CHAPTER I

INTRODUCTION

1.1 Socio-economic structure and agricultural transformation

Transforming the rural scene is a complex process in a country like India, where socio-economic structure is riddled with class and caste resulting in various social attitudes and wide variance in the capabilities of the different types of peasants. Diverse agroclimatic conditions, different cropping patterns and availability of different levels of technology have not permitted an uniform advanced agricultural system. Inspite of several decades of extension services in India involving various programmes such as grow more food campaign (GMFC), community development programme (CD), national extension service (NES), intensive agriculture district programme (IADP), intensive agriculture area programme (IAAP), and high yielding varieties programme (HYVP) etc., the use of new agricultural technology remains limited. There exists inadequacy in the coverage, with respect to area and crop as well as different classes of farming people. Further, lack of sustainability of adoption over a long period is possibly benefiting only the present at the cost of the future. This limitedness in adoption is to be understood in the context that in the post-independence period technology extension has become the key strategy for agricultural improvement, in contrast to the pre-independence thinking that socio-economic-cum-political structural change is a pre-condition for technology extension. During this post-independence period the

rich farmers have become richer and the poor peasants including the growing number of landless ones have become poorer. The inter-regional disparity has also increased substantively. Energy shortage and environmental pollution are tending to create crisis.

In some states like Bihar, foodgrain output remained stagnant during the green revolution decade; but in few others like Punjab there has been a sharp increase of output during the same period. Foodgrain output in Bihar in 1967-68 was 8.627 million tonnes, in 1981-82 it actually declined to 8.239 million tonnes which declined further to 7.316 million tonnes in 1982-83. In Punjab during the same period, foodgrain output increased dramatically from 5.407 in 1967-68 to 13.326 million tonnes in 1981-82 and in 1982-83 it went up further to 14.146 million tonnes indicating inter-regional differences in development. During 1983-86 there has been some progress in Bihar. Even then foodgrain output in Bihar was 11.241 million tonnes in 1985-86 compared to 17.187 million tonnes in Punjab. Thus, during this 'green revolution' period in Indian agriculture foodgrain output in Bihar become nearly 35% lower than that for Punjab in 1985-86, while in 1967-68 the same state produced 70% more grain than Punjab.

These differences are no less glaring when crops are taken into account. It can be seen that the production of rice in the

country increased from 37.61 million tonnes in 1967-68 to 64.15 million tonnes in 1985-86, or by about 71 percent. In wheat, however, this increase was as high as 183 percent with a rise of production from 16.54 to 46.88 million tonnes during the same period. The production of cereals, other than rice and wheat (consumed mainly by poorer people) stagnated over the whole period. Paradoxically the proportion of the rural population below the poverty line, continuously increased during the entire green revolution period inspite of substantive increase in agricultural production and agricultural income. As per estimates of the National Institute of Rural Development, about 46 percent of the rural population covering 196 million people were below the poverty line in 1969-70. By 1975-76 this proportion increased to 47.7 percent covering 225 million people. As per estimates of Planning Commission, this further increased to 50.71 percent in 1979-80 encompassing 260 million rural people below poverty line. Interestingly, during this period the foodgrain production continued to increase from 82 million tonnes in in 1960-61 to 121 million tonnes in 1975-76 and it crossed 150 million tonnes mark in 1983-84. However, the interaction of new technology and its pattern of extension with the prevailing socio-economic structure is far from assuring as it has aggravated both the inter-regional disparity as well as disparity between different classes of people forcing a rapid increase in the number of people below the poverty line.

It is in this background that the Government of India has started programmes for social justice continuing the old basic strategy for growth. This was the strategy of 'growth' with care for social justice. The various programmes designed with an aim to bring social justice included the programme of small farmers development agency (SFDA), drought prone areas programme (DPAP), desert development programme (DDP), command area development programme (CADA), tribal area development programme (TADP), hill area development programme (HADP) and then the integrated rural development programme (IRDP). In October 2, 1980, as many as 5011 development blocks were brought under IRDP but the programme failed to improve the condition of poor even aided by food for work (FFW) and national rural employment programme (NREP). This induced the government to launch another programme called 'rural landless employment guarantee programme' (RLEGP). This programme was introduced throughout the country in 1983-84 to guarantee 100 additional mandays of work for atleast one landless worker in each landless family. Even though successful, the achievement of the scheme seemed to be limited as it could generate only 134.4 million mandays achieving only 65.32 percent of the target set for 1985-86. This represents only about 2.5 days of employment per year per landless agricultural worker in India (the number of such workers as per 1981 census was 52.571 million in the country). The corresponding mandays of

employment per landless worker through RLEGP was even less in Andhra Pradesh being only 1.3 mandays with 7.873 million landless agricultural worker as per 1981 census.

The primary reasons for the inability of the poorer majority of the rural masses to utilise new technologies in agriculture are non-availability of land, as 37 percent of all agricultural workers were landless (as per 1981 census) and about 55 percent of the remaining agricultural households belonged to marginal farmer family having one hectare or less[1]. The question of benefitting by adopting modern technology does not arise for the landless, while the majority of the cultivators who have small holding and negligible savings, cannot invest adequate money in adopting new agricultural technology requiring heavy investment for improved irrigation, fertilizer and plant protection chemicals etc. This is further aggravated by the fact that these small farmers are not often considered bankable by even the nationalized banks. The other concern is the absence of adequate technology for areas without irrigation facility or for areas where flood or drought creates stress. The crops grown under environmental stress are least investigated. Lastly, the relatively high individual risk in adopting something new, particularly in the absence of crop insurance, can be an obstruction towards the spread of modern technology in large parts of the country. There is

1. Estimated on the basis of agricultural census for 1976-77 as quoted in Reserve Bank of India Study on 'Agricultural Productivity in Eastern India', 1984, Vol.II, p.420.

another situation where many with land and other resources do not always adopt modernisation, making the provision of infrastructure (e.g. irrigation) infructuous. They can have better income by investing their resources in money lending or speculative trading or similar other non-productive channels. Often they fritter away their resources in conspicuous consumption.

If the extension is for introducing modern agricultural technology, the aim has to be universal and complete adoption. Any method that fails to ensure a total adoption will distort it by creating differences between the people adopting it and others unable to do so. Partial adoption can also jeopardise the potential for sustained growth. The upper 10 percent of the rural society, who owns more than 50 percent of the land and nearly 100 percent of the savings, may invest in agriculture if it is as lucrative as other existing investments like usury, rack-renting, speculative commerce etc. They need not invest for agricultural modernisation even if they have both resources and awareness of the technology. On the other hand, the poor majority, because of the paucity of land, and dependence on usurious loans and following from it, distress sale, may not be able to modernise adequately, even if they have the will and the knowledge of modern technology. These reflect that the present pattern of interaction between the existing socio-economic structure and the type of the new

agricultural technology is preventing mass extension of the present technology. This is reducing thereby the level of utilization of potential, increasing the cost of production and modernisation,and keeping a vast section of people below the poverty line.

1.2 New agricultural technology and its adoption

The present technology can be considered to be centered on building on the best. Thus, it requires: (a) best land (b) best infrastructure (c) most endowed farmer for its adoption and (d) continuous transfer of constantly improving technology from 'laboratory to land'. Because of the present social structure benefits from the limited 'best' do not and cannot percolate to the extensive poor areas and poor people and 'inferior' crops. In addition, in terms of chemical fertilizers, pesticide and insecticides, controlled irrigation water, all parts of the intensive nature of the modern agricultural technology, it is extremely doubtful whether even this limited benefit can be sustained over a long period of time in this sub-tropic, particularly if the pattern of input use continues in its present form.

There are three interacting aspects of the current technology transfer activities which may demand consideration.

(a) There are some defects of the technology which can make it unsuitable for sustaining over long period. The increase of production mostly occurs at the initial stage of introduction of technology and fails to give similar benefit at a later stage. The technology is often dependent on rapidly depleting non-renewable and polluting energy sources, (b) There are some defects in the structure of the present society which get expressed both in choosing and emphasising this specific technology as well as in its limited adoption in terms of crop, area, and strata of people, (c) There exist also some defects in the machinery and methodology of extension for transfer of technology.

It may therefore be useful in the above context of previous discussion to describe the existing agroeconomic conditions in the three regions of Andhra Pradesh under investigation so that the results obtained can be understood in this perspective.

1.3 Andhra Pradesh and its agriculture

Spread over 2,76,754 sq.km, constituting 8.4 percent of the total area and 7.8 percent of the total population of the Indian Republic, Andhra Pradesh is the fifth largest state in the country both in terms of area and of population. The state comprises of 23 districts (Fig. 1.1).

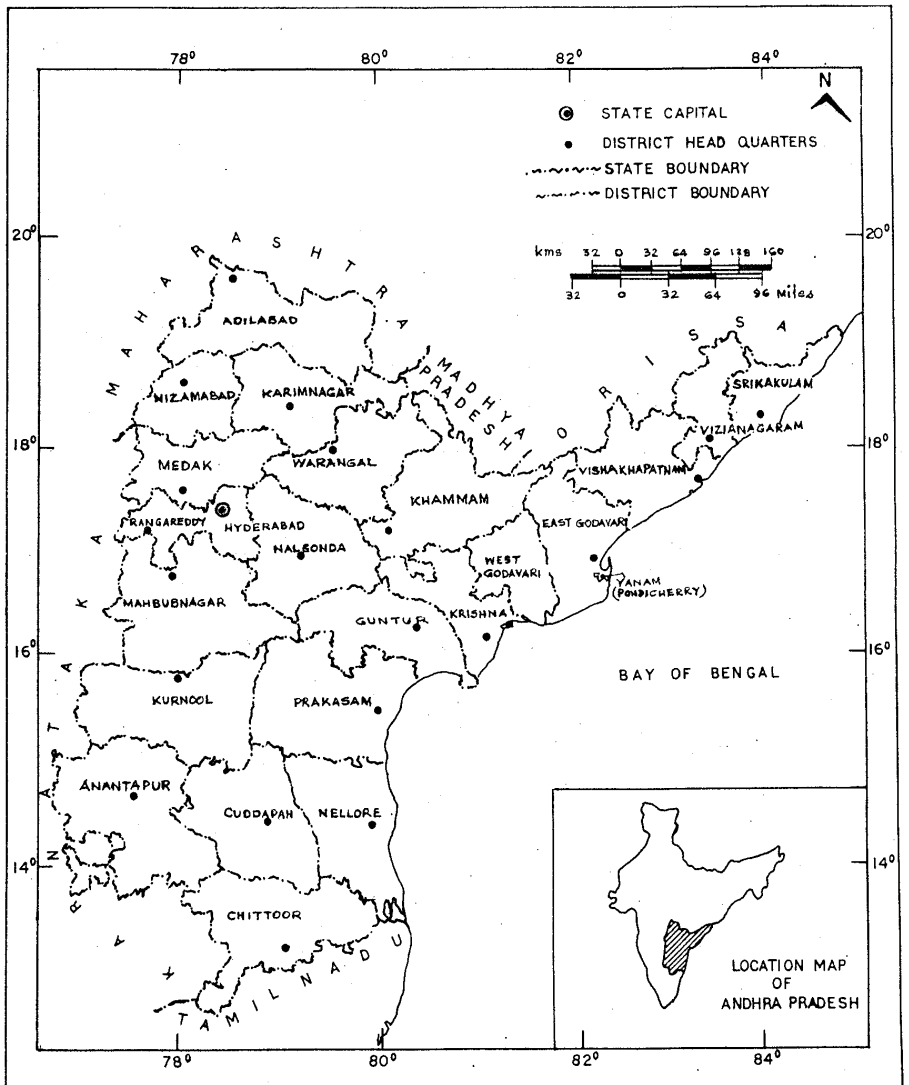

FIG. 1·1 ADMINISTRATIVE DIVISIONS (DISTRICTS) IN ANDHRA PRADESH

The state is situated between the latitudes 12° 14' N to 19° 54' N and the longitudes 76° 50E to 84° 50E and is located on the eastern side of the peninsula and south eastern part of India. The state is bounded on the north by Orissa and Madhya Pradesh and by Maharashtra on the north-west. Karnataka lies on the western frontier and Tamil Nadu to the south. The eastern borders are guarded by the Bay of Bengal.

The entire state can be divided into three regions, viz., 1. Coastal Andhra, 2. Telangana, and 3. Rayalaseema regions. Coastal Andhra consists of nine districts viz. Srikakulam, Vizianagram, Vishakapatnam, East Godavari, West Godavari, Krishna, Guntur, Prakasam and Nellore. Telangana region consists of ten districts viz. Hyderabad, Rangareddy, Nizamabad, Medak, Mahbubnagar, Nalgonda, Warangal, Khammam, Karimnagar and Adilabad. Rayalaseema region consists of 4 districts viz. Kurnool, Ananthapur, Cuddapah and Chittor. The study area was restricted to Prakasam and Nalgonda districts of Coastal Andhra and Telangana region respectively.

Of the total population of 53.59 million (1981), 76.75 percent are in rural area. The density of population per sq.km is about 195. There is wide variation in this density in different parts of this state and this may be seen in table 1.1.

TABLE 1.1 : Population density in different regions of Andhra Pradesh (1981)

Sr. No.	Name of district/region	Population density per sq.km	% of people in rural area
1	(a) Prakasam district	139	85.80
	(b) Other 8 districts of Coastal Andhra	255	77.13
2	(a) Nalgonda district	160	88.61
	(b) Other 9 districts of Telangana	176	74.82
3	Rayalaseema	144	79.82
	Total Andhra Pradesh	195	76.75

SOURCE: Government of Andhra Pradesh 1982, Census of India 1981. Series-2, A.P.

The growth rate of population has been less than the all India average although there has been slight increase in the last decade. However, there exist considerable differences in the growth rate between the three regions when compared with the data of the State as a whole. (Table 1.2)

TABLE 1.2: Decadal variation in population in Coastal Andhra, Rayalaseema and Telangana regions of Andhra Pradesh (1901 - 1981)

Region	1901-11	1911-21	1921-31	1931-41	1941-51	1951-61	1961-71	1971-81
Coastal Andhra	9.34	3.82	11.89	11.65	13.16	14.13	18.27	19.97
Rayalaseema	4.52	-0.85	10.05	11.24	11.42	17.18	20.41	20.56
Telangana	21.67	-3.79	16.20	15.04	16.61	16.46	24.00	27.35
Total Andhra		-0.13	12.99	12.75	14.62	15.65	20.90	22.76

Agricultural situation : The coastal Andhra region which occupies about 33 percent of the area and 37 percent of the population (1981) of the state, is the most fertile of the three regions. It has an average elevation of less than 330 metre above sea level and is well served by the south-west and north-east monsoons. In this region, rainfall is the highest. The soil is mostly alluvial. Three major rivers - Godavari, Krishna and Pennar flow through this region. Most parts of this region, unlike others, have assured sources of irrigation. The cropping pattern of this region varies with the irrigation facilities, soil and rainfall. In the alluvial soils of the delta where canal water is available for about 8 months in a year, a long duration paddy crop is raised. Pulses, sunhemp and groundnut are grown in most of the areas after the harvest of the paddy crop. Well-irrigation is prevalent in the non-deltaic areas and intensive cultivation is widely practised in these areas. Dry farming is practised in the remaining areas.

The Rayalaseema region occupies about 27.4 percent of the total area and 15 percent of the population (1981) in the state and lies at an altitude of 330 to 660 metre above sea level. This represents typical dry region of Andhra Pradesh which is susceptible to chronic drought. The rainfall is meagre and the fluctuations are wide. The major irrigation source in this area is the Kurnool-Cuddapah canal. Except for

a few pockets, the entire Rayalaseema is a dry tract. The cropping pattern in the deep black cotton soil is Jowar or Korra rotated with either cotton or chillies. Groundnut is being grown in the red soils of Chittor and some parts of Cuddapah.

The Telangana region occupies the remaining 59.4 percent of the area and 48 percent of the population in the state and is an extensive plateau with average elevation of about 1200 feet above the sea level. Except Mahbubnagar and certain parts of Nalgonda, the region gets good rain from the south-west monsoon. The topography of Telangana presents a serious handicap to the development of agriculture. The entire area is rugged with heavy undulating topography with mostly reddish brown to brownish red sandy loam soil known locally as 'chalkas' or shallow black soils. In this rough topography there are innumerable streamlets and nalas which are used for storing rain water for irrigation by erecting earthern dams. Nizamsagar is the major irrigation project but several medium sized projects were taken up to augment the irrigation potential in the area. The construction of the Nagarjunasagar dam has helped in bringing some more ayacut under irrigation in the district of Nalgonda. With the completion of the Pochampad project more areas in the districts of Nizamabad, Adilabad and Karimnagar will be brought under irrigation. There are many patches of black soil, both deep and light, dispersed throughout

the region. Generally jowar, cotton and groundnut are grown singly or in rotation.

Pattern of land ownership : In the coastal Andhra region in 1971, 56.7 percent of the total holdings owned area below 1.0 hectare as against 38.6 percent in Telangana and 36.2 percent in Rayalaseema region (Table 1.2; Appendix-C, RT-1). The area below 1.0ha covers only 14 percent of the total net cultivated area in the Coastal Andhra region, while the corresponding percentages in Telangana and Rayalaseema were as low as 5.5 and 5.4 respectively. In the coastal Andhra region the largest holdings (10 ha and above) is only 2 per cent. The corresponding percentages in Telangana and Rayalaseema regions were 6.2 and 6.7 respectively. These latter holdings claim 19.3 percent, 35.3 percent and 35.6 percent of the total net cultivated area in coastal Andhra, Telangana and Rayalaseema regions respectively. This picture does not reflect total situation as it has ignored the agricultural population having no cultivable land, providing the landless agricultural workers.