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IMPACT OF CROP LOAN ON ADOPTION IMPROVED TECNOLOGY IN CULTIVATION OF HYBRIED RICE: EVIDENCE FROM VLLAGE LEVEL STUDY IN STATE OF ODISHA

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Abstract: India having the agriculture based economy and people mostly dependent on agriculture as primary source of income. To improve the agriculture based economy emphasis has been given to crop loan and credit. In Orissa majority of the people derive their livelihood from agriculture. In this study five villages of Karanjia block are selected at random. Selected villages are Amduma, Saandeuli, Andharjhori, Rasmtala and Purna Pani.. The analysis revealed that marginal, small, medium and large size groups of land holding constitute at 39.07 per cent, 22.62 per cent, 33.79 per cent and 4.52 per cent of the total sample respectively. Out of 80 crop loan respondents the marginal, small, medium and large farmers constitute 66.25 per cent (53), 20.00 (16) and 10.00 (8), and 3.75 (3) per cent respectively. The study further reveals that 80 to 90 per cent of the sample farmers cultivate paddy, which is the staple food for the region. Pulses, oilseeds and vegetables are also grown by the sample farmers. Paddy and vegetables dominate the cropping patter in district.

The analysis further revealed that the credit flow per acre to small and marginal farmer is observed to be more than other farm sizes. The recovery performance of loans in case of loan borrowers has increased marginally at 20.00, 21.25, 6.25 and 6.67 per cent for using HYV seeds, fertilisers, insecticides and pesticides and weedicides respectively.

INTRODUCTION

When the country faced the problem of food shortages in the early sixties, agricultural public policy aimed at increasing productivity and production of food grains to meet this challenge. The introduction of dwarf wheat and rice varieties, which were highly responsive to use of fertilisers and irrigation, fortunately coincided with this period. The farmers were hesitant to adopt modern technology, which was new and untested in their fields. Secondly, their levels of income were low due to low productivity of crops. Therefore, agricultural credit policy aimed at increasing the flow of institutional credit at reasonable rates of interest to the agriculture sector. The policy measures adopted included strengthening of the cooperatives,

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nationalisation of scheduled commercial banks, fixing targets for lending to agriculture, launching new schemes like service area approach and lead bank scheme, creation of Regional Rural Banks and apex national level bank namely, National Bank for Agriculture and Rural Development (NABARD).

Two issues are involved in agricultural lending in India. The banking sector has to cater to a very large number of small borrowers spread over a very large area. Secondly, size of the loan is very small. The small and marginal farmer constitute more than 80 per cent of farmers and some of the areas in India are located in remote places and catering to their requirements becomes very difficult and costly. From the borrowers point of view, access to institutional credit specially for small, resource poor and illiterate farmers gets inhabited as the procedural and documentation requirements are cumbersome and time consuming and raise the cost of borrowing for the farmers. On the other hand, access to non-institutional agricultural credit in regarded to be very simple where transaction cost is negligible and involved no procedural complications .Some of the empirical studies have brought out this fact. The transaction cost in case of non-institutional loans was negligible where as it was quite high in the case of institutional loans. In case of CBs they ranged between 3 and 5 percent per annum while in case of co-operatives they were lower than 3 percent. The transaction cost was the highest in case of RRBs due to small size of the loans.

Economic viability is a major issue in case of rural financial institutions as the range of services provided by them is limited and institutions generally are regarded as the providers of loans only. Secondly, the recovery of the loans in the agricultural sector is poor. Empirical studies have suggested many reasons for high rate of loan defaults in the agriculture sector. Low level of income generation especially as small sized farms, diversion of loans to unproductive proposes, in adequacy of the loans leading to their diversion and wilful default under the hope of their waiver are estimated to be the important ones. Besides high rate of loan default, which was estimated to be 37 per cent ending March 2000, the recovery performance varies greatly across regions/ states and financial institutions. It can be seen that the rate of recovery was very high in the relatively developed states like Punjab, Kerala, Haryana & Tamil Nadu, where it was greater than 80 per cent. It was in the range of 60-80 per cent in Andhra Pradesh, Gujarat, Karnataka, Maharashtra, Rajasthan, Madhya Pradesh and Uttar Pradesh. It was very poor in eastern and northern states except West Bengal. There is one good feature that where the use of institutional credit was higher their recovery

performance was also better. The correlation co-efficient between per ha use of credit and rate of recovery was 0.75.

Broadly speaking, there are three types of challenges before the rural financial institutional to cater to the agriculture sector for accelerating its growth viz; the flow of agricultural credit has to be increased, the accessibility of formal credit to rural poor of disadvantaged and agriculturally less developed regions has to be improved and the economic viability of the rural banking operations has to be ensured over time.

Methodology:

The sample technique adopted for this study was multistage stratified random sampling. For this study Karanjia block of Mayurbhanj district was selected purposively. Then 5 villages were randomly selected in the second stage. Then 80 farmers are selected at randomly consisting of marginal (0-1 ha), small (1-2 ha) medium (2-4 ha.) and large farmers (> 4 ha). 16 from each village representing different categories having the total sample size of 80.

Analytical Tools:

This test was applied to ensure the degree of association between numbers of variables and the factors of the respondents with their level of achievement.

$$r = \frac{N\sum xy - \sum x)(\sum y)}{\sqrt{N\sum x2\left(\sum x\right)^2 \quad \left|N\sum y2\sum y\right|^2}}$$

Where,

r = Coefficient of Correlation

N = No. of pairs to be correlated

x and y = variables being correlated

Test of Significance:

It was used to know whether the observed sample correlation is statistically significant to indicate correlation in the population. It was obtained by using the formula.

$$t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{N-2}$$

Where, t = calculated value of statistics student's 't' from the sample observations which has N-2 degree of freedom

Results and Discussion

An analysis of basic characteristics of the sample households is considered to be significant as it provides relevant background information against which the analysis is to be attempted.

The detailed socio-economic profile and structure of the sample households according to the farm size groups have been discussed.

Age of the sample farmers

The distribution of sample Loan holders across the age (Table-1) reveals that in case of loan beneficiary 53.75 per cent are in the age group of 20-35 years as compared to 32.5 Percent in 36-50 years age and 13.75 Per cent above 50 years age group. The study includes 80 farmers as the sample for the study. It indicates that majority of the sample farmers are below 50 years age and are expected to have better managerial ability.

Table 1: Age of the Respondent

Age group	**Crop loan**	
	No. of person	**Percentage**
Less than 20 years	0	0
20-35	43	53.75
36-50	26	32.5
Above 50 years	11	13.75
Total	80	100

Source: Field Study

Education of the Sample farmers

Majority of the respondents in the sample had school education (60 per cent). 25 out of 80 respondents had formal education (Table-2.). Majority of the respondents (83.75 per cent) have formal education as against 16.25 per cent not having any formal education. It is envisaged that higher the level of education, the transaction would be easier for the loan holders.

Table 2: Education of the Sample Farmers

Educational qualification	Crop Loan	
	No. of person	Percentage
No formal education	13	16.25
School education	48	60
Degree and above	19	23.75
Total	80	100

Source: Field Study

Categorization of Sample Farmers

The sample respondents have been classified into marginal (0-1ha.) small (1-2 ha.) and medium (2-4 ha.) and large (> 4ha.) depending upon their operational size of holding. (Table 3) out of 80 respondents the marginal, small, medium and large farmers constitute 66.25 per cent (53), 20 (16), 10.00 (8) per cent and 3.75 (3) per cent respectively. Thus majority of the respondents are small farmers in taking crop loan.

Table 3: Categorization of the Sample Farmers

Types of farmer	Land holding (ha.)	Crop Loan		
		No. of sample farmer	Percentage	Avg. size of sample farm
Marginal	0-1	53	66.25	0.54
Small	1-2	16	20.00	1.65
Medium	2-4 ha	8	10.00	2.92
Large	> 4 ha.	3	3.75	4.13
Total		80	100	-

Source: Field Study

Nature of Cultivation

The study revealed that nearly 80 to 90 per cent of the sample farmers cultivate paddy, which is the staple food for the region. (Table 4) 50 to 60 per cent sample farmers cultivate pulses and 30.00 to 50.00 per cent of them cultivate oilseeds. Only 20 out of 80 farm households are cultivating vegetables.

Table 4: Nature of Cultivation

Cultivation	Crop Loan		
	Total sample	No. of person	Percentage
Paddy	80	64	80.00
Pulses	80	16	20.00
Oilseeds	80	40	50.00
Vegetables	80	48	60.00

Source: Field Study

Cropping Pattern of Loan Borrowers

Table 5: Percentage Distribution of Different Crops in Cropping Pattern of Loan Borrowers

(Area in percentage)

Size groups in hectare	Paddy	Pulses	Vegetables	Oil seed	Others	Total
I	90.13	3.22	4.39	1.15	1.09	100
II	90.14	3.07	4.34	0.83	1.62	100
III	90.53	2.98	4.01	3.29	0.00	100
IV	90.68	2.58	4.00	1.52	1.22	100

Source: Field Study

Paddy and pulses dominate the cropping pattern more than 80.00 per cent area for all categories of farmers followed by oilseeds and pulses (Table 5 and 6). It is observed that loan borrowers are put more percentage of their cultivable land under paddy and pulses crops. The cropping intensity, which is considered as indicators of agricultural growth, is found to be 198.18 for marginal, 201.79 for small, 201.93 for medium farmers and 208.2 for large farmers. The magnitude of cropping intensity is 201.79 and 201.93 in case of small and medium farmers respectively. Thus there is no significant difference in the cropping pattern of the sample farmers.

Table 6: Cropping Pattern of the Sample Farmers

(*Area in ha.*)

Crop	**Farm size category**				
Kharif season	**Loan Borrowers**				
	Marginal	Small	Medium	Large	Pooled
Paddy	17.42	22.11	26.34	29.15	19.69
Vegetables	0	0.32	0.42	0.75	0.13
Others	0.42	0.80	0	0.52	0.46
Rabi season					
Paddy	17.02	22.51	26.53	29.23	19.52
Pulses	1.23	1.52	1.74	1.98	1.36
Oil seed	0.44	0.41	1.45	1.54	0.57
Vegetables	1.68	1.83	1.92	1.98	1.75
Total cropped area	38.21	49.50	58.4	65.15	43.55
Total operated area	19.28	24.53	28.92	37.17	21.96
Cropping intensity	198.18	201.79	201.93	201.98	199.42

Source: Field Study

The credit gaps per acre in case of paddy cultivation are Rs. 600.75, Rs. 354.83, Rs. 227.27 and Rs. 67.38 for marginal, small, medium and large farmers respectively. The percentages of credit gap are found to be 31.27, 22.67, 26.81 and 12.02 for the above category of farmers respectively in Table-7.

Table 7: Disbursement of Crop Loan and Credit Gap on Different Size of Land Holding

Farmer category	Amount demanded (Rs.)		Amount sanctioned (Rs.)		Credit gap (Rs.)		Percent-age of credit gap amount
	Per farm	Per acre of paddy	Per farm	Per acre of paddy	Per farm	Per acre of paddy	
Marginal farmers	1120.12	1920.92	896.29	1320.17	223.83	600.75	31.27
Small farmers	2089.95	1565.52	1615.90	1210.69	4740.05	354.83	22.67
Medium farmers	1989.19	847.46	1523.06	620.19	466.13	227.27	26.81
Larger farmers	1820.20	560.67	1365.50	493.29	454.70	67.38	12.02
All sampled farmers	1754.87	1223.64	1350.19	911.09	404.93	311.81	23.19

Source: Field Study

Adoption of Technology and Recovery of Crop Loan

The result reveals that before availing loan, only 50.00 per cent farmer used HYV improved seed of paddy whereas, the position increased to 70.00 per cent after the loan was taken. The fertilisers' consumption for paddy crop before taking the loan was 66.25 per cent and after the loan was taken it was 87.50 per cent. There was an increase of 6.25 and 6.67 per cent in the adoption of insecticides and weedicides respectively, after advancing the crop loan as is given in Table-8.

Table 8: Revealed Correlation Coefficient between Adoption of Improved Technology and Recovery of Crop Loan

Improved	Before taking loan		After taking loan		Increased
	Number	%	Number	%	
HYV seed	40	50.00	56	70.00	20.00
Fertilisers	53	62.25	70	87.50	21.25
Insecticides and pesticides	5	6.25	10	12.50	6.25
Weedicides	-	-	2	6.67	6.67

Source: Field Study

Table-9: Correlation between Adoptions of Improved Technology in Paddy Cultivation & Recovery of Crop Loan

Size groups of farmers	Amount borrowed (Rs.)	Amount repaid (Rs.)	Re-paying per-centage	Percentage increase in adoption of improved farm practices
Marginal	1228.57	190.37	15.50	9.39
Small	1963.96	600.65	30.58	26.05
Medium	1889.20	216.19	11.13	64.35
Large	1687.50	-	-	100.00
All sampled farmer	1692.31	250.30	14.30	49.95

Source: Field Study

Average amount borrowed was Rs.1, 692.31 while repayment was only Rs.250.30 that is 14.30 per cent. The recovery percentage was found to be highest on small size groups 30.58 per cent while it was lowest on medium size group of farmer. 11.73 per cent and nil on large size group of the farms. The first inference that can be drawn from the study was that small farmer's repayment of loan continued to be below the average recovery percentage. In case of large size group, the recovery position was far from satisfactory in Table 9.The crop loans aims at adequate and timely support to the farmers to meet credit needs of crop production and ancillary activities. The uses of crop loans have been found encouraging among weaker sections of the society. The farmers with small land holdings and generally having low income are getting exposed to the benefits from crop loan. When farmers have pending problems which need to be addressed urgently, there is higher probability of credit to be diverted and agricultural operations turn to be neglected. The procedure of loan disbursement may be made simple so that less educated and illiterate households will have more access to institutional sources of credit through crop loans. Finally it is concluded that majority of farmers received short-term crop loan from the co-operative bank. They took crop loan for the purpose of HYV seed, fertilisers, insecticides, pesticides and weedicides. The cause for poor recovery was due to crop failure which was indeed due to natural calamities.

References

[1] K. Singh, A.K. Koshta & M.R. Chandrakar (2003), "Availability, utilisation & repayment of crop loan a case study of rice growers under district Central Cooperative Bank, Raipur of Chhatisgarh State" *Indian cooperative review*, vol. 42, No.2, 139-148.

[2] Abdullah-AI-Mumun; Miah, M.A.M; Farid-Ahmed, and Haque; A.F.M.M (2001). "Credit use efficiency of BRAC, agricultural credit programme in a selected area of Bangladesh", *Economic Affairs- Calcutta,* 46 (1) 56-64.

[3] Adinew Abate, T.R. Keskava Reddy, N. Mahesh & Lalit AC hoth (2002) "Magnitude & growth of Institutional Credit flow to Agricultural Sector in Karnataka" *Indian Cooperative Review* Vo.39, No.3, 194-212

[4] Alison-Oguru, -E-A; Daba-lbifubara-Bob-Manuel (2000). "Effects of economic liberalisation on the flow of commercial banks credit to farmers in Rivers State, Nigeria". *Tropicultura;* 18 (3), 151-157.

[5] Anil-Bhulmall (2000), "A co-operative credit society impact on credit demand in agricultural production", *Economic Affairs Calcutta;* 45 (2), 86-91.

[6] Bera-B, Santra-B (2001), "A study of some socio economic feature of defaulting farmer-borrowers of cooperative credit in West Bengal", *Economic Affairs Calcutta,* 46 (91); 18-26, 38.

[7] Chnasitiova, Z. (1999), "Agricultural finance in Slovakia and credit infrastructure", *Zamedelsk–Ekonomika*, 45 (10); 443-448.

[8] Debabrata Das (2001), "A study on repayment behaviour of sample Borrowers of the Arunachal Pradesh State Cooperative Apex Bank LTD" Indian Cooperative review Vol. 39 No.2, 139-147.

[9] Dinabandhu Mahal (2002) "Management of recovery A study of Parsik Janata Sahakari Bank Ltd." *Indian Cooperative Review* Vo.39, No.3, 213-221.