

4.1 INTRODUCTION :

In the previous chapter an attempt is made to highlight the general landuse and cropping pattern correlating it with physical factors, viz. topography, climate, soil and non-physical factors such as irrigation in the region. The present chapter aims to assess the impact of irrigation and other inputs such as use of fertilizers, agricultural implements, HYV, crop protections etc. on the crop productivity in Wai taluka.

The crop productivity studies are of vital importance in the country like India, where food problem is acute and horizontal expansion of agriculture has reached to its maximum limit. The only way left is to increase the per hectare yield by introducing modern techniques and extra inputs. After green revolution there is substantial increase in foodgrain production in India; still the problem of food shortage is acute in certain parts of India, due to higher increase in population growth than that in the foodgrain growth; and also due to the uneven distribution of agricultural technology through the country. Therefore, to solve the problem of food shortage efforts should be made to increase the crop productivity at village level.

"Agricultural productivity is a function of the combined interplay of a variety of factors including the physical (e.g. topography, soil and climate), socio-economic (e.g. size of holding, land ownership structure, type of

farming and market structure), and techno-organizational (e.g. crop rotation, cropping pattern, irrigation, fertilizer and mechanization," (Das, 1981). The crop productivity is reflection of combined effect of various factors mentioned as earlier in which irrigation is basic input. The use of other inputs i.e. fertilizers, high yielding varieties of seeds, pesticides and farm implements depends on irrigation facilities.

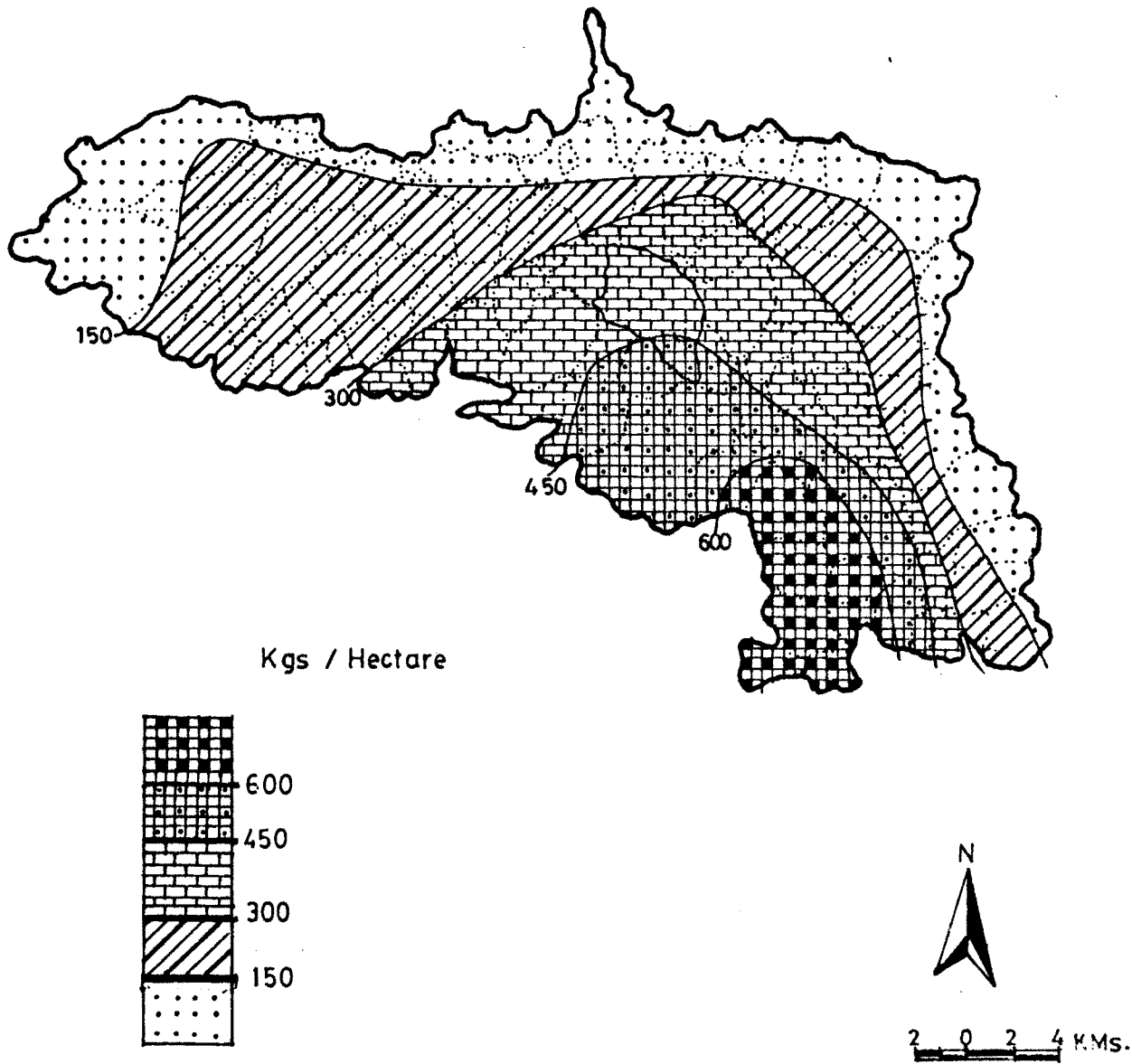
4.2 INPUTS USED :

The modern inputs are playing important role in developing countries like India, where the population is increasing. To satisfy the basic needs like food, clothing and shelter of growing population the land (farm) must be cultivated intensively. The proper use of important resources like water, land and labour is essential to agricultural growth. For this purpose the use of modern inputs is essential.

Table 4.1 and 4.2 reveals the use of modern inputs in Wai taluka. Due to the development of irrigation in the study region the use of modern inputs has been increased during this period. The modern inputs include the implements like improved iron plough, thrashers, tractors and chemicals, fertilizers, high yielding varieties of seeds etc. It is observed that the use of these modern inputs is significant in the canal irrigated area. The staff of T. and V. Scheme of Wai taluka plays important role in helping adoption of the modern inputs by farmers. They give proper guidance about the modern inputs to farmers at village

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USE OF CHEMICAL FERTILIZERS
(1985 - 86)



SOURCE - COMPILED BY AUTHOR

FIG 4.1

TABLE 4.1 : Agricultural machinery and equipments in Wai taluka.

Sr.No.	Description	1970-71	1985-86
1	Pumps		
	Electric	817	2,524
	Diesel	340	427
2	Tractors	13	189
3	Plough		
	Wooden	3,289	3,179
	Iron	1,921	2,040
4	Seed-drills		
	Double bowl seed drills	-	685
5	Thrashers	-	109
6	Sprinkle sets	-	25
7	Plant protections		
	Spray-pump	-	706
	Duster	-	151
	Power spray	-	30
8	Sugarcane crushers		
	Power drivers	19	16
	Bullock drivers	1	-

SOURCE : i) Socio-Economic Review and District Statistical Abstract of the Satara District (1971-72) and
ii) Agriculture Production Plan of Taluka Wai District, Satara 1986-87, T. & V. Scheme, Taluka Wai, District Satara.

level. There are 16 important centres in ~~the~~ Wai taluka which provides HYV seeds, fertilizers and chemicals to the farmer.

The centres are as follow :-

1. Wai
2. Bhujinj
3. Surur
4. Kerjal
5. Kikali
6. Pachawad
7. Bavadhan
8. Renavale
9. Chikhali
10. Borgaon (BK.)
11. Dhom
12. Pasarni
13. Lohare
14. Ozarde
15. Khavali
16. Bopegaon.

Beside these centres there are 57 co-operative societies in Wai taluka which provide loan and other agricultural facilities to the farmers. The Panchayat Samiti, Wai taluka Kharedi Vikri Sangh, private traders provide HYVs, fertilizers, crop protections, chemicals and agricultural implements.

TABLE 4.2 : Sale of inputs in Wai Taluka (1985-86).

Sr. No.	Inputs	Source of supply	Unit
1	HYV Seed	V.K.S.S. & K.V.S	1355 tons
2	Chemical Fertilizer	" "	3071 tons
3	Chemicals and Pesticides	Panchayat Samittee and Private trades	10.7 tons 1100 liters
4	Impliments	" "	1149
5	Crop prote- ctions	" "	224

SOURCE : Agriculture production Plan 1986-87. T.& V. Scheme, Taluka Wai, District Satara.

Note : V.K.S.S. - Vividha Karyakari Seva Society
K.V.S. - Kharedi Vikri Sangh

Fig.4.1 reveals the per hectare use of chemical fertilizers in the region. The significant use of fertilizer is noted in the south-western part of the region where irrigation facilities are developed. Irrigation gives higher yields only when it is supported by the chemical fertilizers. Farmers in the region are now using more and more fertilizers for raising higher yields. Fig.4.1 shows that the areas where intensity of irrigation is low (Fig.2.5-A) the use of chemical fertilizer is also very low and vice-versa.

The farmers of Wai taluka are showing progressive trend in use of the agricultural machinery. They are making more use of improved iron plough, double-bowl (seed cum fertilizer) drills, thrashers, tractors, electric and diesel pumps, sprinkle sets, plant protections etc. In this way, the rising trend in the inputs over last fifteen years during which irrigation facilities increased to a considerable extent, indicates the influence of irrigation on farming practices in the region. "Irrigation is one of the major source for the variation in agricultural productivity it functions as a base for the use of other inputs (fertilizers, HYV etc.)," (Mohammad, 1980).

4.3 METHODOLOGY :

Many scholars have attempted to assess the agricultural productivity. Kendal (1937) used ranking co-efficient method to assess the productive efficiency. The same method was applied in the study of 20 countries of the world by L.D.Stamp (1960) and

for Uttar Pradesh in India by Shafi (1960). In this method the ranking of crop's yield is done merely with the help of per hectare production without considering agricultural output as a whole. Another method was used for measuring agricultural productivity in Ganga Valley of India by Ganguli (1938). An index of agricultural efficiency was prepared by multiplying the percentage of crops share with percentage of crops 'share with percentage of crops' yield in an areal unit and later averaging them into one. Spare and Deshpande (1964) prepared a modified Kendal's equation by multiplying ranking crops with that of crop land share divided by the total of crop land share. Huntington and Valkenbarg (1962) devised a different method for measuring the intensity of agricultural production. They considered the productivity of land per acre on the basis of eight very widely raised crops in Europe. For each crop the average yield per acre for Europe as a whole was taken as an index of 100 and the specific yield in each country was calculated accordingly. Buck (1937), E.de Varies (1967) Clark and Haswell (1967) measured the agricultural productivity in terms of grain equivalent per head of population. Bhatia (1967) used the index prepared by Spare and Deshpande with slight modification. He used Ganguli's percentage yield of crops, instead of yield ranking of individual crops. P.Sen Gupta (1968) also used the same index as prepared by Bhatia for studying agricultural efficiency in India as a whole. Majid Hussain (1979) measured agricultural productivity by money value of productivity per unit area. Shinde, Jadhav

and Pawar (1978) have applied this technique to measure the productivity of Maharashtra plateau. Jasbir Singh (1972) has attempted to measure the agricultural efficiency of Haryana in terms of nutrition units per unit area. Jasbir Singh et al., (1982) recently applied a techniques known as 'the crop yield and concentration indicies ranking coefficient'.

The technique introduced by Jasbir Singh et al., (1982) is used in order to study the regional differences in the levels of food production and to delimit the weaker areas from the point of view of agricultural production. The average food crop yields and production of these crops in the total harvested area have been used as twin-elements for measuring the index of the level of food production. For an objective measurement of the level of agricultural productivity, the relative crop yield and concentration indices arranged in ranking order and computed into average ranking co-efficient, would give a measure which may be called the crop yield and concentration indices ranking co-efficients (Singh and Dhillon, 1984).

This technique is found superior as it gives due weightage to the yield index and crop concentration index and their ranking for various crops. The procedure is as follow :

$$Y_i = \frac{Y_{ae}}{Y_{ar}} \times 100 \quad \dots \quad I$$

Where, Y_i = is the crop yield index
 Y_{ae} = is the average yield per hectare of crop 'a' in the component enumeration unit
 Y_{ar} = is the average yield of the crop 'a' in the entire region

$$C_i = \frac{P_{ae}}{P_{ar}} \times 100 \quad \dots \quad II$$

Where, C_i = is the crop concentration index
 P_{ae} = is the percentage strength of crop 'a' in the total harvested area in the component enumeration unit
 P_{ar} = is the percentage strength of crop 'a' in the total harvested area in the entire region

The crop yield and concentration indices thus derived for all the regional units and the crops are ranked separately. Yield and concentration ranks for individual crops are added and thereafter divided by two, thus giving the crop yield and concentration indices ranking co-efficient. The equation is :-

$$\text{Crop yield \& concentration indices ranking co-efficient for crop 'a'} = \frac{\text{Crop yield index ranking of crop 'a'} + \text{Crop concentration index ranking of crop 'a'}}{2}$$

The ranking co-efficient for an individual crop arranged in ascending order and the co-efficients are divided into three categories giving three grades of the level of production viz. high, moderate and low. The same procedure has been adopted for

the rest of the crops. The overall ranking co-efficients have been derived by adding the ranking co-efficients of all the food crops for each village and divided by the number of food crops. The results thus derived are mapped in Figs.4.2 to 4.8 exhibiting the regional imbalances in the level of production of an individual food crop and level of overall productivity for 1970-71 and 1985-86.

4.4 CROP PRODUCTIVITY PATTERN AND CHANGES :

In the study of agricultural productivity it is of interest to know the general areas where different crops dominate and their contribution in agricultural productivity. For this purpose important crops (jowar, bajara, wheat, rice, groundnut and sugarcane) have been considered. These crops are grown in various parts of Wai taluka in different crop combination and they contribute to the agricultural productivity of the region. The areal distribution of yields of these crops brings out the regional dominance of individual crop.

The following analysis gives the spatial variations in the crop productivity and changes therein during the study period in Wai taluka.

1) Jowar productivity :

Fig.4.2-B reveals the distributional pattern of productivity of jowar in the region. It is observed that the jowar cultivation is widely carried on in the eastern part of Wai

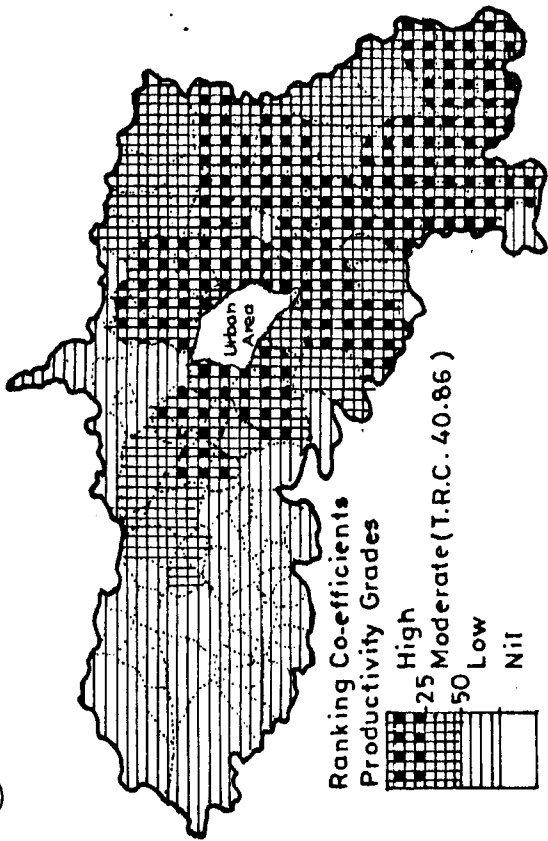
taluka. The high (below 25) productivity of jowar occurs mainly in the south eastern part of the region especially in the villages of Virmade, Khadaki, Jamb, Kholawadi, Bhuinj, Pachawad, Amuratwadi, Ozarde, Asale, Kadegaon. This is due to the presence of fertile soils, assured supply of water and introduction of HYV of seeds and fertilizers. The high productivity is also noted in the villages of Khanapur, Kawathe, Bopegaon, Bopardi and in the villages of Varkhadwadi, Bhogaon and Vyahali. The area under high productivity covers about 16.93 percent of total cropped area in 1985-86, while in 1970-71 it was 37.75 percent (Fig.4.2-A) of the gross cropped area. It shows the considerable decrease in area under high productivity during this period because the area under jowar is replaced by irrigated crops viz. sugarcane, ginger and rice. Here area irrigated is considerably increased.

The moderate (25 to 50) productivity is observed in the eastern part of the region and in the villages of Pasarni, Kanur, Songirwadi, Sidhanathwadi and Bavadhan contribute an area about 32.19 percent of the total cropped area, while in 1970-71 it was about 16.74 percent. Area under moderate productivity has been increased because most of the eastern dry area is devoted to this crop where intensity of irrigation is also moderate.

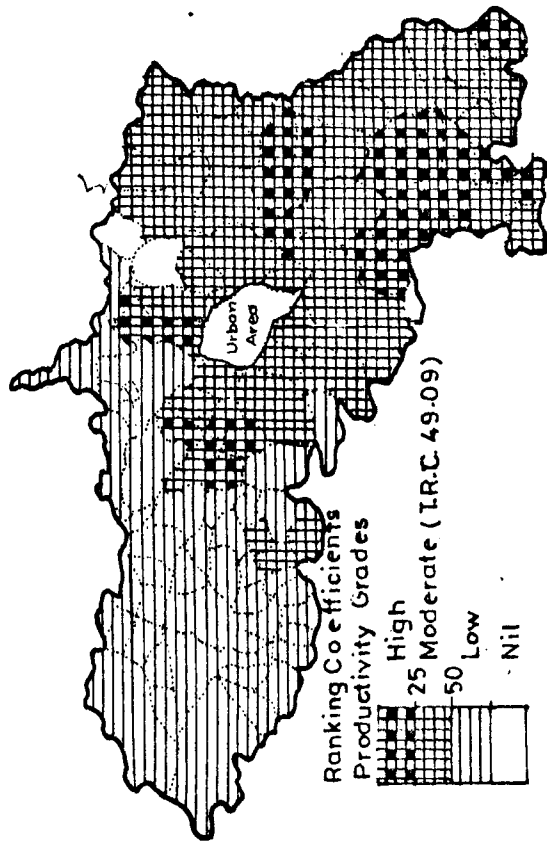
The low productivity (above 50) is confined to the western part of the region. The area under low productivity

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(A) JOWAR PRODUCTIVITY(1970-71)



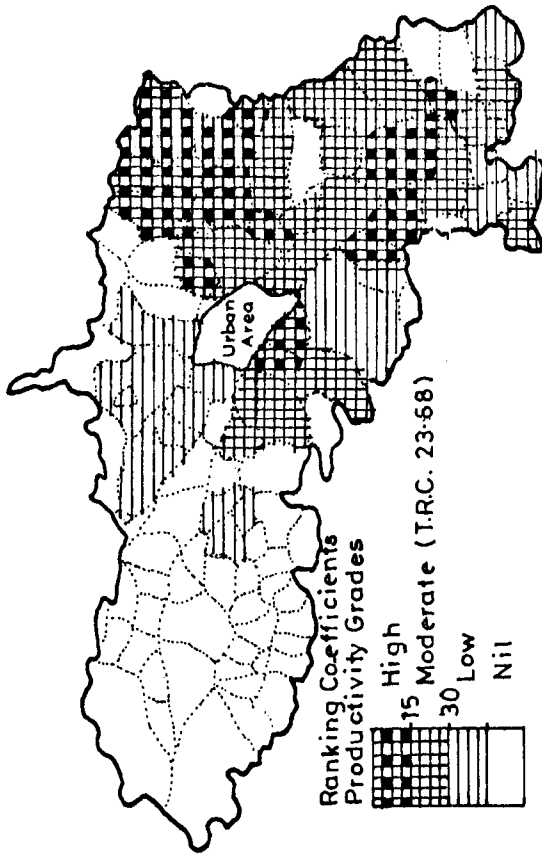
(B) JOWAR PRODUCTIVITY(1985-86)



T.R.C.= Taluka Ranking Coefficient

FIG. 4-2(A,B)

(A) BAJARA PRODUCTIVITY(1970-71)



(B) BAJARA PRODUCTIVITY (1985-86)

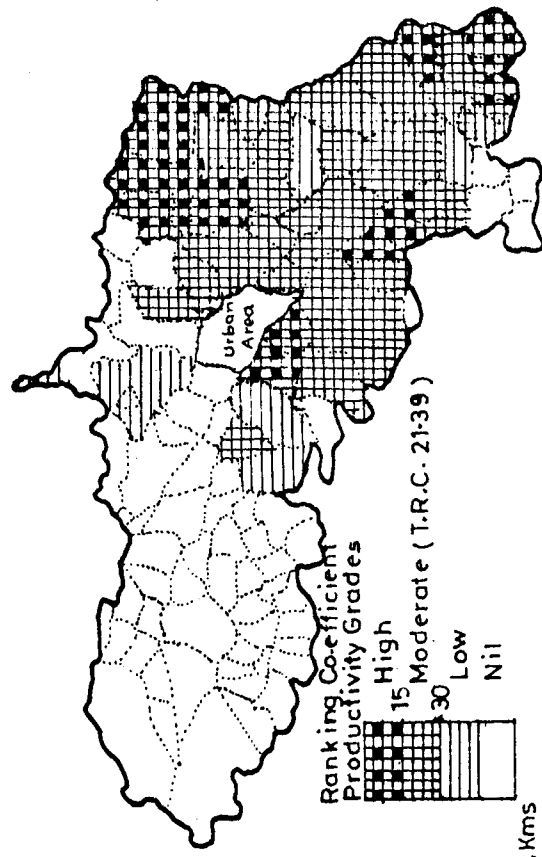


FIG. 4-3(A,B)

has remained almost unchanged. Hilly area, high rainfall are some of the adverse conditions responsible for low productivity of jowar in the western part of the region.

2) Bajara productivity :

The distributional pattern of bajara productivity has been plotted in Fig.4.3-B. There are four pockets of high productivity, most of them are lying in the eastern parts of the study region. The first major area of high productivity is significantly noted in the north-eastern part of the region, covering the villages Chandak, Gulumb, Vele, Mohodekarwadi, Vahagaon and Kenjal. The second area covers the villages of Shirgaon, Kholawadi and Kalangwadi. The third area is situated in the villages of Asale, Kadegaon and the fourth one area is noted in the villages of Songirwadi and Sidhanathwadi. The high productivity villages contribute an area 4.75 percent in 1985-86 which was 3.65 percent of gross cropped area during 1970-71 (Fig.4.3-A). It is because of the decrease in rainfall in the eastern area during the study period. Bajara being a hardy millet, it is confined to the drier part of this taluka. Bajara is cultivated on the coarse shallow and well drained pieces of land, therefore it is stable in irrigated area particularly in the villages of Kadegaon and Asale. In the western part of these two villages it is cultivated on the coarse shallow and well drained soils. Presently HYV of bajara is cultivated in irrigated area and it gives high yields.

The moderate productivity (15 to 30) is found in the east-central part of the region and in the villages of Kanur, Bavadhan, Vyajwadi, Pachawad and Amuratwadi (Fig.4.3-B) together contribute the area about 2.25 percent of the total cropped area in 1985-86. While in 1970-71 the moderate productivity was noted in the villages of Kawathe, Shirgaon, Degaon, Pachawad, Chindhavali, Jamb, Pasarni, Eksar (Fig.4.3-A) and contributed area about 2.52% of the total cropped area. The area under moderate productivity has declined during the study period.

The low productivity (above 30) is noted in the central part of the region and contribute the area about 0.08 percent of the total cropped area in 1985-86. It is also found in the villages of Bopegaon and Chindhavali where irrigation is developed and the area is replaced by irrigated crops viz. sugarcane, wheat, termeric etc. While in 1970-71 low productivity is noted in the north-central part and in the villages of Bavadhan, Virmade, Udtare and Kholawadi and contributed area about 0.41% of total cropped area.

3) Wheat productivity :

Fig.4.4 exhibit the distributional pattern of productivity of wheat. High productivity (under 25) is confined to the canal irrigated area, particularly in the villages of Menavali, Ozarde, Khanapur, Kanur, Bavadhan, Bhujinj, Chindhavali, Jamb, Udatare, Kalambhe and Virmade. It is also noted in the Kawathe

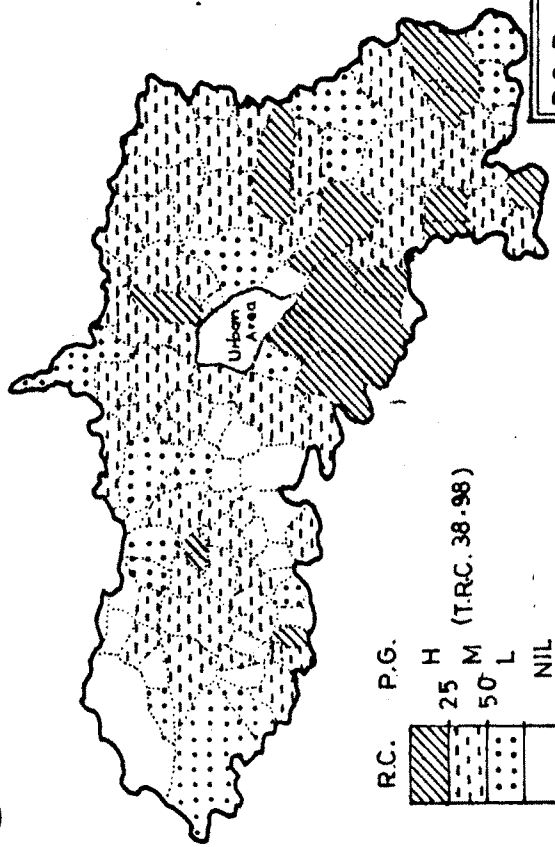
and Lohare where well irrigation is developed. In the private canal irrigated area productivity is high in the villages of Chikhali and Borgaon Bk. All these villages contribute the area about 3.37 percent of the total cropped area in 1985-86. The area under high productivity is in the villages of Virmade, Pachawad, Ozarde, Bavadhan, Kanur, Songirwadi, Lohare, Dahyat and in the Gove contributed an area about 0.92 percent of the total cropped area in 1970-71 (Fig.4.4-A). The area under high productivity has increased during the study period, due to the development of irrigation facilities and use of modern inputs.

The moderate productivity (25 to 50) of wheat is significant in the north-eastern part of the region and in the adjacent to the high productivity areas. Some pockets of moderate productivity of wheat are observed in the western part of the region. The areas of moderate productivity contribute an area about 1.81 percent of the gross cropped area. While in 1970-71 the area under moderate productivity is about 1.09 percent of the total cropped area. It is found in the north-eastern and south-eastern part of the region and in the western part of the region. The area of moderate productivity has declined in the western part of the region due to the decline in amount of rainfall and private canal irrigated area. During the study period insignificant change in the area under moderate productivity has found.

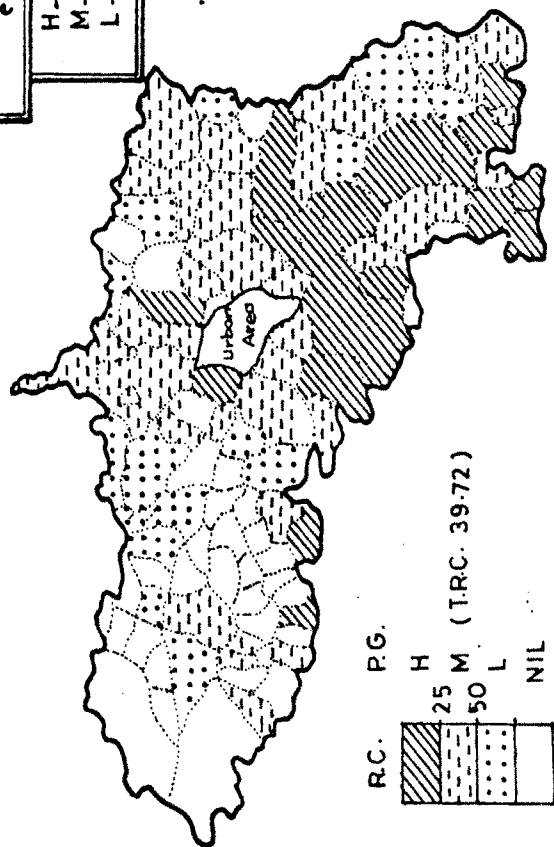
Low (over 50) productivity of the wheat is observed in the western part of the region and in the villages of Anavadi,

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(A) WHEAT PRODUCTIVITY 1970-71



(B) WHEAT PRODUCTIVITY 1985-86



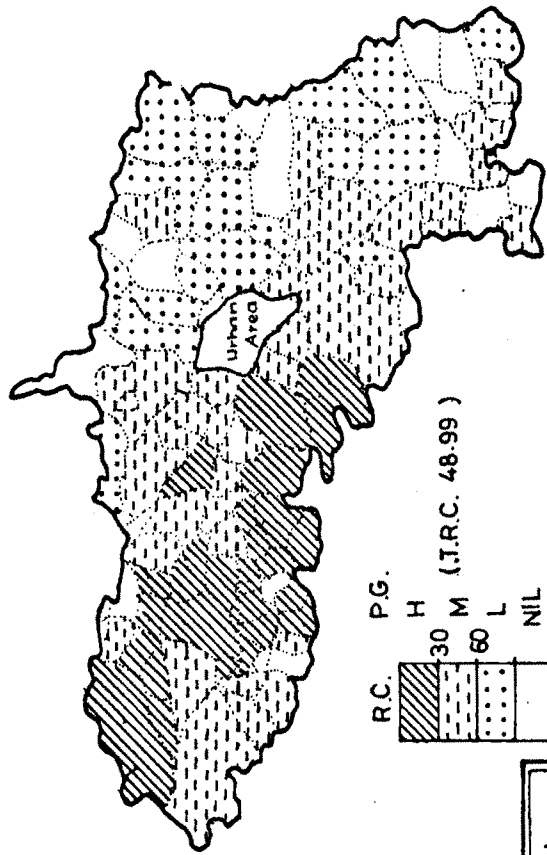
R.C.=Ranking Coefficients.
 P.G.=Productivity Grades.
 T.R.C.=Taluka Ranking Coefficients

H-High
 M-Moderate
 L-Low



2 0 2 4 Kms

(A) RICE PRODUCTIVITY 1970-71



(B) RICE PRODUCTIVITY 1985-86

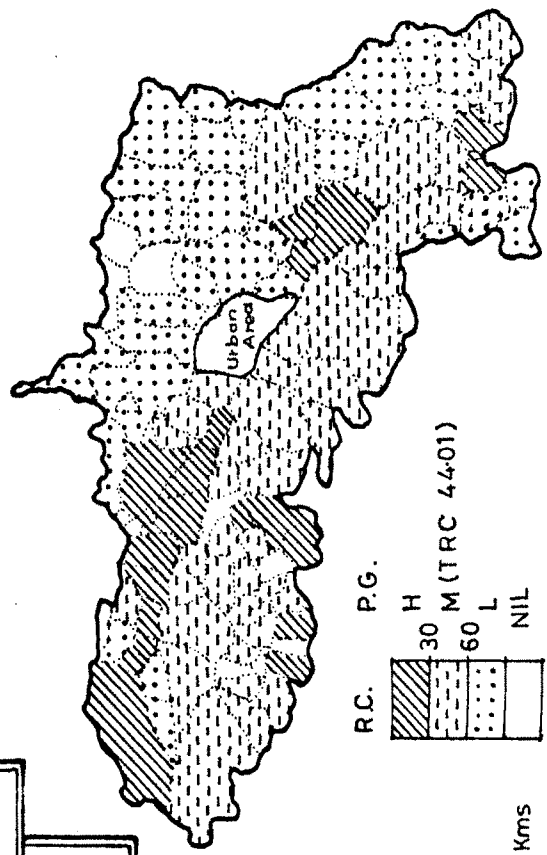


FIG. 4.4(AB)

FIG. 4.5(AB)

Degaon, Lagadwadi and Jamb. The area under low productivity is 0.24 percent of the total cropped area in 1985-86. Poor soil and inadequate irrigation facilities are the important factors causing low productivity in these villages. In 1970-71 the area under low productivity was 0.08 percent of the total cropped area. During the study period area under low productivity has increased because in western part the rainfall has decreased and it affect on private canal irrigated area. Therefore, in western part of the region the areas of moderate productivity is replaced by low productivity.

4) Rice productivity :

The distributional patterns of rice productivity have been plotted in Fig.4.5. It reveals that the high (below 30) productivity is confined to the western part of the region where intensity of rainfall is high, soils are deep laterite and fertile. The area under high productivity contribute about 4.7 percent of the total cropped area in 1985-86. The two pockets of high productivity of rice are located in the eastern part of the region in the Lower Krishna Valley, particularly in the villages of Ozarde, Chindhavali and Jamb. In these villages rice is cultivated in canal irrigated area. In 1970-71 the area of high productivity was noted in the western part of the region, particularly in the south-western and the north-western part of the region and it contributed an area about 5.41 percent of the total cropped area. During



the study period the area under high productivity has decreased due to the decrease in rainfall in the region.

The moderate (30 to 60) productivity of rice is found in the south-central part of the region. It is also noted in the villages of Kawathe, Bopegaon, Bhuinj, Kalangwadi in the east and in the villages of Jor, Kironde, Kondhavale, Vasole, Golegaon, Ulumb, Kondhavali Kh. & Bk., and covered an area about 6.09 percent of the total cropped area while in 1970-71 the area under moderate productivity was 3.55 percent of the gross cropped area. There is considerable increase in the area of moderate productivity during the study period. Because due to the decrease in rainfall the area of high productivity is replaced by moderate productivity in the region. In 1970-71 the area under moderate productivity was noted in the villages of Kalamble, Jamb, Pachawad, Chindhavali, Asale, Ozarde, Vyajawadi, Bavadhan, Songirwadi and Sidhanathwadi. It is also found in the villages of Dhavadi, Chandak, Menavali, Bhogaon, Velang, Abhepuri, Asare, Kondhavale, Jor and Golegaon.

The low (over 60) productivity of rice is significantly confined to the eastern part of the region in 1985-86 and also in 1970-71. In the west the intensity of rainfall is very low and irrigation is insignificant. In 1985-86 the area under low productivity is about 1.52 percent and in 1970-71 it was 0.47 percent of the gross cropped area.

5) Groundnut productivity :

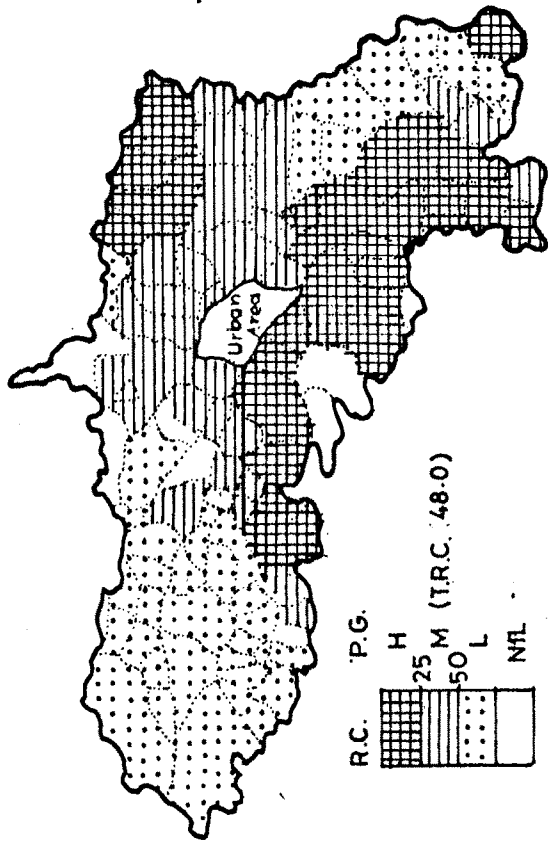
The major area of high (under 25) productivity of groundnut constitutes a contiguous zone in the southern and the western parts of the lower reaches of Krishna river (Fig.4.6-B). It extends from Dhom to Kadegaon and from Kadegaon to Kalambhe to the west of Krishna river valley. In this area soils are coarse shallow to medium deep black, which is suitable for its growth. The canals of the area are also helpful in getting high yields from the high yielding varieties. Another pocket of high productivity is found in the villages of Parkhandi and Lohare where well irrigation is developed. The area under high productivity is about 7.06 percent of the gross cropped area. While in 1970-71 it was 10.98 percent of the gross cropped area. In 1970-71 there was a contiguous zone of high (under 25) productivity of groundnut in the lower Krishna valley along the river course and in the villages viz. Kusgaon, Malatpur, Dasavadi and Mugaon. It was also noted in the north-eastern part of the region and in the village Kholawadi (Fig.4.6-A). The area under high productivity has declined during the last fifteen years. Because in canal irrigated area most of the area under groundnut is replaced by sugarcane and other irrigated cash crops viz. turmeric, ginger, fruits and vegetables. The area under high productivity has converted in low productivity in north-eastern part of the region due to the decrease in rainfall.

The zone of moderate (25 to 50) productivity of groundnut is found to the west of high productivity zone. It extends in north-south direction. It is noted in the villages of Kusgaon, Dasavadi, Chikhali, Mugaon, Nahalewadi and Pandewadi. It contribute an area about 4.9 percent of gross cropped area in 1985-86. In 1970-71 the area of moderate (25 to 50) productivity of groundnut was noted in the north-eastern part (excluding pocket of high productivity) of the region and in the villages of Dhavadi, Menavali, Bhogaon, Pandewadi, Eksar, Vyahali, Chikhali, Borgaon Kh. and Bk. and Dhavali. It is also found in the villages of Nagewadi, Kanur, Jamb, Kalangwadi, Virmade and contributed an area about 4.78 percent of total cropped area. The change in the area of moderate productivity is insignificant during the study period.

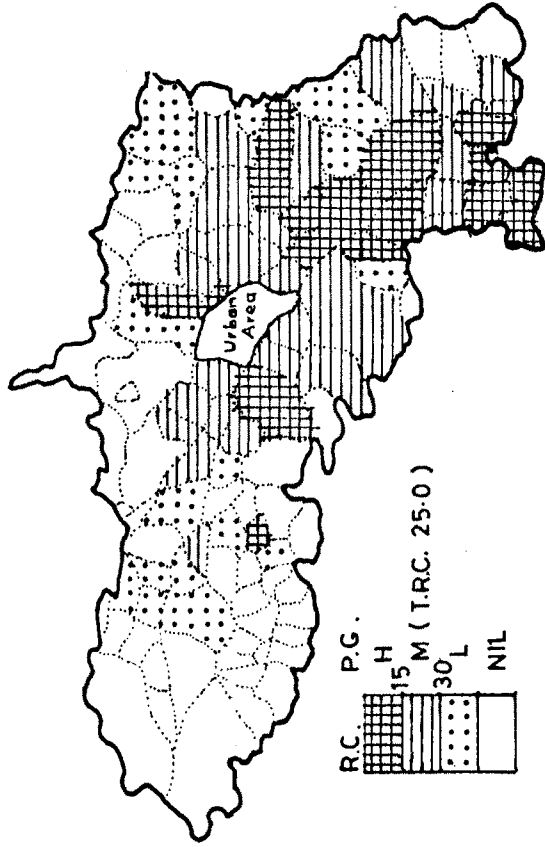
The area under low (above 50) productivity has increased by 0.64% of the gross cropped area. The area of low productivity is noted in the western part of the region and in the eastern part of the region along the taluka border. It is also noted in the northern part of the region particularly in the villages of Bopardi, Dhavadi and Gadhavewadi. The low productivity areas are confined to the areas where negative change in irrigation (Fig.2.5-A) and poor soil is noted. In 1970-71 the areas under high (25.50) productivity was noted in the western and south eastern parts of the region.

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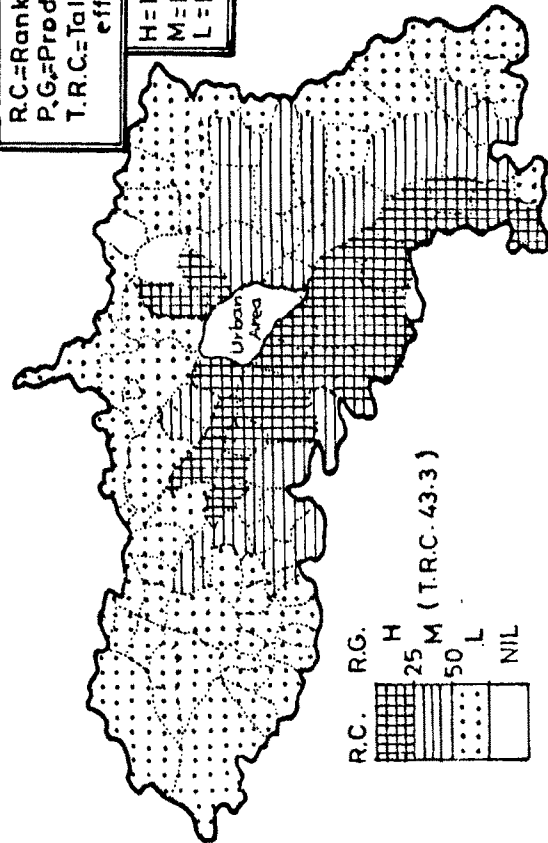
(A) GROUNDNUT PRODUCTIVITY (1970-71)



(A) SUGARCANE PRODUCTIVITY (1970-71)



(B) GROUNDNUT PRODUCTIVITY 1985-86



(B) SUGARCANE PRODUCTIVITY 1985-86

R.C.=Ranking Co-efficients
 P.G.=Productivity Grades
 T.R.C.=Taluka Ranking Co-efficient

H=High
 M=Moderate
 L=Low



0 2 4 Kms

FIG.4.6(AB)

FIG 4.7(AB)

6) Sugarcane productivity :

The soil, climate and irrigation are the important factors which affects the productivity of sugarcane. " The productivity of sugarcane is the manifestation of the integrated impact of factors like physical, social, economic and institutional," (Jadhav,1984). The high (below 15) productivity of sugarcane is significantly noted along the lower reaches of Krishna river (Fig.4.7-B) where black soil (shallow to black) developed canal irrigation, heavy use of fertilizers is significant. The area under high productivity class is 2.74 percent of the gross cropped area. During the last fifteen years area under high productivity has increased by 1.45 percent of the gross cropped area. According to 1970-71 the area under high productivity was noted (Fig.4.7-A) along the lower Krishna valley and in the villages Kawathe, Lohare, Pasarni and Mugaon where the well irrigation was significantly noted.

The moderate (15-30) productivity of sugarcane is noted in the villages of Bavadhan, Vyajawadi, Asale, Jamb, Pasarni, Menavali and Bhogaon. It is also found in the villages Anavadi, Bopegaon, Pande, Kawathe, Khanapur, Kenjal and Surur, where intensity of irrigation is moderate. The area under moderate productivity contribute 2.12 percent of the total cropped area. It has increased from 0.67 percent to 2.12 percent of the gross cropped area during the 1970-71 and 1985-86. In 1970-71 the area under moderate productivity (15 to 30) was significant in

the villages of Kanur, Bavadhan, Pachawad, Chindhavali, Kalambhe, Virmade, Kalangwadi, Jamb and Degaon. It was also noted in the villages of Bopegaon, Surur, Kerjal, Khanapur, Shendurjane, Parkhandi, Menavali and Bhogaon.

Low (over 30) productivity of sugarcane is noted in the south-eastern and north-eastern part of the region where intensity of irrigation is very low. It is found in the villages of Shendurjane, Parkhandi, Kanur, Eksar, Pandewadi, Abhepuri and Varkhadwadi. At present area under low productivity is about 0.35 percent of the total cropped area. It has increased by 0.28 percent during 1970-71 to 1985-86.

4.5 A) OVERALL AGRICULTURAL PRODUCTIVITY AND CHANGES

THEIRIN (1970-71 to 1985-86) :

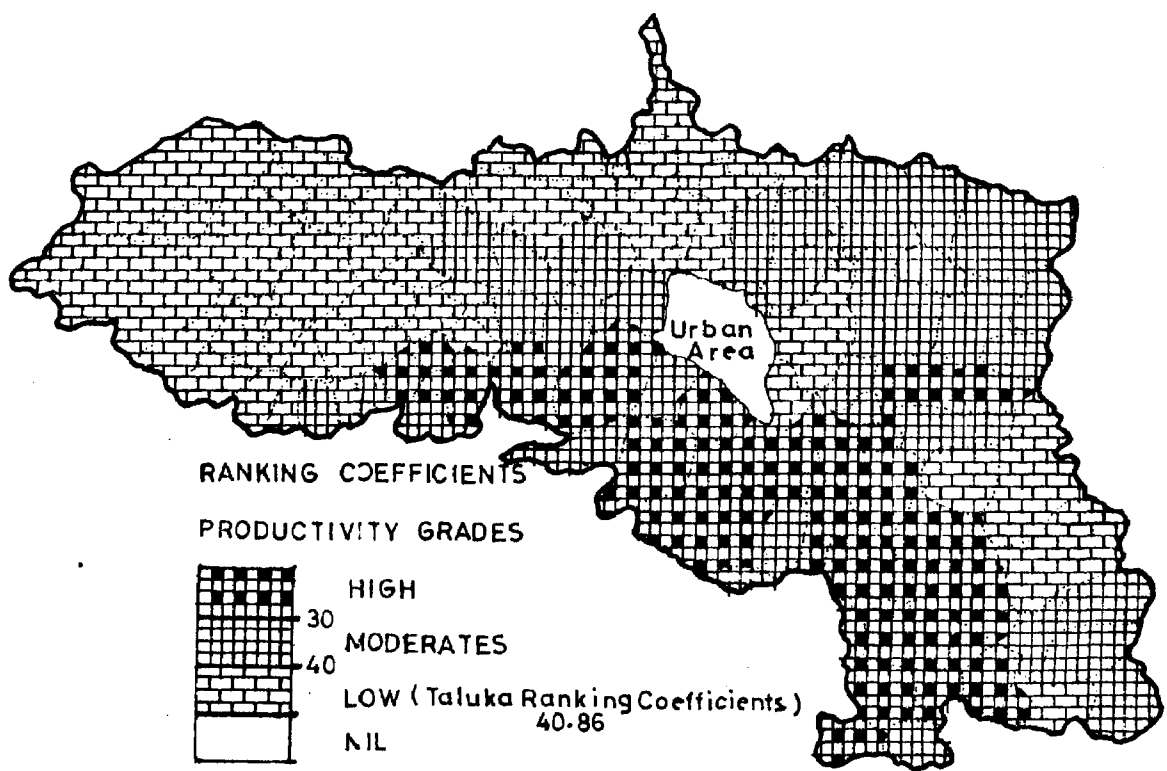
The measurement of overall agricultural productivity is useful to know the weaker areas of the region from the point of view of agricultural production. Further it becomes useful to the planner to give more attention to improve the productivity of weaker areas by adopting the new techniques devised by scientist. " Moreover, in any scheme of removing regional imbalances in agriculture, it is of importance to know the areas which are underdeveloped and need more attention to be paid for the advancement of agriculture," (Husain, 1979). The overall pattern of crop productivity is determined according to the method developed by Jasbir Singh and analysed in the following pages.

1) High productivity :

The areas of high (under 30) productivity are noted in parts of Krishna river valley (Fig.4.8-B). It is found in the villages of Dhom, Vyahali, Bhogaon, Menavali, Pasarni, Sidhanathwadi, Songirwadi, Kanur and Bavadhan. It is also noted in the villages of Ozarde, Vyajawadi, Kadegaon, Khanapur, Pande, Kawathe, Bopegaon, Bhuinj, Pachwad, Chindhavali, Khadaki, Udatore, Jamb, Kalambhe and Virmade. These 25 villages contribute the area about 46.17 percent of the total cropped area in 1985-86. The areas of high agricultural productivity comes under the Dhom project command area excluding, Kawathe and Kanur villages. Developed irrigation facilities, rich soils, adoption of modern technology, are some of the important factors responsible for the higher yield in these villages. The major crops of this area are sugarcane, wheat, jowar and groundnut. According to 1970-71 the high productivity was noted in the villages mentioned above excluding the villages Dhom, Vyahali, Bhogaon, Menavali, Sidhanathwadi, Khanapur, Pande and Virmade. These eight villages are newly brought under canal irrigation and have high productivity. As well as the high productivity of the villages Malatpur, Dasavadi, Mugaon and Kusgaon has decreased during study period due to inadequate irrigation and decrease in amount of rainfall. In 1970-71 the area under high productivity was 40.17 percent of the total cropped area. It has increased by 6.0 percent during 1970-71 to 1985-86.

WAI TALUKA

(A) REGIONAL IMBALANCES IN OVERALL CROP PRODUCTIVITY 1970-71.



(B) REGIONAL IMBALANCES IN OVERALL CROP PRODUCTIVITY 1985-86.

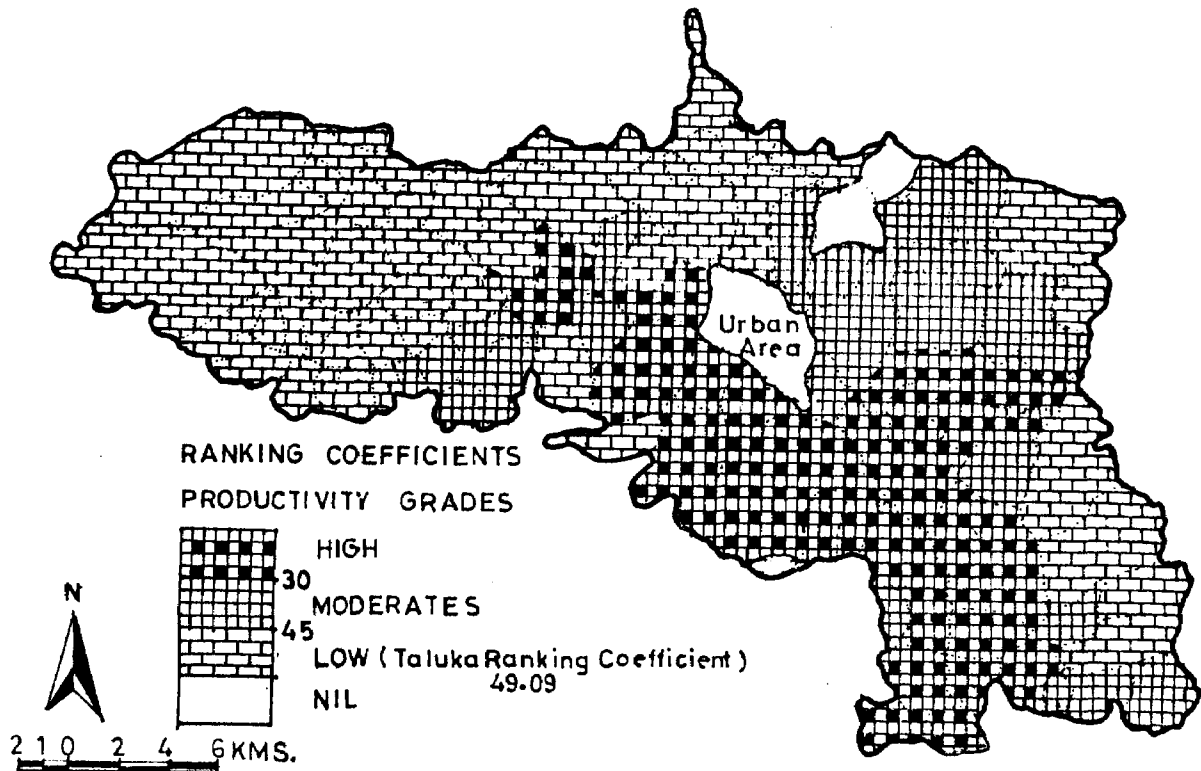


FIG. 4.8 A & B

2) Moderate productivity :

The moderate (30-45) productivity is noted in the north-eastern part of the region and in the villages of Dhavali, Chikhali, Malatpur, Dasavadi, Mugaon, Kusgaon and Eksar. It is also found in the villages of Kikali, Nikamwadi, Kalangwadi, Kholwadi and Pande and contribute 26.13 percent of the total cropped area in 1985-86 (Fig.4.8-B). Low rainfall, moderate intensity of irrigation and poor soils are found in this area. While in 1970-71 the area under moderate productivity was about 35.04 percent of the gross cropped area. It was noted in the north-eastern part of the region and in the villages of Chikhali, Dhom, Vyahali, Bhogaon, Borgaon Bk., Dhavali, Eksar, Menavali, Sidhanathwadi, Nagewadi, Pande, Kikali and Kholwadi. During the study period area under moderate productivity has decreased by 8.91 percent of the gross cropped area due to the shift of area from this productivity category to high productivity category.

3) Low productivity :

The low productivity area is significantly noted in the western, northern and in the eastern parts of the region. The hilly terrain, presence of poor soils and very low intensity of irrigation have retained this area into low productivity. It contribute an area about 27.7 percent of the gross cropped area. While in 1970-71 same area was under low productivity, the adverse environmental conditions are as it was. It contributed an area of 24.79 percent of the gross cropped area.

WAI TALUKA

CORRELATION REGRESSION

RELATION BETWEEN NET AREA IRRIGATED AND CROP YIELD

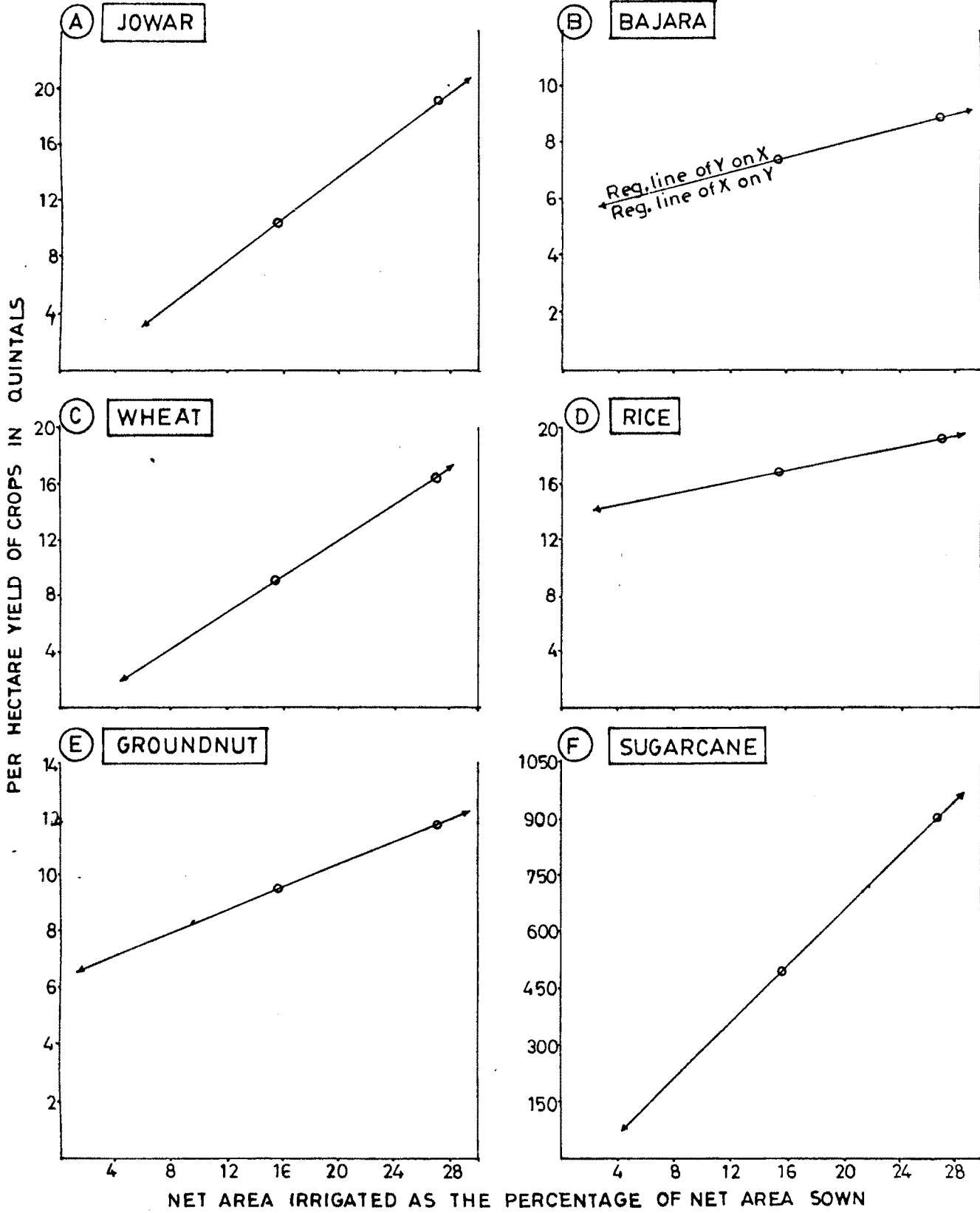


FIG 4.9

An examination of the spatial distribution and changes in agricultural production in Wai taluka reveals that farmers get smaller return from farm production in most of the villages lying in hilly area and unirrigated areas. Therefore, these are the villages where higher priority need to be given in agricultural planning of the region. The dry farming techniques may also give good results in this part of the region.

4.5 B) QUANTITATIVE ANALYSIS - CORRELATION REGRESSIONS :

Water is life giving agent to plants. Assured water supply to them is most necessary. The use of inputs such as high yielding variety of seeds, fertilizers, improved implements and methods of agriculture depends upon the availability of water. It affects the per hectare yield of crops. During the last fifteen years, the assured irrigation facilities have been developed upto some extent in Wai taluka. Due to the availability of irrigation facilities the use of modern inputs has been widely adopted by the farmers of the region. As a consequence per hectare yield of crops has increased considerably. On the whole, these changes are the result of the developed water supply as there is very close positive relationship between the development of irrigation facilities and per hectare yield. Fig.4.9-A,B,C,D, E,F reveal the positive relationship between the net area irrigated and the per hectare yield of crops in Wai Taluka.

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