

## **KHARIF PADDY INTERVENTION IN PURULIA DISTRICT OF WEST BENGAL**

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### **BACKGROUND**

Creating opportunities for sustainable livelihoods for the growing population is the biggest challenge that the country is going to face in the near future. Though as a nation India can claim to be a food-secured country, but at the local level there are many communities especially tribals who are still struggling to meet their two ends during the lean seasons of the year.

Livelihoods of rural mass primarily depend on their effectiveness in harnessing the local natural resources, primarily lands. Access to other resources (water, sunshine and atmospheric elements) is also determined based on access to land. The techniques and effectiveness of harnessing these natural resources are governed by thoughtful use of the accumulated knowledge and skills by the people. The most primitive livelihoods generation skills were hunting and gathering. Thereafter people have gradually moved towards resource husbandry to have better control over sources/resources and ensure predictability over incomes as they graduated to practice settled life. The transition from hunting gathering to resource husbandry had been progressing but still far from the desired sustainable state that the society aspires for. The issues of over exploitation or under utilization of available resources and wastage are yet to be addressed properly.

Most of the natural resources, which continued to supply subsistence to largest number of human population for generations, are getting sick to meet the increasing demand of growing population. The practices of recycling or reinvestment of surpluses to rejuvenate natural resource bases continued to be ignored by the human society. The society's trend to accumulate surpluses (as wealth), apart from meeting basic needs is ever increasing and this reduces the possibility of reinvestment. And this accumulated surpluses over the ages is being seen by the society as an alternative sources of livelihoods as it provides a huge market to buy services (a product of human labour).

The trend is reflected in rural youths' migration to towns to get more remunerative job / engagement leaving agriculture. These phenomena throw additional challenges to the tasks of reinvestment in natural resources to maintain those as primary sources of livelihoods. In absence of adequate provisioning by the society, the quality labour moves away from natural resource base relegating it to further peril.

The most critical investment that the natural resources need is labour. The uplands needs treatment against erosion, tanks to be excavated to harvest rainwater to augment its storage, seeds and saplings to be planted to enhance flora and crops and animal husbandry to be systematically promoted to generate livelihoods for the people. Kharif paddy intervention happens to be just one of the components in the whole Natural Resource Management (NRM) based livelihood system. And the returns in terms of livelihoods generation have to be competitive in the market so that it can attract adequate labour to NRM and sustain it and this is the biggest challenge ahead of us.

## **AGRICULTURE IN PURULIA**

Agriculture as source of livelihood in Purulia district lags behind other districts of West Bengal. Natural endowment in terms of good alluvial soil and availability of irrigation water coupled with better education, presence of well developed market (Kolkata) and better agricultural extension work contributed to the growth of agriculture in plain areas. Absence of all those factors is visibly interlinked with one another to slowdown the pace of agriculture in this district.

Generation wise obsession with subsistence oriented agriculture made farmers especially tribal risk averse when there is a need to show more risk taking ability as situation is less conducive in comparison to the plain areas. These farmers have a very low confidence on themselves that they can also grow good crops like some of the entrepreneur farmers. As a result of this low self-confidence these farmers are not willing to take crop loans from the banks or from the Self Help Groups. Low education, low exposure, low market orientation on one hand and poor soil condition, higher investment need to create irrigation infrastructure generated a kind of vicious cycle posing a great challenge to the growth of agriculture.

Most of the Arable lands of the poor people in the district are mono-cropped (Kharif paddy is the only crop). In spite of that it is not difficult to find a good number of entrepreneur farmers in each village demonstrating high production through adoption of improved package & practice to prove the latent potential of the area. But such practices remain confined within the better off farmers and are not adopted by poorer families.

All these led an NGO, Professional Assistance for Development Action (PRADAN), to believe that if these poor farmers can be backed up with the missing inputs they can be taken through a very positive experience of growing good crops with a production which they have only seen in other's field. It would bring an everlasting change in their attitude as well as the family economy.

### **ABOUT PRADAN**

PRADAN (Professional Assistance for Development Action) is a voluntary organization registered under the Societies Registration Act in Delhi. It currently works in selected villages in 26 districts across 7 states (West Bengal, Jharkhand, Bihar, Orissa, Chattisgarh, Madhya Pradesh & Rajasthan) through small teams based in the field. The focus of its work is to promote and strengthen livelihoods for the rural poor. This involves organizing them, enhancing their capabilities, introducing ways to improve their incomes and linking them to banks, markets and other economic services. PRADAN comprises professionally trained people in professions like agriculture, engineering, management, rural management, veterinary sciences and social work, motivated to use their knowledge and skills to remove poverty by directly working with the poor at the grassroots.

### **PRADAN PURULIA'S INTERVENTION IN KHARIF PADDY**

#### **Objectives**

1. Working with a minimum number of 1000 families through the 250 Self Help Groups (SHGs)
2. Intervention in minimum amount of 0.66 acres of land of each farmer

3. Increasing two months food grain sufficiency for each family

### Key Intervention Areas

1. **Quality Seed Procurement:** The traditional practice was to grow paddy with old seeds, which is a significant reason of low yield in this area. PRADAN has introduced new improved varieties by linking the farmers with a reputed seed company
2. **Following Standard Package for Nursery Bed Preparation:** The traditional practice was to raise nursery bed without proper drainage facility. In most places the nursery bed area was less than required. PRADAN motivated the farmers to go for nursery beds with proper drainage facility and in proper area. PRADAN also trained the Service Providers to calculate nursery bed area for a given plot.
3. **Ensuring Recommended Fertilizer and Pesticides Application at Nursery Bed:** PRADAN made a special drive campaigning the importance of taking care and applying nutrients in the nursery bed as previously the farmers used to neglect nursery beds and fertilizers especially potash and manure application were practically nil
4. **Timely Transplantation & Line Transplantation:** Previously very few farmers paid attention to timely transplantation as a result of which yield was reduced to a large extent. PRADAN tried to motivate the farmers to go for timely transplantation and line transplantation
5. **Ensuring Basal Fertilizer Dose and Top Dressing:** Previously most of the farmers especially tribals apply only manure to grow paddy. PRADAN made efforts to motivate them to apply requisite doses of manure and fertilizer timely.
6. **Pesticide Application as and when Required:** Previously our target farmers were not oriented to deal with pest attack. PRADAN conducted field trainings to help them know the importance of pest control. Service Providers were also trained so that they can help farmers to take up adequate measures for pest control

### The Improved Package of Practice Introduced by PRADAN

ITEM	PREVIOUS PRACTICE	PRADAN'S INTERVENTION
Land preparation	Only 2-3 times ploughing	Minimum 4-5 times ploughing
Seed	Very old seeds; no seed treatment	New seeds from a reputed company; brine water test to remove bad seeds; seed treatment with Bavistin
Seed rate	30-40 Kgs/acre	15-20 kgs/acre
Nursery bed	Generally smaller area than required; poor drainage system	Proper area; Proper drainage system
Inputs in the nursery bed	Only small amount of cow dung	Cowdung as required; Application of N, P, K as required
Seedling treatment	Not done	Done with Thimate
Transplantation	Not timely done	Timely; in line
Inputs in the transplanted field	Only small amount of cow dung, Urea & DAP	Manure & N, P, K as required

### Process Followed

1. Concept sharing & Motivational training of villagers
2. Selection of service providers in SHG meeting

3. Enlisting beneficiaries and requirement of seeds
4. Motivational training of service providers
5. Technical training of service providers
6. Technical training of farmers at village level
7. Regular Field visit by PRADAN professionals
8. Weekly meeting of the villagers with service provider for discussing problem and progress
9. Fortnightly progress report submission by the service providers to PRADAN for monitoring

### The Experience

PRADAN ordered seeds from *Pallishree Limited* according to the list available from the village. But only 60% were sold in the village because of the following reasons:

- Suddenly, a subsidy was announced on most of the varieties in all the blocks.
- Some farmers were not ready to take other seeds also though they were enlisted. They told that they could not afford the price.

At the time of sowing seeds rainfall was adequate. Suddenly there came a dry spell of 1.5 months. This caused maximum damage in medium uplands as seedlings became over matured. Almost 72 % seedlings in the medium uplands were transplanted over-matured. This has hampered the yield very badly for upland paddy varieties.

### Operation wise Coverage

ITEM	NO. OF FARMERS	AREA IN HECTARES
Nursery bed preparation	566	151
Proper application of fertilizer in nursery	250 (44% of the total farmers intervened in nursery)	57 (38% of total area for which nursery was raised)
Transplantation	478 (84% of the nursery raisers)	111 (74% of the total planned area for which nursery has been raised)
Timely transplantation	175 (37% of the total farmers who could transplant)	32 (28% of the total transplanted area)
Proper application of fertilizer during transplantation	332 (69% of the total farmers who could transplant)	66 (60% of the total transplanted area)

Initially we started working with 566 farmers out of which only 478 could transplant because of late onset of monsoon. We could collect yield data of 375 farmers out of which 215 are tribals. The findings are presented in the following tables:

## Output

### Average Productivity

Sample analysis to study average productivity from our intervention Vs. district average				
Total area covered in hectares	No. of farmers	Average productivity in tons/hectare	Average productivity of the district in tons/hectare	Incremental yield in tons/hectare (with respect to previous average yield)
93	375	4.8	2.2	2.1

Additional Food Grain per Family		
Range of Additional Food Grain in Kg per Family	No. of Farmers	Percentage of Total
>=1000	58	15.5
500-999	66	17.6
300-499	65	17.3
200-299	45	12.0
100-199	48	12.8
0-99	35	9.3
< 0	58	15.5
	<b>375</b>	<b>100.0</b>

### A Study on the Tribals in Kharif Paddy Intervention

**Background:** Out of the total 566 farmers, 295 (52%) are tribals. They are mostly Santhals. Few of them are Singh Sardars. We took up this study to develop a broad understanding how the tribal farmers have taken up the improved Kharif paddy intervention.

#### Broad Areas of Study

1. Yield data before and after intervention
2. Yield data with and without intervention
3. People who did not agree to follow PRADAN's intervention
4. People who did last year but opted out this year
5. People who got best results
6. People who got good results
7. People who got medium results
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8. People who incurred a loss
9. Impact of the intervention on women
10. Role of women in different activities in the intervention
11. Role of Self Help Groups in the intervention
12. Replicability of the intervention
13. Cost of the implementing Agency (PRADAN)

#### Steps Followed

1. Sorting out the tribal families from a primary data of 375 farmers
2. Grouping the tribal farmers in four categories--- farmers who got best results, good results, medium results and who incurred a loss
3. Selection of farmers from each category
4. Pre-testing the Questionnaire

5. Interaction with these four categories of farmers---- both men and women
6. Interaction with farmers who did not go for the intervention---- both men and women
7. Interaction with farmers who did last year but opted out this year---- both men and women
8. Interaction with farmers who went for the improved intervention in some plots and went with his traditional intervention in other plots
9. Interaction with the Self Help Groups
10. Interaction with PRADAN staff to find out the cost involved

## OUTPUT AT A GLANCE

### Additional Food Grains per Family

Additional Food Grains (In Kg / Family)	No. of Farmers
>=1000	35
>=500	47
>=300	28
>=200	27
>=100	26
>= 0	21
< 0	31
<b>TOTAL</b>	<b>215</b>

### Productivity in Tons/Hectare

Average productivity (In tons/hectare)	No. of farmers
Up to 1	3
1 to 2	8
2 to 3	15
3 to 4	49
4 to 5	27
5 to 6	38
6 to 7	25
>7	50
<b>TOTAL</b>	<b>215</b>

**This is the District  
Productivity Range**

### Findings

**People who got Best Results:** We have interacted with ten farmers of this category to understand how they could get such tremendous result. From the study it was revealed that most of these farmers have grown low land paddy, which does not face any water stress. For the single farmer (Gurucharan *Baske*) who had grown a medium upland variety had an assured irrigation source to save it during the prolonged drought. Moreover all these farmers have reported that they have totally followed the improved package and practice and didn't make any compromise. Most of these farmers felt good and said that they are very happy as then don't need to worry for food anymore if they can follow this package

**People who got Good Results:** We have interacted with ten farmers of this category. From the study it was revealed that most of these farmers have got good results because they have grown low land paddy. Some farmers in addition to low land paddy have also taken up the intervention in medium upland. But these farmers haven't got best results because of two reasons:

- They could not follow the entire package
- For some farmers who got tremendous yield for low land varieties, the average family level production got reduced because of poor yield for medium upland varieties as there was a prolonged drought and these farmers lack of irrigation facility

Most of these farmers felt good as they could get good results. Some said they are unhappy because they are not the best.

**People who got Medium Results:** We have interacted with nine farmers of this category. From the study it was revealed that most of these farmers have got comparatively poorer results because of the following factors:

- Lack of irrigation facility which caused huge damage in medium uplands
- They could not follow the entire package because of lack of funds
- Some farmers have selected improper varieties

Most of these farmers were unhappy and talked about the importance of irrigation to grow good paddy

**People who Incurred a Loss:** We have interacted with ten farmers of this category. From the study it was revealed that most of these farmers have taken up the intervention in medium uplands, which was affected by a prolonged drought spell. Because of lack of irrigation facility the farmers could not transplant timely. So transplantation with over-matured seedling has drastically reduced yield. The other important reason of failure was that some of these farmers could not follow most of the components of the package because of lack of fund as the fund available in their Self Help Groups was not sufficient.

Most of these farmers were very unhappy and apprehensive whether they can go for the improved package when irrigation and working capital are not guaranteed.

### **General Impact of the Intervention**

#### **For Farmers who got Best, Good & Medium Production:**

1. Purchased raw materials for extension of his house
2. Invested in purchasing a cow
3. Send his son to school
4. Bought a dehusking machine and a sprayer
5. Bought cloths for his children
6. Released mortgaged land
7. Purchased land
8. More expenses in the festival
9. Repaid SHG loan
10. Married off his son
11. This year didn't have to work in brick kilns

### For Farmers who Incurred a Loss:

1. Had to search for wage employment
2. Go for stone cutting
3. Had to take consumption loan from Self Help Group

### **The Components of the intervention, which appealed to the farmers most:**

1. Introduction of good quality seeds
2. Brine water test to discard bad seeds
3. Proper Nursery bed with drainage facility
4. Accurate dose of inputs especially potash at proper time

**People who did not agree to follow PRADAN's intervention:** We have interacted with nine farmers of this category. From the study it was revealed that these farmers didn't agree to follow PRADAN's intervention because of the following reasons:

- Five of them were not convinced about the new technology
- Three of them thought without irrigation it would be a risky venture
- One didn't have money to buy new seeds and apply all the inputs

But after seeing the performance of the farmers who took up the intervention most of them could see the merit of the intervention though some members feel without irrigation it would not be wise to make such investments especially in uplands. All of them expressed their desire to try out the intervention in the next year

**People who did last year but opted out this year:** We have interacted with eight farmers of this category. From the study it was revealed that these farmers opted out this year because of the following reasons:

- Four farmers didn't have money to take up the intervention
- Two farmers have lost confidence because of last year's loss
- Two farmers felt that without irrigation it would be a risky venture

### **Impact of the Intervention on Women**

We have interacted with approximately 30 women along with their husband when we were sitting with the families. We also sat separately with 100 women in the Self Help groups to understand what impact the intervention had on women. The findings are given below:

1. Because of surplus production most of these women are working in her own field instead of wage labour
2. This year most of these women didn't have to worry about food
3. Labour has reduced for women in two families who have bought dehusking machines
4. In 2 families the women could buy clothes for the family members which made them happy
5. Wider spacing has reduced women's transplantation load
6. Two times intercultural operation has increased the work load
7. Awareness to scientific cultivation has increased

## **Impact of the Intervention on Men**

We have interacted with 39 men to understand the impact on intervention on them. The findings are given below:

1. There is a change in mindset. Now the farmers have developed an interest in Agriculture and are willing to invest more
2. Getting sufficient food
3. Migration this year for most families has drastically reduced which allows men to stay with their family
4. Workload has increased due to more number of ploughing, improved nursery bed preparation, seed treatment, and input application both in the nursery bed and transplanted field.

## **Role of Self Help Groups in the Intervention**

We have interacted with women in ten Self Help Groups (SHGs) to understand the role played by the SHGs in the intervention. We could sense a feeling of pride among women that because of the presence of SHGs this intervention was undertaken. The roles played by the SHGs in the intervention are given below:

1. Did meeting to know about the concept and planning
2. Selected Service providers
3. Took training on the improved intervention
4. Gave loan to take up the intervention
5. Monitored the progress in SHG meetings
6. Ensured repayment
7. Provided a stimulus and peer pressure to do better

## **Replicability of the Intervention**

As revealed from the entire study most of the farmers are very much convinced about the technology and have expressed a desire to scale it up. Most of the cultivable lands of these poor people are medium uplands, which require irrigation support to go for the improved intervention. Dearth of working capital is also a major limiting factor to follow the intervention. If funds for creating irrigation structure ( in form of grant) and working capital ( in form of loan) can be arranged the intervention would be widely replicable benefiting a huge number of poor farmers.

## **Cost of the Implementing Agency (PRADAN)**

Approximately six hundred rupees per farmer half of which is towards salary of professionals and the other half is for capacity building of people through training, exposure and day to day support through the service providers.