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## ABSTRACTS OF M.Sc. THESES

Bakhshi, S.K. 1989. Socio-Economic Benefits of Waste Land Afforestation in Chhattisgarh Region of Madhya Pradesh. Indira Gandhi Agricultural University, Raipur, M. P. *Major Advisor* : D. K. Marothia.

At attempt has been made in this study to determine the socio-economic benefits of waste land afforestation in Raipur district of Chhattisgarh region of Madhya Pradesh. The specific objectives of this study were : (i) to estimate the growth rate of forest area and production, (ii) to determine financial feasibility of waste land afforestation, (iii) to project the income and employment effects of waste land afforestation, (iv) to predict the future income on present investment of waste land afforestation, and (v) to suggest the policy framework for forest management.

This study was conducted in the Navagaon village of Raipur district. To work out the afforestation benefits, three species of trees, Awala (*Emblia officinalis*), Anjan (*Hardwickia bianta*) and Sissoo (*Dalbergia sissoo*), were selected from waste land plantation of 141 hectares in Navagaon village done by Forest Department in the year 19 6. Project analysis framework (Benefit Cost Analysis) and growth rate equations were used to fulfil the objectives of this study.

The study yielded the following major results : (1) Forest area and production are both decreasing and the rate of decrease of forest area is higher than that of forest production. (2) Plantation under short felling cycle at 5, 10 and 15 per cent and under long felling cycle at 5 per cent compound rate of interest was found financially feasible in terms of net present value and net benefit cost ratio. (3) Under short felling cycle, Awala plantation has the highest projected net income along with highest employment potential. However, under long felling cycle, projected net income and employment potential are highest for Sissoo (100 years) plantation. (4) Net income is highest from Anjan plantation and lowest from Sissoo plantation under short felling cycle and under long felling cycle it is highest from Sissoo plantation and lowest from Anjan plantation.

The following policy alternatives were suggested for improvement and future expansion of waste land afforestation in Chhattisgarh region : adoption of silvipastrol system to increase net forest area, scientific management of forests, replacement of inferior species with superior ones, collective effort from farmers, village panchayat and forest department, education about forestry to public and administrative personnel, settlement of shifting cultivators, leasing of land and tree patta to landless rural people, establishment of forest nurseries in people's sector, recruitment of female extension workers in forestry programme, systematic survey of waste land in Chhattisgarh region and establishment of village forest panchayat.

Singh, C. 1990. An Economic Analysis of Sericulture Production in Raigarh District of Madhya Pradesh. Indira Gandhi Agricultural University, Raipur, M.P. *Major Advisor* : D.K. Marothia.

The study attempts to analyse the economic efficiency of mulberry and tassar silk production in Raigarh district of Madhya Pradesh. The specific objectives of the study were to (i) work out the cost of cultivation of mulberry plantation under irrigated and rainfed conditions and arjuna plantation under rainfed condition for sericulture production, (ii) work out the profitability of sericulture production through mulberry and arjuna plantation, (iii) examine the income and employment potentiality of sericulture industry and (iv) suggest some policy framework for improving the sericulture production.

To fulfil the objectives of this study four pilot project centres, Tamnar, Dharamjaigarh, Banderchunwa and Kunkuri of Raigarh district were selected and primary and secondary information was collected from the offices of these centres. Pretested questionnaire were used for collecting required secondary information through survey method. The input—output data for major crops, cost of mulberry cultivation under irrigated and unirrigated conditions, cost of arjuna cultivation under unirrigated condition, labour charges, mulberry and arjuna saplings, manures and fertilizers, human and bullock labour, mulberry leaf production per hectare were collected from selected pilot project centres. Data collected for this study refer to the year 1988-89.

The results revealed that under irrigated and rainfed conditions, mulberry plantation for silkworm rearing was economically beneficial yielding a cost benefit ratio of 1 : 1.34 and 1 : 1.20, respectively. Similarly arjuna plantation under rainfed condition was also economically beneficial as indicated by the cost-benefit ratio 1 : 1.60. Through the improved

charkha for reeling, per day income was estimated to be Rs. 170.65. The output-labour ratio was 1 : 1.57.

It was suggested that sericulture enterprise is one of the most vital industries which may generate more employment potential and income both on-farm and off-farm in the rural areas. Research should also be conducted on the additional social opportunity gains due to the employment potential generated under command areas. In fact sericulture research is at the infant stage in Madhya Pradesh and economic aspects of sericulture research should be given priority in both public and private research sectors.

**Naik, T.C. 1991.** Economics of Minor Irrigation in Dabhara Block of Bilaspur District of Madhya Pradesh. Indira Gandhi Agricultural University, M P. *Major Advisor* : A.K. Koshta.

Nearly 30 per cent of net cultivated area is irrigated through major and minor irrigation sources in India. In most of the areas canal water is used which provides protective irrigation to crops. Minor sources of irrigation have been used as assured irrigation subject to availability of ground and surface water therein. The present study on the economics of minor irrigation has been undertaken to examine the pattern of investment, farm credit need and its productivity and the employment potential under various sources of irrigation and to suggest an optimal plan.

Dabhara block of Bilaspur district was selected for the study out of 25 blocks as it had maximum share of irrigated area through minor irrigation sources. Randomly 7 villages mainly having tubewells (TW) were selected. Two additional villages each for tank (T) and reservoir (R) were selected. A total of 77 respondents were randomly selected from the 9 sampled villages and grouped under (i) upto 5 HP TW, (ii) above 5 HP TW, (iii) well, (iv) reservoir, (v) tank, (vi) TW+R, and (vii) TW+T. Primary and secondary information pertaining to 1989-90 were collected.

The study revealed that maximum area was irrigated in summer under above 5 HP TW farms which had maximum cropping intensity. Well and tank contributed to maximum rabi crop area. Proportionately higher area for summer groundnut was allocated on above 5 HP TW farms. The productivity of summer crops was highest under above 5 HP TW farms. Highest value of farm assets was recorded under above 5 HP TW and TW+R and value of livestock assets was minimum on farms with TW source due to more mechanization of farm operations. Highest

investment on farm equipments and permanent improvements had been made on TW farms.

The water discharge has a direct relationship with the average total cost on above 5 HP SMP. ECP has relatively lower cost due to minimum average total cost and moderate water discharge. The owners of deisel pump (DP) have more opportunities to sell water in summer reason.

Summer groundnut optimally utilised water under well source. Over utilization of water was noticed for summer paddy under above 5 HP TW. The total credit need is highest for above 5 HP TW farms, especially for long term credit. The maximum employment is generated under summer groundnut in above 5 HP TW farms and sale of water generated more than 90 per cent employment through reservoir during summer. The optimum plan suggests that proportionately more area should be allocated for summer groundnut by replacing paddy and green gram on both categories of TW farms.

**Nandi, D 1991.** Rural Energy Consumption Patterns in Rice Village of Chhattisgarh Region of Madhya Pradesh. Indira Gandhi Agricultural University, Raipur, M P. *Major Advisor* : D.K. Marothia.

This study was undertaken to (i) examine the rural energy consumption patterns, (ii) work out the supply and demand gaps in rural energy consumption and to identify the factors affecting them, (iii) estimate the pricing trends of various rural energy sources, and (iv) suggest a policy framework to augment the rural energy sources. The following hypotheses were formulated for the empirical verification : (i) Rural energy consumption pattern is related to income and family size. (ii) Energy consumption for agricultural activities is not significantly related to human and animal energy sources.

The findings of this study indicate that human and livestock energies were in surplus whereas cow dung and firewood were in deficit. The firewood, cow dung, human and animal consumption patterns were dominated by family size, income, size of holding, time invested for fuel collection, hired labour, hired animal, owned labour, owned animal and by the effective substitutes.

Policy alternatives have also been suggested to utilize the waste and common lands of the villages and the waste lands of the farmers. The studied villages have enough potential to utilize the solar energy resources and hence it is suggested that the abundant sources of solar energy be utilised for rural transformation. Active participation of the villagers is a prerequisite for maintaining the created fuel, fodder and timber plantations in the villages.

**Prajapat, B.L. 1991.** Socio-Economic Aspects of Rural Migration : A Case of Bhatapara Block of Raipur District, Madhya Pradesh. Indira Gandhi Agricultural University, Raipur, M. P. *Major Advisor* : S.P. Gupta.

An attempt has been made in this study to examine the extent and nature of migration, the factors affecting migration and the socio-economic effects on labour and farm economy and to suggest some policy measures with respect to labour migration.

This study was conducted in Dhaneli and Lamti villages of Bhatapara Block of Raipur district. A total of 140 households from two villages were randomly selected for detailed economic analysis.

The findings of the study indicate that seasonal migration is more than permanent migration. Among family size, land holding, family income, wage rate, education, family type and caste, only three factors, i.e., family size, land holding and income have significant effect on migration. Production potential of paddy was found to be more in migrant households as compared to non-migrant household. Income of migrant households was nearly double than that of non-migrant households. Seasonal migration was observed to be inter-state while permanent migration was limited to some districts only within the state.

**Jally, M.K. 1992.** Socio-Economic Analysis of the Nartora Watershed Project. Indira Gandhi Agricultural University, Raipur, Madhya Pradesh. *Major Advisor* : D.K. Marothia.

The study was undertaken to (i) assess the programme of the development activities carried out during the Watershed Project, (ii) work out the financial feasibility of the different development activities and the Project, (iii) examine the impact of the Watershed Project on the beneficiaries in terms of crop, forestry, fruits, fodder, fuel, timber, dairy, poultry, fishery, goatry activities, (iv) identify the secondary tangible and intangible benefits associated with the Project, and (v) suggest the policy measures for the improved management of the Watershed Project. It was hypothesised that the Nartora Watershed Project has no impact on the crop and non-crop activities and the Project created inequalities in terms of income distribution.

Both primary and secondary data were collected for the study. Primary data were collected for two points of time-before Watershed

Project (1982-83) and after Watershed Project (1989-90). Impact of the Watershed Project on the income of crop sector, dairy, poultry and goatry and secondary benefits generated to the society and their distribution pattern was analysed through the primary information. Secondary information was used to calculate NPV, BCR and IRR for various activities carried out in the Project area.

The findings of this study reveal that the Project had positive impact on the income from the crop sector and dairy. Income from poultry and goatry declined after Watershed Project but it was non-significant. The overall Project was economically viable with the IRR of 44.59 per cent. The Watershed community derived secondary benefits from the Project in form of increased employment through various activities, increased fodder supply, income from intercropping in the orchard activity, maintenance of ecological balance through forests and the services provided by the veterinary hospital. Role of the people's participation was found encouraging. A few policy interventions were suggested for the sustainable development of the Nartora Watershed Project.

**Mukherjee, A. 1992.** Optimal Resource Use Planning in the Mahanadi Reservoir Project Command Area : A Linear Programming Approach. Indira Gandhi Agricultural University, Raipur, M. P. *Major Advisor* : D.K. Marothia.

This study was undertaken to (i) examine the existing cropping pattern and resource utilization pattern in the Mahanadi Reservoir Project command area, (ii) suggest the optimal management of resources in the Mahanadi Reservoir Project command area, through optimal cropping pattern and introduction of new crop rotations, (iii) examine the factors influencing the equitable and efficient use of water resource in the Mahanadi Reservoir Project command area, and (iv) suggest alternative institutional arrangements for efficient and equitable use of water resources.

The data required for the present study were collected from both primary and secondary sources. Primary data collected from sample farmers of selected blocks of the Mahanadi Reservoir Project command area included data relating to physical inputs-outputs of crop activities practised by the farmers in the command area. The secondary data related to the availability of resources of land, labour, fertilizers, capital, irrigation water, etc. and were obtained from relevant sources. The empirical analysis for obtaining a optimal resource use plan was carried out using a linear programming technique. Sensitivity analysis was also

carried out. An institutional aspect of irrigation was also dealt with keeping in view the problems associated with the water distribution system below the outlet of canals.

The findings of this study indicate that land, labour, capital, fertilizers and irrigation water utilization in the command area was inefficient resulting in a sub-optimal cropping pattern and the optimal resource use planning carried out led to an increase in cropping intensity in the command area and also generated employment and income.

Policy alternatives were suggested for efficient utilization of available irrigation potential in the command area and for equitable and efficient water distribution below the outlet. Active participation of irrigators in the command area is a prerequisite for efficient water utilization and water distribution.

Singh, Ajmer, 1992. Milk Production Potential and Marketed Surplus in District Rohtak, Haryana. National Dairy Research Institute, Karnal. *Major Advisor* : K.K. Kalra.

The present study was undertaken in Rohtak District, Haryana to estimate milk production and marketed surplus and their potential over time. Secondary data were taken from cattle censuses held in 1966, 1972, 1982 and 1988. For primary data, 75 households were selected (60 from rural areas and 15 from urban areas) using multistage random sampling procedure.

Based on cattle census data, the compound growth rates of animal population were calculated as 3.07 per cent for buffalo, 0.05 per cent for local cow and 13.98 per cent for cross-bred cow. The trend in growth of population shows that in future, buffalo and cross-bred cattle species would make maximum contributions (90.09 per cent and 7.61 per cent) to increased milk production.

Milk production and its potential were calculated by multiplying animal productivity with their population in different levels of technology situations. For urban areas same productivity was taken in different situations. Buffalo productivity was highest in winter and lowest in summer. In case of desi cattle highest productivity was in summer and lowest in rainy season and for cross-bred cattle, productivity was highest in rainy and lowest in winter seasons.

In 1992 total milk production under existing situation was 12.26 lakh litres per day which would increase to 15.50 lakh litres per day by



2000 A.D. Proportion of buffalo milk in total milk showed an increasing trend over the period i e, from 89.39 per cent in 1992 to 90.09 per cent in 2000 and that of cross-bred cow from 1.01 per cent to 2.28 per cent during the same period of time.

Potential milk production was estimated at 13.82 lakh litres per day in 1992 which would increase to 17.50 lakh litres per day in 2000 AD.

Production potential over existing technology level situation revealed that milk production could be increased by 12.78 per cent with adoption of improved technology. Buffalo milk could be increased by 8.4 per cent and cross-bred cow milk by 69.7 per cent with adoption of improved technology.

The proportion of marketed surplus increased with the level of technology. It would increase from 2.50 lakh litres per day in 1992 to 3.18 lakh litres per day in 2000 AD. and potential marketed surplus would be 3.52 lakh litres per day and 4.47 lakh litres during the corresponding years. Rural areas contributed about 88 per cent of the marketed surplus in 1992 and showed a declining trend. Marketed surplus would increase by 40.8 per cent over existing level with the adoption of scientific practices. Total milk production, operational holding and education of the head of family were found to be important factors influencing marketed surplus of milk.