A Success Story

Boost to Incomes through RCC Check Dam

Integrated Watershed Management Programme (IWMP)

Project name: Dhubri-III, Raidak IWMP
Batch: I (2009-10)
District: Dhubri

Under

Monitoring, Evaluation, Learning and Documentation of IWMP

Februaray 2017

Submitted to:

State Level Nodal Agency (SLNA), IWMP
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Boost to incomes through RCC check dam

Farmers in Jhapusabari pt III village use rainwater for crop cultivation. There was no infrastructure to regulate the flow of rainwater and retain the same in the crop fields, which caused flooding problem in the crop field on one hand and water retention problem on the other hand. This reduced the crop productivity due to lack of sufficient water in the crop fields. The case study reflects the manner in which an RCC check dam, constructed under the IWMP, has effectively resolved the problem by regulating rain water and retaining optimum water level for crop growth.

1. Introduction

1.1. About IWMP

Integrated Watershed Management Programme (IWMP) was envisaged in 2009 after integration and consolidation of three major watershed programmes in the country viz., Drought Prone Areas Programme (DPAP), Desert Development Programme (DDP) and Integrated Wastelands Development Programme (IWDP). This consolidation is for optimum use of resources, sustainable outcomes and integrated planning. The Integrated Watershed Management Programme (IWMP) is a flagship programme of the Government of India and is being implemented by the Department of Land Resources (DoLR). The rationale behind this programme was to have a common vision and coherence in implementation of watershed development programmes across the country. Accordingly, it was decided that the programme should be implemented on the basis of common watershed guidelines of 2008. The objectives of the IWMP were set to 'restore the ecological balance by harnessing, conserving and developing degraded natural resources such as soil, vegetative cover and water'. IWMP has a set of monitoring, evaluation, learning and documentation (MEL&D) activities to ensure quality of programme activities are upheld while execution and its objectives are achieved with optimum effectiveness. The MEL&D component is performed by bodies independent of implementing agencies to maintain objectivity of the assessment. The process is expected to facilitate learning from ongoing and completed activities in order to improve the programme and also replicate the successes in other regions or in subsequent projects as well. Case study is an important methodology to document such successes and as a part of this, The Energy and Resources Institute (TERI), North Eastern Regional Center, Guwahati, one of the MEL&D agencies in Assam, studied and documented the IWMP activities in Dhubri district of Assam in order to highlight the activities done under the project and the impacts that the project brought in through this intervention. The following case study is from Jhapusabari Pt. III village, located in Bhamundanga micro watershed in Raidak IWMP (Batch I-2009-2010) of Dhubri district in Assam.

1.2. About the village

Jhapusabari Pt. III village, stretching across 418.3 ha of land and inhabited by 1070 households, is located in Agamoni block of Dhubri district in Assam. It has a relatively large population of 3978, of which 2030 are males and 1948 are females. The village has a

total SC population of 112 only. The main occupation of the communities of the village is agriculture. A considerable section is also engaged in daily wage earning activities in agriculture and other sectors.

2. Pre intervention scenario

The main crop cultivated by the farmers of Jhapusabari pt. III village was *Sali* paddy (Winter paddy) with an average productivity per bigha[1] of 7 mon[2]. Few farmers cultivated *Boro* paddy (Summer Paddy).Apart from paddy, farmers of the village also cultivated other crops such as potato, maize, taro, cabbage, etc. but these crops are cultivated for own consumption only. The total agricultural land available for cultivation is 99 bigha with a cropping intensity of 120 %.

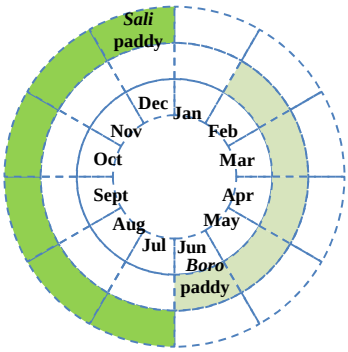


Figure 1: Cropping pattern before intervention

Table 1: Beneficiary profile

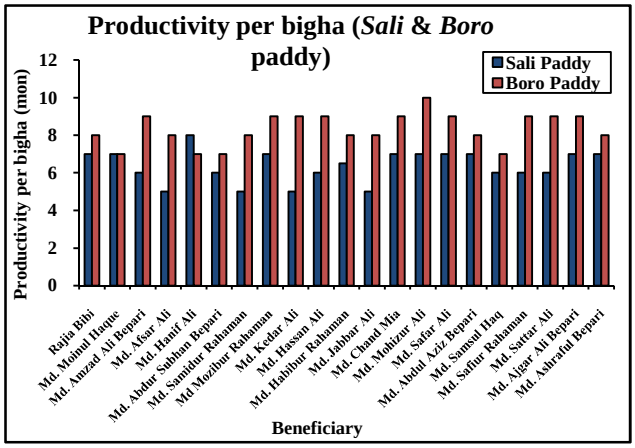
Sl. No.	Beneficiary	Sex	Land holding (bigha)
1.	Rajia Bibi	Female	10
2.	Md. Moinul Haque	Male	10
3.	Md. Amzad Ali Bepari	Male	8
4.	Md. Afsar Ali	Male	5
5.	Md. Hanif Ali	Male	3
6.	Md. Abdur Subhan Bepari	Male	4
7.	Md. Samidur Rahaman	Male	4
8.	Md Mozibur Rahaman	Male	10
9.	Md. Kedar Ali	Male	2
10.	Md. Hassan Ali	Male	4
11.	Md. Habibur Rahaman	Male	2
12.	Md. Jabbar Ali	Male	5
13.	Md. Chand Mia	Male	1
14.	Md. Mohizur Ali	Male	2
15.	Md. Safar Ali	Male	2
16.	Md. Abdul Aziz Bepari	Male	10
17.	Md. Samsul Haq	Male	3
18.	Md. Safiur Rahaman	Male	2
19.	Md. Sattar Ali	Male	2
20.	Md. Ajgar Ali Bepari	Male	5
21.	Md. Ashraful Bepari	Male	5
	Total		**99**

[1] Bigha= Land measurement unit in Assam (7.5 Bigha = 1 Ha)

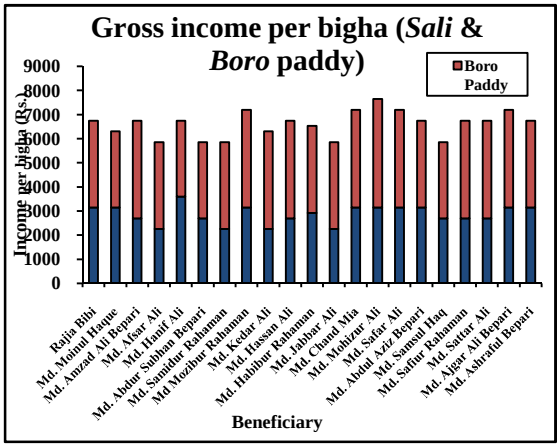
[2] Mon= 40 Kg

3. Issue

The cultivation in the Jhapusabari pt. III village is rainfed and the crop fields suffered from both flooding and water scarcity problems. There was no infrastructure in the crop fields to regulate the flow of rain water and retain the required amount of water in the crop fields. As a result, these crop fields are first flooded with rainwater followed by quick draining out of rainwater which creates a water shortage problem. This phenomenon of flooding and low water retention affected cultivated crops in two ways: (1) first they get damaged with excess water and; (2) they do not receive sufficient water level for a healthy growth even during their critical growth stages due to poor retention of water in the crop fields. As a result productivity of crops was low in the village. Thus, low crop productivity and limited number of crops cultivated in a year led to low incomes earned by farmers in Jhapusabari pt.III.



Graph 1: Productivity per bigha before intervention (*boro* and *sali* paddy)



Graph 2: Gross income per bigha before intervention (*boro* and *Sali* paddy at the rate of Rs. 450 per mon)

4. Proposed action

The main problems faced by the farmers of the village was that of water regulation and retention in crop fields which affected the crop productivity as crops were damaged by excess water at the initial stages and water scarcity in the later stages of crop growth. Therefore, in order to resolve these problems, it was proposed to construct an RCC check dam at a strategic location on the crop fields to regulate the flow of water and also to retain water in the crop fields. Data were collected from the intervention site in order to analyse it and know the overall impact of the intervention on crop cultivation.

5. Target

The intervention treats a total of 99 bigha (13.2 ha) of crop lands which directly benefits 21 households of Jhapusabari Pt. III village.

6. Details of intervention

The intervention site is located in the Jhapusabari Pt. III village, at geographical coordinates of 26˚11'54.8"N and 89˚43'54.8"E. Construction of the RCC check dam was completed in 2014, incurring a total cost of Rs. 7,10,000/-. The RCC check dam has a head wall of 7 m, two extension walls of 4.2 m each, two wing walls of 4.0 m each and two side walls of 4.8 m each. The RCC check dam has two chambers and the thickness of each wall is 0.3 m.

Map 1: Intervention site on map; Source: Google Map

7. Impacts

The RCC check dam regulates the amount of rain water flowing into the crop fields which is distributed through earthen channels. The intervention retains water within the crop fields, allowing crops to receive optimum level of water necessary for growth. The RCC check dam has also improved the soil moisture level, facilitating crop cultivation in *rabi* season.

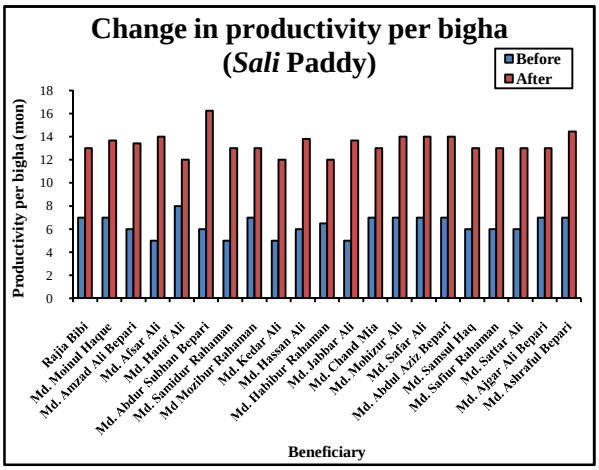
Photos 2: RCC check dam at Bamundanga MWS under Raidak IWMP

Photos 3: RCC check dam at Bamundanga MWS under Raidak IWMP

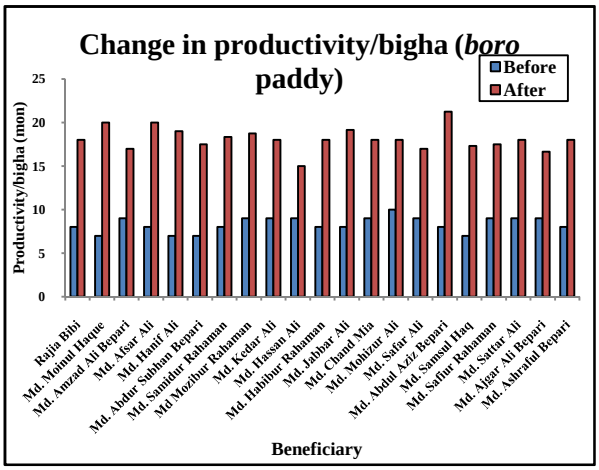
The intervention has led to the following benefits:

7.1. Increase in productivity

Prevention of crop field from flooding and retaining sufficient water level within the crop fields has helped to increase the productivity of both Sali and boro paddy.



Graph 3: Change in productivity (*sali* paddy) (Paddy at the rate of Rs. 450/mon)



Graph 4: Change in productivity (*boro* paddy) (Paddy at the rate of Rs. 450/mon)

Photos 4 & 5: Paddy cultivation

7.2. Change in cropping pattern

Improvement in soil moisture level has facilitated crop cultivation in the dry season. Some beneficiaries have started cultivating potato and maize (earlier only consumed at home) for selling at markets, leading to crop diversification and change in the cropping pattern.

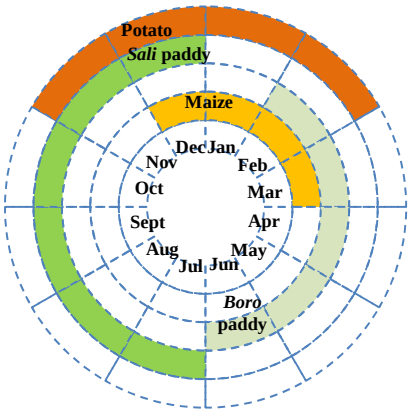
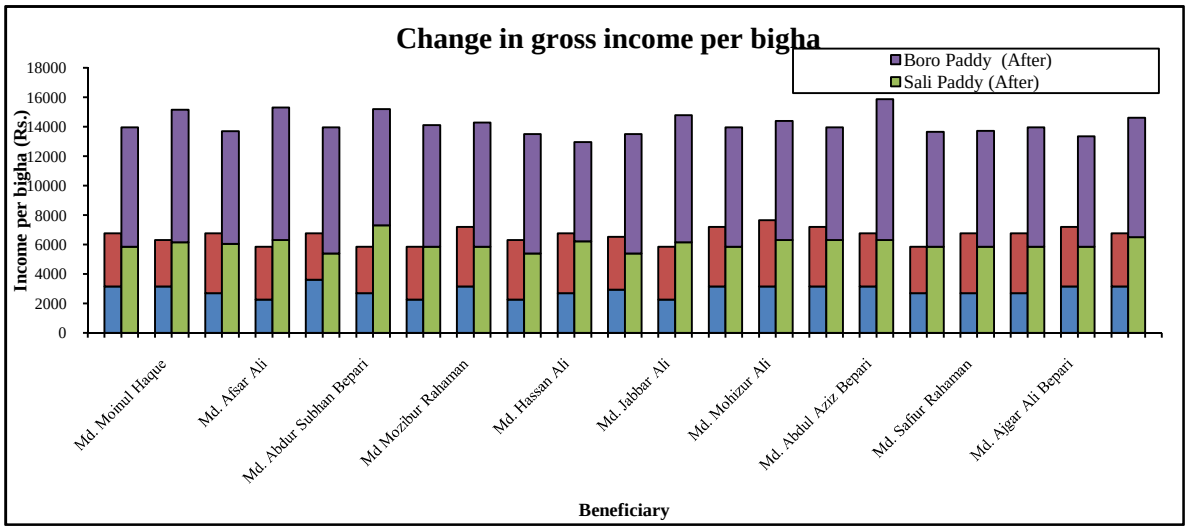


Figure 2: Change in cropping pattern after intervention

7.3. Change in gross income

Increase in productivity per bigha of paddy has led to a nominal increase in the gross income per bigha of all the beneficiaries as reflected in Graph 5.



Graph 5: Change in gross income after intervention (Paddy at the rate of Rs. 450/mon)

7.4. Additional income

Beneficiaries who have diversified into new crops have earned additional income. The additional gross incomes earned by such beneficiaries are reflected in table 2.

Table 2: Additional benefits from crop diversification

Sl. No.	Beneficiary	Total production (mon)		Gross income [a] (Rs.)	
		Maize	Potato	Maize	Potato
1.	Md. Moinul Haque	10	35	5200	28000
2.	Md. Afsar Ali	10	0	5200	0
3.	Md. Hanif Ali	20	0	10400	0
4.	Md. Abdur Subhan Bepari	20	0	10400	0
5.	Md. Samidur Rahaman	9.5	0	4940	0
6.	Md Mozibur Rahaman	20	0	10400	0
7.	Md. Kedar Ali	10	0	5200	0
8.	Md. Hassan Ali	10	0	5200	0
9.	Md. Habibur Rahaman	10	0	5200	0
10.	Md. Jabbar Ali	15	17.5	7800	14000
11.	Md. Abdul Aziz Bepari	20	0	10400	0
12.	Md. Samsul Haq	15	0	7800	0
13.	Md. Ajgar Ali Bepari	20	0	10400	0
14.	Md. Amzad Ali Bepari	0	17.5	0	14000
15.	Md. Ashraful Bepari	0	35	0	28000

[a] **Maize at the rate of Rs. 520/mon; Potato at the rate of Rs. 800/mon;**

8. Conclusion

The intervention has succeeded in regulating the flow of rain water and retaining water within crop fields. This intervention has led to multiple benefits of increase in crop productivity, crop diversification and boost in income earned by the beneficiaries. This particular intervention is expected to reap more benefits when regular water supply is combined with additional inputs such as high yielding variety seeds, fertilizers, pesticides, etc.