



*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

*No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.*

Vol XLIII  
No. 3

ISSN 0019-5014

CONFERENCE  
NUMBER

JULY-  
SEPTEMBER  
1988

# INDIAN JOURNAL OF AGRICULTURAL ECONOMICS



INDIAN SOCIETY OF  
AGRICULTURAL ECONOMICS,  
BOMBAY

## SUMMARIES

### SPATIAL AND TEMPORAL VARIATIONS IN AREA, PRODUCTION AND PRODUCTIVITY OF FORESTS IN BIHAR (1957-58 TO 1984-85)

Hem Chandra Lal Das\*

An attempt has been made in the paper to give an account of inter-State and inter-district disparity in the distribution of forests in India and Bihar respectively, and to investigate into the trends in forest area, production and productivity in Bihar for the period 1957-58 to 1984-85. Williamson's formula of coefficient of regional inequality has been used to study the inter-State distribution of forest area per capita in India for 1971-72 and 1981-82 and inter-district distribution of forest area per capita as well as per head of livestock in Bihar for 1971-72 and 1977-78. The exponential trend equation has been fitted to the time-series data on forest area, revenue, gross and net revenue productivity for the periods 1957-58 to 1966-67, 1967-68 to 1976-77, 1957-58 to 1976-77, 1977-78 to 1984-85 and 1957-58 to 1984-85. Thus the compound growth rates have been estimated for the respective periods along with their standard errors. The coefficient of variation in the case of per cent area under forest in the States has declined from 71.02 in 1971-72 to 67.50 in 1981-82. But the weighted coefficient of regional inequality has increased from 0.339 in 1971-72 to 0.384 in 1981-82. The coefficient of variation in the percentage area under forests in different districts in Bihar has increased from 73.7 in 1971-72 to 85.0 in 1977-78. The weighted coefficient of regional inequality in forest area per capita has increased from 0.342 in 1971-72 to 0.350 in 1977-78; and the weighted coefficient of regional inequality in forest area per head of livestock has increased from 0.336 in 1971-72 to 3.296 in 1977-78.

In Bihar, the area under forests has decreased at the rate of 0.73 per cent per annum, the revenue received from the sale of forest products has increased at the rate of 1.81 per cent per annum, gross revenue productivity per sq.km. has increased at the rate of 2.44 per cent per annum, and the net revenue productivity per sq. km. has decreased at the rate of 1.30 per cent per annum during the period 1957-58 to 1984-85. The factors responsible for the fall in the forest area are unscientific and indiscriminate felling of trees, over-exploitation of forests, lack of cheap alternative fuel resource, conversion of forest land to cultivable land, indifferent forest policy and lack of forest protection measures. The ways for reversing the trend in forest areas are bringing wasteland under tree cover, people's participation in social forestry programme, involvement of industries in the afforestation drive.

---

\* Reader in Economics, Post-Graduate Centre, M. S. College (Bihar University), Motihari, Bihar.

## PERFORMANCE OF FORESTRY IN ORISSA WITH SPECIAL REFERENCE TO SOCIAL FORESTRY PROJECT

Dibakar Naik, B. Bhuyan and D. N. Singht

The total forests and protected forests in Orissa, which were 67.73 thousand sq.km. and 43.78 thousand sq.km. in 1971-72 declined to 59.96 thousand sq.km. and 34.96 thousand sq.km. respectively during 1980-81. The linear growth rates of area under total forests and protected forests are negatively highly significant, implying that the total forests and protected forests have declined significantly over the years. But the reserved forests are almost stagnant over the period. Thus the growth of forest produce like timber and fuelwood has been constrained due to decline in the area under total forests and stagnation of reserved forests in the State during the period of study. Considering the importance of forests as a major source of State revenue, the social forestry project was implemented by international assistance. An area of 48.13 thousand hectares was covered under different plantation programmes of the Social Forestry Project by the end of 1987-88. This plantation programme has enabled to generate 15.63 lakh male man-days and 7.79 lakh female man-days of employment in 1985-86 in different districts of the State. The employment generated through this programme has significantly increased to 53.98 lakh male man-days and 15.92 lakh female man-days during 1987-88. Thus the Social Forestry Project in the State has helped to increase employment from 23.42 lakh man-days to 69.90 lakh man-days with an expenditure of Rs. 4.45 crores and Rs. 13.98 crores during 1985-86 and 1987-88 respectively. The study recommends the establishment of an extension agency to popularise the plantation programme in different districts of the State.

## PROSPECTS OF FOREST PRODUCTS IN INDIA

R. K. Khatkar, S. N. Singh and A. S. Rana\*

The present study is based on the all-India time-series data on demand and supply of forest products, as well as net national income and investment on forests pertaining to the period 1970 to 1985. Compound growth rate function and transcendental production function were used for working out compound growth rates, elasticities and future projections. Most of the regression coefficients and  $R^2$  values are found significant at 5 per cent level. The highest compound growth rate of demand was observed for pulp wood + particles (12.53 per cent) followed by wood pulp (10.64 per cent). The compound growth rate of supply was found to be the highest in the case of wood pulp (12.45 per cent) and newsprint (10.87 per cent).

The income and investment elasticities are the indicators for future planning of scarce resource allocation. More resources should be allocated for the

† Senior Scientist (Economics), National Agricultural Research Project, G. Udayagiri, Professor of Agricultural Economics and Field Officer, Comprehensive Scheme, Orissa University of Agriculture and Technology, Bhubaneswar-3 (Orissa), respectively.

\* Department of Agricultural Economics, Haryana Agricultural University, Hisar.



production of products having income elasticities greater than one and lower investment elasticity. In the present study income elasticity greater than one was observed in the case of dissolving wood pulp (2.32 per cent), pulp wood + particles (2.29 per cent), chemical wood pulp (1.85 per cent) and wool pulp (1.50 per cent). Generally, the projections based on time were found to be increasing and greater than those based on income and investment. The projections based on income and investment have shown mixed trends. The gap between demand and supply projections should be taken into consideration for future planning. Thus on the basis of higher compound growth rates of demand and income elasticities, more emphasis should be given for the production of pulp wood + particles, dissolving wood pulp, chemical wood pulp, etc.

### AN ECONOMIC ANALYSIS OF DEMAND FOR FUELWOOD AND SUPPLY PROSPECTS IN ARID AREAS OF RAJASTHAN

K. Anantha Ram and G. N. Bhat†

At the current rates of deforestation and programmes of afforestation in India, the supply of fuelwood to the rural masses would likely to be the greatest challenge the country may face by the turn of the century. Rajasthan which has less than the national average of 0.11 ha. of forest land per capita and which has a growing demand for fuelwood, may face acute shortage of fuelwood in the years to come. The present study analyses the problems and prospects of fuelwood supply-demand imbalances in the arid zone of Rajasthan by analysing the secondary data. In Rajasthan State, the per capita availability of wood biomass including fuelwood, estimated on the basis of Ministry of Agriculture and Irrigation, worked out to 43 kg. The contribution of forests wastelands for fuelwood being 33 per cent (68 kg.) of the total per capita fuelwood consumption, about 23 kg. of fuelwood per capita per annum is illicitly removed which makes a total of 86.65 thousand tonnes for the entire State. The demand for fuelwood in the ten arid districts of Rajasthan is estimated to be 13.16 lakh tonnes by 2000 A. D. and the supply from the existing forest at one lakh tonnes under sustained use. To meet the supply-demand gap for fuelwood in the arid zone, an area of four lakh hectares have to be brought under fuelwood forestry. *Prosopis juliflora* is suggested for fuelwood plantation in the region. It is estimated that Rs. 320 crores would be needed for the above order of afforestation in a phased manner in the 13-year period till 2000 A. D. The present average Plan allocation of about Rs. 942 per hectare has to be raised to a minimum of Rs. 8,000 per hectare. The above order of investment would yield an income which would be double the initial investment in terms of value of fuelwood alone by the end of 13th year itself. The indirect benefits to the society and the ecosystem would certainly be larger than what the direct monetary returns indicate.

---

† Scientists (Agricultural Economics), Division of Agricultural Economics and Statistics, Central Arid Zone Research Institute, Jodhpur-3.

## RURAL ENERGY NEEDS OF THE HILLS

S. C. Tewari and R. Swarup\*

Total stock of world's energy supply from various sources is insignificant in comparison to its current depletion rate. In India, firewood, cow dung and crop residues contribute about 98 per cent towards the total need of energy; fuelwood itself accounts for about 65 per cent. In spite of the fact that various sources of energy have been developed, the rural masses still depend heavily on fuelwood as being the cheapest source of energy. The demand for fuelwood has, therefore, increased manifold due to rapidly increasing population, whereas the forest stock remains limited. According to estimates, the gap between demand and supply of fuelwood by the end of 1990 will be of the order of 80 million tonnes. This emphasises the dire need for afforestation to fulfil the basic requirement. Due to the rapidly growing population in the lower hills of Himachal Pradesh, the fuel demand is significantly higher in the lower hills than in the higher hills. The fuelwood demand in the lower hills increased at the rate of 7.12 per cent per annum, which is about three times more than that in the State as a whole. However, it was comparatively low in the higher hills mainly on account of low population density. The estimates of fuelwood demand show that the total wood requirement of the State would be around 1.2 million m<sup>3</sup>, increasing by 40.43 per cent by the turn of this century. Consequently, the pressure on forests will increase from 0.5 million m<sup>3</sup> to 0.7 million m<sup>3</sup> by 2000 A.D. Therefore, an integrated system needs to be developed, which would ensure multiple production pattern in terms of total quantity of diverse land products. Presently, the solution is to introduce 'man-made forests', (which fall within the ambit of 'Social Forestry Programme') on 'Shamlat lands', wastelands, pastures, so as to optimise the beneficial effects of interactions of woody components with the annual crops. This programme, besides reducing pressure on forests for fuelwood, would help to increase employment and maintain ecological balance. The resource potential, therefore, in the State offers scope for raising energy plantations. As a conservative estimate, around 40 per cent of the forest area (around 5 lakh hectares) is devoid of any tree cover, and hence this can be taken up under afforestation scheme. In all, it is estimated that 760 thousand hectares of land will be available for energy plantation. It has also been noted that the availability of land for energy plantation will be more in the lower hills than in the higher hills. The reason for this may be attributed to the adverse climatic conditions in some parts of higher hills. This solution thus holds promise to the energy needs of the rural population of the State who can not afford to keep even ten per cent of their agricultural lands for fuelwood plantations due to the small size of their holdings.

---

\* Associate Professor and Head, Department of Economics and Sociology, Dr. Y. S. Parmar University of Horticulture and Forestry, Nauni-Solan (H.P.) and Officer Incharge, Agro-Economic Research Centre, Himachal Pradesh University, Shimla-5 (H.P.), respectively.

## ECONOMIC DEPENDENCE ON FORESTS BY RURAL HOUSEHOLDS: A STUDY IN CUTTACK DISTRICT, ORISSA

J. P. Singh,<sup>†</sup> M. L. Chakraverty<sup>†</sup> and H. N. Atibudhi<sup>\*\*</sup>

Linkage between human civilisation and forest is multifarious and multi-dimensional and in many occasions both are interdependent. The present study is an attempt to examine the linkage with particular reference to the dependence of rural households on forests and forest products. The study is based on 184 respondents selected at random from five villages spread over different physiographic regions in Cuttack district and the data relate to the year 1986-87. The findings of the study reveal that of the total population, 4.37 per cent of the households accepted forestry as their main economic activity while 43.75 per cent as a secondary source. When the linkage was viewed from the angle of economic dependence, as high as 75.72 per cent of the households were found to be dependent on forests for firewood and despite commercialisation of construction materials, 10.44 per cent depended directly on forests. And the average per household requirement was of the order of 42 bamboos and 4.63 cft. of timber either for repair or construction of houses.

As a source of energy, firewood is considered the most important source and on an average, its annual consumption per household was of the order of 37.12 quintals and in terms of per capita, it worked out to 7.42 quintals. When expressed in monetary terms, the annual energy consumption in terms of firewood worked out to Rs. 833 per household, out of which non-conventional sources accounted for Rs. 235. The study further showed that timber consumption for agricultural purposes accounted for 1.02 cft. and the number of bamboos used was three per annum. The average annual expenditure on forest products for agricultural uses worked out to Rs. 29 per household. The use of forest products for industrial purposes (cottage industries) was confined to 30 per cent of the households where the adult family members were found engaged in professional trades like basket making, carpentry, processing and pottery making. But interestingly, it was observed that despite the heavy exploitation of forests, very small number of households reciprocated in contributing to the national resources by way of participation in mass plantation programme. This calls for framing suitable policy measures to create peoples' awareness in social forestry programme and prevent continuous depletion of forest resources.

## A STUDY OF SOCIAL FORESTS IN RAJASTHAN (WITH SPECIAL REFERENCE TO VILLAGE WOODLOTS RAISED UNDER NREP AND RLEGP)

Rakesh Sharma<sup>†</sup>

The socio-economic value of common lands (*gauchar*) can be increased by planting more trees and grasses on them. Establishment of village woodlots/

<sup>†</sup> Readers and <sup>\*\*</sup> Lecturer, Department of Agricultural Economics, Orissa University of Agriculture and Technology, Bhubaneswar-3.

<sup>†</sup> Associate Fellow, Institute of Development Studies, Jaipur.

social forests, another possible form of land use, is an effort in this direction. The primary objective of establishing woodlots on Panchayat lands is to produce fuelwood fodder and small timber for domestic use in the rural areas on a sustainable basis. The main aim of this paper is to review the economic returns from these woodlots. The area of this study is spread over Jaipur, Jhunjhunu and Udaipur districts of Rajasthan. It is representative of a large part of North-East Rajasthan. The major findings of the study are based on the field observations made on 20 per cent of the total village woodlots raised (upto September 1987) in the study area. Some of the major findings of the study are as follows. None of the stated objectives (to meet the fuelwood, fodder and small timber needs of the rural people) has been met by the village woodlots. From the point of view of income to Panchayat, woodlots (an exclusive effort of the Forest Department) are economically unviable units of plantation. People's participation, the core element of social forestry, is completely non-existent and for the Forest Department it is a non-issue. Decisions related to woodlots are highly centralised, either at the State or Divisional Forest Office. The department's whole world view is so set that they cannot bring and see villagers and trees together. In the context of a village environment, woodlots can not be raised and established successfully in isolation with other basic problems faced by the villagers. Raising a woodlot on *gauchar* may or may not fall in their priority. The scheme of village woodlot should be built in the overall development plan of the village, formulated by the villagers themselves in association with any voluntary organisation concerned with the 'People and Tree' together.

### SOCIAL FORESTRY IN TAMIL NADU: PROSPECTS AND PROBLEMS

S. Iyyampillai\*

The Government of Tamil Nadu has undertaken the Social Forestry Project (SFP) at an estimated cost of Rs. 450 million (including a component of Rs. 283.5 million from Swedish International Development Authority) for the first phase from 1981-82 to 1985-86 with a view to (i) bridging the gap between the supply of and demand for fuelwood by fruitfully utilising the public as well as private wastelands for social and farm forestry activities and (ii) shifting the responsibility of forestry activities from the Tamil Nadu Forest Department to Village Panchayats. It is understood from the survey of 63 plantations (2,076 ha. of land area) belonging to 38 villages under seven Forest Range Offices in Pudukottai district that the social forestry has yielded an economically reasonable level of return and would also yield more in future if all the plants planted are grown into trees and harvested. It is also felt that there is sufficient potentiality, importance and necessity for/of having forests. However, the data also show that the average survival rate of the plantations surveyed is about 40 per cent, ranging from even zero to

---

\* Department of Economics, Bharathidarsan University, Tiruchirapalli-24 (Tamil Nadu).

85 per cent in the selected villages. That means, an amount of Rs. 6 lakhs has gone unproductive for the plantations surveyed and at this rate this would be Rs. 2,700 lakhs for SFP in Tamil Nadu. The opinions collected from 380 heads of households spread out in the selected villages with plantations, ten Forest Range Officers, 15 foresters, 30 plot watchers, six block development officers and 15 rural welfare officers indicate that the failure at whatever degree could have mainly been due to the combination of following reasons: (i) The villagers are found to be influenced by direct, immediate and personal income maximisation. This attitude has resulted in (a) free grazing in the social forestry lands, (b) encroachments of social forestry lands and (c) illicit felling of social forestry trees and very low level of adaptation of farm forestry. (ii) The implementing authorities are found to be lacking wholehearted commitment towards the SFP. This has led to (a) selection of unsuitable time, area and species for plantation, (b) negligible contact with local people and thereby poor publicity of the forestry activities and (c) very low level of local understanding, co-operation and participation in forestry activities.

#### COST-BENEFIT ANALYSIS OF EUCALYPTUS FARMING IN U. P. WITH SPECIAL REFERENCE TO KANPUR

D. S. Shukla, M. M. Jaiswal, Y. S. Chauhan and Ram Iqbal Singht

Eucalyptus is considered to be number one commercial plantation. General forestry, social forestry and farm forestry (agro-forestry) all include eucalyptus plantation. Thirty per cent of the returns from it can be obtained in 6 to 8 years. Per hectare cultivation of eucalyptus costs Rs. 55,524 and yields a net profit of Rs. 3,06,976 after eight years, besides purifying the atmosphere and improving the soils. The question that arises is as to why every farmer does not grow it when the tree crop yields so much of profit. Poor cultivators cannot spare land for eucalyptus plantation and wait for eight years to reap the benefits. Hence, social lands-Panchayat lands can be used for its cultivation and the income so generated be used for village development.

#### DETERMINANTS OF FARM FORESTRY—A CASE STUDY

A. K. Agnihotri and P. K. Joshi\*

During the past few years, the country has witnessed rapid deforestation, over-grazing and denudation of productive lands. It resulted in serious energy crises in the rural areas, shortage of fodder and timber and disturbed the ecosystem. In this context, government has proposed to raise fuelwood plantation at an annual rate of 1.5 million ha. during the Seventh Five Year Plan. Since land is a limiting factor with alternative demand, the scope for

† Associate Professor, Research Scholar, Associate Professor, and Professor and Head, respectively, Department of Agricultural Economics and Statistics, C. S. Azad University of Agriculture and Technology, Kanpur-2.

\* Division of Agricultural Economics, Central Soil Salinity Research Institute, Karnal (Haryana).

afforestation in additional areas is a basic question among planners and policy makers. The present study intends to examine the existing state of farm forestry in the rural areas and the factors determining its adoption. The study is based on a survey of 140 farm households selected from three villages of Karnal district in Haryana during 1984-85. The results revealed that the farm forestry is an integral part of agriculture and by and large depends on the resource endowments. The composition of farm forestry depends on the types of saplings distributed by the developmental agencies and forest department. However, there are different purposes of farm forestry among various categories of farms. These are for 'fuelwood-timbershade', 'timbershade', 'fuelwood-shade', etc. It is, therefore, suggested that while distributing tree saplings, the purpose of farm category should not be ignored. Similar to the purpose, location is also an important determinant in deciding the state of farm forestry. It was best preferred on field bunds by all categories of farms. Whereas the next site preference for marginal farm was at cattleshed and tubewell, the small, medium and large farms preferred compact afforestation. It is interesting that among various factors, income from livestock enterprise and farm size determine the size of farm forestry. Various technical, socio-economic and institutional constraints which are very crucial for successful implementation of the farm forestry programme are identified in the study. It is suggested that in the present scenario of farm forestry attempts should be made to overcome the constraints followed by sincere efforts to strengthen the forest management training to the farmers with an appropriate creation of marketing infrastructure.

### ECONOMIC CONSIDERATIONS IN EUCALYPTUS FARMING

J. K. Rawat†

A model for an eucalyptus farm managed by a profit maximising owner has been developed. One seedling crop followed by one coppice crop of eucalyptus hybrid has been taken into account. Subject to the cost of planting, diameter distribution of crop at various ages and densities, market price of the output (timber and firewood) and discount rates, the most economic combination of initial density and rotation age has been determined. Usefulness of such analysis to the farmers in the management of tree crops is highlighted.

### AN ECONOMIC ANALYSIS OF EUCALYPTUS PLANTATION IN PUNJAB

I. S. Chatha, Joginder Singh and D. S. Sidhu\*

In view of the manifold advantages of forests and the emphasis on diversification of farm enterprises, the eucalyptus plantation in Punjab has assumed significance. Consequently, the area under eucalyptus has increased considerably which has created crisis in the market. Hence, this study on the

---

† Conservator of Forests, Forest Research Institute, Dehradun.

\* Department of Economics and Sociology, Punjab Agricultural University, Ludhiana.



economic aspects of eucalyptus plantation was undertaken. The farmers have broadly followed two systems of plantation, *viz.*, (i) border plantation and (ii) block plantation. A sample of 76 farmers, 53 farmers following border plantation and 23 representing block plantation, was taken. The pattern of production, pattern of marketing, production costs, marketing costs, returns, etc., were analysed. The analysis brought out that all the farmers following block plantation had effected post-harvest sales and their average net returns, after accounting for the production and marketing costs, amounted to about Rs. 1,005 per acre per annum. The farmers following border plantation had resorted to both pre-harvest and post-harvest sales. The net returns through pre-harvest and post-harvest sales respectively were Rs. 12.86 and Rs. 15.56 per plant per annum. Obviously, the net returns from eucalyptus especially in the case of block plantation were not attractive. The causes for the low returns were thick plantation resulting in poor growth, low and varied input use, uneven growth and development due to genetic variation, high rate of mortality and non-adoption of replantation, early harvesting due to pressing financial needs, non-adoption of inter-cropping, irregular and exorbitant marketing charges, etc. Advising the farmers to adopt the recommended level of inputs and cultural practices, evolution of better strains for uniform growth, advancing loans against the security of plantation in order to enable the producers to market their product at proper age, *i.e.*, after 9-10 years, regulation of the market of wood and advising the producers to effect post-harvest sales in the markets under competitive conditions can go a long way in improving the economics of eucalyptus. However, it is advisable that block plantation of eucalyptus should be undertaken only on marginal lands where common field crops are not remunerative. Border plantation which showed quick and better growth and yielded better returns needs to be encouraged.

### ECONOMICS OF EUCALYPTUS CULTIVATION AS FOREST CROP IN HOSHIARPUR DISTRICT OF PUNJAB

Nirmal Singh, S. K. Singla and R. S. Dhawan†

The proportion of area under forests in Punjab is much below the national level. The strenuous efforts of the Forest Department brought about 800 hectares of new land under forests in the State from 1970-71 to 1985-86. Most of the area in new plantations shifted to eucalyptus due to its fast and straight growing habit as compared to the traditionally grown species. This study was located in Hoshiarpur district which accounted for more than 40 per cent of the total forest area of the State. A number of farmers in the study area raised it as field crop of varying plant density hoping that it will supplement the farm income in a big way after 8-10 years. The eucalyptus crop fields were categorised into low, medium and high density plantations due to wide

† Statistician, Department of Economics and Sociology, Associate Professor, Department of Business Management and Research Fellow, Department of Economics and Sociology, respectively, Punjab Agricultural University, Ludhiana.

variation in plant population per unit of land. The study showed that the gestation period varied with plant density, for example, it was double for high density plantations as compared to low density plantations. For the first two years, the plant inputs were the highest for high density plantation. The economic analysis brought out that raising eucalyptus as forest crop was quite beneficial to the farmers in the study area. The informal rate of return from low, medium and high density plantations was estimated at 93, 48 and 42 per cent respectively. The benefit-cost ratio at 12 per cent discount rate was more than ten for all the three situations. The average annuity value at 12 per cent discount rate was the highest for high density (Rs. 6,015/ha.) and the least for medium density (Rs. 2,590/ha.) which were more than the gross margins from crops raised in similar type of lands in the study area.

#### PROFITABILITY OF SOCIAL FORESTRY IN RAINFED AREAS OF RAMANATHAPURAM DISTRICT IN TAMIL NADU

Rm. Palaniappan and V. Chockalingam\*

The programme of social forestry aims at promoting forests in the degraded forest areas, planting trees on community lands and those owned by individual farmers. Under this programme the lands that are not utilised for productive purposes but could be used for planting trees are expected to be covered irrespective of the ownership. This paper studies the profitability of raising trees in rainfed areas instead of millets. The data were collected from a cluster of two villages in Ramanathapuram district of Tamil Nadu and relates to the year 1980-81. A sample of 25 farmers was covered by the study. The sample farmers were covered by the plantation extension programme—one of the six components of Social Forestry Programme in Tamil Nadu. The main objective of the programme is to encourage the farmers to raise tree crops on degraded and gravelly soils under extremely rainfed conditions. All the sample households have planted mainly the tree species 'babul'. Prior to the implementation of this programme only millets were grown on these lands. The average cost of raising babul trees and maintenance for one year was Rs. 160. The anticipated income per acre was worked out after making appropriate assumptions and it was Rs. 8,828 per acre. With a view to comparing the profitability of raising millets with that of babul trees, the internal rate of return (IRR) was worked out for a ten-year period, taking the land value at Rs. 1,500 per acre and the average gross return and cost of cultivation for the unirrigated millets at Rs. 500 and Rs. 200 per acre respectively. The IRR was 7.04 per cent for millets and 16.49 per cent for babul trees. This shows that higher returns could be realised from planting trees than from millet cultivation.

---

\* Research Staff, Agro-Economic Research Centre, University of Madras, Madras-5.



## RELATIVE ECONOMICS OF FARM FORESTRY AND AGRICULTURAL CROPS

M. K. Chaudhary and D. R. Aneja<sup>†</sup>

Haryana is a small State with only about 3 per cent of its geographical area under forests. Most of the area of the State is under cultivation, leaving very little scope for preserved forests. Hence, farm and community forestry was given special attention during the last one decade. As a result, a significant percentage of cultivated land was put under trees, particularly eucalyptus hybrids. During the recent past eucalyptus farming has come under severe criticism from the farmers on the ground that it is not a profitable activity. Farmers have started clearing their fields from eucalyptus. Therefore, in the present study an attempt has been made to examine the financial viability of eucalyptus cultivation in comparison to crop farming in a district in North-Eastern Haryana. It is found that the net returns from eucalyptus are Rs. 18,598 per hectare after eight years which is very low in comparison to the returns from crop farming (paddy-wheat rotation), *i.e.*, Rs. 26,422 per hectare for the same period. Eucalyptus cultivation has employed 127 labour days per hectare per year as compared to 196 labour days per hectare per year employed by paddy-wheat crop rotation. The former harms the landless rural poor badly. While analysing the reasons, it was found that the growth (girth) of plants as well as prices prevailing in the local markets were far from satisfactory. In addition to low prices (due to market saturation), some undue deductions are also made from the grower at the time of sale of the trees. It is, therefore, suggested that proper market for wood and its products be created in the area and procurement prices be fixed as in the case of commercial crops.

## RELATIVE ECONOMICS OF TREE AND AGRICULTURAL CROPS IN PONDICHERRY UNION TERRITORY

L. Ratha Krishnan\*

To study the relative economics of agricultural and tree crops, Pondicherry Union Territory is purposively selected and 30 farmers in ten villages were interviewed and cost-benefit analysis was calculated for agricultural and tree crops separately. The result shows that the rate of return for sugarcane is greater among agricultural crops. But the rate of return from tree crops even after combining with inter-crop is found to be lower than agricultural crops. Factors like water scarcity, increasing wages for labour, land conditions and assured returns have induced the farmers to shift from agricultural crops to

<sup>†</sup> Agricultural Economist and Assistant Statistician, respectively, Haryana Agricultural University Regional Research Station, Uchani, Karnal (Haryana).

\* Junior Research Fellow, Department of Economics, Pondicherry University, Pondicherry-3.

tree crops. But it adversely affects the employment opportunities of rural labourers and it creates a lot of social conflict between the landlords and the agricultural labourers. It is found from the study that there is a close relation between farm forestry and fuelwood supply, because this region does not have forestry as such or wastelands to produce trees.

### SOCIAL FORESTRY: ITS IMPACT ON FOOD, EMPLOYMENT AND INCOMES

A. G. Prasad†

The major objective of social forestry is to meet the immediate needs of fuel, fodder and small sized timber for the rural population, particularly the have-nots and weaker sections. Unlike other forest programmes, the ultimate aim of social forestry is more humane than financial. Against this background, the paper seeks to examine (a) the present status of adoption by different categories of farmers, (b) the type of lands devoted to the programme, (c) the resultant effect of the type of land on employment and crop production and (d) the economic aspects of social forestry. The analysis reveals that a majority of the participants are big and rich farmers from the upper castes. Again, of the land devoted to social forestry, a major proportion comes from the previously cropped area diverted solely to make more income and avoid labour troubles. The per acre loss due to diversion amounts to 489 kg. of foodgrains, 47 man-days and about Rs. 950 of gross income. The major conclusions of this analysis are: (i) the programme has become more commercial since many of the farmers hoped to make profit on the expected demand from industrialists. (ii) Most of the farmers who raised plantation crops are well-to-do and rich and they took it with the hope of avoiding labour problems. This, if unchecked, would widen the gaps between the rich and the poor sharply. (iii) The programme, as it is coming up on previously cropped areas, reduces the employment possibilities thus affecting rural labour who depend mainly on wage labour. In addition, production of crops grown previously on these lands is given up, thus creating shortages in the market.

### AN ECONOMIC ANALYSIS OF MARKETING OF EUCALYPTUS IN TARAI REGION OF UTTAR PRADESH

Kuldip Singh and G. S. Gill\*

An attempt has been made in this paper to examine the present system of marketing of eucalyptus mainly as fuelwood in Tarai region of Uttar Pradesh. For the purpose of this study, two tehsils of Rampur district of Tarai region and six villages from each selected tehsil were selected randomly. Then, a sample of 50 producer-sellers (20 block and 30 boundary plantation owners) representing small, medium and large ones categorised by using square-root method of stratification were selected randomly from the selected villages.

† Agro-Economic Research Centre, Andhra University, Waltair.

\* Department of Economics and Sociology, Punjab Agricultural University, Ludhiana.

A sample of 40 household consumers, ten brick kilns, ten contractors and ten tallwala were selected randomly for examining price spread, marketing costs and margins. The necessary data were collected by survey method for the year 1986-87. The various marketing channels observed for mixed firewood were: (I) Producer-contractor-brick kiln, (II) Producer-contractor-tallwala-consumer, (III) Producer-tallwala-consumer; pre-harvest contracts were made in these three channels. However, in channel (IV) Producer-tallwala-consumer and (V) Producer-brick kiln, post-harvest contracts were made. For the disposal of small branches, there was only one channel, *i.e.*, Producer-household consumer.

It was observed that on an average farm situation, of the total marketed surplus 76.56, 11.4, 8.26 and 4.04 per cent of eucalyptus fuelwood was sold to the contractor, tallwala, brick kiln and direct to household consumers respectively, which clearly indicates the dominant role of the contractor. The producer's price varied from Rs. 44 to Rs. 51.50 per quintal of mixed fuelwood whereas the consumer's price varied from Rs. 51.50 to Rs. 60 per quintal. The producer's share in the consumer's rupee was maximum (100 per cent) when he made post-harvest sales to brick kiln in channel V and minimum in channel II (73.33 per cent). It was cent per cent in the case of small branches as no intermediary was involved. The contractor's share in the consumer's rupee was estimated at 16.89 and 15.83 per cent in channels I and II. The tallwala's share in the consumer's rupee under channels III, IV and II were found to be 25, 13.33 and 10.84 per cent respectively. The highest share of the tallwala in the consumers rupee in channel III was due to direct purchase from the producer by pre-harvest contractors. The wood market was observed to be operating to the advantage of the middlemen at the cost of both the producers and consumers because they were unorganised. For the benefit of the farmers, it is advisable to follow post-harvest sales.

#### MARKETING MARGINS OF CUDDAPAH ALMOND (CHIRONGI) IN CHHINDWARA DISTRICT OF MADHYA PRADESH

P. K. Mishra, R. M. Sahu and P. K. Bisen†

The paper attempts to study the marketing margins of Cuddapah almond (*Chirongi*). The study is based on 50 tribal collector-producers of Chhindwara district of Madhya Pradesh as its forest predominantly produces Cuddapah almond. Cuddapah almond comes under minor forest produce and its seeds have high market value. The marketing margins were calculated on the basis of 'concurrent' method and not lagged margin as complete and comparable data were not available for good approximation for different time lags. The data pertain to the year 1986-87 and are primary in nature. The results of the study clearly indicate that the marketing margins for forest produce varied significantly from channel to channel. The price spread was maximum in the case of channel C (collector-village merchant-primary wholesaler-secon-

† Assistant Professors, Department of Agricultural Economics and Farm Management, J. N. Krishi Vishwa Vidyalyaya, Jabalpur (M.P.).

dary wholesaler-retailer-consumer) and minimum in channel A (collector-village merchant-retailer-consumer). The study indicates that the higher marketing margin and marketing cost are largely on account of handling losses, high transportation charges, weighing, loading-unloading and high margins of intermediaries.

It is concluded from the results that the producer's share and marketing margins are directly and significantly associated with the length of channel. The smallest is the channel, the lower is the marketing margin and the higher is the producer's share in the consumer's rupee and vice versa. The producer-collectors of the forest commodities are not getting reasonable share in the consumer's rupee. This may be due to restriction in the marketing of forest produce by the State Forest Department. The producer-collectors are generally tribals and timid in the marketing of the forest produce even when they have produced it on their own farms. The study suggests that in order to promote efficient forest trade, optimal distribution and reasonable producer's share in the consumer's rupee, the Government policy must be rationally modified and clearly spelt out with a view to facilitating the forest people to market their produce. The operation of Government agencies needs to be made effective with regard to the maintenance and handling of the forest products.

#### A STUDY OF THE IMPACT OF TREE CULTIVATION INCENTIVE PROGRAMME ON RURAL POOR IN GOBICHETTIPALAYAM FORESTRY RANGE OF PERIYAR DISTRICT

K. Dhanasekaran and K. A. Thangarajan\*

The present paper attempts to analyse the impact of Tree Cultivation Incentive Programme on income and employment among the adopters (rural poor). It also critically examines the major issues involved in the implementation of the programme. For the survey purpose, a sample of 24 adopters was randomly selected from a randomly selected village Baguthampalayam in Gobichettipalayam forestry range. The empirical results revealed that the adopters have planted the tree crops along their field boundaries only as fence; the programme could be able to generate income and employment opportunities to a limited extent (3.63 per cent and 0.43 per cent respectively). However, it is heartening to note that the adopters have derived additional benefits such as additional income, fuel, fodder, timber, etc., without diverting the cropped area to the plantation crops. A look into the people's participation in other social forestry programmes suggests that the employment effect through such programmes is also negligible due to insignificant participation of the adopters. An analysis of the environmental factors which affect the programme suggests the need for an effective delivery system at the grass-root level. Among the sample beneficiaries, none of them received any cash incentives which showed that the programme was a misnomer. The other limiting factors are lack of marketing facilities, long

\* Assistant Professor and Post-Graduate Student, respectively, Department of Economics, Gobi Arts College, Gobichettipalayam (Tamil Nadu).

gestation period, lack of technical support and guidance, lack of awareness, non-availability of seedlings in time, etc. It is therefore suggested that tree growers' co-operative societies may be organised at the village level to undertake the work of raising and distributing seedlings, providing technical assistance, marketing, information and training to their members in collaboration with forestry department officials.

### FORESTRY (INCLUDING SOCIAL FORESTRY) IN THE CONTEXT OF ECONOMIC DEVELOPMENT OF THE RURAL POOR

P. S. Malik†

In the first place it has been clearly pointed out that why there is a need for social forestry and where it is to be achieved. The scope of social forestry in India has been emphasised and it has been explained what components are included under social forestry and how it is to be accomplished. It has been proved that social forestry is an important instrument for the development of rural people and alleviating their poverty. It is a source of employment generation for the rural areas through NREP/RLEGP/DDP/DPAP, etc. Trees raised by the small and marginal farmers on their lands and by the landless poor around their homes and on Panchayat lands, etc., serve as their fixed deposits and can be encashed in times of need. A policy change has been suggested in the land tenure system to attract the rural poor and landless people to go in for tree planting on Panchayat lands, community lands and other wastelands. Insecurity of land tenures makes the poor indifferent to any social forestry programme. Suitable tree species for farm forestry/agroforestry for the States of Punjab, Haryana, Uttar Pradesh, Rajasthan and Madhya Pradesh, etc., have been mentioned. In the end, the extension methodology being pursued in Haryana has been explained for the guidance of other States. In short, it has been clearly laid down that social forestry is urgently needed to achieve the 33 per cent target of forest area as per the National Forest Policy 1952 and to bring the rural poor above the poverty line. If it is properly followed in the countryside, it will improve the village environment, meet their requirements for small timber, firewood, fodder and grasses. It will also lessen the burden of users on the State forests and they can be better managed for commercial and industrial purposes. It will also reduce illicit fellings and encroachments in State owned forests.

### ECONOMIC ASSESSMENT OF MINOR FOREST PRODUCE—A CASE STUDY OF CONSTRAINTS TO LAC CULTIVATION

S. P. Bhardwaj,\* U. N. Dixit\* and H. C. Gupta\*\*

Forestry has a vital role to play in the general economic development of the economy through proper utilisation of its products, both major and minor.

† Additional Chief Conservator of Forests, Social Forestry Project, Haryana, Panchkula (District Ambala).

\* Scientist, Indian Agricultural Statistics Research Institute, New Delhi-12, and \*\* Head, Economics Department, S.D. Post-Graduate College, Ghaziabad.

