CHAPTER- I

INTRODUCTION

Agriculture is the primary and core sector of the Indian economy. It is well known that agriculture occupies a predominant place in Indian economy, where in nearly 68 percent of the total population derives its livelihood out of it. Hence, naturally, growth of agriculture has to be planned in relation to the rising demands of the growing population.

In the years to come, extension of net cropped area cannot be a significant factor to increase production since the possibilities in this direction have been very nearly exhausted. Now the strategy must consist of increasing annual productivity per unit of the cropped area. Fortunately, the scope in this direction is considerably vast.

It has generally been realized that without a strong agricultural base economic progress cannot be achieved. If the country has to tide over the crisis, all the energies and potentialities at her command have to be bent towards expeditiously winning the war against hunger.

In the last two decades, agricultural technology has changed from conventional method and techniques to innovative method and technique and from traditional varieties to high yielding varieties. These technological changes, however,
have opened up a new area in Indian farming community. The new technologies have established their superiority over the old ones. It is, therefore, believed that the adoption of such technologies would lead to the socio-economic development of the country. At present, adoption of agricultural technologies is said to confine only to certain sections of the farming community and this may eventually creates socio-economic disparities. Hence, appropriate technologies have to be developed for the small and marginal farmers with different socio-economic conditions.

Certain sections of the farming community who were said to be conservative and fatalistic are now gradually moving away from their status-quo positions. The time has come to shift concern from immediate opportunities for agriculture growth to efforts for ushering modern agriculture within a given period.

The key to the greater achievement in the field of agriculture lies in the transfer of technology to the potential adopters for faster adoption of scientific and modern agricultural practices.

In the last two decades, Indian agriculture has been moving from a traditional base to modernized technological base of growing high yielding varieties even in remote areas. But the modern technology is still confined only to certain areas, some crops and certain sections of the farming communities. The achievements in the wake of green revolution have not been uniform in all crops and among all farmers throughout the country. The technological and production break-through have almost remained confined to major cereal crops like wheat, bajra, maize, jowar, paddy etc.
This indicates a wide gap between generation of technology and its adoption by people.

Indian agriculture has been facing challenges and constraints. Though India has achieved the production of more than 203 million tonnes of food production, a lot remains to be done to ensure stable food production for about 103 million people. Efforts are being made by Government as well as farmers to achieve this enormous task.

According to Swaminathan (1968), Director, International Rice Research Institute (IRRI), Manila. "The absolute maximum production potential of India in terms of a standard grain equivalent has been calculated to be over 400 million tonnes. This potential has to be utilised not only for producing food grains, but also for a wide variety of commercial and industrial crops, fruits, vegetables, fodder and forest trees."

Sugar is an universal sweetening agent and sugar in some form has become a 'must' in human diet whether taken directly through various sweet preparations, or indirectly through various carbohydrate containing food stuffs. In every home sugar is known for various sweet dishes and confectionary articles. Sugar as sucrose is important for energy and metabolic activities.

Sugar may be formed in roots of beet carrot and turnip, stems of sugarcane, sorghum and maize in flowers of palms and in fruits. Sugar may be found either in the forms of sucrose or glucose or fructose, hexose and maltose. Sucrose is a commercial sugar.
Records indicate that sucrose is being manufactured ever since 3000 B.C. from sugarcane on a large scale. Another source, sugarbeet was discovered by the middle of the eighteenth century and it came into prominence only at the beginning of the nineteenth century. Researches conducted in U.S.A after 1955 have indicated sweet sorghums as a third source. Recently, the Russian scientists have claimed that the waste of cotton hulls and corn cobs yield a crystalline xylite that is every well substitute sugar. Xylite resembles white sugar, has a pleasant taste and also has curative properties useful for diabetic patients. Presently, the sugarcane (Saccharum species) and sugar beet (Beta vulgaris) are the only two sources of commercial sugar accounting for the white production in the world is nearly 3:2 proportion. Sugarcane dominates the tropical and subtropical areas, while sugar beet is grown mostly in the temperate areas.¹

The sugarcane plant belongs to the genus “Saccharum” which originates from the family of grasses. The genus Saccharum is itself divided into five species. They are as follows:

i) Saccharum officinarum,

ii) Saccharum barberi,

iii) Saccharum sinense,

iv) Saccharum spontaneum and

v) Saccharum robustum,
The sugarcane plant is a vigorous and rapidly growing perennial grass that reaches a height of 8 to 12 feet or more and a diameter of about an inch in cultivation. It grows in clumps with bamboo like stems arison from large stalks with very ornamental feathery flowers. The stem is solid with a tough rind and numerous fibres strands and contains about 80 percent of juice, the sugar content of which varies greatly.

Sugarcane is unique in its versatality. Basically all that it requires to establish and grow is a warm climate and adequate water and nutrients. Given these conditions, it can grow on a wide range of soil types from the lightest sandy soils to the heaviest marine clays. It can tolerate a PH of upto nine or as low as four and it can continue to thrive on quite saline soils. It also has the unique property of being able to grow for varying periods of time. This is indeed a characteristic alien to most crops and its value on the economics of growing and flexibility of cropping can be easily appreciated. Sugarcane being a hardy grass, has been growing continuously on the same land for many years without ill effects, either to the crop or to the soil.

Sugarcane is considered to be one of the most efficient among the cultivated plant species, possessing physiological capabilities to convert solar energy into carbohydrates, yield upto about 20 tonnes of sugar per hectare in 12 months. However, the plant is also highly sensitive to environmental factors including atmospheric and soil temperatures.

Sugarcane is one crop, which attracts a lot of attention both by the central and state governments. This is not just because of the revenue it earns for the
governments, but also due to the fact that it has been regarded as the symbol of agricultural prosperity of a given state, district, taluk or a region. Every elected representative of the people of the region would like to bring a sugar factory to his constituency. Sugarcane farmer is considered to be progressive among the rest in the village. This is particularly so if he is attached to a sugar factory as a supplier of cane and as a member of the cooperatives.

Sugarcane, besides being the main source of sucrose can yield many by-products such as Levulose, Dextrose, cane wax and Aconitic acid. The younger leaves can be fed to cattle. Production of alcohol, yeast and organic chemicals are also possible from molasses a by-product of sugar production. The bagasse, which is about 25 percent by weight of the cane crushed, consists of woody fibre. This can be used for boilers as fuels, wallboards and insulating board plastics, tiles, chicken litter, cattle bedding and plant mulch. In respect of its fuel quality one tonne of bagasse is equivalent to a quarter of a tonnes of coal or a barrel or fuel oil. Bagasse can also be used to manufacture paper. Other potential uses include the production of lignin and alpha cellulose².

The crop is native of Indian and has been cultivated from the historic times. Over the years, the area under sugarcane has spread almost to every part of the country, except the cold Himalayan belt. The duration of the crop varies from 10-14 months and in some areas upto 18 months. There are more than a hundred varieties of sugarcane under cultivation in India. About 80 percent of the area is irrigated and the rest grown as rain fed crop.
The sugar industry plays an important role in the agricultural economy of India. Today, sugarcane cultivation and sugar industry stand as supporting pillars of Indian economy. Besides, the sugar industry also supports the alcohol industry and paper industry with its by-products of molasses and bagasse. Molasses-based cattle feed is becoming important for development of animal husbandry in India. Sugar manufacturing in India got a fillip after the central government granted it protection in 1932. Since independence the country became self-sufficient in sugar within four years thereafter. In 1931-32, there were about 32 sugar factories processing sugarcane into sugar in the country. By 1996-97, the number increased to 460.

Sugarcane is one of the important commercial crops in India occupying a prominent place in the sugar industry. The sugar industry is the largest among the agro-based industries in the country and being situated mostly in rural areas, it has vital role to play in the rural economy. Sugar industry provided employment to about 6.5 lakh skilled and unskilled workers directly and to an equal number of people indirectly. Nearly 35-40 million people are involved in cane cultivation. During the recent years sugar has acquired an important position in our country’s economy as sizeable foreign exchange earner through exports.

To meet the increasing need all the chief sugarcane growing countries have to increase their sugarcane production to the maximum extent by increasing the hectarage wherever possible and also by improving the productivity levels by following improved cultivation practices. India has a great role to play in this direction as it ranks first among the sugarcane growing countries of the world both in area and
in production of sugarcane. Sugarcane in the world is grown on an area of 19.8 million hectares produced 1271.15 million tonnes of cane in 2000. In India, it is grown in an area of about 4.2 million hectares with 315.1 million tonnes of cane produced in 2000. The Global average yield of sugarcane is about 66.6 tonnes per hectare and that of India was 75 in 2000 (table 3.2), yield in India is almost the more as that of world average. But there are examples of farmers who harvest 200-250 tonnes per hectare as against the average of 75 tonnes per hectare. This indicates the potentiality in this crop.

ECONOMIC IMPORTANCE OF STUDY:

Sugarcane is planted by vegetative method using cut pieces (3 budded sets) of its stalk. In tropical and subtropical climates, the buds on the cut pieces germinate and give rise to tillers, which under favorable conditions elongate to form the cane crop. After the harvest of mature cane crop, buds on the left over underground stubbles germinate again and give rise to another crop. This crop is called “ratoon crop” (Yadava, 1986). The shorter oxford dictionary defines ratoon as “a new shoot or sprout springing up from the root of sugarcane after it has been cropped”. Besides sugarcane, ratooning is also practiced in many other crops like banana, pineapple, pigeonpea, sorghum, rice, cotton ramie, berseem and mint.

Ratooning is an important integral component of sugarcane production throughout the world. It not only reduces the cost of cultivation but also dispenses with the requirement of seed material and some cultural practices like land preparation and preparatory irrigation. Pluxknett et al (1970) 4.
Sugarcane being a tropical crop gets favourable agro-climatic conditions in Karnataka for its growth. In order to keep pace with the increasing demand for sugar, both for internal consumption and exports, Karnataka has a greater role to play in contributing its due share to country's sugar production. Among the states it stands fifth in respect of hectarage and fourth in respect of production as well as in average yield. The area under sugarcane is 1.60 lakh hectares with a production of 147 lakh tonnes. Being placed in comfortable position, Karnataka can further boost up its production and productivity. The productivity of cane at present is about 80-108 tonnes per hectare. The yield of 100 tonnes per hectare was achieved more than thrice in the past. But in recent years, according to the report of Government of India, Ministry of Agriculture, the sugarcane production in India was 295.72 million tonnes in 1998-99. There was increase of 4.95 percent over that of previous year 1995-96 to 1998-99. The increase in production was reported mainly from Tamil Nadu, Uttar Pradesh, Bihar, Madhya Pradesh and West Bengal and the increase in production is widely due to favourable weather conditions prevalent during the crop growth. Decline in production was reported from Karnataka, Maharashtra, Gujarat, Assam and Andhra Pradesh.

The National Commission on Agriculture was set an average yield target of 82 tonnes per hectare by 2000 AD for the country as a whole and 75 tonnes per hectare for Northern states and 100 tonnes per hectare for southern states. It is also suggested for doubling the area under sugarcane. As the scope for increasing the
cane hectarage is very much limited in Karnataka, it is intended to keep the coverage constant and increase productivity per unit area.

Earlier sugar was produced in the field and processed only in the factory. For increasing sugar output in the country it is necessary to emphasize proper cane cultivation by the farmers rather than emphasizing more on management of the processing aspects. Sugarcane being a raw material for sugar production, it has to be produced every year. In this direction sugar factories have a role to play in promoting proper cultivation of cane in their respective jurisdictions by way of cane development work and other incentives to the farmers. There are 460 factories in India working in both private and co-operative sectors. In Karnataka there are 37 factories.

Belgaum district has a major contribution to the sugarcane in Karnataka as there are 11 sugarcane factories and one khandsari unit. Sugarcane is grown in an area of 124.02 thousand hectares. It had a production of 123 lakh tonnes, the average tonnage per hectare being 105 in 1998-99. This achievement could be attributed to cane all out efforts made by the factory managements to increase the per hectare production of sugarcane by promoting suitable developmental activities. Thereby, we can see rapid socio-economic changes around factory areas in recent years. The farmers are encouraged to grow sugarcane and they are helped by way of adequate and timely credit, technical guidance, guaranteed market, bonus, subsidies and reasonable advance price fixation etc.
Although the incentives and encouragement are given to the farmers in factory areas, it is observed that all of them are not in a position to adopt the recommended package of practices to get maximum possible yields. Hence, this study is taken up, to identify the facts whether these adopted methods by farmers have really helped to increase their adoption of sugarcane practices, and if not, why they have failed. An attempt has been made for the first time to know the relationship between incentives and adoption in respect of sugarcane cultivation. The findings of the study would guide us as to how far the present system is helpful to the farmers and if not what changes are needed in this system to make it more meaningful and purposeful for rapid adoption of sugarcane technology by the farmers. This kind of research data would give direction to the factory managements and results in better cordial relations between factory management and sugarcane growers. This investigation also tries to cover the relationship of other factors namely socio-economic status, mass media participation, and extension participation, cropping intensity, change-proneness and cosmopoliteness with the adoption behaviour of farmers.

REVIEW OF STUDIES:

Here an attempt has been made to review the earlier studies, thronging light on the cultivation of sugarcane. Only the recent studies, since 1990 have been received to know the recent trends in the sugarcane agriculture.

Rotti\(^5\) (1983), he also found that the information sources consulted by the farmers are also important and crucial in deciding the rate of diffusion of information and adoption by farmers. This study aims at confirming or rejecting the findings of
Rotti in this regard. Sugarcane growers in Belgaum district consulted ten sources of information, out of which agricultural Assistant was the dominant source consulted followed by progressive farmers. It is not known that, whether results obtained in northern parts of Karnataka are also observed in southern parts of Karnataka where this investigation is taken up.

✓ P.S. Sidhu⁶ (1995) in his study on “Sugar cane cultivation in Australia said that sugar is one of the most important industries of Australia. He found that 95 percent of the sugar production originates from Queensland most of the processing units existing in the coastal region where raw material (sugarcane) is available abundantly most of the cane is grown on family owned and operated forms. Both productivity and sugar recovery are influenced by the climatic conditions considerably. He opines that 100 percent mechanization and supply of fresh sugar to the factory gives good sugar recovery. He suggests appropriate package land preparation, planting time, planting material, planting operation and fertilizing. Further he suggests for the improved methods of pest control and irrigation.

✓ Raj Kishore⁷, D.S. Shukla, T.R. Sing, S.R. Yadav, in “An enquiry into economics of sugarcane cultivation in the district Sitapur U.P”. (1997) Studied resource use and cropping pattern of sugarcane growers, to find out costs and returns per hectare of sugarcane cultivation under different size groups. The main problems faced by the sugarcane growers as observed in their study were land of timely input supply, technical knowledge, training, poor credit facilities, lower prices, production of proper marketing delay in payment and poor infrastructure like roads transportation etc.
N.G. Kathiresan and M.L. Manoharan (1998) explained in their article entitled “Role of ‘k’ in cane cultivation”, that calcium magnesium of medium nutrients 'k' i.e. potassium also important for the tolerance of effects of drought, mainly by reduction in the transpirational loss of water of stomata 'k' nutrients can be usable even through spray also.

P. Ravi Lochana, P.S.R Murthy (1998) in their study on “Economics of sugarcane cultivation in south Arcot district- Tamil Nadu- A case study” observed that, the harvesting, transportation and labour cost for loading and unloading accounted for more than twenty percent of the total cost of cultivation. In absolute terms as well as relative terms, farmers registered with private sector sugar factories were realizing higher profit compared to registered with co-operative sugar factories.

The total cost of cultivation incurred by farmers registered with co-operative sector is more than the farmers registered with the private sector. The revenue received by cane growers from sugar factories is also varying due to various incentives offered by sugar factories of both private and co-operate sectors. It is also observed that the sugar factories under private sector are economical in incurring cost on various overheads due to their efficient planting and management control systems when compared to the sugar factories under co-operative sector.

And they suggested certain remedies to increase production of cane; farmers should be provided timely and cheap inputs. They should given training on the use of technology of sugarcane production and provision of credit facilities should be provided by the government. This study also aims at finding out the reasons for non-
adoption or partial adoption of sugarcane practices, which are important indications to develop the future strategies in extension education.

S.M. Patil, L.B. Kunnal and Balappa Shivaraya (1999) found in their article on “Economics of production and marketing of sugarcane in Karnataka”, that majority of the farmers selling their cane to sugar factory, while only few of them used to make Jaggary. This shows that the benefit cost of raw selling cane to factory is Rs. 2.00 or more it varies according to price of jaggary in market.

P. Ravilochanan, P.S.R Murhty (March 2000) said in their article entitled “Economics of sugarcane cultivation in west Godavari District Andhra Pradesh- A Review”. In this they covered only factory performance between private and co-operative sectors with an objective to find out the profitability of sugarcane cultivation in west Godavari district. They argued about payment of factories, weight malpractices and subsidies of cane cultivation inputs and highlighted all the problems of sugar factories and cultivation they concluded that, sugarcane cultivation was more economical and more profitable in terms of returns when compared to other crops like paddy, tobacco, pulses etc.

There are very few studies undertaken in Karnataka with reference to sugarcane cultivation, which is an important cash crop. Hence, the present study is conducted in talukas of Krishna and Ghaprabha river belts of Belgaum district to explore the cultivation behaviour of sugarcane growers with the following specific objectives in view.
OBJECTIVES OF THE STUDY:

1. To know the role of agriculture in economic development with special reference to commercial crop.
2. To study the state of sugarcane cultivation in the world, in India and with special reference to Karnataka.
3. To understand the socio-economic background of the sugarcane cultivating farmers in the study area.
4. To analyze the costs and benefits of sugarcane cultivation.
5. To ascertain problems, prospects and method of sugarcane cultivation.
6. To suggests the remedial measures for the problems of sugarcane cultivation based on the main findings of the study.

HYPOTHESES:

1. Most of the farmers in the study area are engaged in agriculture.
2. The performance of the educated farmers is better than the uneducated farmers.
3. Irrigation is the most important input in the sugarcane cultivation.
4. Availability of labour is a major problem.
5. Sugarcane is produced mainly to supply the sugar factories.
6. The sugar factories help the farmers in sugarcane cultivation by providing several facilities.
LIMITATION OF THE STUDY:

The present study was developed as an ex-post-facto design. The study has the limitations of time and resources usually faced by the student researcher. Majority of the Indian cultivators are illiterate and ignorant who are not aware of keeping book of records in regards to cost of cultivation, cultivating methods. The data relating to all these aspects has been collected through the interview method, which enabled the researcher to get an insight into cultivation methods, as well as the full particulars of farm operation. However, the data is not free from the ill effects like memory bias and other built in biases of the responses of farmers. Even then, the response from the subjects was quite satisfactory and the recall bias was minimized by several cross checks made while interviewing. Hence, the study was undertaken only in four talukas of Krishna and Ghatprabha river belt areas, of Belgaum district where sugarcane is enormously grown. The data has been collected at the end of the season 2000-2001, relying mostly on the memory of the farmers. The study was limited only to four talukas of Belgaum district and as such the findings of this study cannot be generalized to all areas.

METHODOLOGY:

Three-stage sample design has been employed in the present study. Selection of the talukas is the first stage of sample design. Second stage is the selection of villages where sugarcane cultivation is more. And the third stage concerns to selection of farmers through random sampling method. The categories of farmers are marginal farmers (below 2.5 acres), small farmer (2.6-5 acres), semi-
medium farmer (5.1-10 acres), medium farmer (10.1-20 acres), and large farmer (20.1- acres and above). Categorization of farmers is based on the standard classification made by government of Karnataka in Karnataka at a glance.

For this study, out of 10 talukas in the Belgaum district, 4 talukas have been choosen for the purpose of comparison as the selected talukas or leading in sugarcane cultivation coupled with high percentage of irrigation. While selecting the talukas, major role has assigned to irrigation, so as to determine the position of the talukas, because irrigation plays an important role not only in terms of yield also in terms of crops of high returns and cropping intensity. At the same time other economic indicators have not been relegated.

DATA BASE:

The present study is based on both the primary and secondary statistical information in addition to the detailed schedules used for collection of primary information. The schedule is used to collect the information pertaining to farmers cultivating method, input costs, socio-economic background, resources used in cultivation etc. Secondary data is collected through annual reports of District Statistical Office (DSO) Belgaum, statistical statement relating to Belgaum district from the statistical department, and information relating to cane cultivation in the district from the year plan drafts, National sample survey reports, articles published in different journals etc. Besides this discussion with the official authorities of Agri-office and some of the staff members of Agri-University has been made use off. In addition to this number of Government publications were referred to get the required.
TOOLS OF ANALYSIS:

Simple statistical tools like percentage, average, ratio and chi-square test, F test, multiple regressions etc. have been utilized for the present study for the purpose of comparison and analyses.

CHI-SQUARE ($X^2$) TEST:

This is used to test the significance of the difference between an observed statistical distribution and a theoretical distribution.

In another way, chi-square test is defined as a measure of difference between an observed (experimental) or sampled frequency distribution and an expected (hypothetical or theoretical) frequency distribution.

The formula of chi-square ($X^2$) = \[
    \frac{(O-E)^2}{E}
\]

Where, $O$ = individual observed frequency of each class  
$E$ = individual theoretical frequency of each class

The formula indicates that, the difference is taken between each observed and each theoretical frequency of each class in the classification. One may easily conclude that, if 'O-E' is equal to zero, the chi-square must be zero. And the larger the difference between $O$ and $E$ the larger will be the value of chi-square. These differences or measurement of errors are squared, because the minuses and pluses should tend to offset each other, thus resulting in very small differences between the observed and theoretical frequencies. After the differences are squared they are put
in relationship to the theoretical frequencies (E) of each individual class in order to give them their proportional weight. The squared deviations divided by their respective theoretical frequencies are then added for the distribution. The total value is the value of chi-square. This value compared with degree of freedom and at a significance level. If the computed value of chi-square is less than the distribution or table value of chi-square the sets of frequency distributions are nearly alike or the difference between the two distributions is not significant. If the two sets of frequencies are dissimilar the chi-square value or computed value will be higher than the distribution of chi-square.

**F- TEST (RATIO):**

Very often we like to test whether the two independent estimates of population variance differ significantly, or whether two samples may be regarded as drawn from the normal population having the same variance. Such tests are carried out with the help of F- ratio.

Formula is

$$F = \frac{\text{Larger estimate of variance}}{\text{Smaller estimate of variance}}$$

Here,

$$S_1^2 = \frac{\sum (X_1 - \bar{X})^2}{N_1 - 1}, \quad S_2^2 = \frac{\sum (X_2 - \bar{X})^2}{N_2 - 1}$$

$$V_1 = \text{Degrees of freedom for sample having larger variance}$$

$$V_2 = \text{degrees of freedom for sample having smaller variance}$$
The value of F at 5% at or 1% level of significance. If calculated value of $F_{0.05}$ for $V_1$ and $V_2$, then the ratio is considered significant at 5% level. If $F < F_{0.05}$ (for $V_1$ and $V_2$) then both the sample are taken from the populations having same variance.

**TWO-WAY ANALYSIS OF VARIANCE (ANOVA):**

Some times simultaneously two kinds of treatments will like to test whether there are significant differences between the means of treatment one and whether there are difference between the means of treatment two. This sort of classification is based on two criteria and its analysis of variance is called two-way analysis of variance (ANOVA). In analysis of variance in two-way classification the total variation presented in the data can be partitioned into these independent pieces, which is the total variation in the column means, variation in the row means and residual error variation minus the variation among the means rows and the means of columns.

Here, also if calculated value of F is less than the critical value, the difference is considered not significant, but if calculated value of F is more than the critical value, the difference is considered significant.

**REGRESSION ANALYSIS:**

Regression is a statistical tool with the help of which one can predict the unknown values of one variable from known values of other variable. Regression analysis is concerned with the derivation of an appropriate mathematical expression of the functional relationship between variables. This expression is derived for the purpose of predicting values of a dependent variable on the basis of independent
variables. Regression analysis is thus designed to examine the relationship of a variable ‘Y’ to a set of other variables $X_1, X_2, \ldots, X_K$.

The relationship between dependent variable (Y) and the independent variables (X) can be studied through mathematical formulae. The most commonly used linear equation is:

$$Y = b_1X_1 + b_2X_2 \ldots b_kX_k + b_0$$

Here ‘Y’ the dependent variable is to be predicted, $X_1, X_2, \ldots, X_K$ are the known variables with which prediction are to be made and $b_1, b_2 \ldots b_k$ are the coefficients of $X_1, X_2, \ldots, X_K$ variables that are determined from the observed data and $b_0$ is the constant (Y intercept).

The present study considers the output (tonnes) and profit (in RS) are the independent variables and age, education, family size, family income, caste occupation media, machineries and all input costs of sugarcane cultivation are considered as independent variables.

**PLAN OF THE STUDY:**

The study is presented as follows from Chapter I to VIII

**Chapter I: Introduction**- includes agriculture of India, importance of sugarcane, varieties of sugarcane, economic importance of the study, review of literature, objectives, hypothesis, limitation of the study, methodology, data base and tools of analysis.
Chapter II: Role of agriculture in economic development with special reference to commercial crops- contents, meaning and definition of agriculture economics, special features of agriculture, role of agriculture, various versions of agriculture, role of commercial crops and conclusions of chapter.

Chapter III: Sugarcane cultivation in world and India- includes features of sugarcane cultivation in world, origin of sugarcane, climatic growth of sugarcane, significance of sugarcane cultivation, significant uses of sugarcane, sugarcane belt in India and world, sugarcane area, yield and production of sugarcane in world and India, role of sugarcane factories and development of sugar factories in India and uses of sugarcane.

Chapter IV: Sugarcane cultivation in Karnataka- explains geography, climate and soils of sugarcane cultivation, history of sugarcane in Karnataka, district wise area, yield and production in Karnataka, district wise sugar factories and its crushing capacity and sugar production.

Chapter-V: Profile and socio-economic background of the farmers in the study area- evaluates, location, climate, agriculture, irrigation of the districts and farmers distribution, age, family size of the farmers, education level, castes, type of family occupation, political participation, instruments usage, vehicles usage, medias, nature of the house, machineries, land holdings and multiple regression test of all socio-economic indicators of the sample farmers to the profit.
Chapter VI: Cost benefit analysis of sugarcane cultivation in the study area—examines season of cane cultivation, cultivated type of cane crop, varieties of cane crop, education level output of cane, castes and output of cane, cost of cane cultivation, multiple regression input costs of cane cultivation, average income, expenditure and profit of the cane cultivators and sources of credit in the study area farmers.

Chapter VII: Problems, Prospects and cultivation methods of sugarcane in the study area—further examines planting methods, seed fertilizers, micronutrients, bio-fertilizers, farm yard manures (FYM), irrigation, diseases, plant protection chemicals, bio-pest control, inter/companion cropping, labour problems, ratoon management, transportation and marketing of sugarcane in the study area.

Chapter VIII: Summary, conclusion and suggestions—provides main findings important conclusions implications and recommendation about the study.

Suggestions for further study:

As sugarcane is an important commercial crop in the state, it is necessary to conduct in depth studies relating to adoption of new technology in sugarcane cultivation. It is also suggested that the study may be taken up using some more socio-psychological and personal characteristics to find out the relationship with adoption behaviour of farmers in order to facilitate the existing extension agency system to make practices of sugarcane cultivation on a large scale of farmers.
REFERENCES


2. Campbell D.B. 1967,: "Why grow sugar in Britain?", world crops, 19 (3); 19.


