rent on hired**	**Land revenue**	**Rental value of total land**	**Total**
Jawar	1332.43	99.49	130.91	363.16	199.67	32.69	248.84	0.01	196.41	2603.62
Paddy	1522.22	100.05	235.25	489.09	169.33	1.64	127.20	0.00	145.70	2790.50
Wheat	1861.47	265.87	251.56	564.45	172.97	19.97	208.32	0.00	160.98	3505.59
Pulses	1157.87	106.80	228.05	221.54	89.50	74.42	109.22	0.00	113.18	2100.58
Tobacco	**2338.21**	**264.80**	**206.30**	**1279.09**	**551.25**	**686.92**	**350.58**	**0.07**	**486.22**	**6163.43**
Sugarcane	2418.06	661.53	1958.22	1895.04	643.19	30.07	430.81	0.44	1893.12	9930.49
Cotton	2551.68	177.41	325.62	872.00	369.54	862.25	220.38	0.00	327.90	5706.79
Soyabean	1344.01	86.40	436.28	416.14	207.24	95.28	212.14	0.05	217.63	3015.16
Groundnut	1338.29	59.41	410.57	255.95	147.72	8.85	196.31	0.08	147.86	2565.04
Per Kg. Cost of Production for different crops in Sample Region (in Rs.)										
Jawar	2.63	0.20	0.26	0.72	0.39	0.06	0.49	0.00	0.39	5.13
Paddy	3.34	0.22	0.52	1.07	0.37	0.00	0.28	0.00	0.32	6.12
Wheat	4.32	0.62	0.58	1.31	0.40	0.05	0.48	0.00	0.37	8.13
Pulses	6.34	0.58	1.25	1.21	0.49	0.41	0.60	0.00	0.62	11.50
Tobacco	**6.49**	**0.74**	**0.57**	**3.55**	**1.53**	**1.91**	**0.97**	**0.00**	**1.35**	**17.11**
Sugarcane	0.10	0.03	0.08	0.08	0.03	0.00	0.02	0.00	0.08	0.41
Cotton	12.28	0.85	1.57	4.20	1.78	4.15	1.06	0.00	1.58	27.46
Soyabean	3.58	0.23	1.16	1.11	0.55	0.25	0.57	0.00	0.58	8.04
Groundnut	6.46	0.29	1.98	1.24	0.71	0.04	0.95	0.00	0.71	12.38

calculated in the case of sugarcane).

Labour cost, fertilizer, manure and insecticides costs are significantly large in the case of tobacco as compared to most of the other crops except in the case of cotton and sugarcane. Information about per kg costs shows that labour cost is the distinctly largest cost item for tobacco, constituting nearly 38 percent of total cost. Fertilizer, manure and insecticides have a large share in the total cost in the case of tobacco amounting to nearly 41 percent. **This suggests that the tobacco farmers spend more on maintaining the health of the tobacco plant than on the worker himself overlooking the health of the worker !** This is in contrast to what is spent in the case of cotton, another cash crop, where labour costs are nearly 45 percent whereas the costs of fertilizer, manure and insecticides are 37 percent. It is also worth noting that farmers tend to spend on irrigation significantly large amounts per kg of production in the case of tobacco than in the case of those crops, which require irrigation for their survival. This implies that the limited irrigation facilities available in the region are used for cultivating the poison plant than the crops, which are more useful for human beings. This also raises an apprehension as to whether provision of irrigation facilities would help shifting from tobacco or promoting tobacco itself. Tobacco farmers seem to be cultivating tobacco on rented land, for, rental value of total land used for tobacco cultivation is fairly high both when we consider per acre cost and per kg cost of cultivation.

That the farmers seem to consider more the gross returns rather than the net returns from cultivation and that they are oblivious of the costs of cultivation would be brought out by comparing the gross and net return per kg and also costs of cultivation per kg of output. **These details presented in the following table and the attached chart is quite revealing, throwing light on how the farmers take their decisions with regard to the cropping pattern.**

Table – 5.32
Cost of Cultivation per Acre for different crops
Among Different farm sizes (Cost in Rs.)

Crops	Marginal	Small	Medium	Large
Jawar	2876.86 (8)	2412.52 (5)	1285.75 (5)	1757.51 (4)
Paddy	3205.26 (7)	1538.84 (8)	-	-
Wheat	3749.48 (4)	1603.90 (7)	-	-
Pulses	2446.29 (9)	1513.97 (9)	1018.75 (6)	-
Tobacco	**7120.38 (2)**	**5255.32 (2)**	**5525.97 (2)**	**5965.35 (2)**
Sugarcane	10804.74 (1)	9227.40 (1)	8058.93 (1)	8881.83 (1)
Cotton	5832.82 (3)	4362.01 (3)	-	-
Soyabean	3329.13 (5)	2452.79 (4)	2751.78 (3)	2490.15 (3)
Groundnut	3251.30 (6)	1879.01 (6)	1475.54 (4)	1410.06 (5)

Note :Figures in the bracket indicate ranks.

Chart 5.4

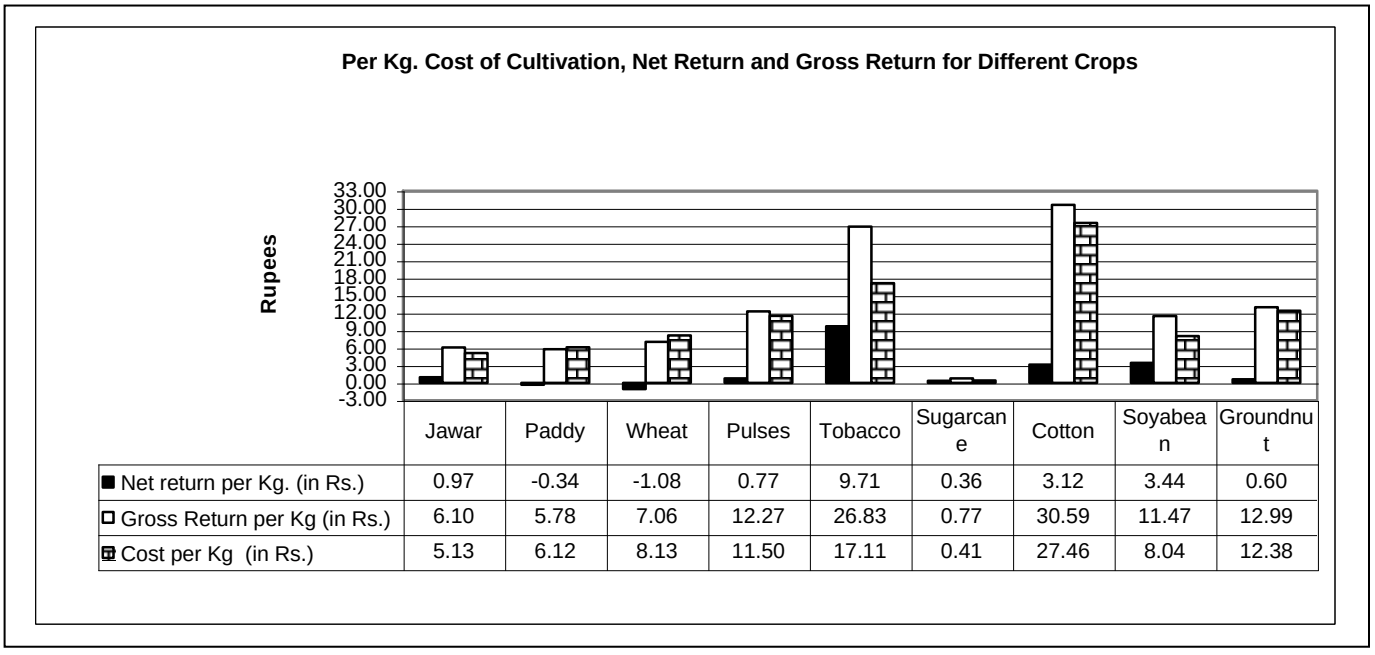
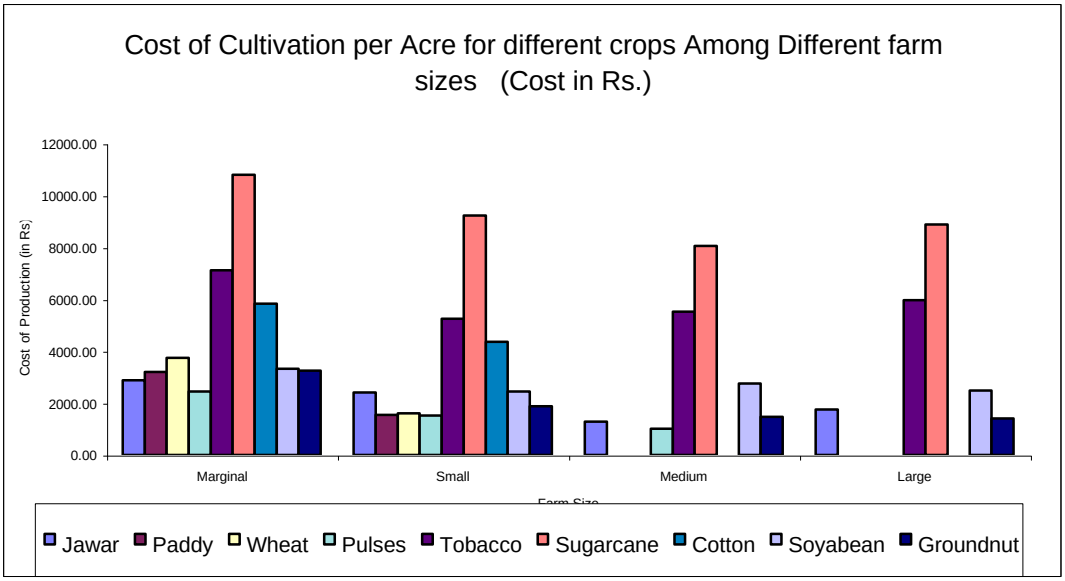


Chart 5.5



The cost of production per acre of sugarcane is the highest in all categories of the farm and tobacco cost per acre is again the second highest. The cultivation of tobacco may be said to be a major source of rural employment. However, on the other hand, it is the costliest crop in both monetary and real terms. The intangible real costs are unavoidable and are in the very nature of tobacco cultivation itself. This is because tobacco is more prone to crop diseases, for which frequent spraying of insecticide and pesticide is required. The adverse effects of the use of pesticides are pointed out by *Goodland et.al.*(1984), **"the use of high doses of pesticides and chemical fertilizer in tobacco cultivation affects soil nutrients at a faster rate than many other crops, and thus rapidly decreasing the life of the soil".**

If the cost of soil erosion, depletion of nutrition of soil and shortage of water supply for other cultivation etc., implicit in tobacco cultivation are estimated in money value, tobacco cultivation would be much more costlier than what we have estimated above. **Costs of environmental pollution due to the smell of the tobacco leaves and spraying for pest control are generally not taken cognizance of in the accountant's approach of cost estimation**. Taking all these things into consideration, whatever are claimed to be the employment advantages from tobacco cultivation, would be totally wiped out by these tangible and intangible costs of cultivating tobacco. These costs are experienced in the immediate run as well as in the long run. The long run costs of cultivation are so large that it would be injurious to the interest of the farmers themselves not to take note of them. The farmers also are found to be distinctly realizing this. However, being under the force of convention and traditional

practices and also the control by the more powerful trading interests, they are not taking the initiative to give-up tobacco cultivation.

Thus, some of the supplier-related adverse effects of tobacco cultivation are summarized as below:

i) Tobacco cultivation can cause soil erosion,

ii) It would deplete soil nutrients,

iii) Furthermore, the frequent uses of fertilizers and pesticides required in tobacco cultivation would necessitate use of plenty of water, which the dry region can hardly afford, finally affecting local water supplies.

Tobacco cultivation : Is it a gainful or a losing proposition ? Analysis of Economic Returns from tobacco and other crops

If returns from cultivation are substantially larger, then, even large costs of cultivation could be overlooked. We have discussed in the previous section the return from tobacco cultivation in relation to the area of cultivation and also in relation to the investments made. A comparison with other crops was also presented earlier. In the paragraphs below, an attempt is made to highlight whether tobacco cultivation is profitable or not to the farmers having different size holdings. The following table presents an idea about the net return to the farmers according to their size holdings. Two charts presented after the table show a comparative picture about profitability of different crops for different categories of farmers.

Table 5.33
Crop-wise Net Return as per size holdings

Crops	Net Return per acre (in Rs.)					Net Return per Re. of investment					
	Marginal	Small	Medium	Large	All farms	Marginal	Small	Medium	Large	All farms	Net return for 1 % of cultivable land
Jawar	224.85	834.9	1037.79	3242.49	490.24	0.08	0.35	0.79	1.84	0.19	0.010 (5)
Paddy	-286.91	246.16	-	-	-154.24	-0.09	0.16	-	-	-0.06	
Wheat	-555.05	249.44	-	-	-463.6	-0.15	0.16	-	-	-0.13	
Pulses	93.86	527.21	-362.5	-	140.97	0.04	0.35	-0.36	-	0.07	
Tobacco	**1238.6**	**4109.1**	**5869.6**	**8836.8**	**3498.76**	**0.17**	**0.78**	**1.06**	**1.48**	**0.57**	**0.014 (4)**
Sugarcane	6214.51	9153.45	12250.8	18027.4	8649.35	0.58	0.99	1.52	2.03	0.87	0.088 (2)
Cotton	616.34	1000.49	-	-	649.25	0.11	0.23	-	-	0.11	0.104 (1)
Soyabean	853.19	1923.75	2126	2224.14	1289.07	0.26	0.78	0.77	0.89	0.43	0.065 (3)
Groundnut	-46.37	427.71	270.3	50.7	125.23	-0.01	0.23	0.18	0.04	0.05	0.003 (6)

Chart 5.6

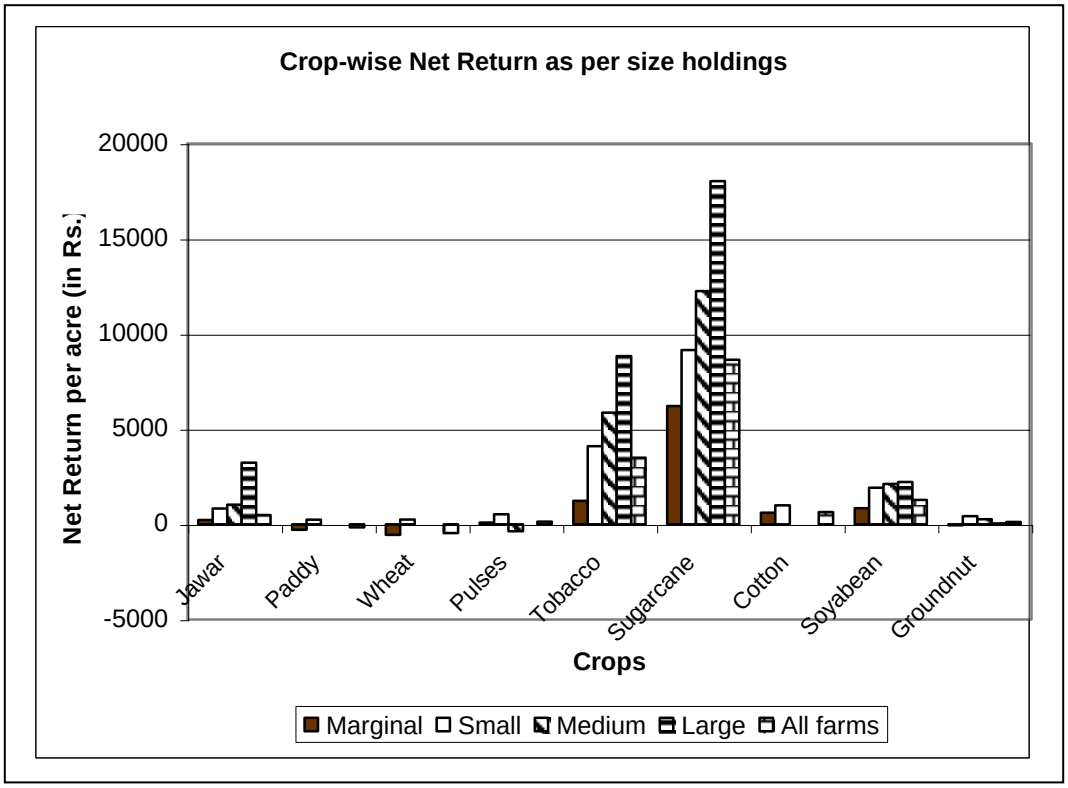
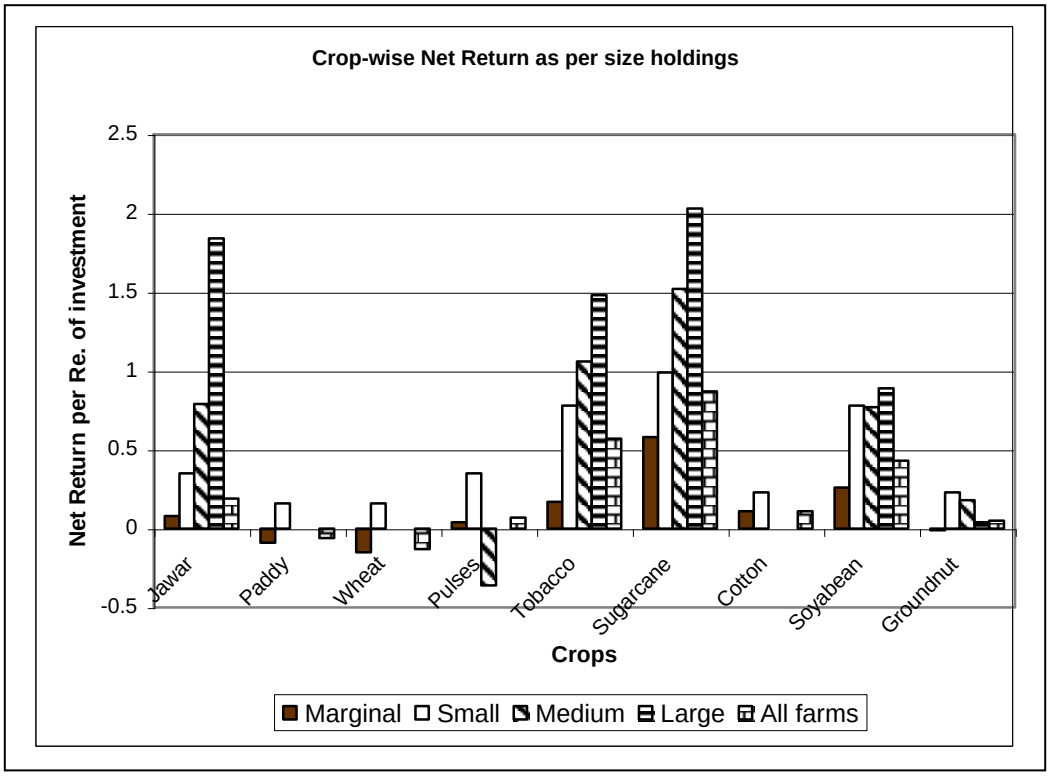

Crop-wise Net Return as per size holdings
Net Return per acre (in Rs.)
20000
15000
10000
5000
0
-5000
Jawar
Paddy
Wheat
Pulses
Tobacco
Sugarcane
Cotton
Soyabean
Groundnut
Crops
Marginal
Small
Medium
Large
All farms

Chart 5.7



Sugarcane, tobacco, Soya bean and cotton appear to be fairly profitable crops for all categories of farmers. Sugarcane is the most profitable crop even for the small and marginal farmers. Its profitability for such farmers is comparable to the profitability of tobacco farming even for medium and large tobacco farmers. Wherever irrigation is available, sugarcane has to be the most preferred crop in view of its distinct profitability. Soya bean's profitability is moderate but not in significant for all the categories of farmers.

In relation to the investments made tobacco does not spore over sugarcane at all irrespective of the size holdings. Thus it appears, that if tobacco has to be given-up, then the alterative seems to be sugarcane wherever irrigation facilities are available. Soya bean can act as a moderate substitute for tobacco. **For large farmers, net return per rupee of investment in cultivation of jowar, is significantly high even higher than that for tobacco**. From this point of view, it is not always necessary that large farmers should always continue to cultivate only tobacco even for their economic returns. **Jawar can be a good, ethically justifiable and economically more paying crop than tobacco for large farmers.**

Are Tobacco Producers also Tobacco Consumers ?
Determinants of Tobacco Production and Consumption

It is generally presumed that production of tobacco causes the family members to become the consumers of tobacco. In order to test this presumption we examined the relationship between production and consumption with different socio economic variables.

Tobacco production and consumption by Social groups

Average production and consumption of tobacco by social groups is presented in the following table (and appendix table 5.15A). Production is found to be the highest among the forward caste population while consumption is the highest among the SC/ST and OBC. If it is taken for granted that the households consume their own product, **the forward caste households are found left with more surplus (products) than the backward caste population.**

Table-5.34

TOBACCO PRODUCTION AND CONSUMPTION BY SOCIAL GROUPS

Social Groups / Taluka	Average Production of Tobacco (in k.g.)	Average Tobacco Production (in Rs.)	Average Consumption of Tobacco per day (in Rs.)	Average Consumption of Tobacco per Annum (in Rs.)	% of Consumption to Production (E / C)	Surplus (C - E)
A	B	C	D	E	F	G
			All talukas			
SC / ST	438.55	9735.81	3.10	1131.50	11.62	8604.31
OBC	374.90	8322.78	3.13	1142.45	13.73	7180.33
Others	440.82	9786.20	3.02	1102.30	11.26	8683.90
All Social Groups	**431.20**	**9572.64**	**3.04**	**1109.60**	**11.59**	**8463.04**

Tobacco production and consumption by family size

Inverse relationship is found between production of tobacco and size of the family while there is a direct relationship between family size and consumption of tobacco. That means, with the increase in the size of the family, the production of tobacco declines but the consumption of tobacco increases (Table – 5.35 and appendix table 5.16A). If tobacco consumption is considered as a stress reliever then does this result imply that the pressure of large family is the reason for more consumption of tobacco in such families. Relatively less production of tobacco in households with large family might possibly be due to the reason that the family may produce more of food crops rather than tobacco, which is certainly not a substitute to food crop.

Table – 5.35
TOBACCO PRODUCTION AND CONSUMPTION ACCORDING TO FAMILY SIZE

Name of the Taluka	Average Production of Tobacco (in k.g.)	Average Tobacco Production (in Rs.)	Average Consumption of Tobacco per day (in Rs.)	Average Consumption of Tobacco per Annum (in Rs.)	% of Consumption to Production (E / C)	Surplus (C - E)
A	B	C	D	E	F	G
All taluk						
<= 4	439.93	9766.45	2.93	1069.45	10.95	8697.00
5 – 7	436.86	9698.29	3.07	1120.55	11.55	8577.74
> 7	407.23	9040.51	3.09	1127.85	12.48	7912.66
Total	**431.20**	**9572.64**	**3.04**	**1109.60**	**11.59**	**8463.04**

Tobacco production and consumption by education of the Head of the household

The following (also see appendix table 5.17A) table presents the production and consumption of tobacco as per the education of the head of the household. Production of tobacco increases with the level of education of the head of the households. Consumption to production ratio also seems increase with the level of education or the number of years of schooling of the head of the household. **Does this mean that schooling is totally insulated from the social responsibilities in promoting tobacco cultivation ? Does this also imply that education sets out a new value system not concerned with personal health and welfare (as, the longer period of schooling has not dissuaded the persons from tobacco consumption) ? These are of course, only guesses, but, these guesses are validated by the generally observed sights of school children and college students consuming gutkha (preparation of tobacco) and smoking cigarettes.**

Table - 5.36
EDUCATIONAL STATUS OF THE HEAD OF THE HOUSEHOLD AND TOBACCO PRODUCTION AND CONSUMPTION

Educational Level / Taluk	Average Production of Tobacco in k.g.)	Average Tobacco Production (in Rs.)	Average Consumption of Tobacco per day (in Rs.)	Average Consumption of Tobacco per Annum (in Rs.)	% of Consumption to Production	Surplus
A	B	C	D	E	F	G
All taluk						
Illiterate	431.22	9573.08	2.98	1087.70	11.36	8485.38
Lit. but below Primary	383.50	8513.70	2.61	952.65	11.19	7561.05
Primary	442.16	9815.95	3.00	1095.00	11.16	8720.95
Middle	423.05	9391.71	2.49	908.85	9.68	8482.86
Technical	418.62	9293.36	4.60	1679.00	18.07	7614.36
Secondary	443.68	9849.70	3.28	1197.20	12.15	8652.50
Higher	469.21	10416.46	3.51	1281.15	12.30	9135.31
Total	**431.20**	**9572.64**	**3.04**	**1109.60**	**11.59**	**8463.04**

Tobacco production and consumption by Occupation of the households :

Production of tobacco is found to be the highest among the households with cultivation as occupation while consumption of tobacco is found to be the highest among the service holders. This finding is quite obvious because the households with cultivation as their occupation naturally have a tendency to grow the profitable crops particularly in an area where the dominant crop is tobacco. So far as the consumption of tobacco is concerned, the service holders seem to cultivate the habit of tobacco consumption, may be due to the reasons like pressure of work, persuasion by the colleagues etc. (Table – 5.37 & Appendix table 5.18A

Table 5.37
TOBACCO PRODUCTION AND CONSUMPTION AS PER OCCUPATIONAL STATUS OF THE HEAD OF THE HOUSEHOLD

Occupation / Taluk	Per Capita Tobacco Production (in Rs.)	Per Capita Tobacco Consumption per Annum (in Rs.)	% of Consumption to Production (E / C)	Surplus (C - E)
A	C	E	F	G
All taluk				
Cultivation	4348.31	1102.30	25.35	3246.01
Profession	2135.20	813.95	38.12	1321.25
Service	3320.23	1405.25	42.32	1914.98
Labour	1758.68	1186.25	67.45	572.43
Others	2747.03	1204.50	43.85	1542.53
Total	**4162.94**	**1109.60**	**26.65**	**3053.34**

Tobacco production and consumption by Land holding size of the households

Table 5.38

TOBACCO PRODUCTION AND CONSUMPTION AS PER THE SIZE HOLDING						
Size Holding / Taluk	Average Tobacco Production (in k.g.)	Average Tobacco Production (in Rs.)	Average Consumption of Tobacco per day (in Rs.)	Average Consumption of Tobacco per Annum (in Rs.)	% of Consumption To Production (E / C)	Surplus (C - E)
A	B	C	D	E	F	G
All taluk						
<= 1	482.72	10716.38	2.80	1022.00	9.54	9694.38
1 - 2.5	440.17	9771.77	1.44	525.60	5.38	9246.17
2.5 - 5.0	419.53	9313.57	2.69	981.85	10.54	8331.72
5.0 - 7.0	410.32	9109.10	2.23	813.95	8.94	8295.15
7.0 - 10.0	431.86	9587.29	2.51	916.15	9.56	8671.14
10.0 +	427.23	9484.51	3.26	1189.90	12.55	8294.61
All Size	**431.20**	**9572.64**	**3.04**	**1109.60**	**11.59**	**8463.04**

Production is found to be the highest among the households with land holding size of less than 1 acre and consumption is found to be the highest among the large farming households i.e. with more than 10 acres of land. Average production declines with increase in size holding while the average consumption increases with increase in size holding. (Table – 5.38 and appendix table 5.19A)

Tobacco production and consumption by Annual income of the household

Production of tobacco increases with increase in the household's income**. When the households are below poverty line, production of tobacco is found to be the lowest while for the households with annual income of more than Rs 2 lakhs, production is found to be the highest.** But, the consumption among the households below poverty line is not found to be the lowest. **These households may spend more on tobacco consumption, largely because tobacco helps to lose appetite and as a result, consumption of food is much less or negligible.**

The above discussion brings out which factors are likely to be important in determining the output of tobacco at the household level. In the following section, an attempt is made to estimate the production function for tobacco in order to understand the direction and quantitative significance of different socio economic factors in determining the production levels. (Table 5.39 – and appendix table 5.20A)

Table 5.39
TOBACCO PRODUCTION AND CONSUMPTION ACCORDING TO THE ANNUAL INCOME OF THE HOUSEHOLD

Income group/ taluka	Average Production of Tobacco (in Kg.)	Average Tobacco Production (in Rs.)	Average Consumption of Tobacco per day (in Rs.)	Average Consumption of Tobacco per Annum (in Rs.)	% of Consumption To Production (E / C)	Surplus (C - E)
A	B	C	D	E	F	G
All taluk						
<=11500	285.12	6329.66	2.69	981.85	15.51	5347.81
11500 - 20000	289.83	6434.23	1.87	682.55	10.61	5751.68
20000 - 50000	366.29	8131.64	2.78	1014.70	12.48	7116.94
50000 - 1 Lakh	438.38	9732.04	2.96	1080.40	11.10	8651.64
1 - 2 Lakh	427.43	9488.95	2.95	1076.75	11.35	8412.20
> 2 Lakh	505.46	11221.21	3.28	1197.20	10.67	10024.01
All income groups	**431.20**	**9572.64**	**3.04**	**1109.60**	**11.59**	**8463.04**

IV. PRODUCTION FUNCITON FOR DIFFERENT CROPS IN TOBACCO REGION

The household level data were used for examining the relative importance of different determinants of the decision making for cultivation of different crops including tobacco in the sample region. The multi-variate statistical techniques were used for estimating the relative importance of these determinants. The approach of Cobb Douglas Production function was used to study the efficiency in resource use in tobacco production and in other crops. The estimated equation is as follows:

$$Y_i = \alpha + \sum_{j=1}^{n} \beta_j X_{ij} + e_i$$

$i = 1,2,3.....n.$

Where Y = output

X_i = independent variables,

α and βs are the intercept and coefficients respectively to be estimated.

e_i is the error term.

The equation is in double log forms and estimated separately for each crop.

We have examined three models in this connection depending upon the definition of dependent variable and the explanatory variables in the model.

All the models are in double log forms and are run separately for each crop. We have considered here 13 crops.

The results of each of the models are presented below :

Results and discussion of Regression Models:

Results of Model - I

The model used in this section is as follows:

Output = f (land, Irr.area, Eco. status, human days, bullock days, seeds, fertilizer, pesticides, other exp, schooling of HH)

The results of model – I are presented in appendix table 5.21A

The value of R^2 reveals that all the values are statistically significant at 1 percent level. The R^2 values vary from 29 percent for chilly to 65 percent for sugarcane and tobacco. The R^2 values of all the crops are presented in appendix table 5.21A

Now coming to the regression coefficients, it is found that the coefficient of the variable land is positive and very significant for all the crops. The coefficient value of land varies from 0.41 (wheat Rabi) to 0.82 (for Soya bean). In all the cases the coefficient is statistically significant also. It implies that 1 percent increase in land influences the output significantly for all crops. Next to land it is the economic status of the household, which is found to be significant in the case of all crops except paddy and pulses (kharif). The coefficient values of other variables show mixed result for different crops. Hence, no common inference could be drawn for these coefficients.

Since our models are double log models, the coefficient values are the partial elasticities. The summation of all the elasticities provides us the value of returns to scale, which indicates the response of output to a proportionate change in its corresponding inputs. If the value of elasticities is equal to one, it is a case of constant returns to scale, which implies that doubling the input will double the output. If the value is less than one, it is a case of decreasing returns to scale implying that the doubling of the inputs is associated with less than doublingof the output. If the value of elasticities is more than one, it implies that doubling the inputs results in more than doubling the output.

Results of Model - II

Output = f (land, Irr.area, Eco.status, human days, bullock days, seeds, fertilizer & pesticides per units of production, other exp., schooling of HH)

Since it is assumed that higher productivity of the crop generally depends on the fertilizer and pesticides, we have tried this model including the variable **fertilizer and pesticides per unit of production.** The dependent variable is the log of output and the independent variables are the same as in case of the first model except that the variable fertiliser and pesticides have been replaced with fertiliser and pesticides per unit of production. The results of the regression are presented in Table 5.22A.

In the previous model we found that the value of R^2 remained between 0.29 to 0.65 while in the present model it is found that the same varies between 0.30 to 0.76 showing some improvement in the explanatory value of the model .

The coefficient values of land for all crops are uniformly found to be positive and statistically significant at 1 percent level. The economic status of the households is found to be significant for all crops except pulses (kharif) and paddy. The coefficient of fertilizer and pesticide per unit of production is found to be significant but negative in the case of all the crops except pulses and wheat (rabbi). It may be due to the fact that if fertilizer and pesticide per unit of production increases more than the quantity required, it may affect the output adversely. It also suggests that in the case of tobacco also there is an over-use of fertilizers and pesticides in the interest of more profit. The farmers, however, hardly realize that this has affected not only the soil fertility but also the tobacco output itself. **The co-efficient of human labour and animal labour in the case of tobacco are found to be positive and very significant at 1 percent level. This implies that production of tobacco is labour intensive.**

Coming to the returns to scale, it is observed that all the crops indicate decreasing returns to scale except rabi jawar. The returns to scale is constant in case of rabi jawar. In this case it may be suggested that **rabi jawar could be considered as an alternative crop to tobacco.**

Results of Model - III

Output = f (land, Irr.area, Eco.status, human days, bullock days, seeds, fertiliser & pesticides per acre, other expenses, schooling of Head of Household)

In this model (see appendix table 5.23 A) all the variables remain the same except the variable fertiliser and pesticide per unit of production. This variable is replaced by the **fertiliser and pesticides per acre since farmers normally decide about the quantity of these inputs in relation**

to the area of cultivated land rather than the quantity of production to be realized in future.

The values of R^2 are more or less found to be the same as in case of the first model i.e. fertiliser and pesticides entered independently. The R^2 values vary between 0.28 to 0.65 while in the previous case it varied from 0.29 to 0.65.

The coefficient value land is found to be very significant in the case of all the crops as in case of previous equations. The variable economic status is found to be positive and significant in the case of all the crops except pulses (kharif) and paddy.

The coefficient of irrigation is found to be significant only in the case of sugarcane and paddy. This indicates that sugarcane requires irrigation to improve its production. Though paddy is a dry land crop, with assured supply of irrigation its productivity can be raised.

A glance at the returns to scale indicates that pulses (kharif) shows highest increasing returns to scale followed by tobacco and sugarcane. Chilly shows constant returns to scale while all other crops show decreasing returns to scale. **In this case pulses (kharif), sugarcane and chilly could be considered as the alternatives to tobacco.**

The returns to scale for major crops of the best fit model is given below.

Crop-wise Returns to scale in the best fit model

Crops	Returns to scale
Tobacco	0.63
Sugarcane	0.86
Soya bean	0.88
Chilly	0.95
Jowar (R)	1.02
Pulses (Kharif)	0.90
Cotton	0.79

The regression results of all the models are summarized in the table 5.40.

Table 5.40

Crop-wise Summary Statement of Regression Models

Crops	Explanatory Variables		
	+ve and Significant	-ve but Significant	Do not show Significant effect
Tobacco	Land, Labour (both humand & bullock), edn, other exp, Eco Status	Ferti & Pest	Irrigation, Seeds
Chilly	Land, eco status, seeds other expences, bullock days.	Ferti & Pest	Irrigation, human days, education.
Sugarcane	Land, Irrigation, Eco status, seeds, other expences, human days.	Ferti & Pest	Bullock days, education.
Cotton	Land, Eco-Status, seeds	Ferti & Pest	Irrigation, Other Exp, human days, bullock days, education.
Soyabean	Land, Eco-Status	Ferti & Pest	Irrigation, seeds, other exp, human days, animal power, education.
Wheat	Land, eco-status, seeds, education	Irrigation, fertilizer and Pesticides	Other exp, human days, bullock days.
Pulses	Land, Other exp	-	Irrigation, eco-status, fertiliser & pesticides, seeds, huamn days, animal days, education.
Jawar	Land, eco-status, seeds	Fertiliser & Pesticides	Irrigation, Other exp, human days, bullock days, education.
Groundnut	Land, eco-status, Other exp, education	Fertiliser & Pesticides	Irrigation, seeds, human and bullock days.
Paddy	Land, Irrigation, Education	Fertiliser & Pesticides	Seeds, Other expe, human & bullock days.

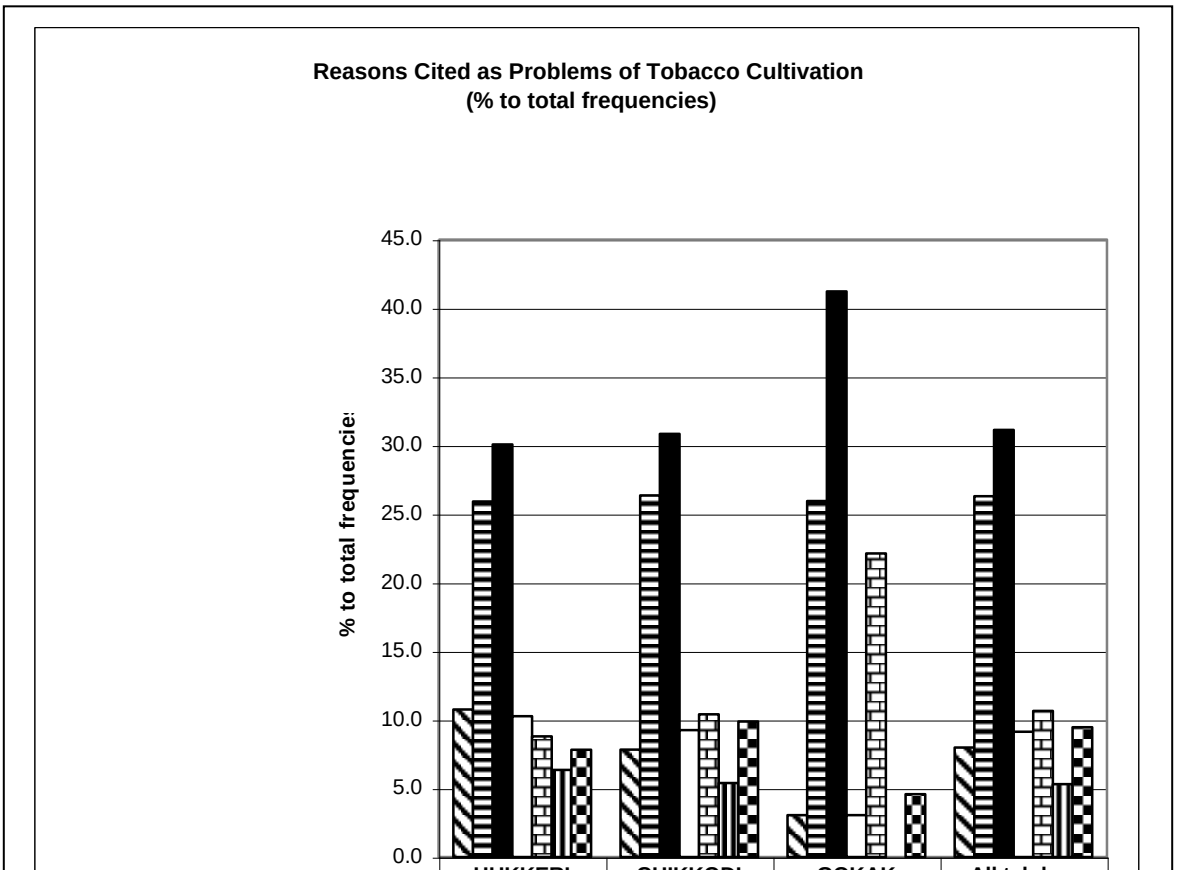
V. IS CULTIVATION OF TOBACCO PROBLEM FREE ?

Many of the problems of tobacco cultivation have already been discussed in the earlier paragraphs. In the following paragraphs, we outline the problems as cited by the producers of tobacco during the household survey. The households listed a number of problems of tobacco cultivation. These are :

i. non availability of seeds in time,
ii. absence of timely supply of water,
iii. labour shortage,
iv. problems in leaf cutting and harvesting etc.
v. risk of total crop failure, etc.

The frequencies of the problems cited by the respondent cultivators are presented in Chart 5.8

Chart 5.8

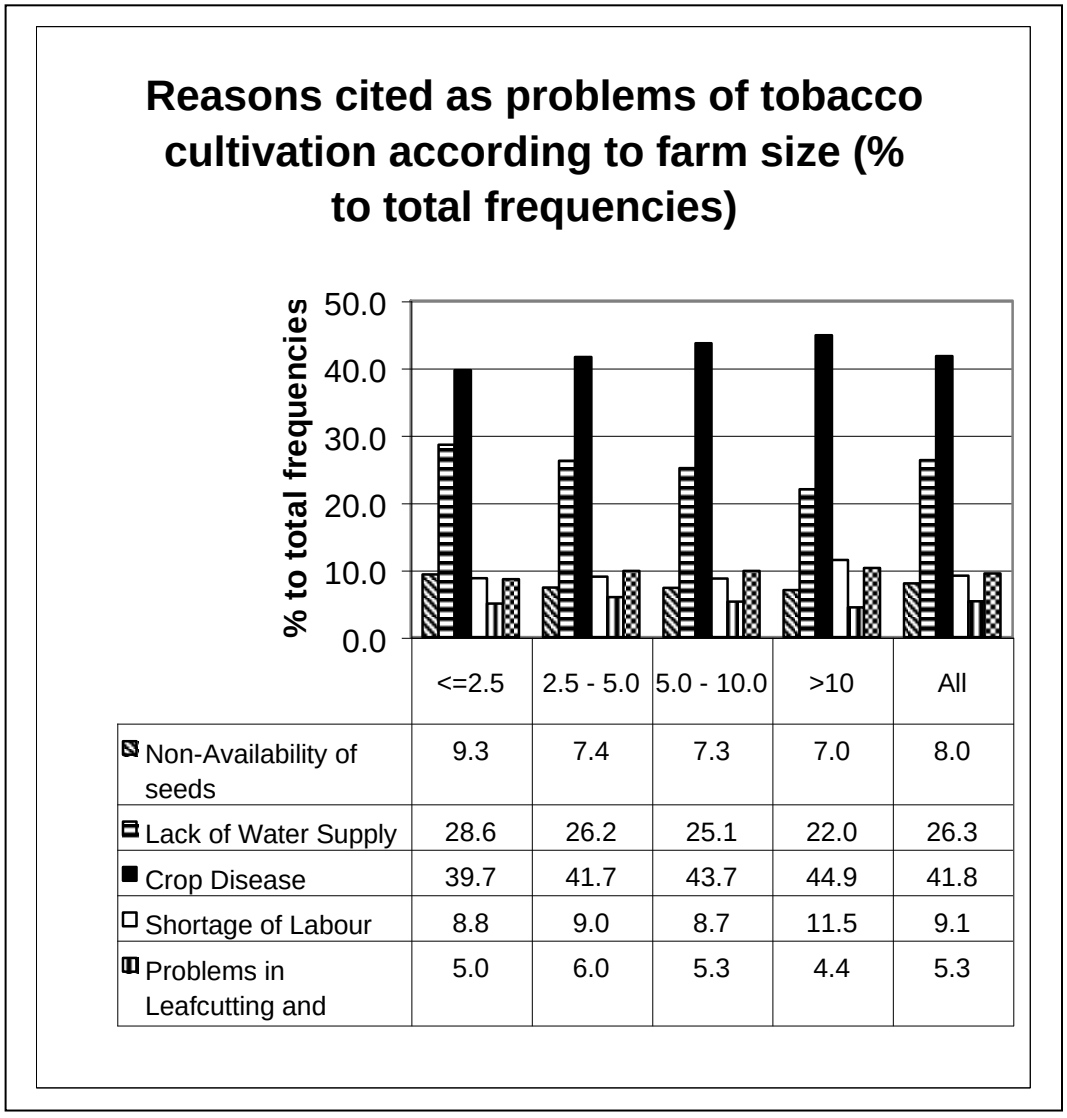


	HUKKERI	CHIKKODI	GOKAK	All talukas
Difficulty in Avalability of seeds	10.8	7.8	3.1	8.0
Inadequate water Supply	25.9	26.4	26.0	26.3
Frequent Crop Diseases	30.1	30.8	41.2	31.1
Difficulties in Avalability of Labour	10.3	9.3	3.1	9.1
Risk of Total Crop Failure	8.8	10.4	22.1	10.7
Risks associated with Cutting of Leaves / Harvesting	6.4	5.4	0.0	5.3

It can be seen that crop disease has been the most frequently cited reason for the problem of tobacco cultivation. Next in importance are the reasons of inadequate water supply and risk of total crop failure.

Analysis of the reasons according to the size holdings also gives the same picture. Large farmers are more apprehensive of crop diseases as the major problem in tobacco cultivation. However, lack of water supply is considered as a problem more by the small farmers than by the large farmers. Shortage of labour is treated as a problem by the large farmers, naturally so because they tend to hire labour, where as the small farmers tend to use in tobacco cultivation. Small farmers seem to be affected more by non-availability of seeds. These aspects are brought out from the following table and the chart 5.9

Chart 5.9



	<=2.5	2.5 - 5.0	5.0 - 10.0	>10	All
Non-Availability of seeds	9.3	7.4	7.3	7.0	8.0
Lack of Water Supply	28.6	26.2	25.1	22.0	26.3
Crop Disease	39.7	41.7	43.7	44.9	41.8
Shortage of Labour	8.8	9.0	8.7	11.5	9.1
Problems in Leafcutting and	5.0	6.0	5.3	4.4	5.3

Tobacco does not require heavy irrigation in all the stages of its growth. However, inadequate water supply may cause stunted growth and also risk of decay through insects. A single shower at the time of harvest would mean total crop failure. Thus, the farmers are always on a tight-rope-walk, as it were, so far as water supply for the tobacco plant is concerned. By and large, according to farmers' own perceptions, tobacco is a delicate crop, always vulnerable to the risk of failure.

Despite a number of problems faced in tobacco cultivation, the fact that a significant number of farmers take to tobacco cultivation is indeed enigmatic. We tried to probe into the question as to why cultivators continue to grow tobacco. Responses of the farmers to a specific open ended question in the questionnaire are indeed quite revealing. A brief analysis of these responses is presented below.

VI. WHY DO FARMERS TAKE TO TOBACCO CULTIVATION ?

The responses of the farmers regarding the reasons for tobacco cultivation are essentially their subjective perceptions, not necessarily validated by the experience of all farmers. The multiple responses highlighting different reasons also indicates the high degree of subjectivity in their assessment about tobacco. The responses might also highlight the existence or otherwise of a particular logic or rationale in the minds of the farmers regarding tobacco cultivation. The question put to the farmers in this connection listed a number of commonly stated reasons and a final open ended option. Thus, the farmers were asked whether they grow tobacco because of the following reasons :

a. tobacco is easy to cultivate,
b. no other crop is suitable for cultivation in the region compelling farmers to take to tobacco,
c. tobacco cultivation is less costly,
d. tobacco cultivation increases fertility of the soil,
e. availability of good market for tobacco,
f. tobacco is profitable,
g. others also grow tobacco,
h. tobacco cultivation is the family tradition inherited from there forefathers,
i. any other reason.

Out of the above reasons, the reasons a, b, c and d relate to cultivation proper. Reasons e and f relate to the facility of sale and the economic returns. Reasons g and h do not explain the economic rationale behind their decision. Some farmers gave their own reasons in terms of employment opportunity, repayment of loans taken from the traders, commitment to the landlords, etc. Thus, the reasons from a to f essentially indicate the micro-economic dimensions of household level decision making for tobacco cultivation.

The table 5.41 presents the summary of the responses of the farmers about the reasons for growing tobacco.

Table 5.41

Reasons cited for Growing Tobacco

Name of the Taluk	Reasons Cited									
	Increases Fertility	Easier to Grow	Less costly to produce	No Other Crop is Suitable	Availability of Market	Profitable	Others grow the same Crop	Grown by Forefathers	Any other	Total
HUKKERI	103	24	7	39	26	177	25	53	14	468
	(22.00)	**(5.12)**	**(1.49)**	**(8.33)**	**(5.55)**	**(37.82)**	**(5.34)**	**(11.32)**	**(2.99)**	**(100.00)**
CHIKKODI	793	107	92	572	218	1161	264	461	63	3731
	(21.25)	**(2.86)**	**(2.46)**	**(15.33)**	**(5.84)**	**(31.11)**	**(7.07)**	**(12.35)**	**(1.68)**	**(100.00)**
GOKAK	48	4	10	22	4	72	11	26	4	201
	(23.88)	**(1.99)**	**(4.97)**	**(10.94)**	**(1.99)**	**(35.82)**	**(5.47)**	**(12.93)**	**(1.99)**	**(100.00)**
All taluk	944	135	109	633	248	1410	300	540	81	4400
	(21.45)	**(3.06)**	**(2.47)**	**(14.38)**	**(5.63)**	**(32.04)**	**(6.81)**	**(12.27)**	**(1.84)**	**(100.00)**

Figures in the parentheses indicate percentages

Source : CMDR Survey

More than three fourths of the responses seem to highlight the economic advantages - both related to cultivation proper and marketing of tobacco as the relevant reasons for tobacco cultivation. As many as nearly one fifth of the responses did not seem to have any specific economic rationale behind farmers' decision to cultivate tobacco. Even when we consider the economic reasons, only about one fourth of the responses of farmers highlighted the positive aspects relating to cultivation of tobacco (such as easier to grow and improvement of soil fertility). About 10 to 18 percent of the responses were in the form of a '**choice through a negative vote**', in the sense that tobacco cultivation is forced by agriculture and family related circumstances. The market related factors are considered as the most powerful basis for tobacco cultivation, for majority of the responses highlighted these aspects. This way of looking at the responses of the farmers for tobacco cultivation shows that **it is not so much the suitability of tobacco in the region, which has motivated them to take to tobacco cultivation. The over riding reasons belong to the external factors of market. Hence, it is the market conditions of high price, assured demand, etc. which seem to be the more powerful determinants of farmers' decision to take to tobacco cultivation. Any strategy for effecting agricultural diversification away from tobacco has therefore to address itself to these external dimensions also.**

In this background, an enquiry into whether any of the farmers are willing to shift from tobacco cultivation assumes a special significance. We outline below the responses of the farmers regarding the question of their willingness or otherwise to shift from tobacco cultivation.

After the tobacco farmers cited various problems of tobacco cultivation, a question was put to them about their willingness or otherwise to shift, in order to understand how many of such farmers are vexed of the problems of tobacco cultivation and hence, are willing to shift. It is likely that these farmers are the same persons, who explained with reasons their decision to continue cultivation of tobacco. This implies that even though farmers are aware of the economic advantages, they have expressed their willingness to shift from tobacco, for, in their assessment the economic advantages from tobacco seem to be less compelling as compared to a number of disadvantages from tobacco cultivation.

VII. WHICH FARMERS ARE WILLING TO SHIFT FROM TOBACCO CULTIVATION VOLUNTARILY?

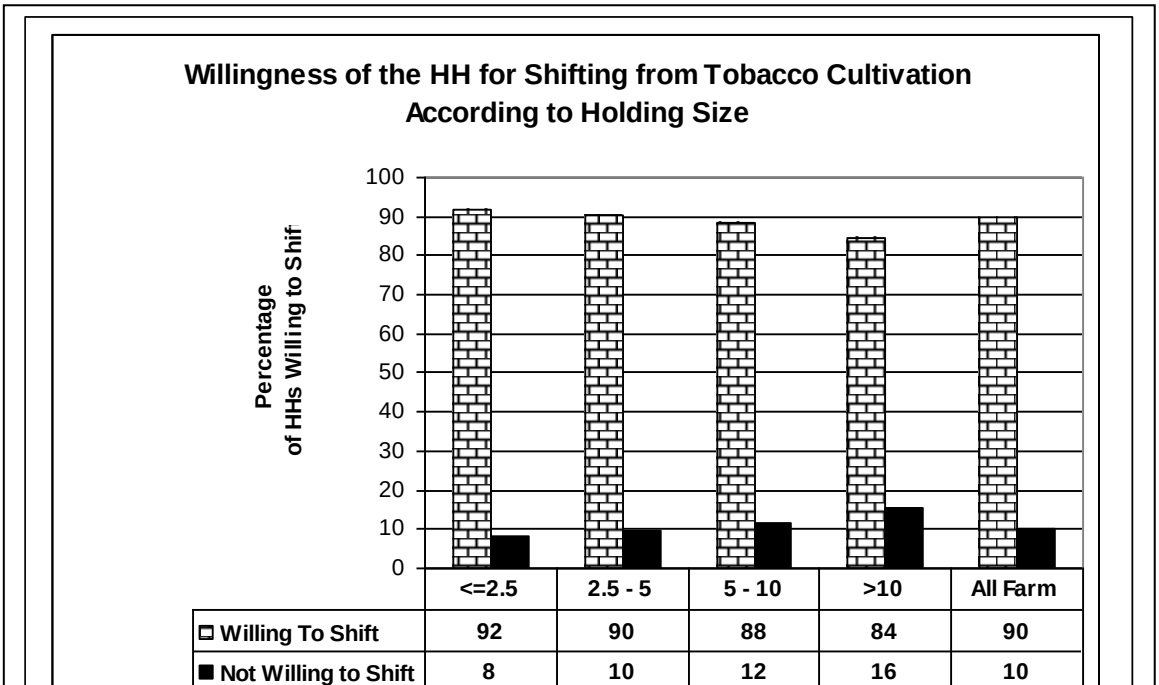
The project team felt greatly reassured by the overwhelmingly encouraging response of willingness of the farmers to shift from tobacco cultivation. It should be stated here that when this question was put to the farmers, no indication was given to them about whether the Centre would be initiating any intervention for the purpose of effecting their shift

from tobacco cultivation. Hence, we take it that responses of the farmers to the question about their willingness to shift or otherwise from tobacco cultivation are indeed genuine and unconditional.

We noticed that **nearly 90 percent of 1652 farm households are willing to shift from tobacco cultivation.** A very small percentage (10 percent) do not desire to shift. Analysis of the response of willingness to shift according to the size of the holdings in each taluka and for the entire sample region also revealed interesting facts. By and large**, households with bigger land holdings (more than 10 acres) are less willing to shift as compared to households with smaller land holdings**. Maximum percentage of households willing to shift came from households with marginal (less than 2.5 acres of land) holdings followed by farmers with small size holdings (2.5 to 5 acres of land). These aspects are indeed quite revealing in the sense that households of big land holdings corner most of the benefits from tobacco cultivation and hence they are less interested in shifting. It should be said however, that even in their case, the percentage of willing shifters is not small; it is nearly 85 percent in the case of all talukas and for each of the three sample talukas, the percentage of willing shifters was ranging between 75 percent to 85 percent. In the most tobacco growing taluka of Chikkodi also, more than 85 percent of rich farm households wish to shift ! These details for all the talukas of the sample region are presented in the following bar chart and in table – 5.24A.

Some farmers may not be willing to shift from tobacco production from the point of view of the profitability of production of tobacco. But when other factors also are considered, then possibly they may also be willing to shift. The proportion of farmers willing to shift is presented in appendix table 5.24A.

Chart 5.10



Responses of farmers about whether they are willing or not willing to shift from tobacco cultivation, were analyzed further in order to develop insights about their behaviour.

Thus, it was noticed that the amount of loan taken was the crucial determinant of shifting, as, the percentage of farmers willing to shift increases with the loan amount. This is brought from the following table :

It should be observed however that even out of those who took less loan the willing-to-shift percentage is substantially high, implying that loan amount might act as an additional factor in farmers' preference to shift.

Income also appears to be a crucial factor behind willingness to shift. This is revealed from the willing-to-shift percentage according to whether the farmer belongs to the below group average income category or to the above group-average income category. As can be seen from the following table.

Table 5.42

No.of Farmers willing or not willing to shift according to their income category

	Willing to Shift	Not willing to shift	Total
Below Average annual Income for tobacco farmrs	1231	124	1355
%	**90.85**	**9.15**	**100.00**
Above Average annual Income for tobacco farmrs	251	46	297
%	**84.51**	**15.49**	**100.00**
Total	1482	170	1652
%	**89.71**	**10.29**	**100.00**

Source CMDR Survey

Nearly 91 percent of farmers having income below the group average desire to shift voluntarily as compared to 85 percent from the below group average income category. The importance of income in particular and economic status in general, as crucial factors for willingness to shift, is also bought out by the classification of responses as per the per capita income of the family (in quartiles) and value of production (in quartiles). These details are shown in the table 5.43 and 5.44.

Table 5.43

Per capita income of No.of Farmers willing or not willing to shift according to per capita income of the family (Quartile wise)

	Willing to Shift	Not willing to shift	Total
Quartile 1	376	37	413
%	**91.0**	**9.0**	**100.0**
Quartile 2	372	41	413
%	**90.1**	**9.9**	**100.0**
Quartile 3	383	30	413
%	**92.7**	**7.3**	**100.0**
Quartile 4	351	62	413
%	**85.0**	**15.0**	**100.0**
Total	1482	170	1652
%	**89.7**	**10.3**	**100.0**

Source : CMDR Survey

Table 5.44

No.of Farmers willing or not willing to shift according to Value of Production (Quartile wise)

	Willing to Shift	Not willing to shift	Total
Quartile 1	377	36	413
%	***91.3***	***8.7***	***100.0***
Quartile 1	378	35	413
%	***91.5***	***8.5***	***100.0***
Quartile 1	375	38	413
%	***90.8***	***9.2***	***100.0***
Quartile 1	352	61	413
%	***85.2***	***14.8***	***100.0***
Total	1482	170	1652
%	***89.7***	***10.3***	***100.0***

Source : CMDR Survey

Farmers seem to have a subtle understanding of the costs of production and this awareness seems to be another crucial factor in their expression of a preference to shift. For example, as shown in the table below, for those farmers for whom per Kg cost of cultivation is higher, willingness percentage is also higher.

Table 5.45

No.of Farmers willing or not willing to shift according to Per Kg Cost of Production (Quartile wise)

	Willing to Shift	Not willing to shift	Total
Quartile 1	355	58	413
%	***86.0***	***14.0***	***100.0***
Quartile 2	372	41	413
%	***90.1***	***9.9***	***100.0***
Quartile 3	376	37	413
%	***91.0***	***9.0***	***100.0***
Quartile 4	379	34	413
%	***91.8***	***8.2***	***100.0***
Total	1482	170	1652
%	***89.7***	***10.3***	***100.0***

Source : CMDR Survey

These results must be contrasted with the **following results,** based upon classification of data according to actual cost of production, in which case, no systematic pattern is brought out.

Table 5.46

No.of Farmers willing or not willing to shift according to Actual cost of production (Quartile wise)

	Willing to Shift	Not willing to shift	Total
Quartile 1	369	44	413
%	***89.3***	***10.7***	***100.0***
Quartile 2	386	27	413
%	***93.5***	***6.5***	***100.0***
Quartile 3	371	42	413
%	***89.8***	***10.2***	***100.0***
Quartile 4	356	57	413
%	***86.2***	***13.8***	***100.0***
Total	1482	170	1652
%	***89.7***	***10.3***	***100.0***

Source : CMDR Survey

It is worth noting that for those farmers for whom the loan percentage in cost of production is higher the willingness to shift percentage is also generally higher. This is brought out from the following table 5.47.

Table 5.47

No. of Farmers willing or not willing to shift according to loans as percentage to cost of production (Quartile wise)

Quartile of loan as % of cost of Production	Willing to Shift	Not Willing to Shift	Total
Quartile-I	363	50	413
0% - 0%	**87.9**	**12.1**	**100.0**
Quartile-II	365	48	413
0% - 36.97%	**88.4**	**11.6**	**100.0**
Quartile-III	382	31	413
37.11% - 127.86%	**92.5**	**7.5**	**100.0**
Quartile-IV	372	41	413
129.03% - 12011.37%	**90.1**	**9.9**	**100.0**

Source : CMDR Survey

Possibly, the economic compulsions from a large family size seem to be operating on the mind of the tobacco farmers while taking a decision to shift or not to shift. Willingness percentage is relatively smaller for the larger families (with more than 6 members) , as can be seen from below. This seems to be natural, for, they consider tobacco to be a source of large income, which helps them to manage their large family.

Table 5.48
No.of Farmers willing or not willing to shiftig according to family size

Family Size	Willing to Shift	Not willing to shift	Total
<=6 members	1017	110	1127
%	**90.24**	**9.76**	**100.00**
>6 members	465	60	525
%	**88.57**	**11.43**	**100.00**
Group Total	1482	170	1652
%	**89.71**	**10.29**	**100.00**

Source : CMDR Survey

We wanted to probe further into the role that borrowing of the farmers might play in their willingness to shift or not to shift, as, it is generally observed that farmers are caught into the debt trap and hence are not able to come out of it on account of their continued tobacco cultivation. Because they grow tobacco they need to borrow to meet high costs of cultivation; because they borrow they need to grow more tobacco, as, it is perceived to be a good source of large incomes enabling the farmers to repay their crop loans.

How much Loan Do Tobacco Farmers take and from where ?

Tobacco farmers seem to be taking loans from different sources such as rural banks, cooperative banks, commercial banks, money-lenders, traders of tobacco and others. As can be seen from the table 5.25A, the organized banking system seems to be the source of largest amount of financial assistance to tobacco farmers. More than three fourths of financial assistance to tobacco farmers comes from the rural banks, cooperative banks and the commercial banks. It is revealing that the financial institutions authorized by the government provide significantly large financial assistance through loans to farmers for tobacco farming ! Out of every Rs.100 of loan taken by tobacco farmers nearly Rs.40 comes from such government authorized financial institutions ! This indeed is inconsistent so far as government's policy towards is concerned. On the one hand, the government, which is supposed to intervene into the merit bad of tobacco for controlling tobacco use, does intervene by issuing a statutory warning that tobacco consumption is injurious to health. However, the same government is found to assist though indirectly, tobacco producing activity. Interestingly, money lenders and traders assist only to the extent of about 2 per cent of the total loan taken by tobacco farmers. Possibly tobacco farmers depend upon private loans or help from friends, relatives, etc. all of which are put under 'other sources' in our questionnaire. Farmers receive more than one fifth of assistance from these other sources. It is interesting to note that farmers with larger holdings have taken assistance from the banking institutions rather than

these informal sources. On the other hand, small land holders have sought financial assistance more from the informal sources. This might be due to the fact that small land holders are not able to fulfill the loan conditionalities and hence they are compelled to depend upon the informal sources. This might have a significant degree of stress on these small farmers, as any assistance from the relatives, acquaintances and friends on an informal basis would make the recipient of assistance feel small. Thus, tobacco cultivation with borrowed funds would be doubly burdensome for small farmers, as they have to face the problems of high tangible costs of cultivation, high intangible costs of cultivation in the form of health hazards (since such farmers cannot afford hiring of labour for the jobs of spraying insecticides, pesticides, etc.) and also the costs of stresses etc. associated with borrowings from informal sources apart from the debt burden itself. It is probably for this reason that the small farmers rather than big farmers are more willing to shift from tobacco cultivation.

HAS BORROWING HELPED TOBACCO FARMERS ?

It is useful to examine to what extent borrowings have helped tobacco farmers in increasing tobacco output. According to general belief, borrowings land farmers in a vicious circle of debt and tobacco cultivation. This vicious circle of tobacco cultivation-debt-tobacco cultivation is essentially an empirical issue, which needs to be probed. This probing was carried out with the help of production function analysis where loan from different sources was included as the explanatory variable(s) along with land area and labour input for explaining tobacco production. The exercise was attempted separately for those who have expressed their willingness to shift and for those who have expressed their willingness not to shift from tobacco cultivation in order to see whether borrowing has made any difference in their tobacco output. Such a separate exercise for the two groups of tobacco cultivators is expected to eliminate the effect of the likely passive attitude of the farmers towards tobacco cultivation, for, those who have expressed their willingness to shift might be passive. Regression equations are estimated by considering the absolute values of the dependent variable and the explanatory variables and also without taking the log values. The results of the various statistical exercises are shown in the following table (5.49):

Table 5.49

Results of Regression Exercise to Explain Tobacco Production by Land, Labour and Finance Factors

Regression Model (without log)	Farmers who are willing to shift (N=909)	Farmers who are not willing to shift (N=64)
1. Dependent variable = Total tobacco Production (in kg)	**Values of Coeffecients**	
2. R Square	0.297	0.891
3. Explanatory Variable	**Beta Cofficients**	
Total tobacco area	0.392*	0.270*
Total tobacco man days	0.306*	0.116*
Rural Bank loan	-0.049*	0.027
Cooperative Society loan	0.006	0.767*
Commercial Bank Loan	0.036*	0.029
Pvt. Money Lenders Loan	0.062*	0.026
'Traders Loan	0.001	-
Other Loan	0.024	0.001

Note : * Coefficient is statistically significant

Basic data used for the analysis is derived from CMDR field survey

The above results seem to be quite revealing in explaining tobacco production in terms of the role of land area, labour input and supplies of financial assistance to the tobacco cultivators.

It is significant that these factors explain the tobacco production more satisfactorily in the case of those farmers who are not willing to shift. Nearly 89 percent of variation in tobacco production is explained by the specified explanatory variables. As against this, for the farmers who are willing to shift, the explanatory value of the model is about 30 percent indicating that in their case many other factors seem to be relevant.

It is also significant that loan taken from cooperative society of the farmers, who are not willing to shift, explains tobacco production much more than financial assistance from other sources. The coefficient for this variable is also statistically significant.

In the case of the farmers, who are willing to shift assistance from regional rural banks has discouraging influence on tobacco production. The loan from commercial banks and loan from money lenders have also positive and statistically significant association with tobacco production in the case of these farmers. In spite of this, they have expresses their willingness to shift, possibly because of the highly exacting conditionalities of financial assistance from these sources. It appears that banks are interested in lending to tobacco farmers because repayment is assured. However, tobacco farmers who continue to take loan from these sources for the purpose of improving their tobacco production seem to be feeling constrained by the formalities associated with the loan.

Area under tobacco and total tobacco man days are both statistically significant in influencing tobacco production in the case of farmers who are willing and who are not willing to shift.

From the above discussion it may be concluded that the sources of finance whether from the private sources or from the government authorized sources seem to be encouraging tobacco production. It therefore follows that when tobacco production needs to be controlled, then, suitable clauses need to be incorporated in the terms and conditions of loans to farmers. Such specific or selective credit controls are quite prevalent in lending policies as prescribed by the Reserve Bank of India (RBI). Thus, the banking system can provide assistance to the farmers for the purpose of cultivation of other crops or undertaking other activities. However, if loan is sought in connection with tobacco cultivation or production of tobacco related products, then, such loan application can be rejected unless such positive and specific goal related policies are adopted the simple commercial (gross) profitability of tobacco cultivation may over power all other difficulties associated with tobacco cultivation.

Since tobacco man days also have a significant influence on tobacco production, a policies may have to be so designed as to divert the scarce agricultural labour from tobacco cultivation to other labour intensive activities such as flori-culture, seri-culture, dairy farming, etc. where family labour also can be used.

VIII. CONCLUDING OBSERVATIONS :

In this chapter, an attempt was made to analyze the micro level data relating to tobacco cultivation. Village level data helped identifying the important general determinants of decision making for tobacco cultivation. Since, the farmers decision making in agriculture is considered to be highly individual specific, insights about determinants of tobacco cultivation and tobacco production could be more clearly developed with the household data rather than village level data. The analysis of household level data brought out the importance of area under cultivation, labour input, higher social and economic background of the tobacco cultivating households, sources of financial assistance particularly from the banking institutions, etc. were found to be crucial determinants of decision making to cultivate tobacco. Bigger land holder farmers tend to persist with tobacco cultivation. The small land holders are continuing with tobacco cultivation primarily as the matter of necessity and absence of alternative opportunities. A large percentage of both bigger land holders and smaller land holders were, however, found to be interested in shifting from tobacco cultivation, as they are fully conscious of difficulties associated with tobacco cultivation. If, irrigation facilities are made available, if quality seeds for alternative crops are supplied, if suitable marketing facilities are provided for the products of alternative crops and the alternative activities, the farmers are ready to shift from cultivating

this poisonous crop. Farmers do not seem to attach great importance to the labour intensive nature of tobacco. They use family labour predominantly in tobacco cultivation. As the schooling opportunities are increasingly available in the rural areas and since the people are recognizing the value of education, it would be in the long term interest of farming households to send their children to schools rather than put them on tobacco farms. It is in this background that the government needs to intervene in rigorously implementing the Compulsory Elementary Education Legislation in tobacco areas in particular. Tobacco cultivation is found to employ children in large numbers. Hence, the intervention of this type should have long term benefits for tobacco control and also for the society in terms of spread of education. The analysis of the household data also suggested that fairly effective measures of tobacco control need to be directed towards big land holders and traders. This has to be done on a continuing basis in terms of educating such farmers and traders about the hazards of tobacco cultivation. These hazards are not only in terms of adverse health effects from tobacco consumption but also from tobacco cultivation. The micro level study brought out a number of such adverse health effects of tobacco cultivation for the workers, for children and for all the members of the family in view of the spoiling of food in the kitchen on account of the smell/aroma of tobacco leaves. The tobacco control measures need to directed towards the view points of the governmental functionaries also towards tobacco. The Govt. of India and the State governments should not consider tobacco as a source of a revenue only, for large health care expenditures would be necessitated on account of allowing tobacco consumption to grow in the country. Since tobacco consumption is facilitated by tobacco production (though there is no evidence of tobacco cultivators consuming their own tobacco output) the supply control measures need to be put into effect quite seriously. The inconsistencies in the governmental policies relating to tobacco are also brought out by our micro level study.

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C h a p t e r - VII

PROCESS OF SHIFTING FROM TOBACCO- EXPERIENCE IN SIDNAL

In the previous chapter we outlined the process of CMDR's action intervention for realizing a shift from tobacco cultivation in the tobacco region of Belgaum district. Broad insights about the out come of this action were also indicated. Analysis of the process of shifting from tobacco cultivation provides interesting insights about the process of social and economic change in a context which is under the strong grip of traditional practices. The present chapter attempts to present such an analysis of the process of change in one of the bidi tobacco regions of Karnataka. CMDR had adopted a small tobacco producing village in this region and implemented the action programmes as stated in the previous chapter. In this course of 24 - 26 months of action, what has happened, is the subject matter of the present chapter. It is essentially a follow-up study of the full, partial, no shifters, of shifters who are stubborn, shifters who are enlightened but helpless, shifters who are enlightened and consistent in their action too. The story of shifters with incentives and of those without any incentives, might throw further light on the process of social and economic change in a traditional agricultural society.

The chapter is divided into ten sections.

Section I presents the profile of the study village. In section II, we discuss the cropping pattern, the cost of cultivation and returns from different crops. The purpose is to understand the economics of different crops and find out which of these can be alternatives for tobacco. Section III gives the details about the intervention and the beneficiary shifters. In section IV & V, we discuss the extent and the impact of shifting as reported by farmers and as per the village records. Section VI presents the comments of farmers on shifting. In section VII &VIII, detailed discussion of the social, economic and agricultural background and the experiences of the farmers who are not growing tobacco for 5 or more than 5 years is presented. IXth section presents the issues in shifting from tobacco based on the experience of partial, full and non-shifters in Sidnal village. The last section gives concluding remarks.

I. STUDY VILLAGE

Tobacco has been the main cash crop in Nippani tract covering Chikkodi, Gokak and Hukkeri talukas. Farmers are growing tobacco here for several generations. Soil suitability and climatic conditions are considered as the main factors responsible for the cultivation of tobacco in this region. But, in many of the villages lying on the bank of the river **Vedaganga we find that farmers have experimented with other unconventional crops and have continued to grow them.** Since the main purpose of our study is to look into, all the major factors

responsible for cultivation of tobacco and the consequences of giving up tobacco, whether it is done voluntarily or is done due to the provision of incentives, we had to consider shifting under, **both irrigation and rain-fed conditions.**

As stated in earlier chapter, for the purpose of studying the impact of shifting on farmers and their households we selected Sidnal village which is 16 kms away from Nippani town which is well known for production, processing and marketing of Bidi Tobacco in India. During our field visit to different tobacco villages, some of the village leaders from Sidnal approached us for undertaking the study on impact of shifting in their village. Farmers showed interest in experimenting with other crops and activities. The details of choosing the project village are presented in chapter VI. The population of Sidnal village is 2400 consisting of 421 households. The main occupational activities in the village are cultivation, dairy and agricultural labour. There are totally 251 (61per cent) cultivator households in the village. Out of 251 cultivator families 150 were growing tobacco during the survey period (Feb.-March 1998) and 90per cent of them expressed their willingness to shift from tobacco.

There are 121 landless households the members of which work mainly as agricultural labourers. The present wage rate in the village is Rs. 30 for males and Rs. 25 for females(it was Rs. 25 and Rs 20 during the survey period). Females constitute nearly 50per cent of the population. Located in Chikkodi Taluk the village is at 12 kms distance from Nippani town which is a prominent tobacco cultivation,processing and trading center. River Vedaganga runs through the village.Total geographical area of the village is 1115 acres. Of this 93 per cent (1032 acres) is cultivable area. 73 per cent of the cultivable land is black soil and the remaining 27 per cent constitutes red soil. Main crops grown in the village are jowar, tobacco, sugarcane, soybean and groundnut. Wells, borewells and river water are the main sources of irrigation.

Sidnal is well connected to Nippani by two tar roads. But one of the nearest route is closed for transport during rainy season when the over-bridge constructed for Vedaganga river gets submerged in water. Sidnal has a well established school run by a private Education Society. But there is no health center in the village. PHU is located 3 kms away. There are three RMPs in the village. Village has two co-operative societies which give credit to various agricultural operations, dairy and also arrange for sale of milk. There are two banks at a distance 2 kms(M.G.Bank) and 3 kms(Syndicate Bank). Village has one post office. Sidnal village does not have any market place. There are petty shops and one small tea club. Some of the tobacco farmers are tobacco traders also. There are two tobacco processing units in the village.

After choosing Sidnal village for studying the impact of shifting from tobacco we surveyed all the cultivator households in the village to

know their economic status, social background, cropping pattern, cost of cultivation for different crops etc. Agriculture is the main occupation of 251 households. 17 per cent of the households belong to SC/ST group. 38 per cent are from backward communities. None of the SC/ST households belong to large farmers category. Except 2 families all others are marginal farmers. More than 50 per cent of the households in Sidnal are below poverty line earning less than Rs. 20000/- p.a. 31 per cent earn upto Rs. 50000 and 12per cent earn more than Rs. 50000. There is nearly 80per cent literacy among cultivator households. Percentage of illiteracy is lower in large farm households.

II FARM ECONOMICS

Total agriculture land owned by 251 households is 808 acres. 65 per cent of this land is under irrigation. Borewell is the main source of irrigation. 50 per cent of land belonging to marginal farmers is under irrigation. Small farmers have 13 per cent of land under irrigation, medium farmers have 20 per cent land under irrigation and large farmers have 22 per cent of land under irrigation. But,34 per cent of the total irrigated land belongs to large farmers and 15 per cent belongs to marginal farmers. Among 251 cultivator households in Sidnal, 63 per cent are marginal farmers, 19 per cent are small farmers, 12 per cent are medium farmers and 6 per cent are large farmers. But only 20 per cent of the agricultural land belongs to marginal farmers. 23 per cent belongs to small farmers, 28 per cent belongs to medium farmers and 29 per cent land belongs to large farmers.

As said earlier jowar, tobacco, soybean, sugarcane and groundnut are the major crops grown in Sidnal. Table-7.1 A in appendix presents cropped area under different crops as per farm size. 25 to 50 acres of the cropped area is under onion, pulses and grass. Other crops like paddy, wheat, maize, vegetables and chilly are grown in few acres of land. Jowar occupies 25 per cent of the total cropped area. Tobacco occupies 20 per cent of the cropped area. Soybean occupies 18 per cent , sugarcane and groundnut each occupy 13per cent and onion is grown under 5 per cent cropped area. 2-3 per cent of the cropped area is under pulses and grass.

***Preferential Crops as per the category of farmers**

Marginal	Small	Medium	Large
1. Groundnut	Tobacco	Tobacco	Soybean
2. Tobacco	Soybean	Sugarcane	Sugarcane
3. Soybean	Groundnut	Soybean	Tobacco
4. Sugarcane	Sugarcane	Groundnut	Onion
5. Grass	Onion	Onion	Groundnut

*Based on total Cropped area

Tables-7.2 A & 7.3 A in appendix present the total production, total value, total cost of production and net returns for different crops. In Table-7.2 A, the value of by-product is also included in calculating the total value and net returns for different crops. In Table-7.3 A, the total value is presented without the value of by-products. The total cost of cultivation for different crops excludes marketing cost which is discussed separately.

As seen from Tables-7.2 A & 7.3 A, cost of production per acre is highest for sugarcane followed by tobacco, vegetables and paddy. Labour cost constitutes a major portion of the cost. It is higher for vegetables, onion and tobacco. Labour cost is not less than 30 per cent for any of the crops. Use of hired labour is higher for most of the crops. But there is more use of labour in cultivation of tobacco, vegetables, sugarcane, paddy, wheat, and onion. Per acre bullock labour use (Table 7.5 A) is higher for paddy, vegetables and wheat. Per acre bullock labour use is 3 labour days for tobacco.

Per acre marketing costs are higher for sugarcane, onion and tobacco as compared to other crops. Due to its bulkiness and heave weight the transport of sugar cane is costlier for formers (Rs. 2133). Per acre costs are Rs. 663 for onion and Rs. 641 for tobacco. Marketing costs are lower for groundnut (Rs. 223), soybean (Rs. 267) and jowar (Rs.116).

Which crop is profitable?

The rates of return for different crops presented in Tables 7.2 A & 7.3 A, should be considered as broad indicators of the extent of returns from different crops as the data is for only one year. Sugarcane is the most profitable crop as the per acre returns are higher and the rate of return per rupee of investment is higher i.e. Rs. 3.00. In 1998, the returns from onion cultivation appear to be very high. Though onion cultivation is profitable as said by farmers, the returns for onion in 1998 cannot be treated to be regular or normal as there were some discrepancies in the market which gained very high price for onion.Other crops which seem to be profitable as compared to tobacco are maize, soybean, groundnut and vegetables. If we consider the by-product value, groundnut is the most remunerative crop. The cultivation of groundnut which otherwise will yield less than a rupee for every rupee of investment will bring in 2 times more return if the value of by-product is added to the total returns. But farmers do not calculate returns adding the value of by-products. Even without adding the value of by-products, the crops mentioned above are more remunerative than the tobacco. **Tobacco is in the seventh position in terms of return.**

III INTERVENTION

Chapter VI gives a more detailed presentation of choosing the project village. As said earlier, once the household survey of cultivators was completed, we visited the Sidnal village frequently and had discussion with farmers about tobacco cultivation, alternative crops, activities and problems in cultivation of tobacco and other crops etc. Farmers knew about alternative crops and many of them had already tried out these crops. In view of commercial gains from tobacco, cultivation of alternatives was not sustained. It was expressed by many farmers that dairy was also a profitable activity in the area and if farmers are engaged in dairy then they would automatically shift from tobacco because both the activities are laborious and if farmers buy buffalo a lot of time is required to maintain it. Moreover, the risk involved in dairy are comparatively lower and the returns are also reasonably high as, the purchase rate per litter of milk is higher in Maharashtra region.

During the household survey and in our frequent meetings with farmers in Sidnal Village, many farmers expressed the **necessity of irrigation, financial assistance and provision of good quality seeds for taking up other alternative crops and alternative activities. Irrigation was their main consideration as it would facilitate permanent shift from tobacco.** The problems in provision of irrigation, connecting the village through canal to Hidkal main canal and regular availability of water from Doodh Ganga reservoir are discussed in earlier chapter.

When we looked into the other options, nearly 100 farmers came forward and requested assistance for d**airy and also the provision of good quality seeds as incentives. Assistance is** very much essential for the poor farmers to carry on the experiment of shifting. We discussed the matter with the Syndicate and Malaprabha Grameena Bank Officials, for the provision of loans to farmers for Dairy. They happily agreed to extend bank finance for dairy and CMDR offered to bear a significant part of the loan amount as an incentive to be paid over a period of 12 months. In addition we suggested that CMDR would provide 30 kgs of quality soybean seeds to each of the selected farmer.

Out of the 100 farmers who approached us for assistance, in all 30 farmers have taken loan for dairy and 46 farmers have received soybean seeds. Other farmers who were to get assistance from Malaprabha Grameen Bank did not pursue the matter as the interest rates of Grameena Bank were 1.5 percentage point higher than the rate quoted by the Syndicate Bank. Therefore our study on the impact of shifting was limited to 76 beneficiaries instead of 100 farmers.

Details about beneficiary shifters

1. 70 per cent of our beneficiary shifters are in the middle age group. 21 per cent are youngsters below the age 29 and 9 per cent are aged (above 60).

2. Majority(72 per cent) of the beneficiaries are literate. They have attended school but have not attained primary education. 8 per cent are illiterates and 20 per cent have received college education.

3. 60 per cent of the families are dependent on agriculture alone, while other families are engaged in labour, tailoring and services along with agriculture. In addition to agriculture 40 per cent (31) of the families undertake dairy. 9 per cent of the families have members working as labourers, 10 per cent have members in service and 5 per cent of the families do some petty business. 5 beneficiary households who have taken loan under project assistance were already maintaining dairy.

4. As per the household income, majority (39 per cent) of the households live below poverty line. Their average earning is below Rs. 20000. 37 per cent earn Rs. 20000-Rs.50000. 17 per cent earn Rs. 50000- Rs. 100000 and only 7 per cent earn above Rs. 100000 p.a. Beneficiaries in the soybean seeds category are richer as 48per cent are above poverty line as compared to those in dairy category (12per cent).

5. Majority of our beneficiaries belong to the group of small farmers (36 per cent). Small farmers are 27 per cent and medium farmers are 11per cent. Large farmers are 6 per cent only.Though we needed more number of large farmers as to bring larger area under other crops, we encouraged small and marginal farmers. Large farmers can face risks of loss. But for poor farmers it is the subsistence living. We wanted to know how these farmers react to changes in cropping pattern , income and risks. If poor farmers can get the same level of returns, then, we may expect that large farmers may not face any problems. But risk involved is greater with large farmers in absolute terms, though in relative terms it may be the same for both.

6. For 78 per cent of the beneficiaries, land is registered in their names. For others it is usually in fathers' name. For taking a decision on shifting it is essential that the beneficiary should be the owner of the land. Elders who are cultivating tobacco from many years may not agree to shift. Of the total families who were growing tobacco last year and whose land is not registered in their name, none of the families have completely shifted from tobacco.

7. Except three, all other dairy beneficiaries who had received assistance had started repaying the loan within a month of purchase

of buffalo. Two of them had brought the buffalo just one week before the survey and the other beneficiary could not pay earlier because the buffalo died. He has purchased another buffalo from his own money. Insurance claim is not yet settled. 20 per cent of the beneficiaries were paying upto Rs.200/- p.m. and 43 per cent were paying more than Rs.500/- per month. 37 per cent of the beneficiary farmers have repaid the complete amount Average milk yield per day is 5 litres and average returns per month are around Rs.1600/-.Net returns are apex. Rs. 1000/- Rs. 1200 per month. Majority of the beneficiaries repaying more than Rs. 500/- per month, itself indicates that beneficiaries are getting good returns. One of the beneficiaries has been earning Rs.2000/- per month from the sale of milk. Bank officials are very happy with repayment by farmers.

IV REPORTING SHIFTING FROM TOBACCO

A. Shifting as per the statements made by the beneficiary shifters.

After a period of three months of receiving assistance from banks and CMDR we approached the farmers (September,1999). By this time soybean crop had come up well and was ready for harvesting. Farmers had planted tobacco seedlings. Farmers had assured that they will reduce the land under tobacco and grow more soybean, onion, groundnut, sugarcane and vegetables. Tables 7.1 & 7.2 present the details of land under tobacco and under different crops by farm size and category of beneficiaries. Details were collected and the results of the initial discussion with all the 76 farmers (beneficiaries) are presented below.

*Of the total dairy and soybean seeds beneficiaries, 64 per cent (49) of the farmers did not grow tobacco in 1999. 20 per cent (15) reduced their land for tobacco by 50per cent and 5 per cent(4) have reduced by 25per cent and 9 per cent(7) have reduced upto 75per cent . **One of the beneficiaries continues to grow tobacco and has no intention of shifting(1per cent).**

***50 per cent of the beneficiaries (77per cent of the total shifters) have stopped growing tobacco even before getting assistance. Some of them were not growing tobacco for two to three years. Due to good prices in 1998 there were chances that they would grow tobacco. But they assured that they will not grow tobacco in 1999 and cultivate either soybean or onion .**

Table –7.1
Total land holding and land under Tobacco cultivation as per F-size

(in acres)

	No. of Beneficiaries	Total Land holding	Land Under Tobacco (1998)	Land under tobacco (1999)	Change over the previous year (in per cent)
> = 1 acre	11 (14.5)	6.07	1.25 (20.61)	0.00	-100.00
1 acre – 2.5 acres	21 (27.6)	39.25	9.75 (24.84)	2.75 (7.01)	-71.8
2.5 acres – 5 acres	27 (35.5)	107.97	25.25 (23.38)	12.55(11.62)	-50.29
5 acres – 10 acres	11 (14.5)	81.25	27.00 (33.23)	17.75 (21.85)	-34.26
> 10 acres	6 (7.9)	89.00	21.00 (23.59)	18.00 (20.22)	-14.28
Total	**76 (100.00)**	**323.54**	**84.25**	**51.05**	**-39.4**

(Figures in bracket indicates per cent to total No. of Beneficiaries(in - 1) and as percent to total Land holding (in 3 & 4)

Total land holding of the 76 beneficiaries is 323.54 acres. Of this 26per cent of the land was under tobacco cultivation in 1998. In 1999, land under tobacco reduced to 15.8 per cent . There is 39.4 per cent shifting from tobacco. The poorest who are holding less than 1 acre are not growing tobacco during 1998–99 (as per beneficiary statements). We can notice that (Table-7.1) land under tobacco increases corresponding to the land holdings. That also shows an inverse relationship with shifting and land holding. Farmers with larger holdings have responded less to the intervention/ motivation. Except one farmer all the other 75 beneficiaries are trying to shift from tobacco, though the change is very marginal. There is only 39 per cent reduction in the land under tobacco. One of the beneficiary who continues to grow tobacco has expressed his inability to give up tobacco cultivation for lack of irrigational facilities.

Table –7. 2
Land utilization pattern for different crops as per category of beneficiaries

(in acres)

Crops	Soybean Beneficiaries		Dairy Beneficiaries	
	1998	**1999**	**1998**	**1999**
1. Soybean	60.19	71.88	13.75	19.08
2. Groundnut	34.94	33.25	20.50	17.02
3. Sugarcane	65.50	79.75	21.25	23.75
4. Tobacco	62.75	40.75	21.50	10.30
5. Jowar	1.00	1.00	3.75	2.50
6. Others	22.75	22.50	8.57	9.85
Total	**247.12**	**249.13**	**89.32**	**82.50**

Soybean, sugarcane and tobacco are the prominent crops grown in Sidnal village. Table-7.2 reveals that there is increase in cultivation of soybean and sugarcane over the previous year while there is reduction in tobacco crop cultivation. Soybean was grown due to supply of good quality seeds by CMDR and sugarcane due to the availability of water

from Vedaganga river. Shifting is seen more among dairy beneficiaries (52per cent) than soybean beneficiaries (35per cent). Since dairy activity and tobacco are laborious farmers cannot maintain both.

During August-September, 1999, which is the prime time for planting tobacco seedlings, on our preliminary investigation we found that majority of our beneficiaries (64 per cent) had stopped growing tobacco. The remaining 35 per cent are trying to shift gradually.

B. Shifting as per village records

Agricultural land of farmers is spread over a long distance. If one piece of land is in Sidnal the other is located at the border or in other village. We trusted our farmers. But for the purpose of authenticity of our research study we verified their statements with village accountant's records. We collected details of cropping pattern for two year period for which the farmers had given details i.e. before intervention and after intervention. Again in August 2000, we recorded the details about land holdings under tobacco from our 76 beneficiaries.

According to land records, in the sowing season of 1999 41per cent (31) of the beneficiary farmers did not grow tobacco. All of them were not growing tobacco earlier also. 16per cent (12) reduced their land under tobacco by 25 per cent , 19 farmers(25 per cent) reduced upto 50per cent and 10 farmers (13 per cent) reduced by 100per cent . These 10 farmers are the real shifters. Total land under tobacco cultivated by these 10 farmers was 18.75 acres. Two farmers reduced land under tobacco by 75per cent whereas 2 farmers continued to grow tobacco to the same extent. One of them said that he had reduced the land under tobacco by 50 per cent . The additional 2 acres under tobacco is new land purchased by him. He said that to increase the fertility and clean the land he had cultivated tobacco and promised to give up another 50 per cent in the next season. Another farmer who is growing tobacco in only 1/4 acre expressed his inability to stop growing tobacco due to lack of irrigation.

V IMPACT OF INTERVENTION

Farmers who had received assistance for soybean seeds were happy as the yield was good inspite of low rain during the later period. As mentioned earlier those who had taken assistance for dairy were earning good income. But unfortunately the market rates for soybean in 2000 were low as compared to 1999. The rate per kg. was Rs. 9 in 1999 which decreased to Rs 8 in 2000. The rates for tobacco were higher during the same period. The rates which were Rs 25 to Rs. 29 per kg. in 1999 increased to Rs. 32 to Rs. 37 in 2000.

Table – 7.3

Extent of Shifting (Number of beneficiaries and Percentage of shifting)

	Decrease					Increase	Stopped growing Tobacco	Total Shift
	25%	25-50 %	50-100%	100%	Nil			
1998-99								
1	12 (16%)	19 (25%)	2 (3%)	10 (13%)	2 (3%)	nil	31 (40%)	41 (54%)
2	4 (5%)	15 (20%)	7 (9%)	11 (15%)	1 (1%)	nil	38 (50%)	49 (64%)
1999=2000								
1	3 (4%)	10 (13%)	1(1%)	5 (7%)	13 (17%)	8 (11%)	36 (47%)	41 (5%)

*P.N 1 =As per village record
2 =As per beneficiary statements

To understand how much the farmers were serious about shifting we once again met all the 76 beneficiaries in the next agriculture season i.e. in August, 2000. This was the time when soybean had already been sown and tobacco seedlings were being implanted. We did not provide any incentives this year to farmers. There were some significant changes. The extent of shifting as reported the farmers and as per village records is presented in table 7.3 above. 4 per cent of the farmers further reduced their land for tobacco by 25 per cent , 13per cent of the farmers reduced by 50 per cent and 7 per cent farmers reduced by 100per cent . But 17 per cent of the farmers continued to grow tobacco in same proportion. One of the discouraging factor is that 11 per cent of the farmers increased the area under tobacco in the year 2000-01 as compared to the land land under tobacco in 1999. Of the 10 farmers who had reduced their land under tobacco by 100 per cent in 1999, 5 farmers planted tobacco in 2000. The other 5 have completely given up tobacco. Therefore the percentage of farmers who have stopped growing tobacco increased from 41per cent in 1999 to 47per cent . **We can conclude to say that complete shifting as per farmers statement was 64 per cent (50 per cent +14 per cent) in 1999 and 54per cent (41 per cent +13per cent) as per village records.** In the year 2000 as per village records there is no change in shifting in terms of number of beneficiary farmers i.e 54 per cent (47 per cent +7 per cent). This is mainly because 11 per cent have increased land under tobacco and 17per cent have grown tobacco in the same area. 18 per cent have reduced land under tobacco as compared to 1999 agriculture season. **But, the overall impact is encouraging. As per the village records the land under tobacco cultivation has come down. Total land under tobacco has come down from 92 acres in 1998 to 46 acres in 1999 and to 39 acres in 2000.** In 1999 the decrease was 50 per cent and in 2000 there is 15 per cent reduction in land under tobacco.

VI COMMENTS OF THE FARMERS ON TOBACCO SHIFTING:

Farmers who have not given up tobacco have said that they will stop tobacco cultivation gradually. In 1999, due to heavy rain during June and July the agricultural fields of many of our beneficiaries which are located on the bank of the Vedaganga river were merged in over flown water. As a result they could not grow any crop and those who had sown already had to lose all the crop. As a result, they say that they had no option and had to cultivate tobacco to make an earning. 16per cent of the farmers said that they could not shift completely due to dry land as there was no improvement made in present irrigational facilities. This year (2000) there was a delay in monsoon and as a result many of the farmers could not sow soybean.

All the beneficiaries who received soybean seeds were happy with the quality of the seeds and nearly 75per cent of them have increased cultivation of soybean as compared to last year. They were expecting higher yield from soybean crop.

Farmers say that they are accustomed to tobacco so much that they could require time to shift and continued assistance is necessary in the initial years. **Many of them have requested for onion seeds to be sown in October.**

Farmers say that banks lend loan only if there is increase in tobacco crop. Therefore farmers lie about area under tobacco. Farmers whose land is in water grow tobacco in August. If there is tobacco there is less weed. They remove the weeds in track and sow jowar in October. They say that when jowar height increases automatically tobacco plants die or do not grow.

Farmers feel that tobacco cultivation will come down atleast for 4-5 years as there is Congress government in Maharashtra. MLA's and MPs are from project village and therefore there will be sufficient water release from Dhood Ganga reservoir.

One encouraging factor that has strengthened our impact study is that out of 49 farmers who had given up tobacco in 1999, 77per cent (38) had not grown tobacco in 1998 also i.e. even before getting the incentives from the Center. Our intervention program started in May, 1998 and during our meetings with farmers we had assured them that the Center would help farmers in shifting either by way of provision of loan, irrigation facilities or by providing seeds. But we could not provide any incentives in 1998. Inspite of non-availability of incentives, these farmers did not grow tobacco in 1998. Since farmers main request was for irrigation and assistance for undertaking alternate activity, our effort was to provide irrigation facility to the entire village, so that tobacco could be eliminated completely. But this is possible only with the intervention of Government.

VII AGRICULTURE WITHOUT TOBACCO - EXPERIENCE OF FARMERS WHO SHIFTED WITHOUT INCENTIVES IN TOBACCO (SIDNAL) VILLAGE

Tobacco is one of the main cash crops the cultivation of which is felt to be profitable by the farmers in Nippani as well as different parts of the country. Since the consumption of tobacco is harmful to human health, activists in many countries are forcing the respective governments to ban the sale of tobacco products. Their opposition is directed towards the sale and consumption of tobacco. But ultimately the burden of such agitation fall on the farmers. Tobacco cultivation is profitable because there is large demand for tobacco products which are consumed because of the stimulation they provide. As a result all that is grown is sold to processing industries, bidi and cigarette industries, zarda makers, gutkha manufacturers and units manufacturing chewing tobacco, tobacco paste and also to industries using tobacco for producing alternative products other than for consumption. **But with restrictions on production, sale and increased tax rate on the tobacco products the industry may be compelled to shift to production of other goods also. This naturally would affect the demand for raw tobacco.**

Experiments on shifting have been undertaken in countries like Bangladesh, Canada, Maldives and Zimbabwe. The results seem to be encouraging. **In India, no such effort has been made on a large scale to study the impact of shifting.** Tobacco Research Institutes in the country have conducted studies on the Economics of different crops in tobacco growing region. These studies suggest some alternatives which can replace tobacco or which can be grown as mixed crop along with tobacco.But all such research is done under the strict supervision of tobacco scientists in fields of tobacco research station.

The agricultural land or the soil in Nippani tract is well suited for tobacco cultivation and tobacco has been the main crop in this region for hundreds of years.To shift farmers from tobacco to other crops, we need to show them the economics of cultivating different crops **which are carried out in tobacco fields in the villages and not in the fields in any research station. Farmers have age old practices in agriculture. They do not accurately quantify the use of seeds, pesticides, manure's, labour and so on.** So research studies should aim at observing their agricultural practices, find out loopholes and come out with practical solutions to any such problems viz., use of pesticides, fertilizers, type of seeds , water requirement etc. **Though training camps are held, farmers are not convinced unless they are involved in understanding the economics of different crops**. They need to know the differences clearly in terms of expenditure and the returns in terms of cash. Apart from crop income, the expectation of some benefits or incentives may induce farmers to shift from tobacco. The returns from agriculture are generally uncertain. Farmers expect

that there should be **proper availability of seeds, stable market for the produce, technical guidance in terms of use of manures/pesticides, mixed crops and availability of irrigation and credit for experimenting with new crops or alternative crops in place of tobacco.** But we found during our field visit to Sidnal and other villages that many farmers who were growing tobacco earlier had shifted to other crops. One of the main factor was the availability of irrigation particularly in village like Bhoj where there is more than 75per cent shifting from tobacco. In Sidnal also some of the farmers who were growing tobacco earlier were growing other crops now. **This naturally was an encouraging factor because, majority of the farmers whom we selected for our intervention study were willing to shift from tobacco only in the case of availability of seeds, credit and irrigation.**

The main focus of our study was to analyse the economics of shifting from tobacco. What would be the returns from other crops or activities in comparison to tobacco, what would be the changes in the economic status of the households, how does the market react were the points to be discussed. This information we tried to get from our detailed analysis of the agricultural households who were willing to shift partly during our study period.

In addition to this information we further moved to get details of the households who have shifted from tobacco voluntarily. **The fact that farmers have continued to grow other crops for may years indicates that they can sustain without tobacco.** To find out the factors responsible for shifting with an intention to search the possibilities of its replication to other tobacco growing households **we met the farmers who have completely given up tobacco cultivation on their own.** We had discussion with 25 farmers (20per cent of those who are not growing tobacco in Sidnal, ref: our field visit – 1999) who were not growing tobacco at least for 5 years or more than 5 year period. The farmers were chosen on the basis of information given by village accountant. We collected information by administering a checklist. Most of the of the queries were open-ended questions. It was more of an informal discussion with the shifting farmers.

Social and Economic Status of Shifters (without incentives)

In Sidnal majority of the population belongs to the Jain Community. Only 3 shifters from those interviewed were from backward community. **None of the farmers among the shifters is from SC/ST community.** There are totally 20 SC/ST households in Sidnal which are not growing tobacco. But some of them are non-growers due to marginal holdings and some of them have stopped growing tobacco for one or two years. They are not complete shifters.Hence they could not be included in our sample.

Eight percent (2 families)of the selected shifters are lingayats and 84per cent (21 families) belong to Jain Community. Majority of the farmers (80per cent) are in the middle age group (30-59). 16per cent are aged falling above 60. None of the shifter is illiterate. 36per cent of them have atleast primary education, 56 per cent have attained secondary education and (8per cent) of them are graduates. Generally in the villages we find large number of joint families. But 88 per cent of these shifters are having nuclear family.

In addition to cultivation, the members of the family work as agricultural labourers also. Members of the families having an annual income upto one lakh also work as agricultural labourers. 36per cent of the shifter families have dairy.

Majority of the farmers live in pucca houses and the economic status of nearly 60-70 per cent of the families is good. Before shifting from tobacco 4 (16per cent) families had an income less than Rs. 11000/- the limit which was considered to be poverty line figure earlier. But after growing other crops 3 of them (12per cent) are earning more than Rs. 11000. Only one family is still in poor status. Earlier 36per cent of the families earned more than Rs. 50000 p.a. **But now 60per cent are earning above Rs. 50000 p.a.**

Farmers spend nearly 5 per cent of their income on education and health and in 16 per cent of the families the expenditure on education is zero as none of the members is in school/college going age. 70 per cent of their earning is spent on agriculture and consumption purpose. 40 per cent of the selected shifters make savings upto 10 per cent and 32per cent of them make saving upto 25 per cent. The remaining 24 per cent do not make any saving.

Agricultural background of Shifters

80 per cent of the farmers who have shifted have stopped growing tobacco since 8-10 years. 20per cent have stopped growing for 5 years. And the shifters include marginal, small, medium and large farmers.

28 per cent of them are marginal farmers, 52 per cent are small farmers and 8 per cent are medium farmers. Three (12per cent) of the shifters are large farmers.

The total land owned by sample shifters is 155.5 acres of which 86.5 acres was devoted for tobacco cultivation earlier. **This accounted for 56per cent of the total land use.** 60 per cent of the sample shifters had less than 2.5 acres under tobacco. 28 per cent had up to 5 acres and 8per cent had tobacco grown upto 10 acres. Only one farmer cultivated tobacco in more than 10 acres land. More than 50per cent of the total land owned by sample shifters belongs to large farmers. 8per cent is owned by marginal farmers, 28 per cent is

owned by small and 10 per cent is owned by medium farmers. Per capita land holdings are 1.5 acre for marginal farmers, 3.6 acre for small, 8 acres for medium and 28 acres for large farmers.

42 per cent of the land belonging to marginal farmers, 72 per cent belonging to small farmers and 81 per cent of the land owned by large farmers is under irrigation.

Crops grown by shifters

Earlier to shifting farmers were growing food grains as well as cash crops like sugarcane, ground nut, soybean and onion in addition to tobacco. Vegetables were also grown but to a limited extent. **Groundnut and Jowar were the two main crops grown by more than 50per cent of the farmers. But now none of the farmers is growing food grain alone.** 16per cent are growing only cash crops like sugarcane, chilly and onion. Others grow both food grains and cash crops including oil seeds. Farmers grow white jowar for fodder purpose also. Only one shifter is growing fodder. Farmers use the dry part of jowar and the tender upper part of sugarcane plant also as fodder.

Farmers know that there is risk of loss in every agricultural crop. They feel that the risk of loss due to heavy rain is severe in tobacco and farmers lose everything if rain occur during harvesting. But its occurrence is very rare. Farmers feel that loss due to crop disease is more in other crops. Though they do not lose entire crop, the returns or prices offered are very low.

VIII DETAILS IN SHIFTING

A. Why did the farmers shift from tobacco?

Increased **use of labour, water availability** (irrigation), **high cost of production, marketing problems**, use of **fertilizers** and **pesticides** are the main reasons cited in order by farmers for giving up tobacco cultivation. Tobacco is both labour intensive and high cost crop. It is a laborious activity and usually the whole family involves in crops cultivation, harvesting and curing. Cost of production is high involving bed preparation for seedlings, transplant of seedlings, weeding, use of pesticides/insecticides and finally packing of the product. Tobacco is a rainfed crop. It requires water at few intervals. Too much of water is harmful to the plant. Those who have irrigation facility cannot use it for tobacco. Tobacco is a rigid plant but there are specific diseases and pests that particularly affect the tobacco crop right from the beginning i.e. bed preparation for seedlings. Therefore the requirement for pesticides and fertilizers is more.

16 per cent of the shifters said that tobacco is harmful to health and therefore its cultivation has to be stopped. But none of them has

stopped growing tobacco solely for health reason.

B.Changes experienced by farmers after shifting from tobacco.

Farmers feel that crop diseases are more in other crops than tobacco. But for those who are growing sugarcane the diseases are less. **General feeling of the farmers is that the cost of cultivation is less in other crops grown by them as compared to tobacco grown by their neighbourers.** One third of the farmers say that the use of fertilizers has increased in recent years. Earlier they used more manure. Occurrence of new crop diseases and the introduction of new fertilizers in the market are also the reasons for increased use of fertilizers. **But majority of the shifters (40 per cent) have lessened the use of fertilizers and 28 per cent of them are using the same amount of fertilizers since many years.** There is no significant change in the use of implements after shifting from tobacco. Crops like sugarcane require continuous supply of water**. One of the significant change is in the use of labour. 80 per cent of the shifters feel that there is decrease in the use of labour** and 20 per cent feel that there is no change in the use of labour after shifting to cultivation of other crops.

Except 2 farmers all others have felt that there is more leisure available to farmers after shifting from tobacco. Women members also feel that they get time to work outside.

Shifting has not made any impact on consumption habits of the household members. Half of the shifter families do not consume tobacco. Women members from two of the families said that they have stopped consuming tobacco now.

Savings are made generally by male members. Only women from those households **which maintain dairy have some cash in their hand.**

Women from 8(32 per cent) families **have said that tobacco cultivation, curing and processing causes some minor health problems like patches on skin, skin allergy breathing problem** etc. Members from processing families would have more health problems. Others (68 per cent) have opined that tobacco cultivation does not cause any health problems. But they have also said that **they are unable or have not tried to identity the health problems that could be due to tobacco cultivation**

C. Reaction by others

Children of tobacco farmers **have felt happy for shifting from tobacco.** Only 20 per cent of them have been indifferent towards the changes in the cropping pattern.

Similarly there is no reaction from traders of tobacco. Since the percentage of shifters is very small traders are not worried. To few of the farmers traders have advised to grow tobacco. But there is no seriousness or concern over shifting.

Neighbourers have shown mixed reaction over shifting. **24 per cent** of the farmers have **been forced by their neighbourers to start cultivation** of tobacco. Some of them are concerned because sugarcane roots spread to their field. **32 per cent of the neighbourers have shown interest in shifting** from tobacco and **44 per cent are not concerned or have shown no** response to their neighbours (shifter) shifting.

D.Opinion of women on shifting

Except in one household, women from all other families have opined that shifting **from tobacco is favorable to farmers.** The reasons are specific to **problems of labour, maintenance of the crop, higher cost and manipulation in marketing.** They are happy for the reason that their men get **more leisure and come home early.**

Women who have said that shifting is not beneficial feel that there is government support for cultivation and marketing of tobacco. This is not so for other crops. Women who are illiterate also suggest that government should not provide subsidies, credit and marketing facilities to tobacco cultivation and products. There is also the feeling that crop failure is more in other crops than tobacco. The general opinion is that assured marketing and assistance (both financial &technical) for undertaking other economic activities and alternative crops will automatically lead to reduction of tobacco in Sidnal.

Issues in shifting- Lessons from experience in Sidnal

- The main reason cited by majority of the formers (42per cent) for growing tobacco is the profitability of cultivation. But from the experiences of the formers who have shifted from tobacco and from the details collected from the cultivator households in Sidnal village it is found that tobacco is not the only crop which can bring better returns. Sugarcane, Onion, Maize and Vegetables under irrigated conditions and, groundnut, soybean under rainfed conditions could be the possible alternatives to tobacco.

- Farmers (26 per cent) feel that tobacco is the best crop suitable to soil conditions in Sidnal and surrounding villages. But, farmers who have shifted from tobacco on their own (without any incentives) have been growing other crops like soybean, jowar, groundnut, sugarcane, vegetables and onion for several years and are getting better returns.

- Shifting from tobacco is larger (52 per cent) among formers who have taken assistance for dairy than farmers who have taken assistance for soybean seeds (35 per cent). It is felt that since dairy activity and tobacco are laborious farmers cannot maintain both. In tobacco growing areas where cultivation of other crops is not feasible in rainfed conditions, dairy can be an alternative activity that can be taken up by farmers. Farmers can cultivate Kharif crops and grow fodder and jowar during rabi season.

- Irrigation is one of the main factors facilitating shifting from tobacco. Small and large farmers who have shifted from tobacco on their own, have more than 70 per cent of their agriculture land under irrigation. Even the marginal farmers have 42 per cent of their land under irrigation.

- Shifters say that there is more leisure and lesser problem of labour after shifting from tobacco .

- Crops like soybean and groundnut are affected more by delayed rainfall and extreme rainfall. If there is no rainfall sowing is delayed or the growth of plats is affected. If there is heavy rainfall formers whose fields are on the bank of the river cannot grow groundnut and soybean. They will opt for tobacco in September month. In 1999, there was heavy rainfall and this year there was delayed rainfall.

- Farmers say that banks lend loan only if the holdings under tobacco are large. This discourages farmers who would like to get institutional credit to cultivate other crops.

- Farmers say that they are accustomed to tobacco so much that they would require time to shift and continued assistance is necessary in the initial years.

- Availability of market is one of the factors which is promoting tobacco cultivation. But there are frequent fluctuations in demand for and marketing of other crops like soybean, groundnut, onion and vegetables particularly tomato, cauliflower etc. Intervention in establishing links between producers (oil refineries, processing units, sugarcane factories) and cultivators and making arrangements for transport of agricultural produce would be beneficial to non tobacco growers and promote the cultivation of other crops.

- During weeding, harvesting and semi-processing of tobacco, the hands of farmers particularly women are stained and dark patches are found on the palm. During this period they taste the food bitter and their appetite is low. There is also the feeling that food gets spoiled within few hours of preparation.

16 per cent of the farmers who have shifted from tobacco on their own have said that health problems are one of the reasons for shifting from tobacco. These findings do not have any scientific basis. Therefore there is need for further research investigation in this connection. The links between health problems and tobacco cultivation need to be justified. This could be a major issue for motivating farmers from tobacco in their own interest.

- One of the main reasons for tobacco being so popular and prominent and continued to be grown despite of many problem is, the sustained support from tobacco traders in Nippani area. Manufacturers from other states also have established their centers in Nippani region mainly to facilitate grading of the produce, price fixation and purchase of the produce. Sugarcane also has good marketing chain.

  Farmers are not happy with the functioning of APMC (Agriculture Produce Marketing Committee).

From our experience in the tobacco villages and the interaction with the farmers during these 3 years period it is felt that farmers need to organize themselves and form a co-operative society which can cater to all the basic necessities of village economy. But 'Intervention' is necessary to initiate farmers to associate and form a co-operative. In villages where there are dairy co-operatives dairy activity has flourished. Marketing co-operatives also have succeeded in other parts. Sugar co-operatives are making profits.

Intervention can be in motivating farmers, mobilizing resources, set the guidelines and educate farmers in functioning of the co-operative.

In recent years tobacco is being used for purposes other than for consumption (bidi, cigarettes, gutkha, zarda etc.). Tobacco is being used in the production of seed oil, nicotine sulphate, drugs, protein etc. But the technology developed for the production of these products is in infant stage and farmers are unaware of these developments and also the marketing points for selling their produce to manufacturers of these alternative products.

Government can encourage research on alternative uses of tobacco and encourage entrepreneurs in the manufacture of these products through provision of credit, infrastructure facilities, lower taxes and promotion of exports.

X CONCLUSIONS :

At this stage of intervention programme, it is felt that tobacco cultivation can be stopped if there is continued assistance

and interaction with the farmers in the initial years. And in the case of natural disaster like heavy rainfall, disease attack farmers cannot help because for their survival they have to shift to tobacco. Farmers who have not shifted, have shown the urge for shifting. But returns are the main factors. Next years' soybean crop will depend on the price for the soybean this year. Last year the Soybean yield was good but the farmers said that returns are low due to variation in national prices.

Irrigational facilities, financial assistance to start different economic activities, technical know how and good variety of seeds in addition to mass campaigning may speed up the process of shifting. Shifting from tobacco as experienced in Sidnal and other tobacco growing villages is a gradual process. Farmers want to experiment with other crops. They wish to expand their agricultural operations. Since they are interested only in returns they wood naturally grow crops which have market and higher price. The differences in costs of cultivation do not bother them if the returns are very good. In addition the availability of facilities plays a major role. If there is a sugarcane factory nearby there is more sugarcane production provided there is irrigation. Food processing industries may add to cultivation of fruits, chilly, tomato etc. Oil refineries could encourage oil seeds production. Even the existence of market mechanism for selling any of the crops would boost cultivation of such crops. In Sidnal dairy activity is profitable as there is market or demand for milk from processing units in Maharashtra. There is market for sugarcane also as there are many factories nearby. But there is no proper market for groundnut, vegetables, onion and soybean.

We can conclude to say that complete shifting from tobacco was 64 per cent as per farmers' statement and 54per cent as per village records during 1998 to 1999. Though there is no change in the number of shifters during the year 1999-2000, the land under tobacco has come down by 15per cent . The fact that there was 50per cent reduction in the land under tobacco and more than 50 per cent reduction in the number of farmers growing tobacco is a boost to our intervention programme. This change has occurred during the first year of our intervention.

It implies that farmers can and are ready to give up tobacco. Considering harm that tobacco is causing to human health and the relative low returns, government and other agencies fighting for tobacco control can intervene on a large scale to educate farmers about the economics of cultivation of tobacco and other crops, provide technical know how for growing other crops and provide financial assistance at least in the initial years.

The real implications of shifting from tobacco could be analysed only when we can compare the economics of cultivation of different crops, returns from each crop and the socio-economic status of the

households between tobacco growing and non- tobacco growing households. This needs to be done for series of years and should be presented to farmers.

C h a p t e r - VIII

SUMMARY OF THE MAIN CONCLUSIONS

The present study on Economics of Shifting from Tobacco is based upon micro level data relating to bidi tobacco cultivation in southern part of India. Nippani region of Belgaum district of Karnataka is known to constitute Bidi Tobacco Belt in the country. Bidi tobacco produced in this belt has been adjudged to be one of the best of the kind sometimes equated with Virginia quality tobacco. Majority of the bidi tobacco growers of this region belong to upper socio-economic strata. Generally, the traders of this tobacco are reported to be having the roots in the states outside Karnataka.

Bidi tobacco does not have any regulated market facility. However, the traders though not organized in a formal way seem to form defacto cartel to decide about the price, supply places, which supplies to be made etc. In the Nippani region there are also some factories for processing bidi tobacco into finished products like chewing tobacco and bidi in particular. Since bidi tobacco is normally sun-cured the tobacco tract presents a scene of green/golden colour dry leaves spread out in front of the houses and small factory units, with women and children around the mattresses of leaves, engaged in separating out the mud particles, midribs, rotten and spoilt leaves from the good quality leaves etc. The courtyards of big land holders also present a scene of big bundles of bidi tobacco – bods, emitting enticing tobacco smell-aroma for the tobacco addicts.

The study attempted to probe into the factors behind tobacco cultivation in the Nippani tobacco belt, with an objective of suggesting an alternative cropping pattern and activities to tobacco farmers. With this purpose a survey of 2000 tobacco households was conducted during October, 1997 to March, 1998.

Before the survey was conducted the secondary data relating to tobacco production in India and other countries was analysed in order to understand the trends in tobacco cultivation, the determinants of the farmers decisions to use land area for tobacco, the implications of tobacco cultivation for other crops etc. Such an aggregative study using the international data brought out:

a. Tobacco area in the world is continuously increasing over the period of time. So also are production and yield from tobacco cultivation

b. Area under tobacco in the developed countries is declining while the yield is increasing. On the other hand, in the developing countries area production and yield are all increasing over the period of time. In fact, nearly 85% of world's tobacco area is from the developing countries.

c. It is interesting that during the 1990s area under tobacco cultivation is increased in as many 43 countries.

d. Tobacco has replaced area under food crop as well as other major cash crops in a number of tobacco producing countries of the world, as is brought out by the area replacement index worked out in the study for different tobacco producing regions of the world. Shockingly in the African and South American regions tobacco has been fast replacing food crops. This is also witnessed in some of the tobacco producing regions of India.

The micro level data analysis of the sample household in the 3 talukas of Belgaum district brought out the following interesting facts:

a. Area under tobacco in this region is highest as compared to other crops, but, the yield and return from tobacco are much lower relative to other crops.

b. tobacco not only keeps engaged largest area under cultivation but keeps the land engaged for longer period with an exception of sugarcane.

c. tobacco cultivation is found to be labor-intensive which ultimately results in low wage rate, wage discrimination by gender and exploitation.

d. frequent use of chemical fertilizer and pesticides affects the fertility of soil by causing depletion of nutrients of soil, shortage of water availability for other uses, environmental pollution etc.,

e. tobacco cultivation affects health of workers/cultivators causing skin irritation, loss of the appetite etc.,

f. the important reason for cultivation of tobacco is its profitability in monetary terms and also provision of enhanced employment opportunities.

g. Thus from the economic point of view, the following findings are worth noting regarding farmers' willingness to shift from tobacco :

- It is the costliest crop in real terms
- It exploits labor by paying low wage and discriminating wage by gender
- Its cultivation leads to decreasing returns to scale
- It affects the health of the environment and health of the workers/cultivators

h. The study showed that the tobacco farmers depend significantly on the financial institutions and money lenders for meeting the heavy costs of tobacco cultivation. It was revealing that the government authorized banking institutions have promoted the cultivation of this poisonous plant through ready provision of credit to the tobacco farmers. This indeed is contradictory to the governments avowed policy of tobacco control as evident from its statutory prescription of printing the warning on the packets of tobacco products viz. tobacco consumption is injurious to health.

In the background of the insights developed from micro level field data analysis the Centre undertook an action intervention programme for realizing the shift of farmers from tobacco cultivation to alternative crops / activities. The main experiences in connection with Centre's action intervention are summarized below:

Action Programme :

a. At the outset of the action intervention, our task was to choose a village, where intervention package was to be administered. Several rounds of Focus Group Discussions (FCD) in different villages helped us to do this. We finally chose Sidnal as the project village where the atmosphere was found to be conducive for implementing the intervention package for shifting from tobacco cultivation.

b. Intensive meetings of the villagers consisting of agricultural scientists, farmers, motivators, social activists and bankers helped us to evolve a promising intervention strategy for helping the farmers to shift.

c. This strategy of intervention consisted of

   i. Provision of high quality seeds of alternative crops suitable for the conditions of the area and
   ii. Provision of financial assistance to farmers to undertake non-farm activities to shift from tobacco.

d. Provision of seeds and bank credit was made at the beginning of the agricultural season. A total of 46 farmers took the seeds of soybean and 30 farmers bought buffaloes to start dairy activity from the financial assistance made available under the intervention programme

e. The initial response was quite good for that year, with a 50% reduction in the area under tobacco from out of the total holdings of the participating farmers. The repayment position of the credit given for dairy activity was also encouraging, indicating that dairy activity is an equally, if not more, paying activity for the farmers. In the immediately next year however, the reduction of tobacco was to the extent of 15 per cent.

f. The message, which has emerged out of the intervention is that there is a change in the mind set of the farmers to shift from tobacco cultivation. But, the time at our disposal was so limited that it is very difficult to make a firm statement that the change would be sustained in the long run.

g. The experience of intervention also brought out that for a major deviation from the age settled practices in agriculture a big push intervention with a comprehensive coverage of all the related aspects would be very much necessary. It was also realized that the intervention should cover fairly large percentage of the farm households of the village where intervention is tried out, for a significant degree of success.

h. Some of the interesting facts of outcomes of intervention deserve to be noted . These are:

* Tobacco is not the only crop which can bring better returns. Sugarcane, onion, maize and vegetables under irrigated conditions and groundnut, soybean under rainfed conditions could be the possible alternatives to tobacco. The mixed non-tobacco cropping pattern was considered by the farmers as a good substitute strategy for tobacco cultivation. This was re-confirmed by our intervention experience as well.

* Dairy is one of the possible alternative activities for shifting farmers from tobacco. Dairy and tobacco cultivation are highly labour intensive and hence farmers cannot undertake both with limited supplies of agricultural workers.

* Shifters have experienced lesser problems of labour and are enjoying more leisure after shifting from tobacco.

* Farmers say that they are accustomed to tobacco so much that they would require time to shift. It was also emphasized that continued assistance is necessary in the initial years.

* Irrigation facilities and assured demand for the produce are the main reasons for promoting tobacco cultivation.

* Farmers are not aware of the use of tobacco for purposes other than consumption. They do not know the marketing points for selling their produce to manufactures of the alternative products.

Intervention is necessary to organise farmers in tobacco villages to form a co-operative, which caters to the basic necessities of the village economy. Intervention in establishing links between producers (oil

refineries, processing units, sugarcane factories) and cultivators and making arrangements for transport of agricultural produce would be beneficial to those who are undertaking alternative activities in place of tobacco growers and promote the cultivation of other crops. For the purpose of any replicable strategy for effecting a shift from tobacco these components have to be considered as very relevant.

On the whole, this study on micro economics of shifting from tobacco has brought out that shifting from tobacco cultivation is not a goal beyond the reach of any country. What is required is a missionary spirit and dedication to convince the farmers about the ill effects of tobacco cultivation and tobacco consumption and also a concern on the part of the policy makers for the economic conditions of the farmers before the shift and after the shift from tobacco cultivation. An approach to help the farmers to improve their condition through adequate provision of all the necessary inputs for their activities in the post shift situation should make the shift sustained and sustainable in the long run. The government needs to demonstrate that their policies have a unified purpose of controlling tobacco. A conceptual framework of **policy matrix** ensuring the internal consistency of the various policies relating to different sectors and institutions in the economy, would go a long way in narrowing the goal distance of tobacco control. An innovative approach of alternative uses of tobacco, adoption of tobacco control measures effectively in all the countries etc., should help the objective of containing the adverse effects from tobacco use and thus help reach the global tobacco control objective.