



A STUDY ON AGRICULTURAL PATTERN AND LAND RESOURCES IN PUDUCHERRY REGION

G. Vijayalakshmi, Ph.D Research Scholar Department of Economics, Annamalai University Annamalai Nagar. 608 002.
Dr. R. Kumar, Assistant Professor and Head, Department of Economics, Bharat Ratna Puratchi Thalavair, Dr. M.G.R Govt, Arts & Science College, Palacode, Dharmapuri. 636 808

Abstract:In a broad sense the term land use pattern means the use of land resources under unusual ecological settings. The pattern of land use of a country at any particular time is determined by the physical, economic and institutional framework taken together. In other words, the existing land use pattern in different regions in India has been evolved as a result of the action and interaction of various factors, such as physical characteristic of land, the institutional framework, the structure of other resources (capital, labour, etc.) available. In addition, the geographical location of the region in relation to other aspects of economic development, viz., those relating to transport, industry, trade, etc. influence the land use pattern.

Keywords: Agriculture, land resources, ecological settings

I. INTRODUCTION

A close scrutiny of the present land use pattern and the trends during the recent years will help us in understanding the Indian economic scenario. In order to increase agricultural production from given land resources, it is necessary to use scientific cropping pattern. Cropping system approach holds many promises in this regard. The adoption of cropping system technology and its successful implementation depend on physical and socio-economic resources, which are available or are made available at the time when they are needed. Location specific and farm based cropping patterns have to be evolved with consideration of such determinants as land, topography, water availability, intensity and duration of sunlight, labour accessibility, cash or credit, power source and market demand. Adequate resource utilization of a farm in integrated farming system with crops as major enterprise is the crux of the problem. Carandang has projected that the cropping system approach has two main components, viz., farm resources and production technology. Farm resources are of two types: physical and socio-economic. Physical resources include land, sunshine, and water. On the other hand, socioeconomic factors include markets, labour, power, cash, etc. Production technology depends on nature of crops and varieties, tillers, fertility, weed management, insects management, disease control, inter-plant durations, water management, etc.

Objectives of the study

* To know the major agricultural crops in the puducherry region and its land use pattern.

II. METHODOLOGY

The present study is conducted on the state major agricultural crops in puducherry region and its land use pattern. It is an attempt to analyze the role agricultural and its growth pattern. The study based on Primary as well as Secondary data has been collected from various articles and journals .The data and information has been collected through different studies.

Need for Land Use Planning in India

In a developing country like India, land is not only an important factor of Production, but also the basic means of subsistence for majority of the people. Agriculture contributes less than 30 percent to India's Gross

Domestic Product, but absorbs nearly 64 percent of the country's working population. About three-fourth of the total population draw their livelihood from agriculture. But there is evidence to indicate that the land sector cannot bear the burden of growing population, notwithstanding the untapped potentials for agricultural productivity growth in many regions. Therefore, there is a felt need for both horizontal and vertical diversification of the agricultural economy. This is particularly so because all lands and locations are not equally suitable for profitable, alternative farming and hence, there is need for cluster approach to development.

India can safely be characterized as an agricultural country despite the recent spurt in manufacturing and services and the declining share of agriculture in the national income, since majority of its workforce are still engaged in agriculture and allied activities. It has been the noblest profession in India since the time immemorial and has been carried out on sustainable basis. It is only relatively recent phenomenon that large-scale forest areas, grazing lands and waste lands have been converted into croplands to support the rising population, which has caused ecological imbalance and atmospheric pollution. With no further scope for expansion of agricultural land efforts have been made to enhance the production of food grains using high-yielding variety of seeds, fertilizers and irrigation along with advanced farm equipments. However, so-called green revolution is confined to a few crops, viz, wheat, rice and maize and has been possible only in restricted areas, i.e., Punjab, Hariyana and Western Uttar Pradesh and certain selected districts of Andhra Pradesh, Maharashtra and Tamilnadu. Naturally much work is needed to lift the agriculture to a level where it is least affected by vagaries of monsoon and needs little from outside the farm, i.e., lesser dependence on chemical fertilizers and water.

Major agriculture practices in puducherry Region

Fruit Production and Processing: Under this project it is proposed to cover 500 ha under fruit trees, i.e., mango 200 ha, sapota 50 ha, guava 50 ha and acid lime 100 ha. The total area may be distributed in several locations, in small and large areas, depending upon land availability, irrigation potential, and willingness of the farmers to join the programme. The details of spacing between the plants, the input cost and the cost of cultivation, average yield, gross returns and net profit are given in Vol.II of the report. The gestation period for fruiting may vary from two to five years and only the optimum yield after full bloom in each plant species is taken into consideration. It has also been estimated that the overall yield of fruits from the five plant species would be around 12,250 tonnes per annum valued at Rs.1,400 lakhs. It is also suggested that the interspace between plants could be planted with vegetable crops for the first two to three years, before the fruit trees cover with canopy. In a two year period, one crop per year of tomato, brinjal, chillies, bhindi and onion could be grown. A total yield of about 5,500 t of vegetables valued at Rs.150 lakhs per annum could be produced, for which an overall expenditure of Rs.80 lakhs is to be incurred. An organization for marketing of the produce is provided at an overall cost of Rs.34.92 lakhs which will bring an annual return of Rs.28.71 lakhs. One of the major hurdles in development of horticulture, especially fruit crops in the country is the poor price offered to the produce during peak seasons. Being highly perishable, the fruits have to be disposed of, often at throw-away prices, and in the process there is heavy loss due to spoilage. In order to set a model, a fruit processing unit is provided to handle 5 tonnes per day. This would cost Rs.55.00 lakhs and is expected to bring a return of Rs.75.31 lakhs annually.

Vegetable Cultivation: The project is for cultivation of an area of 1,000 ha spread over the entire Pondicherry region. In all, 14 vegetable species are to be cultivated most of them as two crops in a year. Total cultivation expenses would be Rs.352.50 lakhs a year with a total yield of 36,490 tonnes valued at Rs.1,033 lakhs. Here again, an organization for direct marketing of the produce, avoiding middlemen, is suggested. This would cost Rs.43.17 lakhs non-recurring and the net profit per annum would be Rs.101.10 lakhs. This works out to 10% of the total value of the produce, whereas when sold through middlemen, the sale price gets more than doubled that of the farm-gate price.

Vegetable Seed Production: One of the major hurdles in increasing vegetable cultivation in the country is the short supply of quality seeds. In order to produce and market quality seeds of some of the major vegetables, this project is proposed. In all, 10 vegetables are to be covered with a total area of about 130 ha,

connecting about 50-100 farmers. expected quantity of seeds to be produced is about 120 t. The seeds have to be produced adopting the best technology and then processed, packed and marketed. The total cost of production is estimated at Rs.46.50 lakhs and sales at Rs.153.25 lakhs with a net profit of Rs.106.75 lakhs. The chief object should be to maintain high quality standards leading to the evolution of a brand name in the market. Over time, the seed production could be expanded several fold and the produce marketed widely in the country. For example, quality onion seed of certain varieties which come up well in Pondicherry region will be in great demand all over Peninsular India.

Floriculture: There is a growing demand for fresh cut flowers in the domestic market. Though the demand varies widely from season to season and on different days of the week, there exists a gap between supply and demand. Under the floriculture project seven major flower crops are suggested, indicating the preferred varieties in each. The total to be covered is 100 ha and the cost of cultivation Rs.102.00 lakhs per annum. The produce is to be sold in bulk by weight or by numbers, and the value is estimated at Rs.409.50 lakhs. For adoption of the latest production technology by the farmers, a technical cell is provided. Also a marketing set up with initial non-recurring expenses of Rs.33.78 lakhs and a recurring expense of Rs.16.28 lakhs is provided. For marketing of the flowers, a margin of Rs.2/kg is provided. On this basis, the marketing organisation can make an annual profit of Rs.16.82 lakhs.

Orchid Cultivation: All over the world, orchids are highly valued ornamentals. They are commercially cultivated in many parts of the world, but are yet to catch on in India. There is a large export market for certain varieties of orchids. The technology for commercial production of orchids is available in India. However, only if bulk quantities are produced could container loads of them be air-lifted and marketed in foreign countries. It is proposed to produce 50 lakhs stalks (or sprays) per year and export. Organizationally, there would be a Main Orchid Centre to propagate the plantlets and also produce in bulk about 30 lakh stalks per year, Another 10 satellite centers would be organized in farmers' fields to produce about 20 lakh stalks, for which the planting material and the technical know-how will be provided by the Main Centre. The flower stalks will be pooled, pre-cooled, packed and exported by the Main Centre. The total area to be covered is 20 ha and 5,000 plants are to be grown per ha. There will be a gestation period of about two years. Total investment in the project is estimated at Rs.328.00 lakhs and working expenses would be about Rs.500.00 lakhs per year. The total gross income from a five year period is estimated at Rs.3,174 lakhs with a net profit of Rs.1,432 lakhs. Since this is a high-tech project, importance is given to technical and managerial training of everyone concerned under the project. Pondicherry region with its prevailing high atmospheric humidity and tropical climate is considered highly suitable for production of certain popular varieties of orchids.

Button Mushroom Cultivation: Of the various edible mushrooms, button mushrooms are the most popular and their demand is growing steadily. While in Western countries, mushrooms are becoming increasingly popular as a part of the regular diet, their cultivation is decreasing. Therefore, the developing countries are entering into cultivation and export trade of button mushrooms. India is the latest one to join the trade. There are a few large scale button mushroom projects in operation in India. There is scope for several others and Pondicherry could be one centre for bulk production and export. The technical know-how is available in India and the required material inputs can be readily procured in Pondicherry region. Organizationally a central plant would be set up to produce the spawn and to grow a part of the 3,000 t quantity per annum. There would also be 30 satellite mushroom-producing sites distributed within a radius of 50 km. The daily harvests would be collected and processed and packed at the central plant. The main responsibility of the central plant would also include quality control and export of the mushrooms. The total cost of the project is estimated at Rs.3,400.00 lakhs. It is a 100% export-oriented project. The total value of sales is estimated at Rs.480.00 lakhs per year, after a lower sales level in the initial three years. A net profit of about Rs.180.00 lakhs per annual is estimated which is to be proportionately shared with the satellite units. This is a high-tech project and necessary provisions are made for meeting the cost of the technology and for training to improve the efficiency of the management.

Dairy Husbandry: Considering that there is an ever-growing demand for milk and milk products in the country, dairy husbandry as a commercial venture is highly worthwhile. In Pondicherry region, there exists a gap between supply and demand of milk. Therefore, commercial production of milk under a society organised by the dairy farmers is proposed. The project consists of 200 production centres, each with six high pedigree

milch cows. The Jersey cross-breed's daily production of milk under the project would start at about 8,800 litres in the first year and reach 14,795 litres from the fourth year onwards. There will be a central organisation to provide supplies and services to the member dairy farmers. It will also organise pooling of the produce and marketing of the milk in selected centres. The total cost of the project is Rs.180.00 lakhs. Each production centre maintaining six animals will derive a benefit of Rs.1.18 lakhs a year. The marketing wing with a margin of Rs.1/- litre is expected to make a profit of Rs.24.60 lakhs again.

Forage Cultivation: Supply of green fodder to dairy animals is not a luxury, but a basic need in order to increase milk production. Presently in Pondicherry region, there is no large scale production of green fodder. The staff-fed cattle are dependent on dry fodder of low nutritive value. To compensate for this deficiency, concentrates at high cost are being supplied. It is therefore thought to fit to organise a commercial venture for the production and supply of the highly nutritive Cumbu-Napier grass, Co-3 grass and Lucerne. Co-3 grass is to be cultivated in 60 ha and lucerne in 15 ha so as to supply every day, all the year around, 50,000 kg of grass and 10,000 kg of lucerne. For this purpose, about 20 farmers owning irrigated land will be enlisted. They will be provided the planting material, the technical know-how and supply of the forage, by an entrepreneur who could be one among them. The entrepreneur will buy the grass at Rs.300/t and lucerne at Rs.400/t and pool them, transport the grass to selected sale points in the urban and suburban areas and sell it at a margin of 25 paise per kg of grass and 25 paise per kg of lucerne. The overall investment by way of cost of cultivation would be Rs.23.70 lakhs with a gross return of Rs.59.55 lakhs. The net profit would be 35.85 lakhs, which works out to Rs.47,800 per ha per year. For the marketing organisation an initial investment of Rs.28.00 lakhs is to be made, followed by working expenses of Rs.24.28 lakhs per year. Through the sale of 18,250 tonnes of grass and 1,200 tonnes of lucerne annually a net profit of Rs.21.35 lakhs can be realised.

Poultry (Broiler) Production: This project consists of setting up of a Mother Unit to provide the inputs to 60 peripheral units producing the broiler at the rate of 1,000 birds per month from each unit. Places like Villianur may be selected for the Mother Unit. The Mother Unit will have a feed mill, office, godown, transport vehicles, etc. The capital cost for the Mother Unit would be Rs.34.00 lakhs and the operating expenditure Rs.17.44 lakhs. The operating profit would be in the range of Rs.50-60 lakhs. Each of the peripheral units would be set up at a capital cost of Rs.1.80 lakhs and an operating cost of Rs.6.66 lakhs and earn a net profit of about Rs.1.2 lakh per year. The total broiler sales will be about 6.84 lakhs. Adequate provisions would be made for proper housing of the birds, scientific feeding, protection against disease and insurance coverage.

Animal Feed Manufacture: The cattle and poultry feed for the Pondicherry region is partly produced locally and partly imported from outside the region. In order to fully meet the growing needs of animal feed in the region and the new, intensive dairy and poultry programmes envisaged, an Animal Feed Manufacturing plant is proposed. It will produce both cattle and poultry feeds, for which necessary machinery and accessories are to be installed in a central place in Pondicherry region. The plant will produce 2,400 tonnes of cattle feed and 10,000 tonnes of poultry feed annually, working for 22 days a month and 264 days a year. The capital investment will be Rs.46.20 lakhs and working expenses Rs.81.26 lakhs, and the plant will earn an annual net profit of Rs.341.64 lakhs. The loan from institutional sources could be repaid in 20 quarterly installments.

Table. 1 Major Crops in Pudhucherry Region

Crops	Area in Hect	Production in MT
Paddy	23000	66499
Pulses	6989	2771
Sugarcane	2406	233324
Gingerly	162	95
Cotton	325	1356
Ground nut	1252	3309

Source: Puducherry Agriculture Department. 2017

Land Use Pattern

Land use pattern Of different uses of land---forests, pastures, human habitations, and various economic activities agriculture is the prime one and most important for the survival of the mankind. At present India has 23percent of forest cover, 3 percent pastures and grazing land, 46 percent area is under agricultural use, 14 percent land is barren,6 percent land is cultivable waste land and remaining 8 percent is fallow land². Compared to India situation, forests cover 30 percent of total land area of the world, 26 percent are pastures and grazing lands and only about 11 percent of land is used for agriculture. The remaining land about 33 percent is marshy land, desert, scrub forests, bare rocks, ice and urban areas. About one-third of this land, i.e., 11 percent is devoid of any plant cover and is completely barren³. Though the deserts and other unproductive lands are generally unsuitable for intensive human use, they are important in biogeochemical cycles and act as a refuse for biological diversity. The proportion of land area under agricultural use in India (46 percent) is much large compared to world (11 percent). According to some agricultural experts about half of the forests in Africa and grazing lands in South America could be converted to croplands if proper inputs of water, fertilizer, erosion control and farm equipments are there. This could feed much larger population but then a sustained intensive agriculture could give rise to serious environmental and social problems.

Table.2 Irrigation Facilities in Puducherry Region

S.No	Source of Irrigation	Area irrigated (hec)	Percentage
1.	Canal	6315	35.12
2.	Tupewell	11588	43.45
3.	Ordinary well	0	0
4.	Motor Pumb Set	53	22.03
	Total		100

Table. 3 Cultivation practices in puducherry Region

Farm Size	WETLAND			DRYLAND		
	Paddy	Sugarcane	Total	Groundnut	Pulses	Total
Marginal Farmer	47 (35.1)	38 (40.4)	85 (37.3)	25 (30.5)	21 (38.2)	46 (33.6)
Small Farmer	41 (30.6)	31 (33)	72 (31.6)	20 (24.4)	15 (27.3)	35 (25.6)
Medium Farmer	28 (20.9)	17 (18.1)	45 (19.7)	22 (26.8)	11 (20)	33 (24.1)
Large Farmer	18 (13.4)	8 (8.5)	26 (11.4)	15 (18.3)	8 (14.5)	23 (16.8)
Total	134 (100)	94 (100)	228 (100)	82 (100)	55 (100)	137 (100)

Source: Primary Data

The above table,3 has included two type of cultivation like wet and dry land cultivation in the study region. We have collected the information from the respondents, It has four category of farmers in the study area, such as large farmers, medium farmers, small farmers and marginal farmers in the study area under two major cultivation like wet and dry land cultivation, under wet land cultivation we have four kinds of crops such, sugarcane and paddy further, dry land cultivation depends pulses and groundnut. Besides, under wet cultivation respondents (228) and dry land cultivation respondents (137). So the research area highly depends on this two major cultivation practices.

III. CONCLUSION

The prime objective of the Department of Agriculture is to promote all agricultural activities in the U.T of Pondicherry for the benefit of the farming community. Improving land productivity, achieving crop diversification, building infrastructure, creating well-organized marketing network, increasing area under horticultural crops and making agriculture more profitable. Providing one stop solution to the farmers for all their field problems through 'Farmers' Help Centre's "Uzhavar Udhaviyagam's", distribution of timely & quality agricultural inputs through PASIC Agro Depots, agricultural marketing intervention by establishing Market Committees in the rural areas and Uzhavar Sandhais in urban areas for marketing of horticultural products, encouraging cultivation of less water consuming crops especially horticultural crops, rationalizing the use of groundwater and preventing indiscriminate conversion of agricultural lands through Land Use Planning.

REFERENCE

1. Sharma, V.P., (2015) Dynamics of land use competition in India: perceptions and realities, Working Paper No.2015-06-02, IIM, Ahmadabad.
2. Government of India (2013), Draft, National Land Utilization Policy, frame work for Land Use Planning and Management, Ministry of Rural Development, Department of Land Resources, New Delhi.
3. Government of India, (2013) National Horticulture Data Base, National Horticulture Board, Ministry of Agriculture, Gurgaon.
4. premakumara, Seema (2013): "Land use pattern in India and Karnataka: A comparative
5. analysis", IJSR- international journal of scientific research, Vol:2/ issue:10/october-2013.
6. Abdul azeez and K.K Subramanian (2000): "Industrial growth in Kerala: Trends and explanations".
7. Golub, alle and W.Hertel, Thomas (2008): "Global economic integration and land use change", journal of economic integration 23(3), sept 2008.
8. Kuldip Kaur and Seema Saini (2011): "Impact of urbanization on environment and socio-economic variables in Punjab", Indian journal of regional science, Vol-XXXIII, NO-2.
9. Kewalramani Gita (2002): "Land use change in the pre-urban interface of Mumbai": A case study of the Varai virar lowlands.