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Finding the Relationship between Independent variables and Annual Income Changes and the Overall Impact on Agricultural Ponds in Jaipur District of Rajasthan

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ABSTRACT: India has a long history in tank technology. There are reservoirs to collect water in all parts of Rajasthan. In order to collect excess rainfall from agricultural areas, some dams must be built against weather conditions. The machine has the ability to increase the amount of water, increase efficiency and productivity, thereby increasing the yield from the crop. Agricultural ponds, if built in large numbers, also play an important role in flood control and welfare. They also play an important role in rain-fed agriculture. From an economic perspective, reservoirs should be created to provide the maximum amount of water. This usually occurs in places where there are narrow and steep places. Agricultural ponds help coordinate planning for better land and water use; Consider groundwater and water resources to develop or identify new ways to interact with water, plants, animals, and human land use in the reservoir farm area.

Keywords: Farm pond, Utilization, Technology, Supplemental, Mechanism.

INTRODUCTION

India has ancient history of tank technology. Runoff collection in irrigation tank exists in every district of Rajasthan. Number of dugout type ponds is necessary for harvesting of excess rain water on farmer field. It is true that progress of India is depended on the development of agriculture. The increased agriculture production depends upon the number of factors of which water play an important role. Agriculture is one of the most important sectors in the Indian economy, which means it is also a major employer. Approximately 60% of India's population is involved in this sector and this sector contributes approximately 18% of India's GDP. This rate is decreasing every year with the development of other sectors of the country's economy (Jaganmohan, 2020). Agricultural ponds are small tanks or reservoirs designed to store water needed for rivers. Farm ponds can be used to water plants, provide water for cattle, raise fish and more. Water is an important and valuable resource on which our ecosystems and agriculture depend. Water is a natural resource and 97.39% of it is found in the oceans, meaning the majority is salt water. The other 2.16% is fresh water and 77.23% is ice and glaciers. Only a small part of the water resources available in underground lakes, rivers and streams are useful to humans. The total cultivated area in India is 139.36 million hectares, of which 37.67 million hectares are under water, accounting for 27% of the area (Deshmukh *et al.*, 2017).

Pond farming is a flexible, mechanized and advanced method that can be used for many purposes. Resource management that aims to balance sanitation, finance and health in watersheds. Agricultural ponds help coordinate planning for better land and water use; Including groundwater and surface water, in order to create or implement new methods for the use of water, plants, animals and human lands in the field of agricultural ponds.

Rain harvest depends on the quality and distribution of rainfall, so the harvest will be better in regions with sufficient rainfall. Additionally, rain harvesting depends on many factors such as the location of the river, soil type and slope, depth and vegetation. Apart from providing irrigation water, rainwater harvesting facilities (RWHS) also meet various human needs such as drinking and potable water needs, livestock farming, fish production and others. Rainwater storage facilities must have sufficient water area and be able to fulfill their designed purpose. The main RWHS projects taken up in the basin are dams, farm ponds, Narrabang and rain-fed plantations. Rainwater harvesting systems (e.g.

agricultural ponds) play an important role in the management and conservation of soil and water because they regulate agricultural patterns, fills vegetation, etc. They must influence. Agricultural reservoirs are water tanks used for various purposes to meet agricultural needs. Agricultural ponds are used to collect rainwater for irrigation purposes. Agricultural ponds bring productivity, employment and income to farmers.

Agriculture in ponds is the reform, integration and development of various management systems designed to balance the health, economy and social well-being of rivers. Agricultural ponds help coordinate planning for better land and water use; to take into account groundwater and surface water in order to create or realize new systems for land use of water, plants, animals and people in the agricultural pond area.

The subject of this study is the effect of agricultural ponds on agricultural land, water and plant relations and the farmer's economy.

RESEARCH METHODOLOGY

Many regions have poor groundwater resources due to lack of groundwater and hard rock substrate. Farm ponds help recharge groundwater. Farm ponds are considered to be more expensive than large canals. Farm ponds are water storage facilities that serve many purposes. Agricultural ponds are used to collect rainwater for irrigation purposes. Although agricultural ponds are limited in size and water capacity, they play an important role in many aspects depending on their suitable location in the basin. In recent years, India had hoped to use cultivation ponds to realize the growth of agriculture in rain-fed and semi-arid regions. These areas were neglected by the Green Revolution and saw little or no growth in agriculture for decades. Farm ponds are not only a source of additional income, but also a way to irrigate crops during the dry summer months. Farm pools offer many additional economic opportunities to small and marginal farmers.

The following summarizes the methods and procedures followed by the investigation. It has tools and techniques for collecting data. Modeling and operational procedures and tools for data analysis are also described.

There are 23 AAO circles in Jaipur. Among them, 4 AAO departments *viz*., Hingonia, Jobner, Boraj and Bichun were deliberately chosen as subjects. This AAO office is located next to SKNAU, within a 20 km circle of Jobner, and researchers from the university regularly exchange technology in nearby villages and farmers also visit the school to solve their agricultural problems. Among the four circles, AAO was selected from 120 sample participants of 234 beneficiaries according to the ratio. Interviews were conducted with the interviewees and data were collected from their families and farms with the help of a systematic approach prepared for this purpose. The collected data were analyzed with the help of statistical methods such as frequency and percentage.

A. Karl Pearson's coefficient of correlation

This tool is used to analyze whether there is a relationship between individual variable scores and the variable scores of the sample of participants enrolled in the crop insurance plan.

The relationship method is usually used to examine the relationship between two variables. Calculate the correlation coefficient between the variable "y" and the independent variables x1, x2, x3, xn. The correlation coefficient (r) is a measure of the relationship between a variable and an individual variable. It is calculated from the following formula:

$$R = \frac{\Sigma_{xiyi} - (\Sigma_{xi})(\Sigma_{yi})/n}{\sqrt{\Sigma_{xi}^2 - (\Sigma_{xi}^2)/n}\ \sqrt{\Sigma_{yi}^2 - (\Sigma_{yi})^2/n}}$$

Where,

R = Coefficient of correlation

xI= Values of x variable for its pairs

Yi= Values of y variable for its pairs

n = Number of pairs of x and y values.

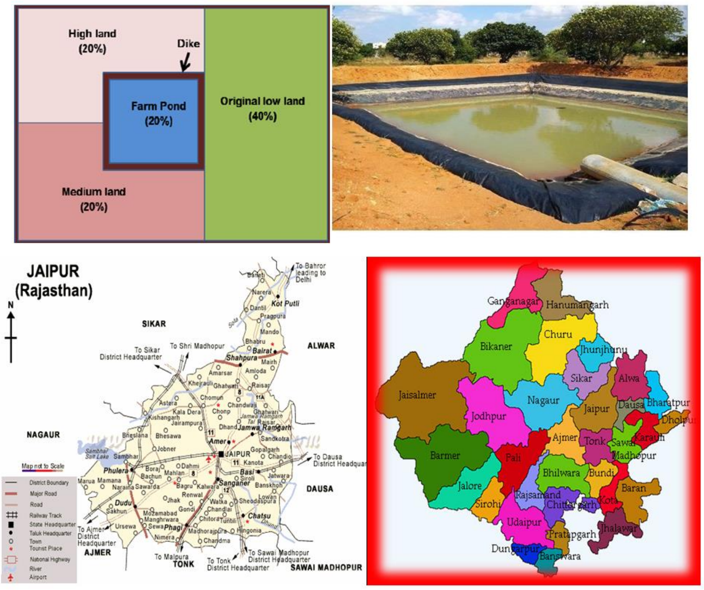

Fig. 1. Study area in Jobner Jaipur.

RESULTS AND DISCUSSIONS

A. Relationship of profile of beneficiaries with impact of farm pond

The correlation results shown in Table 1 clearly show that the cultivation pattern has a 1% relationship with social participation, annual income, land ownership, agriculture and agricultural use. There is a significant 5% relationship with education and knowledge.

There is a positive and non-significant relationship between changes in age, occupation and cultivation. Therefore, the negative hypotheses H01.2, H01.3, H01.4, H01.5, H01.6, H00.7 and H01.8 were rejected and the other hypotheses were accepted. This suggests that there is a relationship between changes in age, occupation and upbringing methods, but it is not significant. Adoption of improved crop standards also increased as beneficiaries became more flexible and educated, leading to greater participation and greater use of agricultural and information request forms. This result shows that the plant pattern changes due to the increase in water level after the construction of agricultural ponds. The above findings are consistent with Ahire (2000); Erappa (2000); Nipanikar (2006).

The correlation coefficient shown in Table 1 clearly shows that cropping practices are positive and have a positive relationship at the 1% level. It has a significant impact on education, social participation, annual income and the use of agricultural practices. Crop practices have a 5% relationship with agriculture, land insurance and information.

There is a positive and non-significant relationship between labor and crop yield. There is a negative and non-significant relationship between age and crop yield. Therefore, the negative hypotheses H01.2, H01.3, H01.4, H01.6, H0.7 and H01.8 were rejected and the other hypotheses were accepted. The study shows that there is a positive and negative relationship with crop variation, while age has a negative relationship and no relationship with crop variation. Crop production is also increasing because the people who benefit from it will be more flexible and better educated, leading to greater cooperation and greater exploitation of agriculture and textiles. The above relationship shows that after the construction and use of agricultural ponds, most crops increased due to the increase in irrigated area. Since the products grown also increase the annual income of farmers, they provide more education opportunities for their children and increase the social participation of extension workers, enabling them to have more knowledge about agriculture. Compared to the previous lake farm, the yield of most crops increased.

The above research is based on Ahire (2000); Nipanikar (2006); Kulkarni (2009).

The correlation coefficient shown in Table 1 clearly shows that cultivation is effective and its positive effect is 1. This percentage is important in terms of education level, social participation energy, annual income, use of agriculture and agricultural practices. Agricultural effort has a significant 5% relationship with land ownership and knowledge. There is a relationship between age, employment, and changes in agriculture, but it is not very large. Therefore, the negative hypotheses H01.2, H01.3, H01.4, H01.5, H01.6, H0.7 and H01.8 were rejected and the other hypotheses were accepted. This means that there is a positive and non-significant relationship between age and occupation.

Because beneficiaries are more flexible and more educated, have social participation, use more agricultural practices, source more information sources and plant more. The present results are also in agreement with the works of Chavai *et al.* (2015).

Table 1: The distribution of the beneficiary profile reflects changes in cropping patterns, crop yields and cropping intensity.

Sr. No.	Independent variables	Cropping pattern 'r' value	Crop production 'r' value	Cropping intensity 'r' value
1.	Age	0.133 NS	-0.057 NS	0.107 NS
2.	Education	0.192*	0.251**	0.290**
3.	Social participation	0.431**	0.249**	0.346**
4.	Annual income	0.312**	0.266**	0.309**
5.	Land holding	0.303**	0.196*	0.186*
6.	Farming experience	0.322**	0.224*	0.360**
7.	Use of farming App	0.241**	0.383**	0.248**
8.	Source of information	0.184*	0.217*	0.196*
9.	Occupation	0.142 NS	0.155 NS	0.163 NS

* = Significant at 0.05 level of probability; ** = Significant at the 0.01 level of probability; NS = Non- significant

B. Relationship of profile of beneficiaries with economic change

The correlation results shown in Table 2 clearly show that job creation has a positive impact on education, social participation, annual income, land ownership and use of agricultural practices at the 1% significance level. Employment creation has a 5% relationship with agriculture and employment. There was a positive but non-significant relationship between age and change in job creation. Therefore, the negative hypotheses H01.2, H01.3, H01.4, H01.5, H01.6, H0.7, H01.8 and H01.9 were rejected and the other hypotheses were accepted as true. This shows that age has a positive and insignificant relationship with changes in job creation. Working hours also increase as beneficiaries will be more flexible and better educated, which will lead to greater participation and increased use of information technology as well as agriculture. The findings are similar to Nakhate (2006).

The relationship between the results presented in Table 2 clearly shows that annual income has a positive relationship with education, social participation, annual income, land and use of agricultural practices with 1% significance. Annual income has a similar rate in the business and information fields, at 5%. There is a positive and non-significant relationship between agriculture and annual income changes. There is a negative and non-significant relationship between age and change in annual income. Therefore, the null hypothesis of non-significant variables is accepted. Therefore, the negative hypotheses H01.2, H01.3, H01.4, H01.5, H01.6, H0.7, H01.8 and H01.9 were rejected and the other hypotheses were accepted as true. It shows that agriculture has a positive but insignificant relationship with the change in annual income, while age has a negative and insignificant relationship with the change in annual income. Annual income also increases as beneficiaries become more flexible and educated, leading to greater use of agricultural and textile products and greater participation.

The present results are also in agreement with the works of Chavai *et al.* (2015).

Table 2: Distribution of beneficiary profile regarding employment creation and annual income.

Sr. No.	Independent variables	Employment generation 'r' value	Annual income 'r' value
1.	Age	0.050 NS	-0.143 NS
2.	Education	0.271**	0.317 **
3.	Social participation	0.310**	0.332**
4.	Annual income	0.324**	0.317**
5.	Land holding	0.248**	0.328**
6.	Farming experience	0.180*	0.130 NS
7.	Use of farming App	0.242**	0.297**
8.	Source of information	0.285**	0.181*
9.	Occupation	0.214*	0.191*

* = Significant at 0.05 level of probability; ** = Significant at the 0.01 level of probability; NS = Non-significant

C. Relationship of profile of beneficiaries with social change

The correlation value in Table 3 Clearly shows that property ownership has a 1% correlation with education level, social participation, annual income and Practice farming use. Property related to labor and land ownership is 5%. There is a strong and insignificant relationship between agriculture and knowledge and asset transfer. There is a negative and non-significant relationship between age and property turnover rate. Therefore, the negative hypotheses H01.2, H01.3, H01.4, H01.5, H01.6, H0.7, H01.8 and H01.9 were rejected and the other hypotheses were accepted as true. This means that agricultural knowledge and information have a positive and non-significant relationship with changes in availability, while age has a negative and non-significant relationship with changes in assets. Ownership of equipment also increases as beneficiaries become more flexible and better educated, leading to greater participation and greater use of agriculture.

The research is supported by Ahire (2000); Nakhate (2006).

The correlation coefficient in Table 3 clearly shows that educational change has a 1% correlation with education level, social participation, annual income, and use of agriculture and Practice agriculture. Educational variables have a 5% correlation with land ownership, information technology, and employment. There is a negative and non-significant relationship between age and change in educational achievement. Therefore, the negative hypotheses H01.2, H01.3, H01.4, H01.5, H01.6, H0.7, H01.8 and H01.9 were rejected and the other hypotheses were accepted as true. This shows that age has a negative and irrelevant effect on educational change. Educational change increases as beneficiaries become more resilient and better educated; this leads to greater participation, greater use of agriculture and Informative knowledge. This means that as the level of education, land tenure, annual income, social participation and knowledge increases, the education of the household also increases. The reasons for this include the construction of agricultural ponds and the increase in agriculture; Most of the beneficiaries are engaged in agriculture and their families are also engaged in agriculture. For this reason, more production is obtained from the field and sold in the market. The money raised can be used to teach children how to build a farm pond. Education is inversely proportional to the improvement in agricultural pools.

The findings are supported by Ahire (2000); Nakhate (2006); Deshmukh (2016).

The correlation coefficient shown in Table 3 clearly shows that farm ownership has a 1% relationship with annual income and land insurance. There is a relationship between 5% of agricultural equipment ownership and education, community participation, agriculture, knowledge and employment. There is a positive and non-significant relationship between age and changes in farm equipment used and farm ownership. Therefore, the negative hypotheses H01.2, H01.3, H01.4, H01.5, H01.6, H0.7, H01.8 and H01.9 were rejected and the other hypotheses were accepted as true. This suggests that age and farm practice use have a positive but not positive relationship with changes in farm ownership. Farm ownership has also increased as beneficiaries have changed and become more educated, resulting in greater participation and knowledge. Those who benefit from agricultural pools are more educated, own land and have annual income, so they are willing to use technology to farm.

The present results are also in agreement with the works of Narayan Gowda (1992); Pimparikar (1994); Ahire (2000).

Table 3: Classification of the relationship between the beneficiary profile and properties, changes in the family's education and property use.

Sr. No.	Independent variables	Material possession 'r' value	Change in to education of family member 'r' value	Implement possession 'r' value
1.	Age	-0.100 NS	-0.076 NS	0.040 NS
2.	Education	0.287 **	0.289**	0.232*
3.	Social participation	0.301**	0.262**	0.184*
4.	Annual income	0.237**	0.252**	0.307**
5.	Land holding	0.180*	0.198*	0.274**
6.	Farming experience	0.084 NS	0.294**	0.206*
7.	Use of farming App	0.272**	0.264**	0.157 NS
8.	Source of information	0.172 NS	0.214*	0.212*
9.	Occupation	0.215*	0.226*	0.226*

* = Significant at 0.05 level of probability; ** = Significant at the 0.01 level of probability; NS = Non- significant

CONCLUSIONS

India has a long history in tank technology. There are reservoirs to collect water in all parts of Rajasthan. A number of shelter type ponds are required to collect excess rainfall from the land.

Economic change is measured as job creation and changes in annual personal income; beneficiaries, farm pool creates average job after opening the field.

The study shows that the average crop yield between Kharif and Rabi has generally increased. While the average productivity of kharif plants increased by 16.20 percent, 7.17 percent, 16.64 percent and 17.52 percent, respectively, compared to the previous year, the average productivity of Bajra, lima gram, peanut and bush increased, while the time average productivity of kharif plants did not change. Seen: Wheat. The percentage change in barley, mustard, mung beans and peas was 13.56%, 7.54%, 24.36%, 16.71% and 13.68%, respectively. As for vegetables, the averages of pepper, eggplant, okra and tomato changed with percentage changes of 8.25%, 11.39%, 17.23% and 14.98%, respectively.

After construction of farm dams, most of the beneficiaries (42.50% of the respondents) earn annual income in the range of Rs. 400,000 to Rs. 600,000, indicating that 31.66% of the beneficiaries earn in the range of Rs. 200,000 to Rs. 14.17% of the respondents have an annual income of over 600,000 rupees and only 11.67% of the respondents have an annual income of over 600,000 rupees. Up to 200,000 rupees of farmers' annual income was benefited. The annual income change after the construction of farm ponds is 24.84%.

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