BANGLADESH WATER DEVELOPMENT BOARD (BWDB)

Coastal Embankment Improvement Project, Phase-1 (CEIP-1)

Polder no. 43/2c,47/2 & 48 Kalapara, Galachipa, Dist: Patuakhali

REPORT ON INTEGRATED PEST MANAGEMENT (IPM)

Submitted To:

Project Director

Coastal Embankment Improvement Project, Phase-1 (CEIP-1)

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Acronyms and Abbreviations

BFD	Bangladesh Forest Department
BWDB	Bangladesh Water Development Board
CEIP	Coastal Embankment Improvement Project
CO	Community Organizer
CST	Construction Supervision Team
DAE	Department of Agricultural Extension
FGD	Focus Group Discussions
FFS	Farmer Field School
GoB	Government of Bangladesh
IPM	Integrated Pest Management
IPSN	Integrated Plant Soil Nutrient
IWRM	Integrated Water Resources Management
MoU	Memorandum of Understanding
O&M	Operation and Management
PMU	Project Management Unit
RIC	Resource Integration Centre
SSUS	Swabalambi Samaj Unnayan Sangstha
TL	Team Leader
ToT	Training of Trainers
WMA	Water Management Association
WMC	Water Management Committee
WMG	Water Management Group
WMO	Water Management Organization
WMU	Water Management Unit

Report on Integrated Pest Management (IPM)

Abstract;

IPM technology is a key tool for reduction of pesticides use. With a view to dissemination of IPM technology 25 water management groups was formed under polder 47/2,48 & 43 2c. As per CEIP project-phase-1, IMP technological practical demonstration was provided to 210 farmers. Among 25 WMGs, the five categories IPM demos was implemented in farmers field such as (a) Bio-pesticides 35 farmers field, (b) Perching 60 farmers' rice fields, (c) Compost preparation demo 33 farmers, (d) Sex pheromone traps 57 farmers in vegetables fields and (e) Vermi-compost fertilizer producing demo 25 farmers. Demo farmers knowledge on integrated Pest Management (IPM) and Integrated Plant Soil Nutrient (IPSN) are increased. Farmers are able to reduced pesticides application by using IPM technology as well as production cost and pollution. Demo farmers were able to identify different pests and beneficial insects (predators and parasites) and also increased their crop production. CEIP-1 project total of 6 batches of IPM training has provision for 154 FFS farmers, which was completed IPM technological training in the month of January 2021. Train farmers are the key implementers of IPM field school.

1.0 Introduction;

Different pests (Insects, Diseases, Weeds, Rodents and birds) are acute problem and causing significant damage crops (15-20%) and reduced yield every year under polder area. Farmers used over and under dose large amount of Hazardous Pesticides (Insecticides, Fungicides, Herbicides) for controlling pests, which is increased crop production cost, health hazard and environmental pollution. Farmers due to lack of IPM technological knowledge they are depends on pesticides for controlling pests. IPM is an ecological based combination of chemical, non-chemical, mechanical and biological control methods used which is reduce the pesticides and chemical fertilizers, reduce costs and control pest. CEIP project Phase-1 was implemented of some recommended IPM technology to WMGs farmers. The CEIP project, IPM program objectives was increased farmers knowledge on different IPM methods through practical training, setup each IMP technology demo in farmers crop fields. Selected farmers were implanted IPM technology demo in his crop field. End of implementation of IPM technological demo farmers can identify pests and defenders, effectiveness of technology. FFS was established under polder area for dissemination of IPM technology to other farmers.

2.0 Implementation of IPM Activities;

A total of 25 water management groups (WMG) were formed under 43/2c, 47/2 & 48 polder. Only 210 farmers included for execution of IMP technological field program. IMP technological practical demonstration was provided to 210 farmer's intern they disseminate IMP technology to other farmers. Train farmers are the key implementers of IPM field school. Demo farmers are able to identify different pests and beneficial insects (predators and parasites) and also increase farmers knowledge on Integrated Plant Soil Nutrient (IPSN). IPM demonstration program (farmer's selection, training venue etc.) setup of technological demonstrations and monitoring were done by COs & WMG executive committee of 39/2C polder, CEIP-1 project and SAAOs of DAE. Each WMG area concern respective SAAO were also given pest management

Technological support and cooperation to COs during implementation of different IPM demonstration in farmers' fields which are ensured DAE participation and active involvement in IPM program under CEIP-1 project.

IPM demo farmer's information's were collected and 210 farmers selected from 25 WMGs and also finalize the five different categories of IPM demo farmers list (Appendix-1). The five categories IPM demos are: (a) Bio-pesticides 35 farmers field, (b) Perching 60 farmers' rice fields, (c) Compost preparation demo 33 farmers, (d) Sex pheromone traps 57 farmers in vegetables fields and (e) Vermi-compost fertilizer producing demo 25 farmers. Demo farmers knowledge on integrated Pest Management (IPM) and Integrated Plant Soil Nutrient (IPSN) are increased. Farmers are able to reduced pesticides application by using IPM technology as well as production cost and pollution. Demo farmers were able to identify different pests and beneficial insects (predators and parasites) and also increased their crop production. CEIP-1 project total of 6 batches of IPM training has provision for 154 FFS farmers, which was completed IPM technological training in the month of January 2021. Train farmers are the key implementers of IPM field school.

3.0 Implementation of IPM Technologies Activities

3.1 Compost Preparation Demo

Farmers are depending on chemical fertilizers. To reduce the use of chemical fertilizer compost, need to use for improvement of soil nutrient status. Compost making materials are available in farmer's house. But most of the farmers did not make compost. Under each WMG areas 2 compost total of 50 compost preparation demo were established in farmer's yard.

3.2 Demo Farmers Selection

Demo farmers were selected from WMG members. Among the WMG members those farmers actively involved in crop production and have own agricultural lands and rearing cows were selected for compost demo.

3.3 Demo Implementation Period

Compost demo were established in farmers yards from October-December 2020.

3.4 Supply of Demo Inputs

During preparation of compost demo Cow dung, chemical fertilizer such as Urea, Shade materials, labor, Signboard and technological support were given to farmers.

3.5 Monitoring

After establishment of compost demo respective COs once a week visited demo farmers house and has given technical advice. They also explain to farmers about benefit of compost preparation. CEIP-1 team member's consultants during their field visit they also given technological advice to farmers.

3.6 Demo Farmers Opinions

COs and Consultant team members were taken opinion from 34 compost demo farmers. They said, increase their practical knowledge and able to prepare and use in vegetables crop fields.

4.0 Vermi-Compost Fertilizer Producing Demo

Without use of chemical fertilizer farmers can able to produce good quality of different vegetables. Now-a-days many district farmers produced vermin-compost fertilizers and used their vegetables

crop fields. Some farmers were producing Vermi-compost as commercial basis and sell to other farmers. From CEIP-1 project each WMG area one Vermin-compost demo was established.

4.1 Demo Farmer's Selection

Verimi-compost producing farmers were selected from WMG those have cows, because for producing compost need cow dung. From 17 WMG groups one farmer selected from each group. A total of 25 farmers were selected for implementation of vermin-compost demo.

4.2 Demo Implementation Period

Vermi-compost fertilizer producing demo were established from October-December 2020.

4.3 Supply of Demo Inputs

Ring, earthworm, labor, signboard and technological practical support have given to farmers during establishment of vermin-compost fertilizer producing demo.

4.4 Monitoring

Respective COs once a week were visited demo farmers house and given them technological advices and benefit of vermin-compost. CEIP-1 consultant team members also give advice during their field visit.

4.5 Demo Farmers Opinions

COs and Consultant team members were taken opinion from 40 Vermi- compost demo farmers. All demo farmers opined that increase their practical knowledge and able to produce vermin-compost fertilizer and use in vegetables crop fields. They also reported that they will able to produce vermi-compost fertilizers as commercial basis and sale to others farmers. Demo farmers opined that they will able to produce different vegetables by use of vermin-compost fertilizer without use of chemical fertilizers.

5.0 Perching in Farmers Rice Fields

Perching is very effective one of the IMP methods for control of rice pests. Farmers do not believe birds can control the pests. To change the farmer's attitude about perching demo were established under 25 WMG areas.

5.1 Farmers Selection

Demo farmers selected from WMG members, those farmers have own Aman rice field. A total of 97 farmers were selected from 25 WMG members for perching demo.

5.2 Demo implementation period

Perching demo was established in farmer's rice field from September- October 2020.

5.3 Supply of Demo Inputs

When farmer's Aman rice was tillering stage, perching was done by using bamboo strict, tree branch. Bamboo strict, tree branch, labor and signboard were supply to demo farmers.

5.4 Monitoring

Respective COs once a week visited perching demo field and explain to farmers about benefit of perching, damage level, harmful and beneficial insects. CEIP-1 consultant team members also give advice during their field visit.

5.5 Demo Farmers Opinions

COs and Consultant team members were taken opinion from 65 perching demo farmers. All demo farmers opined that increase their practical knowledge about perching. Farmers reported that birds can control pests. No need to use pesticides. Pest infestation and damage level was less and rice yield was higher.

6.0 Sex Pheromone Traps demos in Farmer's Vegetables Fields

Farmers generally cucumber vegetables pests' control by pesticides. Fruit fly damaging the cucumber crops. Sex pheromone traps is an effective tool for control of cucumber vegetable crop

pests. No need to use pesticides. From CEIP-1 project, 70 demos of sex pheromone traps were setup under 25 WMGs areas farmers cucumber vegetables fields.

6.1 Demo Farmers Selection

Demo farmers selected from WMG members, those farmers have own vegetables field such as cucumber, Bottle gourd etc. A total of 70 farmers were selected from 25 WMG members those have vegetables crop fields for sex pheromone demo.

6.2 Demo implementation period

Sex pheromone trap demo was established in farmer's rice field from October-December 2020.

6.3 Supply of Demo Inputs

When farmer's vegetables crops were fruiting stage, sex pheromone traps were setup. Each demo farmer 30 Pheromone lure, 30 Pheromone traps,Tin, Bamboo Khuti, labor and signboard were supply to demo farmers.

6.4 Monitoring

Respective COs were visited the sex pheromone demo farmers field and shows the pest and explain benefit of sex pheromone traps. Farmers can identify the pest. CEIP-1 consultant team members also give advice during their field visit.

6.5 Demo Farmers Opinions

COs and Consultant team members were taken opinion from 70 sex pheromone trap demo farmers. All demo farmers anonymously opined that it is very effective pest control methods and increase their practical knowledge about sex pheromone. Farmers reported that Pest infestation and damage level was very less and yield is higher. They can identify vegetable harmful pest.

7.0 Bio-pesticides demo in farmers' rice field

Farmers used synthetic chemical which is harmful to health and environment. But Bio-pesticide are not too harmful to health and environment. For reducing use of harmful pesticides, 40 Bio-pesticides demos were established in farmer's rice field under 25 WMGs areas.

7.1 Demo Farmers Selection

Demo farmers selected from WMG members, those farmers have own Aman rice field. A total of 40 rice farmers were selected from 25 WMG members for Bio-pesticide demo.

7.2 Demo implementation period

Bio-pesticides demo was established in farmer's rice field from September- October 2020.

7.3 Supply of Demo Inputs

Each demo farmer Bio-pesticide 300ml, spraying Bio-pesticide labor and signboard were supply to demo farmers. During Bio-pesticide spraying respective COs and demo farmers was present.

7.4 Monitoring

After establishment of demo respective COs, once week were visited Bio-pesticide demo field and observed the rice field. COs shown to farmers the pest and defenders' population and damage level.

7.5 Demo Farmers Opinions

COs and Consultant team members were taken opinion from 40 Bio-pesticide demo farmers. All demo farmers anonymously opined that it is very effective pest control methods and increase their practical knowledge about Bio-pesticides. Farmers reported that Pest infestation and damage level was less and yield is higher. They can identify harmful pest and beneficial insects and predators. Farmers reported that they will use Bio-pesticides instead of hazardous chemical insecticides.

8.0 Problems

IMP technology need to implement seed to seed in farmer's field. But due to short period of project and also embankment is not yet completed, less facilities are available for HYV crops cultivation. Only one day training is not sufficient for dissemination of IMP technologies.

9.0 Conclusion

WMGs farmers have shown very much interest to implement IMP technologies in their crop production. They wanted to more IMP technological training (at least 3 days) and availability of improve pest resistant variety of different crop seeds and bio-pesticides.

APPENDIX-1

IPM Technology wise Demos Beneficiaries Farmers list

SL#	IPM Technology	Name of IPM Beneficiaries	Mobile #
1	**Use Nimbecidine for Pest Control**	Salam Munshi	
2		Tania Begum	
3		Ashrab Melkar	
4		Delowar Melkar	
5.		Sultan Hawlader	
6		Nittoranjon Hawlader	
7		Masum Kha	
8		Rashida Begum	
9.		Selim Mridha	
10		Mostofa Mridha	
11		Md. Faruk Peyada	
12		Kanika Rani	
13		Afjal Gazi	
14		Sofikul Mridha	
15		Parvin Begum	
16		Tara Vanu	
17		Md. Sohrab Hawlader	
18		Khadiza Begum	
19		Rakibul Hasan	
20		Sultan Baburchi	
21		Nasima Begum	
22		Rina Begum	
23		Mainuddin	
24		Jakia Begum	
25		Honufa Begum	
26		Hawa Begum	
27		Raza Khan	
28		Babul Hawlader	
29		Md. Faruk Hawlader	
30		Mojibar Hawlader	
1	**IPM Technology Perching**	Nur Hossain	
2		Mokles Khan	
3		Selim Hawlader	
4		Md. Fajlul Rahman	
5		Abul Hossain	
6		Md. Nasir Hawlader	
7		Anukul Hawlader	
8		Taslim Hawlader	
9		Oliullah	
10		Mosaraf Matobber	
11		Md. Bashir Matobbar	
12		Abu Kalam Khan	
13		Md. Khabirul Khan	
14		Shah Alam Khan	
15		Forkan Khan	
16		Khalil Khan	
17		Shanu Mollah	

SL#	IPM Technology	Name of IPM Beneficiaries	Mobile #
18		Abdur Rab Hawlader	
19		Sohrab Fokir	
20		Nur Fokir	
21		Honufa Begum	
22		Khalil Hawlader	
23		Kawsar Mir	
24		Nur Nahar	
25		Khaleda Begum	
26		Jahidul Fakir	
27		Al Mamun	
28		Mostofa Akon	
29		Md. Rahat Hawlader	
30		Md. Jahidul Hawlader	
31		Nur Nahar Begum	
32		Mahiuddin Khan	
33		Md. Sahin Mollah	
34		Limon Hawlader	
35		Md. Jahidul	
36		Md. Habubullaj	
37		Md. Mohiuddin	
38		Jakir Morol	
39		Milon Hawlader	
40		Shahida Begum	
41		Fatema Begum	
42		Abdul Hai	
43		Anowor Hossain	
44		Shahinur Begum	
45		Khadeja Begum	
46		Md. Mahmub Rahman	
47		Eunos Gazi	
48		Ami Gazi	
49		Juekha Begum	
50		Abdul Hai	
51		Roma Begum	
52		Humayon Kabir	
53		Md. Rekha	
54		Md. Najmul	
55		Aman Ullah	
56		Fatema Begum	
57		Rubel Howlader	
58		Md. Eusuf	
59		Md. Anwar	
60		Shah Alom	
61		Md. Jamal	
62		Shajahan	
63		Altaf	
64		Sahrea Begum	
65		AKhinur	
1	**IPM Technology Compost**	Sultan Hawlader	

SL#	IPM Technology	Name of IPM Beneficiaries	Mobile #
2		Alamgir	
3		Md. SUmon	
4		Amidul Haque	
5		Abul Kalam	
6		Sader ali Hawlader	
7		Marufa	
8		Shainur	
9		Jonab ali	
10		Farid Sardar	
11		Ahmod Hawlader	
12		Eusun Khan	
13		Laily	
14		Jamina	
15		Shahanara	
16		Shohrab Khan	
17		Ilias Munsi	
18		Jalil Mridha	
19		Shanara KHanom	
20		Ibrahim Hawlader	
21		Shahinur Begum	
22		Rabea Begum	
23		Shahida Begum	
24		Shaha mollah	
25		Md. Jakir	
26		Shanaj	
27		Ak Mamun	
28		Abdul Salam	
29		Md. Rubel	
30		Habibul Rahman	
31		taslima Begum	
32		Mst. Tohmina	
33		Rustom Ali	
1	**IPM Technology Vermi Compost Fertilizer Production**	Nasir	
2		Md. Jafar	
3		Mst. Julekha	
4		Md. Hanif	
5		Salom Hawlader	
6		Abdul Jalil	
7		Mst. Sokina	
8		Rokea begum	
9		Harun Matobber	
10		Jafor Hawlader	
11		Kananbala	
12		Sayed	
13		Nikhil Sakhari	
14		Anita Bala	
15		Bilkish	
16		Nur Miah	
1	**IPM Technology Sex Pheromone Trap**	Ibrahim Mollah	

SL#	IPM Technology	Name of IPM Beneficiaries	Mobile #
2		Salma Begum	
3		Sansu Babu	
4		Fruma	
5		Salma Begum	
6		Mostofa Mollah	
7		Mahibullah Sharif	
8		Manik	
9		Jalil	
10		Shahjahan	
11		Jainal	
12		EUsuf Foraji	
13		Riaj	
14		Panna Faraji	
15		Dulal	
16		Jalil	
17		Rajjak Faraji	
18		Kahinur	
19		Rasheda	
20		Nupur	
21		Mst. Mahamuda	
22		Azad Patoary	
23		Abdul Rajjak	
24		Samima	
25		Rojina	
26		Morjina	
27		Rahima	
28		Amena Begum	
29		Jahanur Begum	
30		Md. Mamun	
31		Md. Habib	
32		Md. Elyias	
33		Md. Obaydul	
34		Aleya	
35		Md. Ibrahim	
36		Md. Badal	
37		Sahinur	
38		Masuma	
39		Nipa	
40		Kanika	

SL#	IPM Technology	Name of IPM Beneficiaries	Mobile #
41		Sahida	
42		Sajib	
43		SObahan	
44		Saiful	
45		Rahmatullah	
46		Jamal Hossain	
47		Pabitra Chandra Hawlader	
48		Md. Sagir	
49		Faruk Bhuiya	
50		Mostofa Mridha	
51		Saied Matubbar	
52		Jakir Hossain	
53		Iddrish	
54		Abdul Gani Hawlader	
55		Md. Jakir Hawlader	
56		Rayma	

SL#	IPM Technology	Name of IPM Beneficiaries	Mobile #
1	**Use Nimbecidine for Pest Control**	Renu	
2		Kahinur	
3		Selim	
4		Fatema	
5		Abdul Salam	
6		Abdul Rab	
7		Hasina	
8		Sahabanu	
9		Salma	
10		Md. Bashir	