CHAPTER - I

INTRODUCTION

1.1 Role of Agriculture in securing livelihoods, generating employment and income

Agriculture is the most important industry in the world in terms of the number of people employed. The estimated agricultural population, depending for their livelihood on agriculture, hunting, fishing or forestry, is of over 2.5 billion, makes up 42 per cent of the total. In the developing countries, over 50 per cent of the population depends upon agriculture. Although the proportion is decreasing as a result of rural-urban migration, the absolute numbers securing their livelihoods from agricultural production are still increasing in the developing countries.

Consideration of these statistics suggests three reasons why agriculture plays a critical role in economic development and improvement of the general welfare of the whole population. First, given that the agricultural population forms such a large proportion of the total, national average income per capita must be strongly influenced by income levels in agriculture. Any improvement in agricultural labour productivity must be reflected in a rise in national income per capita. This last measure is still seen as a key indicator of economic growth and development. Other key indicators, such as
improvements in nutrition, health and education facilities and life expectancy, are closely related to average per capita income.

A second need for agricultural growth and development is to provide livelihoods for the still increasing numbers of people dependent on agriculture in most of the developing world. As the agricultural population and labour-force grows, in relation to limited resources of land and capital, diminishing marginal and average returns might be expected. In order to avoid diminishing returns and at least maintain existing levels of productivity per person, some combination of land expansion, capital investment and technological change is needed.

A third need is for agriculture to produce a growing marketed surplus to feed the rapidly expanding and urbanized, non-agricultural population and to provide raw-materials for industrial development. Failure of agricultural production to keep pace with the growth in demand must result in increase in agricultural imports and falling self-sufficiency, or rising prices for food and other agricultural products. In either case, there will be a serious brake on industrial expansion because of the adverse effects on the balance of payments or the inflationary pressures of rising food and raw material costs.

The movement of labour out of agriculture is an essential feature of economic development. The associated rural-urban migration has accelerated in recent decades, particularly in the
developing countries. Thus agriculture may be seen as contributing to industrial growth by providing a source of cheap labour. Further, more agricultural surpluses, extracted by Government policies or by private saving, have provided much of the capital for industrial development, while agricultural exports earned the necessary foreign exchange to import industrial raw materials. In addition, agricultural incomes are a source of effective demand for domestically manufactured consumer goods. These linkages may become less important as the balance, between agriculture and other sectors of the developing countries economies, changes.

1.2 Agriculture and rural poverty alleviation

The importance of agriculture in economic development goes beyond its contributions to growth in national income, the livelihoods of rural people and meeting the nutritional requirements of increasing populations. Agricultural development is also seen as having a key role in the reduction of poverty. This follows from the knowledge that a majority of the poor in most developing countries (with the exception of countries in Latin America) live in rural areas and that food prices are a major determinant of the real income of both the rural and urban poor.

It is estimated that, globally, 1.2 billion people are in extreme income poverty, as defined by the US$1 limit, and 75 per cent of these work and live in rural areas. More than two thirds of the poor live in
Asia, with nearly a half of the total in South Asia alone. About a quarter of the total number live in Sub-Saharan Africa.

Agriculture is the main source of livelihoods for the majority of rural people in developing countries\(^2\) (Agricultural population equals 87 per cent of the rural population: FAOSTAT 2003). It follows that most of the extremely poor people are mainly dependent on agriculture. The landless and casually employed farm labourers are almost everywhere among those most likely to be poor. Female headed households are often among the poorest in much of the developing world although less so in Asia. Activities are diversified with many supplementary off-farm activities. None the less, the rural poor, in all developing countries, depend extensively on crop and animal production and related activities for their livelihoods. Improvements in agricultural productivity offer the most direct route to the relief of rural poverty. Despite the global objective of halving poverty levels by 2015, the share of development assistance going to agriculture has fallen from about 20 per cent in the late 1980s to 12 per cent in 2000.

1.3 Livestock, development and poverty alleviation

Livestock and livestock products (LLPs) are estimated to make up over half of the total value of agricultural gross output in the industrialized countries, and about a third of the total in the developing countries\(^3\). The global importance of livestock and their products is increasing as consumer demand in the developing
countries expands with population growth and rising incomes. This growth in consumption is reflected in improvements in the average human nutritional status due to the intake of animal protein. The resultant changes have been dubbed ‘the next food revolution’ and the growth in developing country consumption of animal products is predicted to continue at least until 2020⁴.

Livestock products such as meat, milk and eggs are more costly, per tonne and per unit of food energy, than staple crop products, so diets in most developing countries generally include lower levels of intake of animal products than those in the developed, or industrialized, countries. However, as incomes rise, in the developing countries, consumers seek more variety and better quality foods in their diets. Hence demand for livestock products rises rapidly, as an effect which is also driven by quite rapid growth in the number of consumers. However, in many of these countries, domestic production has failed to keep pace with the growing demand and so imports of livestock products have increased.

The developing countries, as a group, are now net importers of all livestock products, with dairy produce as the largest item, while imports of beef, pig and poultry meat are growing rapidly (imports of poultry meat to developing countries quadrupled between 1989 and 1999)⁵. The widening gap between consumption and production within the group of developing countries presents a challenge. Given the strategic importance of food supplies, the major economic
contribution of the agricultural sector in most developing countries and the foreign exchange costs of imports, greater self-sufficiency in animal products is likely to be a significant policy goal. Increased efficiency of domestic livestock production should, at least, slow the rate of import growth.

Apart from the importance of animal production to national economies in contributing to national income, improved human nutrition and foreign exchange, earned or saved, livestock play an important role in contributing to rural livelihoods, employment and poverty relief. Under many grassland-based systems, usually where alternative forms of land-use are uneconomic, livelihoods are largely dependent on livestock production. Increases in productivity, though difficult to achieve, have a direct impact on household incomes and the incidence of poverty. The landless poor, who are able to acquire livestock, are enabled to satisfy immediate cash and food needs. As animals gain in value over a time, they may provide a route into owning other types of assets.

In mixed and integrated farming systems, livestock contributes to both intensification and diversification of income streams. The majority of the world’s rural poor depend on such systems.

Livestock have an important role to play in national economic development, and within the agricultural sector of the developing countries. Livestock make a large and growing contribution to the
nutrition of expanding populations, and contribute to the trade balance. Livestock-crop interactions are important in integrated mixed farming systems in much of the developing world. Further, more livestock production provides employment and livelihoods for many of the world’s rural poor. However, there are major differences between the agro-ecological and economic environments in different parts of the developing world, between animal species, between production systems. Changes have also occurred over time.

1.4 Land, Livestock, and poverty in India and Andhra Pradesh

India has 36 per cent of the poor people in the world. About 433 million Indians (44 per cent) lived on less than $1 a day in 1997 (World Development Indicators 2000). Official statistics classified roughly 36 per cent of the population as poor in 1993-1994. Indian poverty is largely a rural phenomenon. About 75 per cent of the poor reside in rural areas7. Roughly 33 per cent of rural residents were considered by the Government of India to be poor in 1991, as compared to 18 per cent of urban residents8. There is no doubt that compared to international standards and its own historical experience, India has been growing at impressive rates since the mid-1980s. In terms of gross domestic product (GDP) at purchasing power parity (PPP), India ranked fifth in the world in 1980 and fourth in the world (behind US, China, and Japan) in 2003. Among large economies (above $100 billion 2001 PPP), in terms of growth of GDP,
India ranked twelfth in the period 1991-95 and fourth in the period 1996-2001\(^9\). In 1990s, Indian per capita GDP grew at the rate of 4.1 per cent per annum, which was somewhat higher than the same in the 1980s (3.3 per cent) but substantially higher than the same in the 1950s (1.7 per cent), 1960s (1.2 per cent), and the 1970s (1.1 per cent)\(^{10}\). Most locate the causes of rural poverty in slow agricultural growth rates, low factor productivity, and inequitable access to land and other inputs\(^{11}\).

Rural poverty is closely linked to land ownership and to social status. Approximately 84 per cent of rural Indian households operate less than 2 hectares of land; the other 16 per cent operate almost 66 per cent of the land\(^{12}\). Land may be distributed more inequitably than official figures suggest as some large landholders distributed formal ownership among family members to evade land ceilings. Many households own too little productive land to rely solely on its products for subsistence. However, those households that manage to secure a livelihood from their land are less likely to be poor than those dependent on agriculture wage labour\(^{13}\). There is little reason to expect a dramatic shift in land distribution in the short term.

Low caste and out caste status continues to be correlated with poverty. The populations of Andhra Pradesh comprise a substantial proportion of dalits (scheduled castes) and adivasis (scheduled tribes)\(^{14}\). There are pastoralist and sedentarized communities in Andhra Pradesh. Pastoralists tend to possess a greater number of
livestock per capita than other groups. Pastoralist communities often lack political influence, but they are not necessarily poor by standard measures\textsuperscript{15}.

For the most part, land ownership and social caste continue to serve as indicators of political influence or lack thereof. Despite increased mobilization by dalits and adivasis in recent decades, research in Andhra Pradesh indicates that large land owners and upper caste individuals continue to exert disproportionate influence in local, district, and state level decisions\textsuperscript{16}. Poor rural livestock producers tend to own little arable land and often come from socially marginalized groups.

Both land ownership and social caste are relevant to livestock production. The amount of land one owns affects one’s ability to support livestock. Those with ample private lands have greater crop residues and may be able to raise fodder crops. Most producers, however, depend partially or wholly on crop residues and common property resources – such as village pastures, tanks, and local forests.

Social caste affects livestock production by constraining access to services and resources. Higher caste individuals are frequently unwilling to provide services to low/out-caste livestock producers because contact with “untouchables” is perceived to pollute oneself. Historically, livestock were integrated into a mixed agricultural-livestock system. Livestock tilled fields. Fed on crop residues, and
fertilized the fields with their manure; and provided milk and meat for household consumption, celebrations, and religious festivals\textsuperscript{17}.

Inequity in ownership of livestock has important implications for pro-poor interventions. Because the majority of livestock are owned by small holders and landless people, almost any intervention that benefits livestock producers can be said to be pro-poor. This view is often advanced in policy documents and was supported by several informants. But it is not the case that all livestock producers will benefit equally from intervention. Factors affecting the distribution of benefits from an intervention include the animals included, the risk involved, and the other inputs required to benefit from the intervention. For example, improvements in the functioning of dairy cooperatives benefit all producers who own dairy animals. Provision of fodder seeds, on the other hand, is likely to benefit only those with arable land in which to sow the seeds\textsuperscript{18}.

Animals differ substantially in the investment required and the potential profit. Large ruminants are raised primarily for dairy products and draught power. Dairy animals require a greater investment in cash (purchase) and need more feed, fodder, and time to reach productivity. In return, they offer a steady income that may be quite substantial. Dairy producers located in areas served by a cooperative system receive a regular payment for their milk throughout the year; producers may also sell to informal traders or private companies. Because cooperative payments are based on milk
fat rations, buffalo milk is more profitable than cow milk. The potential for profit appears to be greater for dairy than meat animals, although this is limited by difficulties in disposing of unproductive cows.

India is among the world’s largest and fastest growing markets for milk and milk products. The development and growth of dairy sector in India has been fascinating. In a period of four decades, India catapulted from a milk deficit to a milk sufficient nation. During the 1950s and 1960s, 43 per cent of milk solids in the total output of dairy industry were imported. The commercial import of milk powder touched its peak in 1963-64. This made the policy makers worried and led to the launching of “Operation Flood” programme in 1970 by the National Dairy Development Board (NDDB) and was supported by Technology Mission on Dairy Development in 1989.

These programmes resulted in spectacular growth of milk production – from 22 million tonnes in 1970-71 to 104.8 million tonnes in 2007-08 and the per capita milk availability more than doubled from 112 grams to 252 grams per day in the same period.

1.5 India is cost efficient

India’s milk production today accounts for more than 15 per cent of the total world output and 40 per cent of Asia’s total production. It continues to grow at about 4 per cent per annum far exceeding the global average of 1 – 2 per cent in recent years. Also,
India’s milk production economy is based on conversion of agro by-products and opportunity labour. Therefore the cost of milk production in India is among the lowest in the world, making it globally price competitive without any subsidy.

The global milk output growth continues to remain slow. According to the FAO Food Outlook (Global Market Analysis) released in June, 2009, world production of milk was estimated to be around 688 million tonnes in 2008, about 1.7 per cent higher than the previous year. Recent milk production estimate for 2009 is 699 million tonnes, 1.6 per cent more than last year. This growth is below the global trend rate of 2 per cent annually, which prevailed in the previous decade. Milk production is now expected to rise by 3.5 per cent in Asia to 256 million tonnes. Output in developing countries may reach 337 million tonnes, virtually counting for all the additional global output, as milk production in developed countries is anticipated to remain largely unchanged. Consequently, the share of developing countries in world milk production is expected to rise to over 48 per cent, up from a 40 per cent share ten years ago and 32 per cent at the start of the 1990s.

1.6 Complementary Role

The livestock sector is playing an important role in achieving the targeted agricultural growth in India. According to estimates of the Central Statistical Organisation (CSO), the value of output from
livestock sector at current prices during 2007-08 was about 29 per cent of the total value of output of the agricultural and allied sectors. Two-thirds of this was contributed by the milk sector alone. The livestock sector has been contributing over 5 per cent to the total GDP. A target of 6-7 per cent growth per annum for the livestock sector with milk group growing at a rate of 5 per cent has been set during the 11th five year plan.

1.7 India’s Dairy Market

Over half of India’s milk production is consumed in urban India. The urban population is projected to cross the 400 million mark by 2011. The expected rise in the purchasing power of this growing urban population would boost the dairy market. Presently, some 1,500 out of 5,000 cities and towns in India are served by milk distribution networks. Rising awareness about hygiene standards and preference against loose milk has prompted the urban consumer to switch to pasteurized packaged milk – a demand of some 140 million litres per day, expected to double in the next five years.

The food service institutional market is growing at double the rate of the consumer market. There is increasing consumption of ‘away-from-home’ food. The concept of parlours is opening new vistas for ready-to-serve dairy products. There is a growing market for dairy products as ingredients in pharmaceutical and allied industries. As
per recent trends, a boom for dairy products is forecast in the defence market.

According to the five-yearly expenditure survey conducted by the National Sample Survey Organization (NSSO), the consumption of livestock products, particularly milk, has gained popularity in the last two decades, both in the rural and urban areas.

1.8 Market Size

India’s dairy market is multi-layered, shaped like a pyramid with the base made up of the vast market for low-cost, liquid, raw milk. The narrow tip at the top is a small but affluent market, largely for western-type and fresh packaged dairy products.

The domestic market for value added products like butter, cheese, ice cream, dairy whiteners and spreads is galloping at 8-10 per cent per year. The current annual estimated market for western type dairy products is: butter 60,000 tonnes; branded milk powders: 27,000 tonnes; ghee in small packs: 40,000 tonnes; cheese : 13,000 tonnes and infant foods : 1,25,000 tonnes. The butter and cheese market is growing between 8 per cent and 10 per cent annually; the infant food market is expected to grow at 10-15 per cent. Increased consumption of pasteurized packed liquid milk is likely to retard the growth of branded milk powders.
1.9 Need for the study

It is evident that much emphasis has been placed in the Five Year Plans of India as well as in the state of Andhra Pradesh on the development of dairying as a means of enhancing income and employment in rural areas. Several studies have attempted to examine the role of dairying in increasing income and employment opportunities on one hand and factors influencing the supply and demand aspects of milk on the other. The results obtained at one place or region may not be considered for generalizations due to the socio-economic and cost-benefit variations could be found. For instance, dairying can be found as a most economically viable enterprise in some of the coastal districts like Krishna, Guntur, West Godavari, etc., while the same does not hold good with respect to the drought hit districts of Rayalaseema and Telangana regions. The demand for milk and milk products may vary from place to place and region-to-region caused by the changes in tastes, habits and preferences of the consumers. For instance, consumers in some regions may prefer to take milk either directly or with coffee while in some other regions they may prefer high fat milk which enables them to prepare milk products at their home. On the other hand, supply of milk may also vary from region to region due to the variations in breeding of milch animals, availability of green fodders, climatic conditions, etc. Thus to analyse the economics of dairying, regional studies are essential. It is in this context an attempt is made in this
study to examine the economics of dairying in Prakasam District of Andhra Pradesh.

1.10 Objectives of the study

The major objectives of the study are:

1. to review origin and progress of dairy industry in India and Andhra Pradesh.
2. to study the historical, geographical and socio-economic profile of Prakasam district.
3. to examine the socio-economic characteristic features of sample respondents.
4. to study the status of dairying in the study area.
5. to analyse the factors affecting the milk production in the study area; and
6. to examine the productive and reproductive factors of milk yield of milch cattle.

1.11 Hypotheses

1. It is hypothesised that there is a positive relationship between the milk yield and explanatory variables such as fodder used per animal per day (in Rs.), green fodder used per animal per day (in Rs.), Concentrate used per animal per day (in Rs.), number of labour hours required per day and age of animal (in years). Alternative relationship between
milk yield and the above explanatory variables are negatively related.

2. It is hypothesised that the lactation milk is significantly related with the explanatory variables such as lactation length (days), peak yield (kg), calving interval (days), calf birth weight (kg) and service period (days). Alternative hypothesis is that lactation milk yield is insignificant with the above explanatory variables.

1.12 Methodology

For the purpose of the study Prakasam district of Andhra Pradesh is randomly selected. In view of time and resource constraints two mandals namely Martur and Cumbum are selected. The Martur mandal is identified as relatively developed mandal in the coastal belt of Prakasam district, while the Cumbum mandal is located in the western part of Prakasam district which is relatively backward in terms of both agriculture and industry. It is identified that among the non-agricultural and allied activities to agricultural sector, dairying is providing gainful self-employment and generating the incomes to the rural masses. It is also identified that there is a change in variety of cattle breed in the study area. The local breed/indigenous cattle are found very few in number in the district. The cross breed variety of buffaloes are being reared in large number because of substantial improvement in Milk yield. Hence, it is decided
to study the – milk yield and the dairying aspects of households in the study area, who are rearing the cross breed buffaloes. The information is elicited from the households rearing cross breed cattle in these two selected mandals. Apart from primary data, the secondary data for the study are collected from office of Directorate of Economics and Statistics, Hyderabad, and Chief Planning Office of Prakasam district, Ongole. The statistics pertaining to Prakasam District profile are collected mainly from Statistical Abstract, Season and Crop Reports, Annual Survey Industries, Hand book of Statistics and Prakasam District.

1.13 Sampling

For the purpose of data and information a pre-structured questionnaire is canvassed in the selected four villages from these two mandals. Among these four villages 460 sample respondents are selected based on random sampling technique. The data are collected during January-February, 2011. The particulars of sampling are given below:

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Name of the Mandal</th>
<th>Name of the Village</th>
<th>Number of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Martur</td>
<td>Kolalapudi</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Konanki</td>
<td>100</td>
</tr>
<tr>
<td>2.</td>
<td>Cumbum</td>
<td>Kandulapuram</td>
<td>119</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ravipadu</td>
<td>136</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td><strong>460</strong></td>
</tr>
</tbody>
</table>
1.14 Techniques of analysis

The data is processed with the help of mini tab and S.P.S.S. To study the factors influencing milk yield the multiple linear regression model is adopted by the method of ordinary milk yield. The specified model is applied for all the four villages. Further, to study the influence of productive and reproductive factors of milk yield of cattle, a multiple linear regression model is adopted. The conventional methods such as percentages and ratios are used wherever applicable.

1.15 Scheme of the Study

The thesis is divided into eight Chapters. Chapter – I explains the role of agriculture in securing livelihoods, generating employment and income, importance and growth of Dairy Industry in India and Andhra Pradesh, need for the study, objectives of the study, methodology, techniques of analysis and scheme of the study. Chapter – II portrays the Global Dairy Scenario, Impact of W.T.O. on dairy sector and the History of dairy industry in India and Andhra Pradesh. Review of Literature on dairying in Indian context is presented in Chapter – III. Chapter – IV depicts the comprehensive profile of Prakasam district. The socio-economic characteristic features of sample respondents in terms of age, sex, literacy, size of family, type of residential accommodation, ownership of landed property, income, employment, levels of living, assets, savings, borrowings, utilization of loans etc. are discussed in Chapter – V. It
also attempts to analyse status of dairying in terms of generating income and employment to the sample respondents in the study area. Chapter – VI examines the factors affecting the milk yield of cross breed buffaloes in the study area. The productive and reproductive parameters of milk yield of cattle are studied in Chapter – VII. Chapter – VIII presents the summary and conclusions of the study.
REFERENCES


12. Of course, quantitative data on land ownership and operation tells us little of its quality; an acre of irrigated land and an acre of rain-fed land are not the same.


14. The terms Scheduled Caste and Scheduled Tribe are used to refer to those historical marginalized groups that are granted special protections in the Constitution. Scheduled castes refers to “untouchables” and scheduled tribes refers to “tribal” peoples. Dalit and adivasi are the terms contemporary representatives of these groups use most frequently.


17. Sale of animal fibres (wool) and skin (leather) is not an important source of income in Andhra Pradesh.

18. The ILRI Project on Multiple Use Crops could diminish the trade off between food crops and fodder crops.