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Heterogeneity among Size Groups of Operational Holdings

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***Abstract* – This paper attempts to examine whether it heterogeneity is exist or not among size groups of operational holding regarding to application of various inputs like that Chemical Fertilizers, Farm yard Manure, Pesticides, utilization of different types of seeds like certified, Notified, Hybrid, Institutional loans (short, medium, large). This paper also tries to find out the important factors which create low productivity in agriculture of agrarian farmers. The Data was used by all India report of input survey 2000-2001 and 2006-2007. On the basis of this secondary data, variations were checked through statistical tool of the analysis of variance (ANOVA).**

***Keywords* – Operational Holding, PACS (Primary Agricultural Credit Societies), Primary Land Development Banks (PLDB/SLDB), Commercial Banks (CBB), Regional Rural Bank (RRBB)**

I. INTRODUCTION

Agricultural research is presently being conducted by the Indian Council of Agricultural Research, various Agricultural Universities and other institutions for involving high-yielding varieties of seeds for different crops, application of various inputs, and distribution of short, medium and large loans. It seems that somehow homogeneity or heterogeneity between states, regions, caste, and groups regarding above contents according to during the survey of 2000-2001 and 2006-2007. However, there seems to be a general consensus that in the early period of the green revolution, large farmers benefited much more from new technology as compared with the small and marginal farmers. This was not unexpected as the new technology called for substantial investments which were generally beyond the means of a majority of this country's small and marginal farmers. Only relatively rich farmers who were in a position to 'afford' the new strategy which is a package programme involving the use of high-yielding varieties of seeds in combination with other inputs like irrigation, fertilizers, pesticides, etc. adopted it. This paper is focusing the differences between size groups with respect to their various contents which above mentioned. For analyzing this study the concept of operational holding was used & grouped as follows:

S. No.	Operated area	Size-Group of Holding
1	Below 1 ha.	Marginal
2	1 ha. And above but below 2 ha.	Small
3	2 ha. And above but below 4 ha.	Semi-medium
4	4 ha. And above but below 10 ha. And	Medium
5	10 ha. And above	Large

Operational Holding: All land which is used wholly or partly for agricultural production and is operated as one technical unit by one person alone or with others regard to the title, legal form, size or location**.**

Operational Holder: An Operational holder is the person who has the responsibility for the operation of the agricultural holding and who exercises the technical initiative and is responsible for its operation. He may have full economic responsibility or may share it with others. The operational holder may be individual/Joint/ Institutional.

1) Individual: if the holding is being operated either by one person alone or by group of persons who are the members of the same household it will be considered as an individual holding.

2) Joint: if two or more persons belonging to different households, share jointly as partners in the economic and technical responsibility for the operation of an agricultural holding, such holding would be considered as joint.

3) Institutional: Holdings such as government farms, sugarcane factories farms, co-operative farms, lands managed by trust would be treated as institutional.

II. REVIEW OF LITERATURE

Whether it is inequalities between size groups have increased or not due to the adoption of new agricultural strategy. It is not easy to determine. This is due to the reason that studies conducted by different scholars have yielded different results. Moreover, the conclusions are often conducted by the preferences and biases of the researchers.

This shifted the advantage of productivity per acre in favour of big farmers. This advantage, in turn, got reflected in the distribution of benefits from new technology in the regions that adopted it. Such trends were clearly indicated in the studies conducted by Francine R. Frankel, G. R. Saini and Pranab Bardhan covering the early years of the green revolution. There is a difference of opinion as far as the later phase of the green revolution is concerned. According to some economists with the passage of time, the supply of institutional credit to small farmers improved (although a major share continued to be cornered by the large farmers). As a result of this and also because of improved extension services, small farmers started adopting new technology rapidly. Thus, over a period of time, green revolution started benefiting small farmers as well. Usha Nagpal, George blyn, john Richard Westly, G.S. Bhalla and G.K. Chandha subscribe to this view.

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III. Objectives

1) To identify whether any significant difference among the levels of consumption of various inputs chemical fertilizers, farmyard, pesticides by within size groups.
2) To examine the Heterogeneity among Agricultural Loan that is provided to size Groups of operational Holdings.
3) To analysis Heterogeneity among utilization of different types of seed by size groups of operational holding for agricultural purpose.

IV. Hypothesis

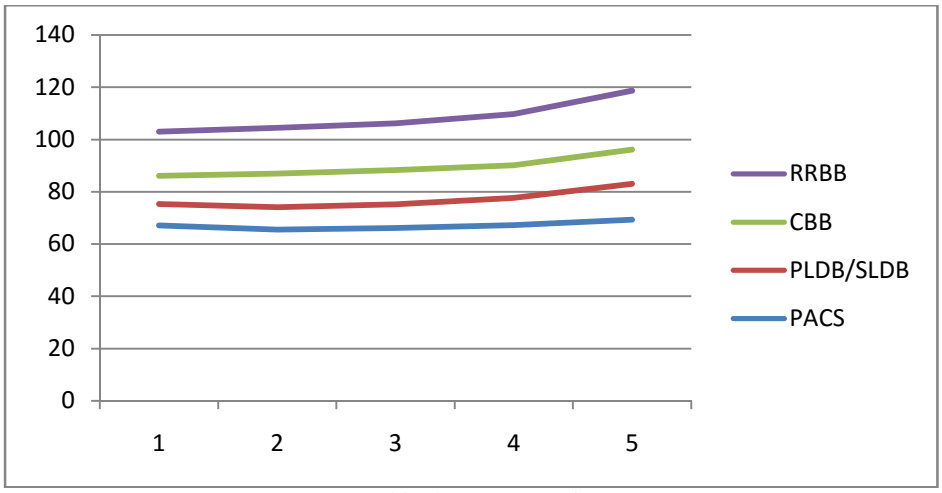
1) There is no significance difference between size groups and agricultural Loan
2) There is no significance difference between size groups of operational holding to the corresponding Institutional credit.
3) There is no significance difference between size groups for unirrigated areas treated with chemical fertilizer, farmyard, and pesticides.
4) There is no significance difference between size groups and utilization of different types of seeds.

V. Institutional Credit

Generally Primary agricultural co-operative societies (PACS), Commercial Banks (CBB), Regional Rural Banks (RRBB) and Land development Banks (PLDB/SLDB) provides loans to agriculture sector in India. Following table represents contribution of various banks to providing loans for various sizes of operational land holders in India. It is indeed that PACS have large contribution to providing loans for each size of land holders, although there is a positive relationship between size of operational land holding and loans provided through PLDB, CBB and RRB.

S.No.	Size Groups	Percentage of operational holdings availing credit from			
		PACS	PLDB/SLDB	CBB	RRB
1	Marginal (Below 1.0 ha.)	67.1	8.2	10.8	16.8
2	Small (1.0 -1.99 ha.)	65.5	8.6	12.9	17.4
3	Semi-Medium (2.0 -3.99)	66.1	9.1	13.1	17.8
4	Medium (4.0-9.99 ha)	67.2	10.4	12.5	19.6
5	Large (10.0 ha. And above)	69.3	13.7	13.1	22.5

Data Sources: All India report on Input Survey 2000-2001



Graphical Representation

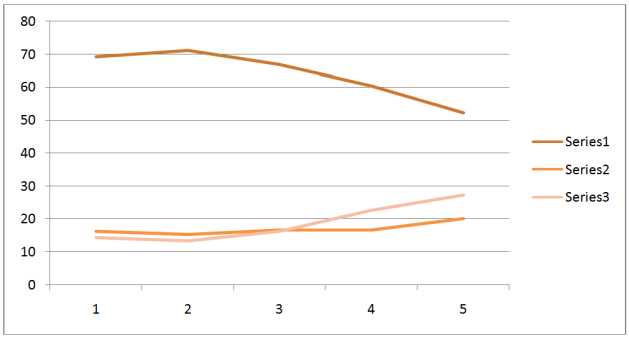
ANOVA TABLE						
Source of variation	**Sum of Square**	**Degree of Freedom**	**Mean Square**	**Variance Ratio (F)**	**P-Value**	**F crit**
Between rows	39.313	4	9.82	**8.427224**	0.001776	**3.259167**
Between colums	10849.58	3	3616.52	3100.987	1.34E-17	3.490295
Error	13.995	12	1.166225			

Data Interpretation: The table shows hypothesis is rejected. Statistical value is greater than table value or P value is also greater than the value of (5%) Level of Significance. Hence, there is a significance difference between size groups of operational holding to corresponding institutional credit. Similarly, there is a significant difference between different types of sources for institutional credit.

Institutional Loan:

Short term Loan	Medium term loan	Large term Loan
69.1	16.4	14.5
71.1	15.4	13.5
66.9	16.7	16.4
60.4	16.8	22.8
52.2	20.1	27.4

Data source: All India report on Input Survey 2000-2001.



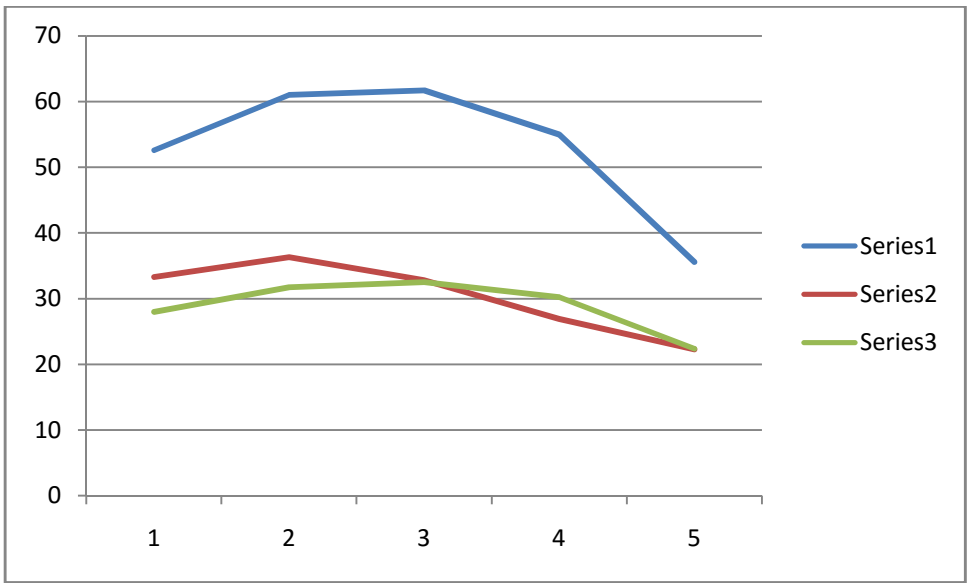
ANOVA TABLE						
Source of variation	Sum of Square	Degree of freedom	Mean Square	F-statistical Value	P-Value	F-Critical Value
Rows	0.024	4	0.006	0.000122	1	3.837853
Columns	7043.409	2	3521.705	71.90014	7.71E-06	4.45897
Error	391.844	8	48.9805			
Total	7435.277	14				

Data Interpretation: This table shows that on the basis of statistical value hypothesis is rejected. Hence, there is significance difference between different types of loans which was provided to size groups. But on other side, Hypotheisis is accepted. Hence, there is no significance difference among size groups regarding to loans to be provided.

Unirrigated areas treated with chemical fertilizers, farm yard, and pesticides 2006-07:

Chemical fertilizers	Farm yard	Pesticides
52.6	33.3	28
61	36.3	31.7
61.7	32.8	32.5
55	26.9	30.2
35.6	22.3	22.4

Data Sources : All India report on Input survey 2006-07



ANOVA TABLE						
Source of variation	Sum of Square	Degree of freedom	Mean Square	F Statistical Value	P-value	F-critical value
Rows	507.1507	4	126.7877	7.705271	0.00753	3.837853
Columns	1851.729	2	925.8647	56.2676	1.94E-05	4.45897
Error	131.6373	8	16.45467			
Total	2490.517	14				

Data Interpretation: This table shows that hypothesis is rejected. F statistical value is greater than F-critical value. Hence, There is significance difference between chemical fertilizers, farmyard, pesticides etc. with treated in un irrigated areas with respect to among size groups.

VI. Conclusion

From the analysis, we conclude that there is significance difference between uses of chemical fertilizers, farmyard and pesticides with treated in unirrigated with respect of among size groups. we also conclude that there is heterogeneity between different types of loans which was provided to size groups. This study explore that on the basis of testing the analysis of variance (ANOVA), there is significant difference between size groups of operational holding to corresponding institutional credit.

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