### CHAPTER-V

#### GROWTH OF IRRIGATION FACILITIES BY DIFFERENT SOURCES

# 5.1 <u>Importance of Irrigation in the Process of Agricultural</u> <u>Development</u>.

Irrigation is one of the important inputs and socioeconomic basis of agriculture. It is <u>Since Qua non</u> for intensive and more economic agricultural operations. The success of agriculture depends to a large extent on how successfully water requirements of various crops can be met.<sup>1</sup>

Availability of perennial water for irrigation encourages to adopt more scientific techniques and intensive cultivation. "Farming without irrigation is very limited and if rain fall decreases to less than 300 mm, agriculture is impossible without irrigation."<sup>2</sup>

Irrigation helps to augment yield per unit of area and increase the cropped land. Through the transformation of agriculture and increasing production, agriculture offers new opportunities of employment to the people. Due to irr‡gation farmers can make additional investment in cattle, farm implements on more valuable crops like sugarcane and the total employment of farmers and labours. Obviously, it increases the land value and leads to additional use of land. Thus,

### CHAPTER-V

#### GROWTH OF IRRIGATION FACILITIES BY DIFFERENT SOURCES

# 5.1 <u>Importance of Irrigation in the Process of Agricultural</u> <u>Development</u>.

Irrigation is one of the important inputs and socio\_ economic basis of agriculture. It is <u>Since Qua non</u> for intensive and more economic agricultural operations. The success of agriculture depends to a large extent on how successfully water requirements of various crops can be met.<sup>1</sup>

Availability of perennial water for irrigation encourages to adopt more scientific techniques and intensive cultivation. "Farming without irrigation is very limited and if rain fall decreases to less than 300 mm, agriculture is impossible without irrigation."<sup>2</sup>

Irrigation helps to augment yield per unit of area and increase the cropped land. Through the transformation of agriculture and increasing production, agriculture offers new opportunities of employment to the people. Due to irr‡gation farmers can make additional investment in cattle, farm implements on more valuable crops like sugarcane and the total employment of farmers and labours. Obviously, it increases the land value and leads to additional use of land. Thus, irrigation plays vital role, particularly in cane cultivation and changes an agrarian structure from subsistence to commercial.

#### 5.2 IRRIGATION IN KOPARGAON TALUKA :

One of the main resons of the economic development of the area is the availability of canal irrigation in some parts of the taluka. The Nandur Madmeshwar dam is built on the Godavari river. From the dam, two canala are constructed. One on the right side of the Godavari river which is 100 Km. long. It serves northern part of the Ahmednagar district. The Second canal is is on the left bank of the river. It serves Nasik and Ahmednagar districts. Both the canals flow through Kopargaon taluka. One through northern parts and the other through southern parts of the taluka. Out of the total 107152 hectares of land of Kopargaon taluka nearly 22084 hectares of land i.e. 20.59% are under canal irrigation. Part of the remaining land is under well irrigation and the rest depends on the vagaries of the monsoon.

Prior to the construction of the canal, the tract was entirely dependent on seasonal monsoon and Kopargaon taluka was also traditionally known as drought prone area. The cropping pattern was traditional and farmers were familiar with the cultivation of cereals and oil seeds. In 1911, the canals were first constructed in the taluka, but the local farmers were ignorant of the possibility of utilising canal water for the betterment of agriculture.

In the following paragraphs, we intend to trace the development of irrigation facilities by different sources and area brought under irrigation in Kopargaon taluka. In the year 1965-66 the area irrigated by Government canal amounted to 25744 hectares.

The voilent fluctuations of the area irrigated more than once in a year during the period of 1965-66 to 1970-71 seems to have been caused by the year to year changes in the precipitation of monsoon. It also seem's from table that the area irrigated more than once depends upon the area irrigated by Government canal. During the same period the index number of the area irrigated by Government canal declined continuously from 100.00 (base year) to 72.91 in 1970-71. The loss caused in the area irrigated by Government canal seems to have been made good by the continuous increase in the area irrigated by wells. This can be substantiated by the increasing index numbers. The index numbers of the area irrigated by wells changed from 100.00 (1965-66) to 182.14 (1970-71).

During the next period of the five years that is 1971-72 to 1975-76, the area irrigated by Government canal declined

continuously excepting the year 1972-73, in which the area under Government canal increased to 21159 hectares as a result of which the percentage of it to the net irrigated area increased to 59.80. The index number declined from 72.25 to 66.39 in the terminal year of the period that is 1975-76. Similarly the area irrigated by wells seems to have been declined as its index number moved down from 182.14 to 153.94 (1975-76). Since the hectarage under well irrigation declined from 17205 to 14542, it's percentage to the net area irrigated. The another source of irrigation that is wells, formed 45.97. seems to be significant considered in terms of the percentage of the area irrigated by wells to the net area irrigated. It just formed 26.84 percent to the net area irrigated. In the subsequent years, i.e. from 1966-67 to 1970-71, the area irrigated by Government canals declined continuously, that is from 22181 hectares (1966-67) to 18771 (1970-71). As a result the percentage of the area irrigated by Government canal declined from 63.72 to 52.18 in the same years.

On the contrary the area irrigated by the wells increased from 12634 hectares (1966-67) to 17205 hectares.(1970-71).The percentage of the area consequently watered by wells increased from 26.84 (1965-66) base year ) to 47.82 (1970-71) because of the increase in percentage of the area under well irrigation, the net area irrigated remained almost unchanged, with very

- 103 -

insignificant year to year fluctuations. It is disquiteing to note however, that area irrigated more than once in a year fluctuated abnormally. In the year 1965-66 the area irrigated more than once in a year amounted to 2235 hectares and its percentage to the gross irrigated area formed just 5.97. In the subsequent year, it increased abruptly and the area irrigated more than once in a year increased to 2123 hectares, as a result of which its percentage to gross irrigated area increased to 8.23 (1966-67). Then again in the subsequent year 1968-69 the hectarage irrigated by wells declined from 42.14 to 31.10 (1975-76).

The net result of the decline in the area irrigated by both Government canals and private wells had been in the continuous decline of the net irrigated area during the sub period under study. The index number of the net area irrigated came down from 100.86 (1970-71) to 89.89 (1975-76). Similarly the percentage of the net irrigated area to the gross area irrigated came down from 95.39 (1970-71) to 67.67 (1975-76) in the period under study.

Notwithstanding, the fact that the area irrigated by both the sources declined during the period, area irrigated more than once in year seems to have increased continuously, as its index numbers and its relative percentage shares in the net area irrigated reveal. Its index number moved upwards

- 104 -

from 109.48 to 676.10 (1975-76) consequently its percentage share in the gross area irrigated changed from 4.60 to 32.32 (1975-76).

Despite the relative changes in the percentage shares of the net area irrigated and the area irrigated more than once the gross area irrigated seems to have remained almost constante as its index numbers reveal. Only during the last two years of the period (1974-76) the area under gross irrigation seems to have increased to 46262 hectares and 46745 hectares in the respective years. As a result, the gross irrigated area increased by 24.90 percent by the end of the period (1975-76) as compared to the base year (1965-66).

During the third subperiod (1976-81) the area irrigated by Government canals shows no improvement excepting the two years  $1977^{-2}79$  in which the area irrigated by Government canals increased abruptly. The index numbers during these two years increased to 119.96 and 129.48 in the respective years. The increase in the hectarage irrigated by Government canal had been caused by favourable monsoon precipitation during the years in the question. However, during the last year of the period (1980-81) the area under Government canals came down to 19350 hectares as a result of which its relative percentage share in the net irrigated area came down to 51.51 (1980-81). During the same sub period, the area irrigated by wells seem's to have fluctuated rather abruptly as the index numbers reveal. The index number moved down from 184.78 (1976-77) to 33.45 (1978-79) and again it moved in upward direction to 170.88 and 187.54 in the last two subsequent years (1979-81) consecutively. The percentage of the hectarage irrigated by wells also declined from 46.02 (1976-77) to 8.66 (1978-79) and then again moved in an upward direction and reached to 43.74 and 47.79 in the last subsequent years (1979-81).

Despite the year to year fluctuations in the area irrigated by both the sources, the net area irrigated seem's to have remained more or less constant. The index number of the net irrigated area ranged between a very small margin of 103.70 and 107.77. The stationary condition in the net irrigated area could be explained by the fact that the loss in the area irrigated caused by a fall in the area irrigated by wells had been compensated by the increased in the area irrigated by Government canals and vice varse. The area irrigated more than once in a year abruptly fell to 7850 hectares in the first year of the last sub period (1976-77) as compared to the hectarage irrigated more than once in a year during the preceding year. (1975-76). In the subsequent two years(1977-79) it increased, as result of which, the index numbers moved to 967.20 and 989.48 in the respective years. Again in the next

- 106 -

subsequent two years (1979-80) it came down to a 4360 hectares as a result of which the index number dropped to 195.07 Despite the abrupt fall, the area irrigated more than once in a year, again shotup to 11854 hectares, with the result that the index number rose to 530.38. The increases in the area irrigated more than once in the years 1977-79 could be explained by fact that there were increases in the areas irrigated by the Government canals. These increases might have caused the corresponding increases in the area irrigated more than once, but not exactly, as the decisions, regarding the allocation of agricultural lands as between the various crops are taken at micro level. Again these decisions regarding multiplie cropping pattern taken by the individual farmers are largely governed by the exogenous factors such as conditions of both south west and north east monsoon and the relative post harvest price structure of the different agricultural commodities.

The gross irrigated area, as a result of increase in the area irrigated by Government canals seems to have increased during 1977-79 and remained more or less constant. The index number of the gross area irrigated increased from 122.31 (1976-77) to 156.60 (1978-79). Again in the subsequent two years there seems to be a decline in the gross irrigated area in sympathy with the area irrigated by Government canals.

- 107 -

The index number came down to 110.15 in the succeeding year (1979-80) and it again rose to 130.71 (1980-81) By and large the gross area irrigated has increased by just 30.71 percent during the last year of the study as compared with the base year of the period.

The up shot of the forgoing discussion reveal that the Government canals consititute the predominant sources of irrigation in the taluka. As far as the private canals are concerned there is not even a single hectare irrigated by the private canal. A birds eye view, of the table No.5.4 reveals the fact that the area irrigated by Government canals has been declining through out the period, despite very marginal; year to year fluctuations. It's relative percentage share to the net area irrigated has been on the decline, whereas the relative percentage share of the area irrigated by wells seems to have been on the increase through out the period. This conclusion could be substantiated by, barring some minor upward and downward movements, the increasing trend of the index number of the area irrigated by wells. This also indicates the increasing preference of the farmers for well irrigation.

This could be accounted for by the easy and increasing accessibility to financial institutions such as land development banks, regional rural banks and nationalised

commercial banks. If we look to the column No. 7 of the table No.5.4, we may safely conclude that there is no remarkable head way in respect of the net area irrigated throughout the period. This conclusion could be supported by the behaviour of the index numbers. As regards the area irrigated more than once column No. 8 of the same table reveals that the farmers are going in for double cropping on the perenially irrigated lands. The increase in the percentage share of the area irrigated more than once in year points out to the fact that the farmers have started to subs itute short duration food crops which could be irrigated twice in a year to perenially irrigated cash crops like sugarcane. In the following chapter we under take the analysis of the changing crop pattern in the taluka as a result of irrigation facilities made available by the Government as well as by the private individuals.

- 109 -

- 110 -

## REFERENCES

 Arora A.C. "Development of Agriculture and Allied Sectors." S.Chand & Co. New Delhi, P.P. 17.36. 1976.

2. King Thomson

Water miracle of <sup>N</sup>ature, MacMillan, New York, P. 170. 1953.

		• •				•	
Gross area Irrigated.		37938 101.37 N.A.	39599 - 105.80 38226	102.14 37711 - 100.76	37941 	43980 43980 117.51 46262 -	46745 124.90 45776 122.31
Area Irrigated more than		3123 (8,23) 139,93 N,A,	1456 (3.67) 65.14 3141	(8.21) 140.53 1735 (4.60) 77.62	2447 (6.44) 109.48 2288 (6.07)	10641 (24,19) 8052 (17,40) 360,26	15111 (32.32) 676.10 7850 (17.14) 351.23
Net area Trrigated	35190 100.00	34815 	38143 - 108.39 35085	- 99.70 35976 102.23	35494 - - 35380 - 100 53	33338 94.73 94.73 .38210 (108.58	31634 
Other Wells		12634 (36.28) 133.74 N.A.	16689 (43.75) 176.67 16127	(45.97) 170.72 17205 (47.82) 182.14	16120 (45,42) 170,65 14221 (40,20) 150,55	13512 13512 (40.53) 16304 (42.67) 172.60	14542 (45.97) 153.94 17 <b>4</b> 55 (46.02) 184.78
• Other Sources.				11 11	3 1 1 3 11	1726 (5.18) (3.23)	
Tanks		1111	11 1 1	1111	111	1 1 1 1 1	
Total Ca <b>nal</b> (1 + 2)	25744	<b>22</b> 181 - N.A.	21454 - 18958	- - 18771 -	19374 - 21159 =	18100 19906 -	17902 - 2047 <b>3</b>
Private Canal		1 1 1 1		111111	1111		111 11
Government Canal	25744 (73.16) 100.00	22181 ( 63.72) 86.15 N.A.	21454 (56.25) 83.33 18958 (54.03)	(54.03) 73.64 18771 (52.18) 72.91	19374 (54.58) 75.25 21159 (59.80) <b>8</b> 2.19	18100 (54.29) (54.29) 19906 (52.09) 77.32	17092 (54.03) 66.39 20471 (53.98) 79.51
Year	<b>1965 - 1</b> 966	1966 <b>-</b> 1967 1967 <b>-</b> 1968	1968 - 1969 1969 - 1970	1970 - 1971	1971 - 1972 1972 - 1973	1973 - 1974 1974 - 1975	1975 - 1976 1976 - 1977

.

I I

1



					- 110 8 -	· .	• • • • • •		
1 1 1 1 1	, , , , , , , , , , , , , , , , , , ,	 	 		TABLE NU. 5	.4 (Contd)	C	Area in hecta	res)
L Year L T	Government Canal	Private Canal	Total Canal(1+2)	Tanks	• Other Sources		Net area Irrigated	Area Irrigated more than	Gross are Irrigated
1977-1978	30884 (83.68) 119.96	1 1 1 1 1 1 1	1 3088 <b>4</b> 1 1 1 1 1 1		<b>1 1 1</b>	6022 (16.32) 63.75	36906 - 104.87	21617 36.93 967.20	58523 - 156.37
1978-1979	33334 (91,34) 129,48	1 1 1 1 1 1 1	3334 3334  	<b>1 1 1</b>		3160 (8.66) 33.45			
1979–1980	20764 (56.26) 80.69	111	20764 -	   <b>! ! !</b>   		16142 (43.74) 170.88		<b>4360</b> <b>10.56</b> <b>195.07</b>	41266
1980–1981	19350 (52.21) 75.16		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1	1 1 1 1 1 1 1	17715 17715 (47.79) 187.54			
• 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1		Source : As in The She	n Table No.	2.1 2.1 n the brecket	indicate the r	elative percen	t t t t t t t t t t t t t t t t t t t	1 1 1 1 1 1 1

ł