CHAPTER - III

OBJECTIVES AND METHODOLOGY
CHAPTER III
OBJECTIVES AND METHODOLOGY

3.1 – Introduction:

The review of the vast literature on the broad issues of farm mechanisation – specially farm machineries, some of the research gaps and issues have been identified in the previous chapter. Keeping these gaps and issues in view, the following broad objectives have been formulated for the present study.

3.2 - Broad Objectives of the Study:

1. To analyze and study the growth of farm machinery.

2. To study the distribution and availability of farm machinery and equipment across various districts of Karnataka.

3. To study the utilization pattern of farm machineries in agriculture and its relationship with cropping pattern, intensity, input use and output across various farm-size categories.

4. To estimate and assess the impact of farm machineries on the farm employment and income on the selected farms.

3.3 – Hypotheses of the Study:

1. There is an inverse relationship between the farm-size and the adoption of farm machineries.

4. Increase in the intensity of irrigation results in increase in the adoption of farm machinery

2. There is a positive relationship between the usage of farm machinery and the productivity levels.

3. There is an inverse relationship between the farm-size and productivity.
3.4 - Research Methodology:

With a view to get a better and precise understanding of the variations in different sources of farm machineries pattern and methods of utilization and efficiency, Karnataka has been selected for an in-depth study. This state has been selected as agriculture has taken a moderate pace of growth during the last four decades with the advent of mechanisation.

As mentioned by Maheshwari (1966) "The analysis of the pattern of agricultural growth in Karnataka indicates that after twenty five years of growth since 1955-56, the yields of the major cereals which benefited from the new seed technology have stagnated during the eighties before exhausting the full technological potential". India Livestock Census Reports of 1983 to 2003 shows that this state has a large quantum of mechanical power and equipment. These reports also reveal that there is manifold increase in the quantum of agricultural machineries, farm implements and plant protection equipments in Karnataka. The mechanical power definitely influences the muscle power, cropping intensity, output and productivity over a period of time. Though Karnataka is primarily an agrarian state, it has different agro climatic regions and hence the utilization pattern and the diffusion of different farm machineries and implements vary according to the viability of the districts.

Changes in the livestock sector in the recent past has also contributed towards the need for agricultural mechanisation. The more popular breed of cows namely
Holstein Fries on, Red Dane and New Jersey have led to increased milk production and its availability, but the male offspring of these cows are either killed immediately after birth or sold for beef since these are economically non-viable as draught power. Thus there is likely to be a shortage of animal power and this needs to be supplemented by farm machinery.

Therefore, it can be said that there is a thrust for this kind of study in Karnataka as the state is going ahead even in the commercialization of agriculture and it is hoped that the result of this study will be useful for making suggestions and future implications on farm machineries and implements in agriculture.

3.4.1 - Data Source:

In the present study both primary as well as secondary data have been used. The secondary data were collected from various published sources such as All India Quinquennial Livestock Census Reports, Season and Crop Reports, Karnataka. Report on Area, Production, Productivity and prices of agriculture crops in Karnataka and statistical abstracts of India and Karnataka. The secondary data were used to trace the growth of farm machineries and implements for three decades. The data has been collected from the year 1983 to 2003.

Data on the number of agricultural implements and machinery, human population engaged in agriculture (both cultivators and agricultural labourers) area cultivated, area irrigated, and cropping intensity were obtained and simple and
compound growth rates for farm machineries in Karnataka as a whole has been worked out and analyzed across various regions of the state. The growth rate has been computed for each farm machinery. The reasons and the factors, which are influential for productivity differentials throughout the state, have also been discussed.

Though the present analysis concentrates on the state as a whole, the focus will be on one district i.e., Mandya. This district is having protected irrigation. Classifying the districts into four administrative divisions has been done in the analysis. This is done to understand the regional variations in terms of farm Mechanisation. In addition to this the district and the state results are shown separately to highlight their importance.

Among the various implements used for agricultural purposes, the following implements are taken for the study. They are tractors, power-tillers, power operated sprayers and dusters, sugarcane-crushers seed cum fertilizer drillers, threshers and pump-sets consisting of diesel and electric engines. In addition to these the stock of the traditional equipment also has to be taken into account to understand the impact of each farm equipment on employment and income.

The primary data for the present study has been collected through sample survey method. Sample households were collected on the basis of personal interviews. The major crops grown in the district have been selected. Data for the
present study relate to the principal crops of paddy and sugarcane areas in the district have been collected. The reference period for the primary data has been 2003-2004.

3.4.2 - Method of Primary Data Collection:

The data has been collected for the agricultural year 2003-04. Primary data has been collected by using Multi-Stage Stratified Sampling Method as it gives proper representation to all the categories of farmers. Accordingly, a Taluk where we find highest usage of farm machinery will be taken and again in the same Taluk one Hobli by following the same method. However, the sample households were personally visited to get more insights about the farming in general and farm machineries in particular. Information on items like, the access to different sources of farm machineries, fluctuations in wages, rent, marketing, the operational techniques, credit facilities and related issues were gathered as background information.

3.4.3 - Sample Design:

A sampling design with a district at the first phase, one Taluk at the second phase, and a hobli in the third phase. And a group of villages are selected to cover about 200 HHs. The procedure adopted for the selection of the district, Taluk, Hobli and villages and households are explained as follows:

3.4.4 - Selection of the District:

Mandya district was purposively selected for the present study as it has distinct features in agriculture where the prime-face occupation of the district is
agriculture. The principal crops are sugarcane, paddy, ragi and sericulture. Assured canal water is facilitating the irrigation in Mandya district. Canal irrigation from the two major canals i.e., Visweswaraiah canal and Krishnaraja Sagar are the main sources of irrigation in Mandya district (It covers red loams and red sandy loam soils. It is derived from granite rocks. Rainfall is 800 to 970 mms.). It will be interesting to study the region which is having different agricultural characteristic features, thus Mandya has been selected for this study. The maps 1 and 2 illustrate the sample district and Taluk, which are selected for the study.

3.4.5 - Selection of the Taluk and the Study Villages:

One Taluk is selected in the Mandya district for the analytical study. The Taluk is selected on the basis of farm machinery availability. And it is being chosen on the basis of irrigation facility, cropping intensity and proportion of the total principal crops cultivated (paddy, sugarcane, ragi and sericulture). The Taluk selected for the study is Maddur which has a desirable source of production and irrigation and other varied agricultural characteristic features. Villages were selected on the basis of area under selected crops, irrigation and availability of farm machineries. Two hundred (200) households were selected on the basis of machine availability of each farmer.

In the present exercise an attempt also has been made to study the differences in yield level, inputs, gross output in relation to intensity of farm machinery for selected sample levels. The impact of farm Mechanisation on the use of power is
studied. Level of Mechanisation has been related with the productivity differentials, has been related to find out the magnitude of the impact. Similarly, the differences in the input, gross output, and irrigation have related with the level of Mechanisation across different districts.

3.5 - The Scope of the Study:

The objectives of the study have already been spelt out. Broadly the scope of the study includes economic issues concerning the cultivation of various crops and the farm machinery used in the process on the one hand, and on the other the employment and income implications of these on the farm HHs. While analyzing these issues the focus has been mainly on the performance of marginal and small farmers in the study area. It is assumed that the study will help the policy makers and others to devise suitable policies for the better usage of farm equipment to increase the efficiency and productivity of the farming community in general and the marginal and small farmers in particular.

3.6 - Limitations of the Study:

The study deals with only the farmers who are directly involved in the cultivation and using the farm machineries. However, the people who are involved in the process of marketing the latest technology are not taken into account. Moreover, the credit as a whole will be taken as one component and the analysis will not be covered the impact of various sources of credit and their impact on the intensity of farm Mechanisation. In
other words the impact of credit will be seen as a source but not the type of source as credit itself is a major subject to be dealt with. Any way the present study will guide the other researchers to explore so many other issues relating to farm Mechanisation.

3.7 - Chapterization:

The First three Chapters contain the introduction, review of relevant literature, research problem, general methodology followed for the study and the chapter scheme.

Chapter IV highlights the Growth of Farm Mechanisation in the state of Karnataka. The Chapter will be dealt with purely using secondary data, where a brief profile of the state is included in addition to a detailed secondary data analysis.

Chapter V highlights the growth of farm Mechanisation in the study district. The chapter will be dealt with purely using secondary data, where a brief profile of the district is included in addition to a detailed secondary data analysis.

Chapter VI covers the trends in the application of the farm machineries at the village level. This includes the analysis of the data, which is collected from about 200 HHs. in the study area.

And the Chapter VII consists of Summary Conclusions and the Policy Suggestions.