

**Report on Baseline Survey of Farmers
under the Pilot Project for Augmenting Farm Productivity in
Balasore District, Odisha**

Executive Summary

Supported by
**Department of Economic Analysis & Research
National Bank for Agriculture & Rural Development, Mumbai**



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(With data collection support from the NABARD Regional Office, Bhubaneswar)

Acknowledgement:

This baseline study was initiated and supported by the Department of Economic Analysis and Research (DEAR), NABARD, Mumbai. I would like to thank the DEAR, Mumbai, NABARD Regional Office, Odisha and Xavier Institute of Management, Bhubaneswar (XIMB) for the kind financial support and administrative support in undertaking this study. The ground support from the Project Management Unit (PMU) in Balasore district for data collection has been very crucial for the accuracy in data collected and the timely completion of the study and I thank the PMU for its support.

There have been many who were involved from the above institutions and I thank all of them for their support and assistance. To name a few, I want to thank Dr. R N Kulkarni, CGM, and Dr. B V S Prasad DGM, from DEAR, Mumbai, Shri KK Gupta, former CGM, Odisha and Shri S K Kale CGM, Odisha, Shri B Sridhar, Incharge-PMU, Balasore, and Shri SM Sahasrabudha, GM, Shri B K Mishra, DGM, Dr. GHV Ratna Babu, AGM, and Dr. D P Dash, AGM from the Regional Office, Odisha. I also thank the Director and the Financial Controller of XIMB for facilitating this study.

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1.0 Executive Summary

The National Bank for Agriculture and Rural Development (NABARD) in association with the Government of Odisha has initiated a unique intervention in the country that is to Augment Farm Productivity in Balasore District, Odisha in 2012. The lead crops planned for the pilot project include cereal (paddy-kharif and paddy-rabi), pulses (green gram and black gram), and oil seeds (ground nut & mustard). The main objectives of the project include (a) enhance agricultural productivity, and (b) enhance income of farmers.

The **objective of the baseline survey** has been to assess the situation of the farmers prior to project intervention in terms of

- (a) Agricultural productivity including cost of cultivation of the above six crops,
- (b) Net income to farmers from these crops,
- (c) Agricultural practices and processes followed by the farmers and
- (d) Institutional support and services that farmers receive from PACS and other local institutions for agricultural extension services.

The baseline study report is to help NABARD and other stakeholder of the project to assess the impact of the three year pilot project at the end of project period.

Research Methodology: The baseline study was undertaken at three different levels viz., individual farmer level, farmer ecosystem level (village level) for each block, and district institutional level. Figure 1 and related field photos indicate the research process followed. The sample size of the survey at individual farmer level consisted of **4306 farmers** from about 240 GPs. Of these sample farmers, 1001 were Demonstration Farmers, 1957 were Master Farmers, 334 were Impact Farmers and 1014 were General/Regular Farmers.

Key Findings:

A. Productivity

1. For cereals, the average yield of paddy (kharif) is about 16 quintals per acre and for paddy (rabi) is about 22 quintal per acre. There are few exceptions with high productivity of paddy i.e. up to 35 quintals per acre. This could be the case when farmers adopt proper SRI method of paddy cultivation.
2. For pulses, the present average yield of green gram is about 4 quintal per acre and that for black gram is about 5 quintals per acre.
3. For oil seeds, the average yield of ground nut is about 7 quintals per acre and that of mustard is about 3.4 quintals per acre.

B. Cost of Agricultural Inputs

4. For most of the farmers, the total cost of material input for paddy (kharif) is 2550 INR per acre. Where as the cost of material input for paddy (rabi) is 5000 INR per acre which is almost double the cost for paddy (kharif). The cost of material input for ground nut is INR 4600 per acre. This may also be due to the high input cost of seeds, chemical fertilizers and manure in the rabi season.
5. The prices of inputs from market like fertilizers seem to be higher in rabi season than in kharif season. This could be a mere demand and supply feature in market system. Since most farmers grow paddy in kharif season due to abundance/availability of water, the demand for fertilizers is high and hence the supply for fertilizers is also high. However, the presence of many dealers supplying fertilizers during this season makes the market supplied inputs like fertilizer cheaper in kharif season than in rabi season.
6. The cost of manure in rabi season is also more than that in the kharif season. This may also be due to higher demand than supply and that farmers at present are not planning well to retain sufficient cow dung from their own cattle stock and other plant-organic materials.
7. Other than inputs like chemical fertilizers and manure, the lower frequency of responses also reveals that there is less usage of other inputs like bio-fertilizers, micro-nutrients, soil amendments, and herbicides. This also suggests that the institution for delivery of chemical fertilizers is better developed than the delivery of other inputs.
8. The frequency of responses and usage of standard inputs is higher for paddy than other crops. This also suggest that the majority of farmers today are into cultivating paddy than other crops viz., pulses and oil seeds; although these crops may provide better income than paddy. In other words, majority of the farmers rely greatly on paddy (kharif) and they also invest more in this crop.
9. The focused group discussion also revealed that farmers tend to have been increasing their usage of inorganic fertilizers and chemicals over the years due to greater need of the same by the soil. They also seem to compete with each other in applying these chemical inputs to protect loss of crops from their individual small holdings. This behavior could be because their lack of understanding in the inter-connections of practices and the need for inter-dependence for greater productivity in the perspective of agriculture and ecosystem architecture.

C. Cost of Operations & Labor

10. The average total cost of operations and labor per acre is again highest for paddy with about INR 10650 per acre. The average cost of operation and labor for pulses and mustard is about INR 3500 per acre. The average cost of operations and labor for ground nut is about INR 7150 per acre.
11. The total cost of inputs and operations per acre for individual crops has also been estimated. The average total cost per acre for paddy (kharif) is about INR 13,650; for paddy (rabi) it is about INR 14,550; for green gram, it is about INR 4600; for black gram, it is about INR 4450; for ground nut it is about INR 10,270 and for mustard, it is about INR 6800.
12. The variation in the mean of different input costs and the operations and labor costs to farmers across the locations and different seasons appears to be linked to the lack of awareness among farmers on best practices and the deficiencies of the current institutional delivery system.

D. Marketing related Expenses

13. Average total marketing related expenses for paddy (kharif) is about INR 1085 and for paddy (rabi) is about INR 428. Similarly the average total cost of marketing for other crops varies about 200 – 300 INR.
14. The market commission paid to the intermediaries due to not meeting the quality standards, which the farmers often feel unjustified amount to about 50-75 INR for paddy. The commission charged by local traders and buyers in local markets on the other crops like pulses and oil seeds is higher. It is around INR 200 for green gram, ground nut and mustard and about INR 470 for ground nut.

E. Gross & Net Income by Farmers

15. The average total gross income for paddy (rabi) is about 19,134 INR as compared to 17,826 INR for paddy (kharif). Most farmers earn about 26,000 INR from paddy (rabi) than paddy (kharif) with about 15,000 INR. Among pulses, the average gross income from black gram is slightly higher than green gram. However, most farmers earn more money from green gram than from black gram. Among oil seeds, farmers earn more average income from ground nut than from mustard. While the average earning from ground nut is about 24,165 INR; it is only about INR 9000 from mustard.

16. The net income to farmers from different crops is quite revealing from this baseline study in Balasore district. On an average, the net income from paddy (kharif) is 14,640 INR; from paddy (rabi) it is 15,491 INR; from green gram it is 8,117 INR; from black gram it is 8,563; from ground nut it is 20, 696 INR; and from mustard it is 7,446 INR. Ground nut seems to help farmers earn more than staple crops viz., paddy and pulses.
17. About 14% - 29% of the farmers are making losses in all the crops that they are currently cultivating. In paddy (kharif) nearly 14% farmers show losses, in paddy (rabi) about 16% show losses, in green gram about 25% show losses, in black gram about 29% show losses and in ground nut about 15% show losses. Although farmers are hesitant to indicate their actual earnings, the large sample size suggests that is indeed a concern to observe that about one fifth of the farmers are currently making losses or making marginal income from agriculture.

F. Supply of Inputs, Technology, Credit & Infrastructure and Service Quality from different Agencies: Perceptions of Farmers

18. Among the various suppliers of seeds, the farmers in the present context give highest reliability to their own seeds in terms of choice, timelines and germination rate with an above average score of 4.26- 4.76 out of 7.0. The second best option that the farmers have is the supplies from the government department or government authorized dealers with scores ranging from 3.96–4.47 / 7.0. Private dealers and others score lesser than this below average scores.
19. With regard to industrially produced fertilizers and pesticides, the private dealers of these items tend to offer better service with scores of little over 5.0/7.0 than other institutions.
20. But for self finance, credit services from all other agencies viz., PACS, Gramya Banks, Commercial Banks, Private Money Lenders and others in terms of timely availability, adequate quantity, cost of credit and procedures and systems are below average to poor. While self finance may be timely, it is usually not adequate. Among the all other credit institutions PACS seems to be better than others on different parameters, viz., timely availability (3.97/7.0), adequate amount (3.62/7.0), favorable cost of credit (3.62/7.0), systems and procedures (3.38/7.0). The quality of credit services further reduces with Gramya Bank, Commercial Bank and Private Money Lenders and in this order.
21. On other services related to technology/machinery support, infrastructure for post harvest, storage and marketing, the existing institutions seem to provide poor quality service as perceived by the farmers. The quality of institutional support on technology seem to be below average to poor (below 2.42/7.0) on all counts viz., soil testing facility, technical

advice, ICT support on weather and agricultural practices, and ICT support for market prices of produce.

G. Agricultural Practices, Capacity, & Attitude: Perceptions of Farmers

22. With regard to use of improved/high yielding and quality seeds, farmers seem to be on moderate or average score (4.3/7.0). There seem to be less usage of hybrid seeds (2.53/7.0). The awareness and usage of variety of crops is below average that is with scores of 3.7-3.9 out of 7.0.
23. The present soil management by the farmers in general is below average on all counts. Soil testing is hardly undertaken by the farmers. While farmers are a little interested in paying for soil testing, there seem to be lack of this provision. Application of organic manure is rare. Use of plant biomass and use of crop residue is also poor. Use of lime and gypsum to improve the quality of soil is also rare. Interesting, although the overall satisfaction with regard to water balance of soil is just about moderate (3.73/7.0), it is better than the other practices of farmers to enrich their soil.
24. The farmers' awareness on integrated pest management is below average to poor at the moment (2.3/7.0). While the farmers seem to have near average understanding of the major pests and crop diseases (3.83/7.0) and also know of how to control them (3.54/7.0), they seem to be very poor to poor in terms of adopting organic methods of pest control (1.8/7.0) and mechanical means of weed control (1.91/7.0).
25. The usage of machinery at different stages of farming but for land preparation purposes is below average with scores of below 3.0/7.0. Usage of tractor / power tillers, etc for land preparation is between below average to average with a score of 3.76/7.0. For planting and harvesting, there is little use of machinery (1.45/7.0). The level of awareness among the farmers on the appropriate machinery for different farming activity is also poor.
26. The post harvest management practices of the farmers in today's context are also observed to be below average to poor. At present adoption of post harvest management practices is 2.23/7.0. Presumably, the post harvest losses are likely to be significant. However, the farmers perceive that they do not lose much from the post harvest losses. There seems to be lack of provision for marketing of the surplus farm produce with score of 2.81/7.0.
27. Training, capacity building and handholding on the best agricultural practices, building awareness on the inter-connectedness in agricultural system and hence appreciating interdependence and improving the institutional delivery system are keys to improving the practices and reducing cost of material inputs.

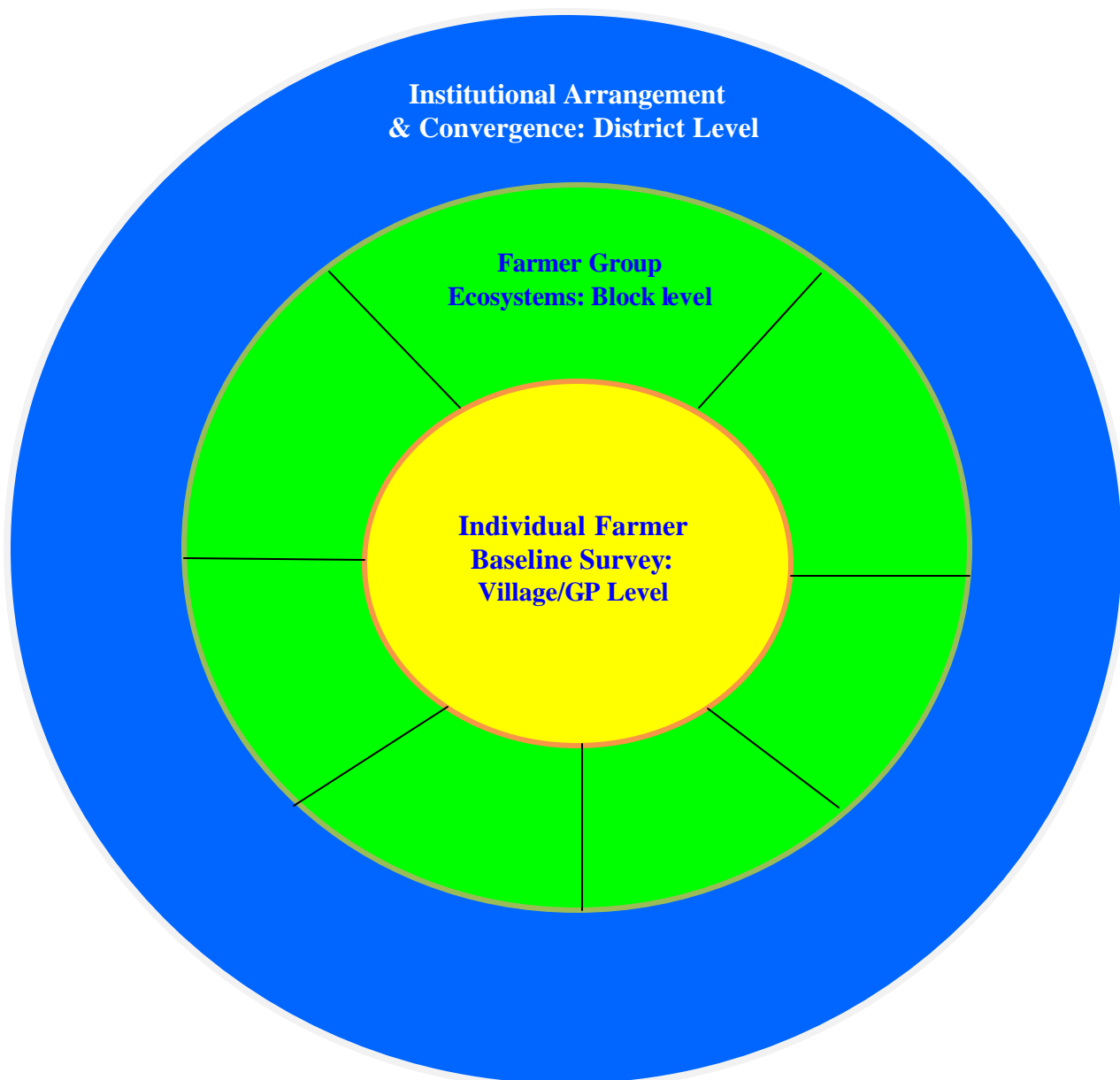
28. The small farmers seem to compete with each other in applying larger quantities of fertilizers and pesticides to ensure yield and protect loss of crops from their respective small land holdings. This behaviour could be because of their lack of understanding in the inter-connections of practices and the need for inter-dependence for greater productivity in the perspective of agriculture and ecosystem architecture.
29. In terms of availability of information relating to different farm inputs, better agricultural practices and market information, farmers at present seem to have below average information (2.67/7.0).
30. Most importantly, farmers in the pilot project are quite hopeful of this project to improve the productivity and net income of farmers in Balasore district (5.32/7.0). There is some willingness (3.71/7.0) to work with other farmers and to form farmer cooperative or producer organization for better efficiency.

Recommendations:

The ongoing pilot project in Balasore district is a well conceived project and should be pursued with full vigor and strength to augment farm productivity and net incomes to the small farmers from agriculture. Given the current characteristics of the complex agricultural ecosystem, variation in agricultural practices, short term behavior of small and vulnerable farmers and weak institutional arrangements for delivery of ecosystem services, I would like to suggest two key issues that need to be complemented for achieving the project goals and objectives.

1. Through regular training and social communication, farmers need to be made more and more aware about the inter-connectedness of agricultural practices and the critical need of better understanding of the logic of inter-dependence for greater productivity in the perspective of the agricultural ecosystem architecture.
2. Facilitate formation or revival and stabilization of local level optimally sized organizations owned and managed by the small farmers that can serve as a single window for delivery of the ecosystem services and provide external linkages including local value addition and marketing of surplus produce on behalf of the community of small farmers in a cluster.

Figure 1: Framework for Baseline Survey at different levels for higher Productivity of Agricultural Ecosystem in Balasore District



The above framework is executed through the three layers of Baseline Survey undertaken at (a) Individual Farmer level, (b) Focused Group at the village/Block level and (c) with key officials at the State level is shown through photo snap shots in the next few pages.







