

“Impact Of Farm-ponds On Changing Cropping Pattern: A Case Study Of Wadule Village In Parner Tehsil Of Ahmednagar District (maharashtra)”

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Abstract

This paper examines the agricultural development with the help of “Impact of Farm-ponds on cropping pattern: A case study of Wadule village in Ahmednagar district (Maharashtra).” “Farm pond is an artificial dug-out structure with definite shape and size for collecting and storing surface runoff water for secure irrigation whenever needed” (Feng M, 2020). The present work has basic aim to understand the changing Cropping pattern through farm ponds and its effect on productivity and socio-economic development of the farm pond holding farmers in Wadule village.

The present research paper is based on primary and secondary sources of data. The results indicate that, total GCA of the Farm pond holding farmers has increased by 53.28% as compared to before construction of Farm ponds. It is found that the higher share of GCA was of cereals crops (51.90%). Secondly, the Pulses have 30% share of GCA in Wadule village. The share of crops under Kharif season has significantly decreased by 333.33% in the village after farm-pond as compared to before farm pond situation. The proportion of crops in Rabi season has increased by 30.54%. The productivity of all the crops has significantly increased after the construction of farm-ponds. The major reason behind this is availability protective and secure irrigation due to farm-ponds; therefore, it is suggested to construct more Farm ponds in drought prone areas.

Keywords: Farm pond, Cropping Pattern, Irrigation, Productivity etc.

Introduction:

The issues of Indian agriculture cannot be overlooked as more than 62% population is directly dependent on it (Balasubramaniam, 2019). The severity of droughts has its long term impact as it does not allow capital formation and hence farmers become vulnerable community, financially as well as socio-politically. “Farm pond is an artificial dug-out structure with definite shape and size for collecting and storing surface runoff water for secure irrigation whenever needed” (Feng M, 2020). K Palanisami, et al-2010, reveals that Watershed programs in India are contributing to water resources development, agricultural production and ecological balance. Watershed development activities like Farm ponds changed the Cropping pattern, increasing crop yields and Crop diversification, therefore they provided enhanced employment and farm income. Irrigation plays a vital role in Agriculture (Rao, R. N., 2018).

Cropping pattern means the proportion of area under various crops at a point of time. Cropping pattern is a dynamic concept as it changes over space and time (Husain M. 1979). The present work has basic aim to understand the changing Cropping pattern through farm ponds and its effect on productivity and socio-economic development of the farm pond holding farmers. Therefore, the present work entitled “Impact of Farm-Ponds on changing Cropping Pattern: A Case Study of Wadule Village in Parner tehsil of Ahmednagar district (Maharashtra)” has been undertaken.

Study Area:

Wadule is located in Parner tehsil of Ahmednagar district, Maharashtra. (Figure 1) The village lies at crossing of 18°56'11" N latitude and 74°23'22" E longitudes. The average elevation is about 643m from mean sea level. The village is located at about 5 km north-west from Ralegan Sidhhi and 11 km south-west from Parner, a tehsil town.

The village is surrounded by Ganjibhoyare village to north, Pimpalner and Ralegan siddhi to south, Panoli to east and Sangvi surya village to west. The Parner-Pune state highway (MH-50) is

Dr. Dattatray Sheshrao Ghungarde

passes from about 5 Km east from the village. The average annual rainfall in the village is 450 mm and average annual temperature is 32.3⁰C.

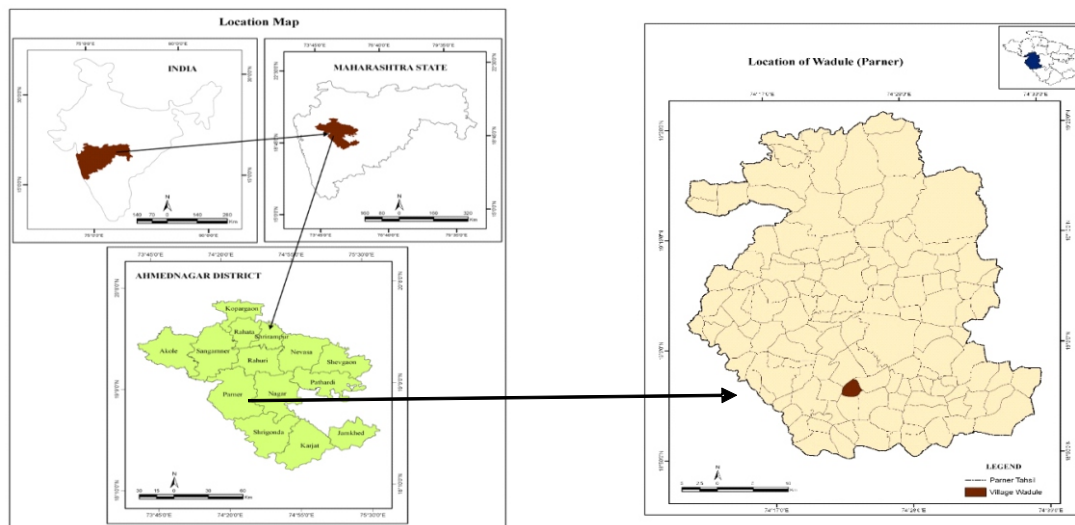


Figure No. 1: Location map of Wadule village (Parner), Ahmednagar

Objectives:

The main objectives of present research papers are;

1. To carry out impact analysis of Farm ponds on changing Cropping Pattern.
2. To assess the impact of Farm ponds water in terms of Crop productivity and Income output.

Database and Methodology:

The Database and Methodology of the present work is presented with the help flowchart (Fig. No. 2). The present research paper is based on primary and secondary sources of data. The methods used for collection the data and execution of the work are discussed below.

1. The primary data is collected through intensive field work with help of detailed Questionnaires A & B and through the method of observation, interview and group-discussion.
2. The secondary data is collected from village Krushi-Sahayyak, Grampanchayat office, Talathi office and Tehsil Agricultural office etc.
3. The 45 number of Farm ponds were constructed during the period 2005 to 2020. Out of that, sample size of 50% were selected for the collection of Primary data collection and understanding intricacies of the issues faced by the farmers. These farmers were selected by adapting Random sampling techniques.
4. On the basis of statistical data extracted from the sources referred of Wadule village. The comparative study has been carried out before and after implementation of Farm ponds. The collected data has been processed, tabulated and prepared charts for the purpose of Analysis.

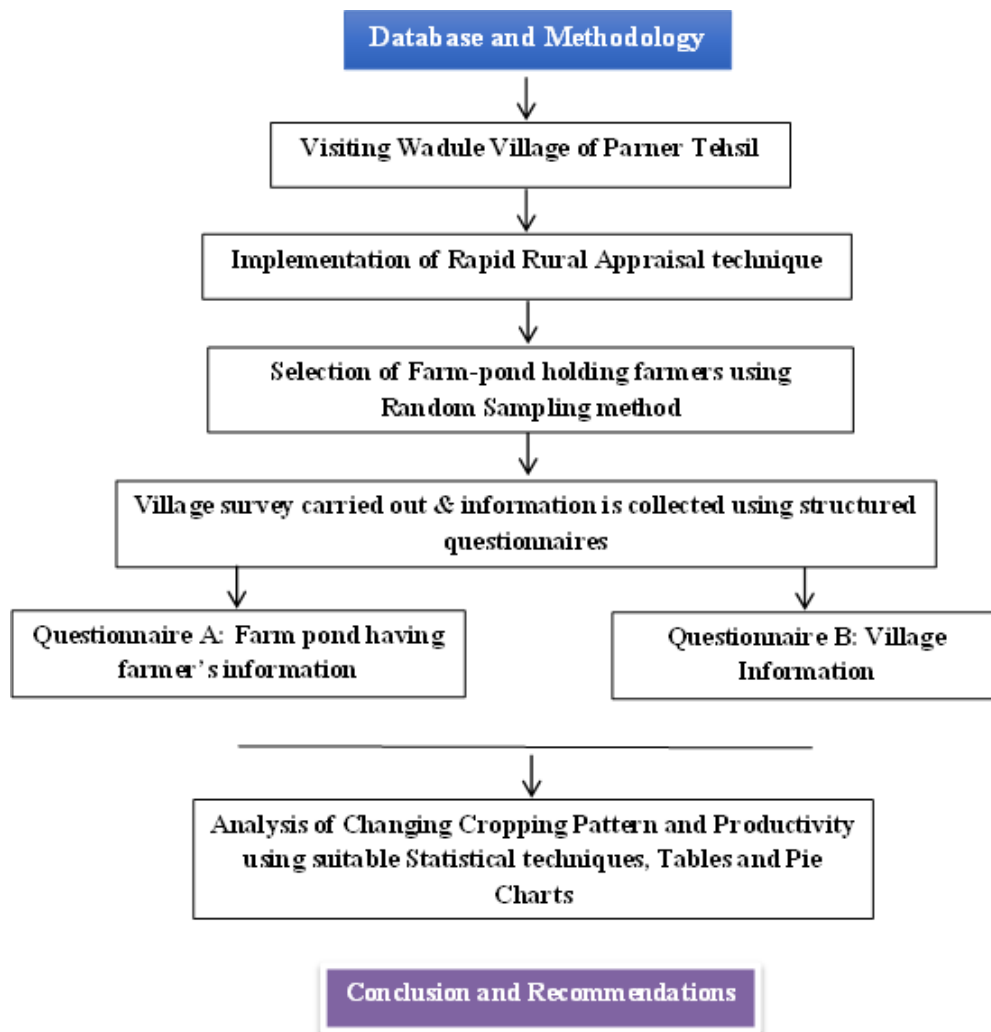


Figure No. 2: Flowchart for Database and Methodology)

Results and Discussion:

The cropping pattern of farm-pond having farmers in Wadule village is given in table (Table 1) and pie diagram (Figure 3 A & B). It is represented in the form of percentage to gross cropped area. The productivity (kilogram per hect) before and after farm-pond construction has been considered to understand value addition.

Table No. 1: Cropping Pattern

	Crops	Before Farm-pond		After Farm- pond		Change	
		Cropped Area (% to GCA)	Productivity (Kg/ha)	Cropped Area (% to GCA)	Productivity (Kg/ha)	Area (%)	Productivity (Kg/ha)
Kharif	Bajra	24.50	700	6.00	900	-62.45	200
	Mung	18.60	500	10.96	650	-9.68	150
	Hulga	2.80	500	0.00	600	-100.00	100
	Tur	4.30	600	1.30	700	-53.49	100
	Onion	0.80	33000	4.18	45000	+700	12000
	Soyabean	3.60	1750	1.30	1800	-44.44	50
Total Kharif		54.6	-	23.74	-	-333.33	-
Rabi	Jowar	22.80	800	8.09	900	-45.61	100
	Wheat	4.60	1000	9.66	1200	+221.74	200
	Gram	4.40	450	7.05	650	+145.45	200
	Onion	1.60	10000	3.65	13000	+250.00	3000
Total Rabi		33.4	-	28.45	-	+30.54	-
Annual	Sugarcane	2.00	110 (Ton)	1.57	130 (Ton)	+20	20 (Ton)
	Mango	2.00	12000	7.31	15000	+460	3000
	Pomegranate	2.40	12000	6.20	17000	+295.83	5000
	Lemon	3.20	10000	11.86	13000	+468.13	3000
	Custard apple	0.00	6000	8.48	9000	+100	3000
	Guava	0.00	0	9.39	12000	+100	12000
	Total Fruits	9.6	-	43.24	-	+590.42	-
	Vegetables	0.40	13000	1.04	16000	+300	3000
	Fodder	2.00	42000	1.96	60000	+50.00	18000
Total Annual		12	-	47.81	-	+510.67	-
Gross Cropped Area (GCA)		100	-	100	-	+53.28	-

(Source: Computed by researcher based on field work)

The gross cropped area before farm-pond was 50 hect which has increased to 76.64 hect after the

construction of farm-pond. The total GCA has increased by 53.28% as compared to before. As per results, it is found that the higher share of GCA was by cereals crops (51.90%). Secondly, the Pulses have 30% share of GCA. This is to say that before farm-pond construction about 81.90% area is occupied by cereals and pulses crops. The significant proportion (19.51%) of the same has been diverted towards fruits and cash crops after construction of farm-pond.

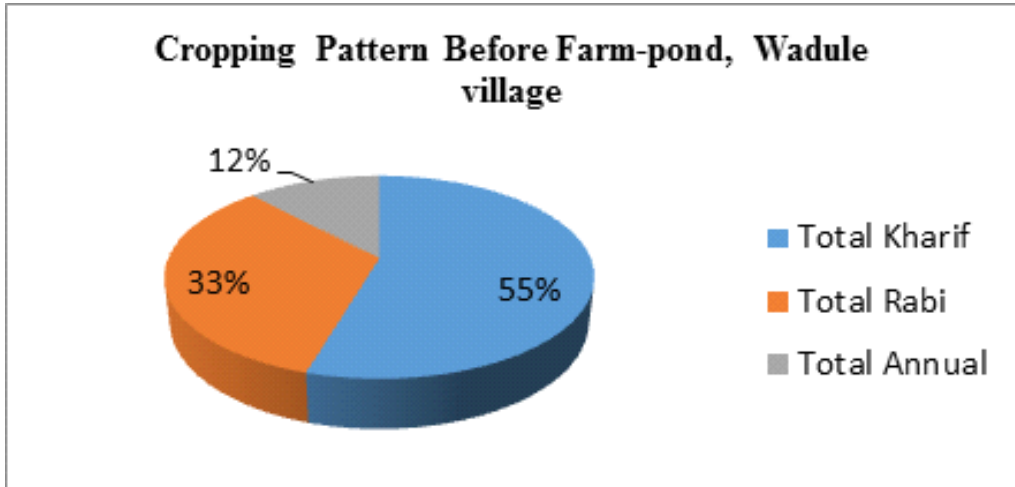


Figure No. 3 A: Cropping Pattern Before Farm-pond, Wadule village

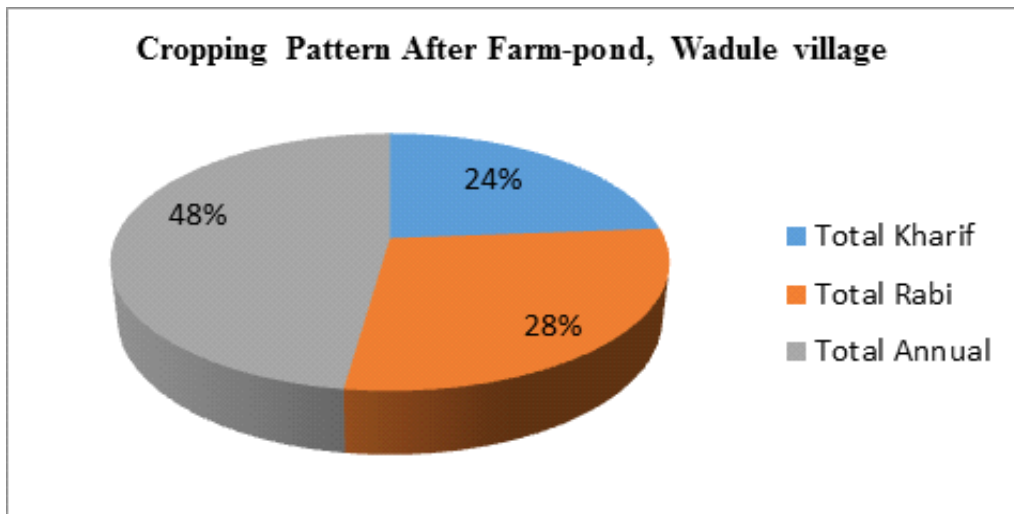


Figure No. 3 B: Cropping Pattern After Farm-pond, Wadule village

The share of crops under Kharif season has significantly decreased by 333.33% in the village after farm-pond as compared to before Farm pond. The proportion of crops in rabi season has increased by 30.54%. This is due to the reason that, the area under cereal crops of these farmers has decreased by 29.87%. The area under pulses has also decreased by 1.66%.

The overall increment in area under fruits crops is 590.42%. Therefore, a huge amount (6 times) of area under cash crops and fruit crops has increased after construction of farm-pond. It is also noted that there is reduction in area under the kharif season and farmers started preferring perennial

crops like fruit and cash crops. The productivity of all the crops has significantly increased after the construction of farm-ponds. The major reason behind this is available protective and secure irrigation due to farm-ponds.

Table No. 2: Net Production and Income Output

Season	Crops	Before Farm-pond				After Farm-pond				Change in Income (In Lakh Rupees)
		Productivity (Kg/Ha)	Net Production (In Quintal)	Procurement Price (In Rupees Per Quintal)	Total Income (In Lakh Rupees)	Productivity (Kg/Ha)	Net Production (Quintal)	Procurement Price (In Rupees Per Quintal)	Total Income (In Lakh Rupees)	
Kharif	Bajra	700	86	784	0.67	900	41	1431	0.59	-0.08
	Mung	500	47	2863	1.33	650	55	4591	2.51	1.18
	Hulga	500	7	3000	0.21	600	0	10000	0.00	-0.21
	Tur	600	13	1877	0.24	700	7	4045	0.28	0.04
	Onion	33000	132	468	0.62	45000	1440	2500	36.00	35.38
	Soyabean	1750	32	1500	0.47	1800	18	3000	0.54	0.07
	Total Kharif	-	316	-	3.55	-	1561	-	39.92	36.38
Rabi	Jowar	800	91	1349	1.23	900	56	1946	1.09	-0.14
	Wheat	1000	23	1183	0.27	1200	89	1815	1.61	1.34
	Gram	450	10	2360	0.23	650	35	5123	1.80	1.56
	Onion	10000	80	530	0.42	13000	364	3500	12.74	12.32
	Total Rabi	-	204	-	2.16	-	544	-	17.24	15.08
Annual	Sugarcane	110000	1100	200	2.20	130000	1560	300	4.68	2.48
	Mango	12000	120	500	0.60	15000	840	9000	75.60	75.00
	Pome- granate	12000	144	2500	3.60	17000	808	6000	48.45	44.85
	Lemon	10000	160	1000	1.60	13000	1182	2100	24.82	23.22
	Custard apple	6000	0	500	0.00	9000	585	2000	11.70	11.70
	Guava	0	0	700	0.00	12000	864	1500	12.96	12.96

(Source: Computed by researcher based on field work)

The cash value of crops according to on farm prices prevailing in the district are analysed and presented in table (Table 2). It is clear from the information gathered in the field study that productivity of all crops has positively changed as per crop pattern adopted by farmers after construction of farm

Dr. Dattatray Sheshrao Ghungarde

ponds in the village. The total cropped income of sample 20 farmers is about 2 Crore and 49 lakhs. Out of this, in kharif season; they earned about 39 lakhs, in rabi season; 17 lakhs while through fruit crops; they have earned 1 Crore 73 lakhs.

Conclusion:

Therefore, it is concluded that, the farmers of Wadule village have compromised the area under seasonal crops in kharif and rabi season to prefer annual crops like fruits and cash crops. The significant proportion (19.51%) of the cereals and Pulses has been diverted towards fruits and cash crops after construction of farm-pond. The productivity of all the crops has significantly increased after the construction of farm-ponds. The major reasons behind this are available protective and secure irrigation due to farm-ponds, Secondly, the availability of fertile soil for cultivation and thirdly, there is availability of Agricultural Market centres.

Recommendations:

It is observed that the Farm pond is useful for secured and sustainable irrigation; therefore, it is suggested to construct more Farm ponds in drought prone areas. It is observed from the field survey that farmers use groundwater to recharge the farm pond; It is suggested that farmers should use excess water / runoff from rainwater to store water in Farm pond.

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