Bellarý district spanning an area of 9,857 Km² is situated in an arid zone, receiving about 575 mm. annual rainfall spread into 39 rainy days. August and September are the wettest months of the year. The showers are generally light and the rainfall is capricious. So much so, prior to the advent of assured irrigation on a large scale, the district was susceptible to frequent droughts and famines. The district is noted for its hot summers (maximum of 42°C) and a dry weather for a major part of the year. The soils in the western division are predominantly sandy and red loamy while in the eastern portion (Bellarý and Sirguppa talukas) are mainly of the deep black cotton soils. Under rainfed conditions the soils of Bellary grow jowar, groundnut, pulses, bajra and cotton and when suitably irrigated they yield paddy and sugarcane also.

Tungabhadra, the most important river of the district is dammed near Hospet which irrigates Hospet, Bellary and Sirguppa talukas of the district. The remaining five talukas are identified as drought prone talukas. Agricultural land is the backbone
of the economy of the district and agriculture is one of the most important occupations of the rural as well as urban (though not complete) population. The district has 64.02 per cent (6,11,275 hectares) of net sown area (1985-86) spread in 589 inhabited villages. Out of which 22.91 per cent land is irrigated by all sources of irrigation. The total water (by all sources) available in Bellary district is 9,268.12 million cubic metres of which still 6,078.32 million cubic metres is unused. The fallow land (7.86 %) and cultivable waste (3.21 %) can be converted preferably for agricultural development in the district. The total population of the district is 14,89,225 (1981) with a density of 151 people per square Km. The rural population constitutes 66.95 per cent (9,97,065) while urban is 33.05 per cent (4,92,160). Out of 6,36,100 (42.71) working population, 4,42,746 (29.73) are agricultural workers. The total literacy rate in the district is 29.31 per cent. With 33.05 per cent of its population dwelling in urban areas, Bellary ranks among the most highly urbanised districts of the State. Bangalore and Dharwad are the only other districts in Karnataka that have higher urban content. The average number of towns per hundred inhabited villages is often considered as an index of urbanisation. In Bellary district there are 2.2 towns
for every hundred inhabited villages whereas in Karnataka State it averages to 1.05 only. Among the talukas of the district Hagaribommanahalli is the least urbanised as it does not have even a single town. Hospet taluka has the largest number of towns per hundred villages, for in this case the index is as high as 5.56. In all there are 12 urban centres in the district where Bellary and Hospet are cities (above 1,00,000 people), three belong to class three (20,000 to 49,999), six towns belong to class IVth (10,000 to 19,999) and only one town belongs to Vth category. The growth rate of population from 1971 to 1981 is quite high due to overall economic development achieved by the district during the decade, especially in the spheres of agriculture, mineral exploitation and minor industries. Quite a large number of people seem to have been attracted the towns and villages of Bellary district. All the 8 talukas have registered positive growth rate of population.

The practice of subletting the lands to share-croppers or on receipts of fixed rents has been in vogue. But incidence of such cases has come down drastically in view of the various land reform measures taken up by the Government in recent decades. As per 1985-86 there were 27 per cent (46,631 holdings) marginal (less than 1 hectares) land holdings, 22 per cent
small holdings (1 to 2 hectares), 20 per cent (34,036) medium holdings (4 to 10 hectares) and 6 per cent (10,003) large (more than 10 hectares) holdings in the Bellary district.

The crop land use shows (1985-86) jowar as the predominant food crop (23.41 per cent of the net sown area) whereas cotton (16.94 %) and groundnut (11.47 %) are important cash crops. The crop rotation, combination, diversification and ranking have helped the farmers to maintain soil fertility and their subsistence requirements. The various aspects of agricultural productivity and efficiency explain us what to underpin for future development. The details of such underpinnings are mentioned in respective chapters. The levels of agricultural development show us the need for reduction of such variations. In order to improve the agriculture i.e., in productivity and efficiency it is very essential to take note of ratios of all types of infrastructural facilities in the district. Unless these facilities are not increased both in quantity and quality we cannot expect further dynamism in the agriculture of Bellary district.

The profiles of selected villages explain how is agricultural practice and productivity at grass root level. The secondary data on 585 villages reveal that there is slow transformation of
agriculture practice from that of age old system. Some villages are advancing fast due to irrigation in the irrigated talukas and very few due to urban impact. The development of transport and mass media communications have played profound impact on the behavioural change of rural population leading them to adopt new vistas in agriculture. Therefore, it is hoped that in the decades to come agricultural improvements will certainly change the overall landuse and efficiency system leading to economic prosperity. The small and marginal land holders need more care in terms of financial help. The Government/private agencies that are engaged in the development of agriculture and integrated regional development should be honest in their duties. They should also take vigil to see whether aids given are properly used by farmers, the chapter on regional disparities directs to improve the talukas on the basis of scarcity of needed facilities. It is needless to mention that an overall development of Bellary region can certainly influence on the growth of agricultural efficiency.

Strategies:

"The progress in Indian agriculture during the last 40 years can be broadly classified under three areas: First, considerable progress has been made in developing the research and educational infrastructure, essential for the development
and testing of technologies suitable for the different agro-
ecological regions. There is at least one agricultural univer-
sity in every State and there are many Central institutions,
National bureaus and All India co-ordinated research projects
dealing with crop husbandry, animal husbandry, fisheries and
forestry. Secondly, a reasonably efficient input production and
delivery system has been developed. Thus, there are fairly
effective instruments for knowledge and skill transfer, credit
supply and production and distribution of seeds, fertilizers
and other inputs. Thirdly, policies essential for stimulating
higher production by small farmers and increased consumption by
the rural and urban poor have been gradually evolving. Thus,
progress is being made in agrarian reform, rural infrastructure
development, input and output pricing policies and marketing
arrangements. At the same time, steps have been taken to streng-
then policies to promote greater consumption by the rural and
urban poor, through National Rural Employment Programme (NREP),
the employment guarantee and other projects. Thanks to these
steps, food production has on the whole remained above the rate
of population growth. There is, however, widespread hunger in
the country owing to inadequate purchasing power. There are
also considerable variations in the pattern of growth, with
regard to regions as well as crops. Several parts of the country
are yet to benefit from new technologies. Many groups of crops, particularly pulses and oil seeds are yet to see the growth rates essential to improve the per capita production and consumption. The total food grains production has also tended to stagnate partly due to climatic factors and partly due to inherent weaknesses in agricultural planning and management. Five basic principles which should shape the future development programmes in agriculture can be set out. First, the pattern of production advance should be "land saving crop husbandry and grain saving animal husbandry". Secondly, ecological sustainability and equity in the use of national resources should constitute the basic norm of all agricultural and rural development programmes. Protecting the livelihood of the poor is essential for enduring ecological security. Thirdly, explicit attention should be given to promoting beneficial growth linkages among the primary, secondary and tertiary sectors of economic activity. At least 200 million persons in the rural areas should be found skilled jobs in the off-farm sectors by the year 2,000. Fourthly, agricultural technology should be intellectually satisfying and economically rewarding to attract and retain youth in farming and related activities in villages. Over 50 per cent of India's population is below the age of 21 and the agricultural future is in its hands". These views
expressed by M.S. Swaminathan, an eminent agricultural scientist of India guide this researcher to draw meaningful strategies for agricultural development of Bellary district. Any micro level study like Bellary district should lead us to generalise the agricultural situations at national level. In this regard the following information gives certain clues. "the consumption of fertilizer nutrients in 1966-67 (India) was 1.1 million tonnes with food grain production at 74.2 million tonnes. These significantly increased to 8.74 million tonnes and 144.1 million tonnes respectively in 1986-87 inspite of widespread drought in the latter year. The projected food grain production targets for 2,000 A.D. with a population of about one billion is 225 to 245 million tonnes. When the population is expected to stabilise around 1.5 billion in 2050 A.D., 380 to 400 million tonnes have to be produced to meet their requirements. To meet these targets, the fertilizer nutrient requirements are estimated at 20 and 40 million tonnes respectively. At the current level of inherent fertility of Indian soils, these can sustain a production of about 81 million tonnes and additional production can come only from the external inputs of organic manures and chemical fertilizers. Although India is the fourth largest producer and consumer of fertilizer nutrients in the world, the consumption average per hectare is still very low at 50 Kg. Therefore the
agricultural development in Bellary district needs an integrated approach. The planners should try to develop not only agriculture but also social, economical and demographical aspects as explained in chapter 8th and 6th. The following can be considered as important suggestions to incorporate for the agricultural development of Bellary district:

(1) Widespread use of underground water for irrigation instead of depending upon only canal water. The water should be used preferably as sprinkle irrigation and drip irrigation so as to avoid wastage of water as well as consequent effects like degradation of soil structure.

(2) Development of dry land farming through water shed management as per the guidelines of ICRISAT. This will ensure to utilise wastage of heavy rain water (especially summer rains) and thereby also reduce soil erosion. In such farming crops which need more water like rice, sugarcane etc. cannot be grown and also should be discouraged. Except Hospet, Bellary and Sirguppa talukas in the remaining 5 talukas the water shed management programme should be undertaken at every village level.

(3) Farm Levelling:

Controlling of soil erosion through bunding, terrace cultivation should be encouraged in suitable areas of the
district for which agricultural departments should take lead to finance and diffuse the idea.

(4) Linking of Ganga-Cauvery Rivers:

The South Indian rivers suffer from scarcity of flow of waters during off monsoon period. The Ganga river which flows with plenty of water throughout the year if brought to south India via Krishna some talukas of Bellary can also get due share for irrigation.

(5) Artificial Rain Making:

In order to avoid uncertainty of south west monsoon rains in the district artificial rain making can be of some use though dealing is costlier.

(6) Maintaining of Ecology:

The ecological imbalance can be reduced in the district if social forestry is extensively developed. It can be even practiced on wastelands by both of private and public concern. The farm boundaries can be very well used to grow sah-babul trees which can yield fodder as well as fuel wood.

(7) Technological Application:

The existing age old agricultural implements used in Bellary district should be replaced on extensive scale in a
span of short time and training should be given to farmers regarding their importance and how to use. In a range of fields of 5 Km. radius there should be one B.Sc., agriculture technologist to look after and guide the farms and farmers respectively in the district. Further development of agricultural productivity can be possible if biotechnological research is intensively carried in Bellary district in order to find out suitable plant/crop species. Here biotechnology relevant to small farms must be developed indigenously of which India cannot get it from the western countries.

(8) Extension of Medical Aids:

The extension of veterinary aids is another urgent need in the district. The existing 47 veterinary centres are not only insufficient to treat total number of 11,0441 animals but also are not well equipped. There should be at least one well maintained veterinary hospital to serve villages/animals in an area covered by radius of 8 Kms. Besides this, due to rough terrain and farmers ignorance of modern aids a mobile veterinary van is needed to take care of animal health.

(9) According to the 1981 census only 30.64 per cent of the population was literate in the district. The rate of literacy for male and female was 41.65 per cent and 19.32 per cent
respectively. In male population 35.32 per cent is of rural literate and 54.27 per cent is urban literate. In female population 12.61 per cent is rural literate and 33.14 per cent is urban literate.

In order to make aware of the illiterate farmers and other workers, Government of India has launched a programme of adult education through which it is expected in the years to come that our rural folk can improve in their behaviour and try to develop a personality towards awareness in the agricultural improvements, accordingly in Bellary district there are 660 adult education centres with 19,800 participants. It is expected that this number will increase in the years to come.

Adequate and suitable prices for agricultural produce, well net work of marketing system and provision of several other infrastructural facilities (enlisted in Chapter 6.4) are to be made available in Bellary district.

Thus, this entire study with interlinking comprehensive approach concludes that irrigated farming and dry land farming will continue as separate entities in the district. It is hoped that the various regions (productivity, efficiency, levels of agricultural development, crop combination etc.,) that are identified in respective chapters' are sole contribution due to
geographical investigation derived by this researcher. Such studies will certainly give enough clues about problems and prosperities of micro level regions. Therefore, it is hoped that the present research endeavour will certainly add to the knowledge of understanding the regional perspectives of agriculture of India in general and Bellary in particular. It is also hoped that observations/suggestions etc. made in respective chapters will provide enough base to strengthen agricultural system in the district and thereby lead to regional economic prosperity.