CHAPTER VIII

SUMMARY AND STRATEGIES
Dharwad district situated in the western sector of the northern half of Karnataka State has an area of 13,783 Sq.Kms. and the population of 29,45,487 (1981 census), spread into 1,352 settlements. Climatically district is divided into Malnad (heavy rainfall zone), Semi-Malnad (moderate rainfall zone), and the Maidan (dry plain area). The western belt i.e., Malnad is about 20 to 30 Kms. in width covers the portions of the taluks of Kalaghatagi, Hangal, Shiggaon, Hirekerur and Byadgi. Immediately to the east of this Sahyadrian region lies the transition belt which too is about 20 to 30 Kms. in width. After crossing this belt, towards the east, gradually rainfall decreases and the maidan region appears. It is this maidan which has vast lands of black-soils to a great extent and red-soils to lesser extent. The rivers like Tungabhadra and Malaprabha flow bordering the district to the south and north respectively, while as the river Varda flows in the centre of the district from west to east without having any dams built across it. The annual average rainfall in the district is
680 mm. The western part receives about 1,000 mm average annual rainfall, whereas the maidan area receives about 450 mm rainfall. Though the temperatures are in the range of 25°C to 40°C yet the western parts of the district appear to be cooler than eastern parts due to forest coverage. The droughts are common and frequent in the most parts of the district yet its impact is reduced in the irrigated taluks and in the western parts of the district. The fertile soils distributed in the central and eastern parts of the district are unable to produce more agricultural output than expected (except irrigated taluks) due to shortage of rainfall/irrigation. Whereas in the western zone though the rainfall is adequate the output of agriculture is lesser due to lesser fertility of the soils and leaching. The infrastructural facilities are also unevenly distributed and also they are not in proportion to the population and their needs. Out of the total geographical area 68.99 per cent (9,50,799 hectares) of land is under net sown. Out of this net sown area 8.91 per cent of land (84,734 hectares) is under irrigation. About 91.09 per cent of net sown area is depending on rainfall. Of the geographical area about 17 per cent of the land (2,36,127 hectares) is a fallow land,
whereas 8.37 per cent is under forest. The district needs an urgent programme to reduce the wastelands and also convert the existing wastelands into usable land for suitable purposes like cropping, forest, fishing etc.

Obviously the agricultural conditions have stabilised in the district since long and annual variations if any are of only a marginal significance. The chief crops of the district are jowar, wheat, rice, pulses including horse gram, groundnut, cotton, spices and condiments. According to the prevailing cropping pattern food crops account for about 62 per cent (cereals 46 per cent, pulses 8 per cent, others 8 per cent) and the non-food crops account for the remaining 38 per cent (cotton 21 per cent, oilseeds - mainly groundnuts 14 per cent and all the remaining other crops 3 per cent). Paddy is the chief agricultural produce of the malnad zone covering the western-tracts of the district, comprising the lands belonging to the taluks of Hangal, Kalaghanagi and Dharwad. A fair proportion of rice fields are generally suitable for growing sugarcane. It is a common practice to take a crop of sugarcane once in three or four years in such fields. In this Malnad zone paddy is raised mainly as rainfed crop.
Of course irrigational facilities provided by tanks, ponds and canals besides wells are made use of wherever available. Wheat is mainly grown in the taluks of Naragund, Navalgund, Ron, Gadag, Revur, Savanur and Shiggaon. It is a cold weather crop which is sown in good soft black-soils after the October rains are over. It is reaped during February and safflower the main winter-crop is harvested about a month later. The extent of lands sown with ragi is significant only in the south-western tracts of Dharwad district. Among the cereal crops jowar occupies the pride of place and is grown all over the district over a very extensive area. Jowar is the staple food of the people of the district. Further, jowar stalks constitute the chief fodder for the cattle. It is mainly a rainfed crop which grows well in black-soils as well as in red-soils. It can be grown as a kharif crop and rabi-crop. Jowar is therefore looked upon as the basic crop of the district and its cultivation is associated with several ritualistic practices also. Among the oilseeds produced in the district groundnut is the most important crop. It is cultivated extensively in almost all the taluks, particularly those located in the southern and central belts. It is a kharif crop and is
grown on the medium type of soil and after its harvest, if the soil is medium black a second crop of Bengal gram is also grown. Among the spices and condiments a special mention may be made of Chillies, garlic, ginger and turmeric. In fact Harwad is one of the largest chilly growing districts of Karnataka and from the point of view of yields in terms of cash this crop ranks next to cotton and groundnut. The climate and the rich soils of Hirekerur taluk and parts of Manebennur, Byadgi and Haveri are regarded as particularly suitable for this crop. Harwad district has been famous for its cotton from the earliest times and even now it is one of the most important cotton growing districts of Karnataka and also India. In the western belt comprising the Malnad zone, cultivation of cotton is somewhat less than maiden and transitional belt i.e., the black soil tracts of the plains in the central and eastern zones of the district. The four taluks viz., Navalur, Gadag, Ron and Kundagol together account for more than 50 per cent of the area under this major cash crop of the district. Jayadhar and Lakshmi are the two varieties of cotton grown here. Hubli and Gadag are the two premier cotton marketing centres of the district. Cotton and groundnut
are the two agricultural products which have provided a sound basis for the agro-industrial development of the district. The agricultural lands are held under the land tenure system, according to which the land revenues are fixed not upon a estate on a whole or on a village as a whole but on individual landholdings. A direct relationship has been established between the tiller of the soil and the government. In the entire district the marginal hectares of land (below 1 hectares) holdings are of 2.45 per cent under the control of 14 per cent land holders, the small land hectares (1 to 2 hectares) are 12.22 per cent under the control of 27.37 per cent number of landholders, semi-medium land holdings (2 to 4 hectares) are 23.73 per cent under 29 per cent land holders, medium land holdings (4 to 10 hectares) are 40.01 per cent under the control of 23.80 holders and large holdings (above 10 hectares) are 21.53 per cent under the control of 5.77 per cent land holders. Though a significant proportion land falls in the category of marginal holdings, medium and small holdings seem to be preponderant. There is a sprinkling of large holdings also. The average size of a holding works out to 4 hectares and this cannot be regarded as large in an area noted for dry farming. The per capita availability of land
however works out to 0.47 hectares and if the cultivable land alone is taken into consideration the per capita moves down to 0.40 hectares only. In the absence of assured irrigation facilities the yields from these lands depend on the vagaries of the monsoon.

The detail account on crop landuse, crop concentration, crop combination and crop diversification reveal about inherent physical and non-physical factors that are contributing for agricultural change/growth. These aspects also reveal the areas that are to be considered for further development of agricultural productivity, agricultural efficiency and their relations with the overall development of Dharwad district, as a region. The aspects of water resources explain the need for better utilization of the existing water resources. This study reveals that the underground water as the potential source of water, still needs lot of harnessing by all types of farmers. In understanding the agricultural productivity of Dharwad district explanations on methodological approaches have been made. Wherein Bhatia’s method explains Hubli taluk as highly developed while Byadgi, Mundargi and Shirhatti taluks as very low developed. Thus this type of an appropriate
regionalisation of agricultural productivity can provide surely certain clues for future development of agriculture in Dharwad district. The multiple regression test which explains the relationship between agricultural productivity and its nine variables explain that all these (nine) together can play about 69 per cent of the total variation in the productivity. This study of multiple regression test further pinpoints that net area irrigated, net sown area and draught animals are most important factors influencing positively on the agricultural productivity of Dharwad district.

The agricultural efficiency regions drawn on the basis of seven factors with the help of standard coefficient method show no taluka under very high category of agricultural efficiency. This result itself explains and supports the view expressed in the previous paragraph that Dharwad district in terms of efficiency of agriculture has to make further head towards the development. The results of agricultural efficiency show that Ron, Ranebennur and Mundargi taluks as very low efficient, while rest of the taluks are spread into high medium and low groups. The relationship between agricultural efficiency and its seven variables reveal that the findings
are very close to the reality. All the positive variables selected to compute the agricultural efficiency show a positive correlation with the agricultural efficiency which was hypothesised. The levels of agricultural development is unique study needed for regional analysis of agriculture. Therefore, sixteen relevant factors selected for the study reveal after computation with the help of per cent proportional standardised mean that in the entire Dharwad district there is no taluk falling under the category of very high development. The taluks like Dharwad, Hirekerur and Hubli show high development of levels of agriculture, Hangal and Haveri taluks as medium, Byadgi, Gadag, Kundagol, Naragund, Ranebennur, Ron, Savanur, Shiggaon and Shirahatti as low, whereas Kalaghatagi and Mundargi taluks in the category of very low development (1985-86). It was hypothesised that positive co-relation is expected between index of agricultural development and among the selected variables. The results of correlation matrix reveal that this hypothesis is almost proved with little variation in the degree of relationship.

The chapter on "Situation of agriculture at grass root level" reveals several typical and well-known problems that
have been widely spread in the district. In this regard it can be concluded that more than 99 per cent villages suffer from one or the other shortcomings of agriculture development. These shortcomings are related with land management, water management, financial assistance, transport and communication linkages, technological aspects of agriculture, problems of land holdings, poverty and illiteracy of the farmers, health of the people and animals and above all the exploitation of the ignorant farmers by middle-men merchants and bureaucrats.

The regional disparities based on factors of social, economic and demographic concern explain that in the entire district there is no single taluka falling under the category of very high development. This result itself is so noteworthy to explain that Dharwad district has a lot of things to develop in its versatile personality. In this regard the identification of disparities of regions will help to take care while planning for the integrated rural development of Dharwad district. It is needless to say that the identification of regions of agricultural productivity, agricultural efficiency, levels of agricultural development and the regional disparities based on combined indicators are the basic and typical
contributions of this researcher, which are the result of his strenuous efforts based on the entire gamut of aspects of Geography of Dharwad region. For which this researcher has made sincere and humble attempt in finding out suitable methodologies to adopt. Therefore while planning for the regional development, agricultural development, community development, sectoral development etc. on Dharwad district, the regions identified in this thesis will be of great use in order to make the success of objectives of particular plan.

Strategies:

During the last twelve years in India, since the NCA (National Commission on Agriculture) submitted its report, attention has generally been directed towards targets rather than the goals set by the Commission. Agriculture experts have been expressing satisfaction over achieving the prescribed targets for certain crops. For instance, wheat production had gone up to well over 42 million tonnes by 1983 as against the projected figures of 42 million tonnes by 1985. Though the position is not that satisfactory for rice the 1985 target of 61 million tonnes was almost achieved. Realisation of the target by itself does not solve vital problems. On the contrary,
there may be fresh problems. The fact that the production has
already surpassed the contemplated target for wheat proves
that a production level in excess of what was contemplated by
the NCA can be attained. Sadly, however, the NCA's hopes for
three important groups of crops - coarse cereals, pulses and
oilseeds may not materialise. In coarse cereals, production
has been stagnating around 30 million tonnes for the last
twenty years, with marginal increases or decreases depending
upon the monsoons. It is the same with pulses with their
production around 13 million tonnes for the last three decades.
Thus, in India the per capita availability of pulses is now
less than 50 per cent of what it was at the time of Indepen­
dence and imports may have to continue to meet the minimum
nutritional standards. The NCA had expected a production
level of 40 million tonnes for coarse grains and 22 million
tonnes for pulses by 1985 which will have to be raised to 65
million tonnes and 35 million tonnes respectively by 2000 A.D.
The production is, thus lagging behind the targets by at least
15 to 18 million tonnes for coarse grains and 12 million
tonnes for pulses. On the other hand the capacity to produce
50 million tonnes of wheat - the target contemplated for
2000 A.D. has been attained. Going by the present trend, by
2000 A.D., the NCAs expectation of 230 million tonnes of food-grains might be fulfilled but the country will be left with unsalable surplus wheat and rice and huge deficits in certain other crops. The policy makers have laid great emphasis on rainfed areas and production of pulses and oil seeds, the seventh plan contemplates only a marginal increase of two to three million tonnes in case of these two groups of crops which are predominantly grown under rainfed conditions of India. The position is shaky for oil seeds also; that is why a technology mission has been initiated for their production by introducing new technology.

In India progress of agriculture during the last 40 years can be classified under three broad 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 are number of agricultural universities, at least one in each 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 systems has been developed. Thus there are fairly effective instruments for knowledge and skill transfer, credit supply and production and distribution of seeds, fertilizer 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.

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 shaving crop husbandry and grain shaving 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 endeavouring 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 two hundred million persons in the rural India should be found skilled jobs in the off-farm sectors by the year 2000. Fourthly, agricultural technology should be intellectually satisfying and
economically rewarding to attract and retain youth population in farming and related activities in villages. Over 50 per cent of the Indian population is below the age of 21 and the agricultural future is in its hands. Finally, (Fifth), the comparative strength in agriculture with regard to exports should be carefully identified and nurtured.

Nearly 90 per cent of the food requirements will have to come from land based farming. Land is a shrinking resource for agriculture owing to competing demand for its use. Population growth also is leading to increasing pressure on the carrying capacity of the land. The water resources too are not being used in a sustainable manner. With the deforestation there is erosion of biological diversity and frequent floods in the downstream areas.

In statistical terms 230 to 250 million tonnes of foodgrains have to be produced every year in India. Food production has been increased by about 75 million tonnes (80 to 155 million tonnes) during the last twenty years. This performance has to be repeated during the next twelve years. The present livestock population of India includes 192 million
cattle, 69 million buffaloes, 48 million sheep, 96 million goats, 10 million pigs and 193 million poultry, leading to a total of 606 million animals. In addition there are two million horses, a million camels and many other small animals. The animal population suffers from chronic undernutrition. An animal fodder and feed security system is yet to be developed in India. Therefore about 700 million tonnes of livestock fodder has to be produced annually by the year 2000. Over 200 million tonnes of fuel wood per year by 2000 have to be produced as it is still the most important source of cooking fuel. Therefore all these aspects are related to landuse of India. The jobs in off-farm sectors are also have to be increased to engage the working population.

Increasing the efficiency of small farm management:
The average size of an operational holding is getting smaller and smaller. Nearly 80 million of the 90 million holdings in 1980-91 belonged to small and marginal farmers. A small farm is ideal for knowledge intensive agriculture, but a small farmer suffers from serious handicaps arising from the cost, risk and return structure of farming. To help the small
farmers to improve the efficiency of management of farms:
(i) Research on knowledge and input delivery systems which
can help all farmers irrespective of their innate input
mobilising and risk taking capacity is needed to derive econo­
ic benefit from new technologies. Very little attention has
been paid so far to research on delivery systems; (ii) Group
endeavour should be promoted in areas like land and water
management, pest management, nutrient supply and post-harvest
technology. Unless individual initiative, group endeavour and
Government support become mutually reinforcing, the efficiency
of small farm management will continue to be low, particularly
in rainfed areas where water harvesting and equitable distri­
bution of the conserved rain water are extremely important
for higher and more stable production.

Considering the above some salient features of Indian
agriculture this researcher is able to draw meaningful stra­
tegies for wholesome development of agriculture in Dharwad
district. Any micro-level study like Dharwad district should
lead us to generalise certain aspects of agriculture situations
at national level if not, of all the aspects. The consumption
of fertilizer in 1975-76 was 26,066 tonnes which increased to
43,763 tonnes during 1985-86, in Dharwad district. The area under high yielding varieties was 1,57,871 hectares during 1975-76 which increased to 1,69,174 during 1985-86. The agricultural implements (machineries, irrigation pumps and tractors) were 5,81,955 during 1975-76 which increased to 10,44,886 during 1985-86. The net area irrigated during 1975-76 was 77,940 hectares which increased to 84,734 hectares during 1985-86. All the above figures indicate a dynamic trend of agricultural development in Dharwad district, though yet slow rate with taluka level variations. The net sown area which was 11,19,094 hectares during 1975-76 has decreased to 9,50,799 hectares during 1985-86. This decreasing trend of net sown area is mainly due to vagaries of south-west monsoons. However looking into the potentiality of underground water and surface water Dharwad district can reach at least 40 per cent of area under irrigated farming within next 15 years if continuous efforts are made. As a result of this it is estimated to reach a target of about 85 per cent of district’s geographical area to bring under agriculture.

If we draw our attention to chapter III, chapter IV and chapter V there is every chance to develop the agricultural productivity, agricultural efficiency and reducing the
gaps in the levels of agricultural development by way of developing the indigenous bio-technology which cannot be imported. This indigenous bio-technology must suit the needs of the local ecological and economic conditions. Therefore the varieties of hybrid species of seeds can be developed which can be richly grown within the semi-arid conditions of Dharwad district. The grass root level studies on villages of Dharwad district reveal that the farmers and the farms need an integrated approach to their development.

Though the rainfall and the soil fertility are the natural factors influencing the yield levels adverse effects of these factors could be overcome to considerable extent by application of dry land technologies like soil and moisture conservation structures through watershed approaches, inter-bund management practices, modification in the cropping pattern, introduction of suitable inter-cropping systems and appropriate crop management practices. The study made by agriculture scientists reveals that in Dharwad district training of farmers and visiting to the villages has given a good result in enhancing agricultural productivity. The study made by agricultural extension scientists shows that Mundargi
taluk is the low productivity taluk in Dharwad district. This result is also arrived at the same result by this researcher through his approaches based on methodologies obtained from agricultural geographers.

In a country like India, where most of the cultivators (about 74 per cent) are small and marginal farmers, rural development essentially is a strategy designed to improve the economic and social life of these poor. There are 3 crores and 70 lakh farmers who either have no land or own less than half an acre in several scattered pieces. If the efforts are not made to support and assist them in raising their production and income level, their resentment is bound to create a political revolution and may be violent revolt. They have been living under object poverty and scarcity being economically weak and backward, crippled, stagnant and subjected to indignation. It is evident from the foregoing analysis that small and marginal farmers have not been benefitted much by various development programmes. This fact has not remained unnoticed too at the Government level. As a result a silver-lining in dark clouds were drawn in fifth five year plan by way of organizing urbanizing Small Farmers Development Agency (SFDA) and other
agencies to identify the problems of small farmers and viable farmers to ensure them supply and services. Keeping the above facts in view 20 point programme was launched to take the benefits of various developmental schemes and programmes directly to the weaker sections of the society and for minimizing the gap between the poor and rich people. The goal of any programme to uplift rural masses can be achieved only if it has been framed by taking into consideration the situational, agro-economic and socio-economic factors of different categories of farmers, which determine their adoption pattern regarding utilization of various inputs like improved seeds, fertilizers, irrigation, plant protection measures and credit etc. Hence, the association between adoption behaviour and situational, personnel and communication factors must be known in order to make these programmes successful. A number of social scientists have pointed out that several developmental efforts evidently bypass the small cultivators and less fertile areas. Agricultural technology, therefore would become prime mover in increasing productivity when adopted by large percentage of small farmers. Hence, in Marwad district, it is desirable that our efforts should be directed towards evolving policies that help the small farmers and agricultural labourers...
not only for social justice but also for production strategy. In this regard the recent programme for rural development brought out by the Central Government under the title "Jawahar Rozgar Yojana" should reach to the needy farmers and also farm labourers in order to see the fruits of agricultural development.

Lastly the following enlisted programmes are to be undertaken in Nanded district.

Widespread use of underground water, increase of lift irrigation along the river bank of Varda and Tungabhadra should be taken. The water should be used preferably as sprinkled irrigation and drip irrigation so as to avoid wastage of water as well as consequent effects like degradation of soil structure etc.

Development of dry land farming in the district should be undertaken as per the guidelines of ICRISAT. This will ensure to utilise heavy wastage of rain water and thereby also reduce soil erosion. This type of practice is to be limited to dry land crops like jowar, bajra, millets, groundnut etc. Surely not for wet crops like sugarcane, rice etc. The stored water in the "farm ponds" should be used only when rains fail.
In this regard except the irrigated taluks and heavy rain-fall taluks the rest of the taluks in Dharwad district are very well suited.

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

Linking of Ganga Cauveri rivers: The south Indian rivers suffer from scarcity of flow of water during off-monsoon period. In this regard the Ganga river which flows with plenty of water throughout the year, if little portion of its water is diverted to south India by a special canal, may benefit some eastern taluks of Dharwad district to irrigate the lands.

Artificial rain making: During south west monsoon season the moisture laden clouds which are moving towards east at a speed of 40 to 60 Kms. per hour usually do not downpour in the rainshadow region of the district. This situation happens due to non-existence of vegetation covered hill ranges. Therefore this type of situation creates uncertainty
of distribution and occurrence of rainfall. Therefore in order to get rainfall from such moisture laden thick clouds an artificial rain making is very essential. Though this involves lot of financial expenses but it becomes unavoidable to mitigate the need of moisture to the crops.

The maintaining of ecology: The ecological imbalances can be reduced in the district if social forestry is undertaken in all those areas where wastelands are existing. The quick growing plants species have to be used even on the farm boundaries, road-sides, hill-slopes and in the existing forest lands of Dharwad district. This programme if undertaken on a massive scale can surely boost the ecological development and thereby it will result in stopping soil erosion to some extent, development of microbe and other related ecological and environmental aspects.

Extensive use of modern technology: In the entire Dharwad district most of the farmers are still using the age old agricultural implements which do not provide an efficient and effective result in deriving higher agricultural output from the soil. The Indian agricultural universities and various other scientific organisations like ICRISAT and ICAR have
already come out with such farm tools that can be used even by the poorest farmers who possess the smallest land holdings. Secondly the farmers in the district though they are illiterate can be trained in using the modern implements and other agricultural inputs for which a scientist (with B.Sc. agriculture science) should be appointed to look after the farm and the farmers in an area covering a radius of 5 Kms. or for every 10,000 population. Further the increase of agriculture productivity in the district can be increased if indigenous biotechnological research is intensively carried in different parts of the district in order to suit the local ecology of the areas.

The distribution of medical aids: The distribution of veterinary aids is another urgent need in the district. During 1985-86 there were 117 veterinary hospitals to serve 19,21,885 number of livestock which works out one hospital for a group of 16,443 cattle. This ratio is quite unwieldy to manage by one hospital. Similarly the number of hospitals are also not adequate when we compare with 1,352 number of settlements. Therefore there must be at least one veterinary hospital to serve the animals belonging to those villages which fall in
the radius of 5 to 8 Kms of range. Similarly the health of the rural people i.e., farmers is also utmost importance. The data shows that there are about 358 villages which possess one or the other type of medical aid to serve the population. This is hardly to serve about 28 per cent of the villages in Dharwad district. Therefore our field observation reveals the need for increased number of health care centres to serve each village within the range of 5 Kms distance or for every 5,000 population. Looking into the nature of terrain, types and patterns of settlements and inhabitation of people (density) and animal in each village it is necessary to have a mobile van to cater to the medical needs of the people and the animals separately in the district.

Need for increase of literacy rate is another target to be achieved in Dharwad district. The general literacy of Dharwad district is 42.76 per cent. This rate is much higher than the state average of 38.76 per cent. In Karnataka, Dharwad district ranks seventh in literacy. However, it is not a factor to be satisfied. Therefore a creation of an awareness in every farmer is needed by making him literate. If the literacy is widespread in the district it will indirectly give yields in
the form of higher agricultural efficiency through farmers. In this regard adult education programme which is already undertaken should function effectively to educate rural illiterate farmers. They should be made aware of the importance of modern technologies.

For the regional development at the higher levels in the hierarchic system, inter-city linkages are more important, and in lower orders urban-rural links are more important. The impact of primacy (dominance and hence the shadow effect) of the metropolis does not percolate to all levels in the hierarchy. The primacy is related to the whole system or sub-system, and can be reduced through regional development policies. Larger villages have the potential to function as service centres to the adjoining rural areas. These attributes of the settlement system need to be explicitly recognised in allocating investments for development of infrastructures, along with plans to provide economic base, which is necessary to sustain the infrastructure for better living. Economic base need not always be equated with industry. Commercialization of agriculture, if properly harnessed, could contribute to the improvement in the economic status of the people of Bharwad district. There are
empirical: to show that some of the positive tendencies towards urban-rural continuum exist, at least in the commercializing irrigation farming regions and within the higher order urban fringes. Therefore Dharwad district needs the strengthening of marketing system, and transport system for which the rural service centres have to be considered as the nodal and focal points to develop and diffuse the agricultural change in the district.

For periodical examination (at least once in a 5 years) of the agricultural situations, right from grass root level needs an inventory of village wise data. This scheme should be undertaken as early as possible, so that accurate and adequate measures can be undertaken at an appropriate stage to correct the mistakes being done in the farm management, crop-productivity etc. Therefore we must have a computerized system of data bank on various aspects of agriculture of each village and of each land holding. Such data will be of immense use to the geographers and other scientists who are interested in the development of agriculture and rural aspects.

This comprehensive study of agriculture of Dharwad district based on typical geographical approaches reveals that
Dharwad district will continue as subsistence agriculture husbandry in all those rainfed taluks with slight higher productivity in the Malnad area and higher percentage of commercialization in the irrigated taluks. Thus irrigated farming and dry farming will continue as separate entities in Dharwad district.

It is hoped that the various regions (productivity, efficiency, levels of agricultural development, crop combinations, regional disparities) that are identified in respective chapters are sole contributions of this researcher. It is hoped that this type of study will certainly give enough clues about problems and prosperities of agriculture and rural development of micro-level areas. Hence, it is anticipated that the present research endeavor will certainly add to the knowledge of understanding the regional dimensions of agriculture of India in general and Dharwad district in particular.

The study concludes that on an average there is a slow development of agriculture whereas rapid development in irrigated taluks like Naragund, Navalgund, and also in heavy rainfall taluks in the western zone of Dharwad district. Thus it is hoped that the findings and observations carried out in each
chapter (except first chapter) if are taken into account will certainly help for the overall development of agriculture in Dharwad district leading to commercial farming. Hence this research endeavour is a humble contribution to strengthen the agricultural system of Dharwad district in particular and for similar other areas of India in general.