SUCCESS STORY ON INTEGRATED PEST MANAGEMENT (IPM) IN RICE BY A FARMER OF KIASI VILLAGE, SIAHA DISTRICT, MIZORAM

Name of the KVK:
Krishi Vigyan Kendra
Siaha District, Siaha
Mizoram
INDIA
PIN - 796901
Tel. No.: +91 9862222958, +91 6033023828
Email : kvksaiha@gmail.com

Photo

Name of the farmer:
K. Beirapilyu
S/o K. Malsawma
DOB – 20/12/1991
Age:- 30 Years
Education qualification: 8th Standard
Land holding: 2 hectare
Farming experience: 5 years
Other crops grown: Maize, Pigeon pea, Roselle
Village - Kiasi,
Siaha District
Pin - 796901
Mizoram
Adhaar card no: 433005945885

Mobile Number: 7629858878

Mail id: nil

Introduction:

Majority of the farmers from Kiasi village and the adjoining villages take up Wetland Rice Cultivation. Here farmers mostly grow their local rice variety called Sahsaiva (Buhsen) and Japan. Other commonly grown local rice varieties are Pata and Matupi. Rice variety CAU R1 was also grown when they are distributed by Agriculture department during 2016-2017. The most preferred variety however is Sahsaiva (Buhsen) variety owing to its good taste and adaptability to the region followed by Japan variety whose taste is inferior to Sahsaiva but gives a higher yield as compared to Sahsaiva and also has a good adaptability and resistance to pests and diseases.

Among the local varieties, Sahsaiva is most preferred for its taste followed by matupi. But these two varieties have lower yield potential and longer crop duration as compared to Japan and Pata. Japan and Pata variety, even though they are inferior in their taste to Sahsaiva and Matupi, they are cultivated in large scale owing to their higher yield potential and shorter crop duration.

Baseline survey and problem diagnosed:

A proper baseline survey on rice cultivation practices in Kiasi village was carried out in 2019-2020. The major insect pests infesting rice crops were Leaf folder, Stem borer, Rice

horned caterpillar & Gundhi bug. The major disease incidence diagnosed were Blast, Brown spot & Sheath blight.

KVK intervention:

To overcome the problems diagnosed in rice fields, the following interventions were undertaken by KVK in collaboration with ICAR-NCIPM, New Delhi.

1. **Rice Stem borer: *Scirpophaga incertulas***

ETL: 25% (Dead heart symptoms)

ATL (Action Threshold Level): 2 egg masses/m2

At ATL, egg parasitoid, *Trichogramma japonicum* was released for the management of the rice yellow stem borer. Besides, Spraying of Neem seed kernel extract as well as clipping of the seedling tips before transplanting to eliminate egg masses and collection and destruction of the egg masses in main field were carried out.

Spraying of Azadirachtin 0.03% 1000 ml/ha or Carbofuran 3% CG 25 kg/ha or Chlorpyriphos 20% EC 1.25 l/ha and Fipronil 5% SC 1000-1500 g/ha was advised to be carried out only as and when necessary.

2. **Rice Leaf folder : *Cnaphalocrocis mainsails***

Management:

ETL: 10% leaf damage at vegetative phase and 5% of flag leaf damage at flowering

Release *Trichogramma chilonis* @5 cc (1,00,000/ha) thrice at 37, 44 and 51 days

Keeping the bunds clean.

Avoiding of excessive nitrogenous fertilizers.

Spraying of NSKE 5 % or carbaryl 50 WP 1 Kg or chlorpyriphos 20 EC 1250 ml/ ha as and when necessary.

3. **Rice Earhead Bug: *Leptocorisa acuta***

ETL: 5 bugs/100 ear heads at flowering and 16 bugs/100 ear heads from milky stage to grain maturity

Dust Quinalphos at 25 kg/ha twice, the first during flowering and second a week later or Spray Malathion 50 EC 500 ml/ha

4. **Rice Horned Caterpillar: *Melanitis ismene***

Spray the crop with chlorpyriphos 20 EC 1250 ml/ha

5. **Blast:**

Remove collateral weed hosts from bunds and channels

Use only disease free seedlings

Avoid excess nitrogen

Spraying of Carbendazim 50WP @ 500g/ha or Tricyclozole 75 WP @ 500g/ha after observing initial infection.

Output and Outcome:

Since this farmer has never adopted any IPM measures before, therefore farmers practice may also be used as untreated plot for result comparisons. The increase in yield percentage after adopting IPM measures was 22.6% which was a good outcome. The farmers in Kiasi village were happy to see a good outcome being achieved through adoption of simple IPM modules and following were the results of comparisons studies.

Result & Discussion:

Package of practice	% of Stem borer	% of leaf folder	% of Gundhi bug	% of Horn caterpillar	Yield (q/ha)	Gross Cost (Rs/ha)	Gross Return (Rs/ha)	Net Return (Rs/ha)	BCR
IPM	6%	11%	8%	5%	37.2	50,000	1,33,920	83,920	2.67
Farmers practice	17%	29%	24%	22%	28.8	47,000	1,02,960	55,960	2.19

Impact :

The IPM strategies mentioned above were implemented in selected beneficiary fields in Kiasi village and regular monitoring and diagnostic visits were carried out in the field and during this event, the adjoining farmers were invited to the project plot and farmers field school was also conducted along with method demonstrations on various techniques of available and necessary IPM measures. The majority of the farmers were happy as the IPM measures implemented does not require much inputs but rather include many mechanical practices which when taught to the farmers were readily adopted by the farmers. Also, we can see that there was a huge difference in the incidence of pests and diseases after adoption of IPM which eventually leads to a higher yield and higher income.



SUCCESS STORY ON INTEGRATED PEST MANAGEMENT (IPM) IN RICE BY A FARMER OF KIASI VILLAGE, SIAHA DISTRICT, MIZORAM

Name of the KVK:
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Email : kvksaiha@gmail.com

Photo

Name of the farmer:
S. Vabeisia
S/o S. Rahlo
DOB – 02/12/1982
Age:- 39 Years
Education qualification: 10th Standard
Land holding: 2 hectare
Farming experience: 7 years
Other crops grown: Maize and local vegetables
Village - Kiasi,
Siaha District
Pin - 796901
Mizoram
Adhaar card no. 933878673063

Mobile Number: 9362199465

Mail id: nil

Introduction:

Mr. S. Vabeisia is a hard working farmer in Kiasi village. He cultivated Sahsaiva and Japan variety in his WRC plot. The farmers of Kiasi village mostly grown local rice variety called Sahsaiva, Japan, Pata and Matupi. Other varieties like CAU R1 were also grown but commonly grown local rice varieties are Pata and matupi. Among the local varieties, Sahsaiva is most preferred for its taste followed by Matupi. But these two varieties has a lower yield potential and a longer crop duration as compared to Japan and Pata.

Baseline survey and problem diagnosed:

The major insect pests infesting rice crops were Leaf folder, Stem borer and Rice horned caterpillar & Gundhi bug. The major disease incidence diagnosed were Blast, Brown spot & Sheath blight.

KVK interventions:

To overcome the problems diagnosed in rice fields, the following interventions were undertaken by KVK in collaboration with ICAR-NCIPM, New Delhi.

1. **Rice Stem borer: *Scirpophaga incertulas***

ETL: 25% (Dead heart symptoms)

ATL (Action Threshold Level): 2 egg masses/m2

At ATL, egg parasitoid, *Trichogramma japonicum* was released for the management of the rice yellow stem borer. Besides, Spraying of Neem seed kernel extract as well as clipping of the seedling tips before transplanting to eliminate egg masses and collection and destruction of the egg masses in main field were carried out.

Spraying of Azadirachtin 0.03% 1000 ml/ha or Carbofuran 3% CG 25 kg/ha or Chlorpyriphos 20% EC 1.25 l/ha and Fipronil 5% SC 1000-1500 g/ha was advised to be carried out only as and when necessary.

2. **Rice Leaf folder : *Cnaphalocrocis mainsails***

Management:

ETL: 10% leaf damage at vegetative phase and 5% of flag leaf damage at flowering

Release *Trichogramma chilonis* @5 cc (1,00,000/ha) thrice at 37, 44 and 51 days

Keeping the bunds clean.

Avoiding of excessive nitrogenous fertilizers.

Spraying of NSKE 5 % or carbaryl 50 WP 1 Kg or chlorpyriphos 20 EC 1250 ml/ ha as and when necessary.

3. **Rice Earhead Bug: *Leptocorisa acuta***

ETL: 5 bugs/100 ear heads at flowering and 16 bugs/100 ear heads from milky stage to grain maturity

Dust Quinalphos at 25 kg/ha twice, the first during flowering and second a week later or Spray Malathion 50 EC 500 ml/ha

4. **Rice Horned Caterpillar: *Melanitis ismene***

Spray the crop with chlorpyriphos 20 EC 1250 ml/ha

5. **Blast:**

Remove collateral weed hosts from bunds and channels

Use only disease free seedlings

Avoid excess nitrogen

Spraying of Carbendazim 50WP @ 500g/ha or Tricyclozole 75 WP @ 500g/ha after observing initial infection.

Output and Outcome:

The increase in yield percentage after adopting IPM measures was 19.5% which was a good outcome. The farmers in kiasi village were happy to see a good outcome being achieved through adoption of simple IPM modules and following were the results of comparision studies. The cost of land preparation was also considerably reduced since land preparation was done through hiring system of Tractor by KVK, Siaha which immensely boosts up the income of the farmers. The BC ratio is also increased from 2.05 to 2.39 which was a great achievement.

Result & Discussion:

Package of practice	% of Stem borer	% of leaf folder	% of Gundhi bug	% of Horn caterpillar	Yield (q/ha)	Gross Cost (Rs/ha)	Gross Return (Rs/ha)	Net Return (Rs/ha)	BCR
IPM	5%	9%	7%	8%	33.3	50,000	1,19,880	69,880	2.39
Farmers practice	21%	35%	37%	24%	26.8	47,000	96,480	49,480	2.05

Impact :

The majority of the farmers were happy as the IPM measures implemented does not require much inputs but rather include many mechanical practices which when taught to the farmers were readily adopted by the farmers. Also, we can see that there was a huge difference in the incidence of pests and diseases after adoption of IPM which eventually leads to a higher yield and higher income. The IPM strategies mentioned above were implemented in selected beneficiary fields in Kiasi village and regular monitoring and diagnostic visits were carried out in the field and during this event, the adjoining farmers were invited to the project plot and farmers field school was also conducted along with method demonstrations on various techniques of available and necessary IPM measures.

SUCCESS STORY ON INTEGRATED PEST MANAGEMENT (IPM) IN RICE BY A FARMER OF PHURA VILLAGE, SIAHA DISTRICT, MIZORAM

Name of the KVK:
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Siaha District, Siaha
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Email : kvksaiha@gmail.com

Photo

Name of the farmer:
S. Zawdi
D/o S. Zawsua
DOB – 20/12/1991
Age:- 30 Years
Education qualification: 11th Standard
Land holding: 2 hectare
Farming experience: 11 years
Other crops grown: Maize, Pumpkin, Chilli, Roselle, etc
Village – Phura North
Siaha District
Pin - 796901
Mizoram
Adhaar card no. 900948557445

Mobile Number: 9612007585

Mail id: nil

Introduction:

Phura is often called the rice bowl of Siaha district owing to its vast potential area for Wetland Rice Cultivation. Mrs. S. Zawsi is one farmer that is worthy of noticing and has been proudly praised for her achievement as a hard working farm woman. Like Kiasi village, the rice varieties most commonly grown in Phura are Sahsaiva (Buhsen), Japan, Pata and Matupi. Other varieties like CAU R1 are also often cultivated if they are distributed by Agriculture Department. Mrs. S. Zawsi also cultivated Japan and Sahsaiva variety in her WRC area.

Baseline survey and problem diagnosed:

A proper baseline survey on rice cultivation practices in Phura village was carried out in 2019-2020. The major insect pests infesting rice crops were Yellow Stem borer, Paddy leaf roller, Ear head bug, Case worm, Grasshoppers and Rice horned caterpillars. The major disease incidence diagnosed were Blast, Brown spot & Sheath blight.

KVK interventions:

To overcome the problems diagnosed in rice fields, the following interventions were undertaken by KVK in collaboration with ICAR-NCIPM, New Delhi.

1. **Rice Stemborer**: ***Scirpophaga incertulas***

Nature and Symptoms of Damage :

Young larvae bore into the central shoots of young seedlings and tillers, they feed internally on growing shoots causing 'dead heart' symptom i.e drying of the central shoots and interrupting movement of water and nutrients. At boot stage or ear head stage, the larva bores into the top most node and feed at the base of the ear head and succulent ear head dries and becomes white ear or chaffy ear head and such ear heads easily come out when they are pulled out.

ETL: 25% (Dead heart symptoms)

ATL (Action Threshold Level): 2 egg masses/m2

At ATL, egg parasitoid, *Trichogramma japonicum* was released for the management of the rice yellow stem borer. Besides, Spraying Neem seed kernel extract as well as clipping of the seedling tips before transplanting to eliminate egg masses and collection and destruction of the egg masses in main field were carried out.

Spraying of Azadirachtin 0.03% 1000 ml/ha or Carbofuran 3% CG 25 kg/ha or Chlorpyriphos 20% EC 1.25 l/ha was advised to be carried out only as and when necessary.

2. Rice Leaf folder : *Cnaphalocrocis mainsails*

Nature and Symptoms of Damage :

This pest damages throughout crop growing stage until boot leaf stage. In seedlings and young plants, 3-4 leaves of adjacent plants are webbed together forming longitudinal folds and feed on green matter. In case of growing plants, one leaf is folded longitudinally or transversely and larva live inside by scrapping green matter and infested leaves appear white and leaf fold is filled with excreta. Thus, each larva damages several leaves which prevent the photosynthetic activity of the plant.

Management:

ETL: 10% leaf damage at vegetative phase and 5% of flag leaf damage at flowering

Release *Trichogramma chilonis* @5 cc (1,00,000/ha) thrice at 37, 44 and 51 days

Avoid excessive nitrogenous fertilizers

Keep the bunds clean

Spray NSKE 5 % or carbaryl 50 WP 1 Kg or chlorpyriphos 20 EC 1250 ml/ ha

Spraying of Chlorpyriphos 20 EC 1250 ml/ha. as and when necessary.

3. Rice Earhead Bug: *Leptocorisa acuta*

Nature and Symptoms of Damage:

This pest generally appears on rice just before flowering stage and continue until the panicle ripening stage. The nymphs are slender, elongated, yellowish or greenish in colour and suck the sap from milk grains. Both nymphs and adults suck sap of the peduncle, tender stem and milky grains, inserting their proboscis. Grains become chaffy at the spot of the puncture, the water soaked spots appear and become brown with white center. The earheads in infested fields show the presence of many such chaffy grains and the quality of the affected grain gets deteriorated.

ETL: 5 bugs/100 earheads at flowering and 16 bugs/100 ear heads from milky stage to grain maturity

Dust Quinalphos at 25 kg/ha twice, the first during flowering and second a week later or Spray Malathion 50 EC 500 ml/ha

Output and Outcome:

The increase in yield percentage after adopting IPM measures was 20% which was a good outcome. The average number of tillers per plant in IPM adopted filed was 37 against 20.9 in farmers practice and the average number of grains per panicle was 247 as against 165.4 in farmers practice. The average length of panicle was 26.4cm against 25.5cm in farmers practice and average.

Result & Discussion:

Package of practice	% of Stem borer	% of leaf folder	% of Gundhi bug	% of Horn caterpillar	Yield (q/ha)	Gross Cost (Rs/ha)	Gross Return (Rs/ha)	Net Return (Rs/ha)	BCR
IPM	6%	11%	8%	5%	32.9	50,000	1,18,440	68,440	2.4
Farmers practice	17%	29%	24%	22%	26.3	47,000	94,680	47,680	2.01

Impact:

The different IPM technologies implemented were carefully chalked out with the farmers, using all the available materials with minimum use of chemicals as far as possible. Training and method demonstrations were carried out in farmer's field by inviting all the farmers of the adjoining areas of the selected trial plots. These farmers then adopted the technologies in each of their own farms and thus the productivity of all the WRC farmers has also increased as compared to the previous year.

SUCCESS STORY ON INTEGRATED PEST MANAGEMENT (IPM) IN CABBAGE BY A FARMER OF PHURA VILLAGE, SIAHA DISTRICT, MIZORAM

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Email : kvksaiha@gmail.com

Photo

Name of the farmer:
L. Machengi
W/o R. Lalrawngbawla
DOB – 28/02/1979
Age:- 42 Years
Education qualification: 7th Standard
Land holding: 1 hectare
Farming experience: 14 years
Other crops grown: Maize, Brinjal, Roselle etc
Village – Phura North
Siaha District
Pin - 796901
Mizoram
Adhaar card no. 9683-3222-5501

Mobile Number: 9612613953

Mail id: nil

Introduction:

Mrs. L. Machengi is a hard working farm woman who cultivates different types of locally available vegetable crops like tomato, pumpkin, roselle, sweet potato, cabbage, brinjal, okra, carrot, raddish, French beans and maize.

Baseline survey and problem diagnosed:

Proper baseline survey on existing pests and diseases as well as beneficial insects were carried out. The major pests infesting the crops were Whiteflies, Thrips, Leaf Miner, Aphids, Leaf Webbers, Cabbage Butterfly, Brinjal Shoot and Fruit Borer, Red Pumpkin Beetle and Tobacco Caterpillar. Some of the diseases diagnosed in the field were Wilt disease, Fusarium and Verticillium, Anthracnose, Downy mildew, Mosaic Virus, Rusts and Powdery Mildew.

KVK interventions:

To overcome the problems diagnosed in Mrs. Machengi's farm, the following interventions were undertaken by KVK in collaboration with ICAR-NCIPM, New Delhi.

The following IPM strategies were followed :

1. Cultural practices : Summer ploughing, selection of healthy seeds, timely planting, raising of healthy nursery, removal of weed from field, balanced use of fertilizers as per recommendations are followed.
2. Mechanical practices: Removal and destruction of pest infested plant parts, hand picking of larvae, collection of egg masses and larvae of pests and their placement in bamboo cages for conservation for bio-control agents.
3. Biological control practices: Bio-control agents like Coccinelids, spiders, damsel flies, dragonflies, etc. were conserved.
4. Behavioral control: Pheromone traps were installed @ 20traps/ha.
5. Chemical Control: Need based application of pesticides
6. **IPM for *Spodoptera litura*** :
    a) Destruction of egg masses
    b) Poison bait rice bran 5kg + mollase 500g/3 lits of water + Carbaryl 500g /lit of water
    c) Chlorpyriphos 2ml/litre or Dichlorvos 1ml/lit of water

Output and Outcome:

Since this farmer has never adopted any IPM measures before, therefore farmers practice may also be used as untreated plot for result comparision. The increase in yield percentage after adopting IPM measures was 29.7% which was a good outcome. The average weight of head in IPM plot was 2.02kg whereas it was 1.8kg in untreated plot.

Result & Discussion:

Package of practice	**% of cabbage head borer**	**% of Aphids**	**% of *Spodoptera litura***	**% of Cabbage butterfly**	**Yield (q/ha)**	**Gross Cost (Rs/ha)**	**Gross Return (Rs/ha)**	**Net Return (Rs/ha)**	**BCR**
IPM	5%	11%	7%	6%	175	90,000	3,50,000	3,25,000	3.88
Farmers practice	18%	31%	28%	22%	123	85,000	2,46,000	1,61,000	2.89

Impact:

The farmers were really happy to observe such a huge increase in yield and quality of cabbage through adoption of simple IPM technologies and this trial has been carried forward as frontline demonstration in many other villages of Siaha District.


CABBAGE
Bahar

SUCCESS STORY ON INTEGRATED PEST MANAGEMENT (IPM) IN MANGO BY A FARMER OF KAOCHAO 'E' VILLAGE, SIAHA DISTRICT, MIZORAM

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Photo

Name of the farmer:
HC Laikhai
S/o HC Nalai
DOB – 13/04/1950
Age:- 30 Years
Education qualification: 5th Standard
Land holding: 1 hectare
Farming experience: 24 years
Other crops grown: Nil
Village – Kaochao 'E'
Siaha District
Pin - 796901
Mizoram
Adhaar card no. 2745-7316-8703

Mobile Number: 7085626188

Mail id: nil

Introduction:

Mr. HC. Laikhai was one of the first people to cultivate mango in Kaochao 'E' village of Siaha District. Large scale cultivation of mango in Kaochao'E' village started in the year 1997 by just 2-3 farmers. The variety grown in this region is called Rangkuai variety which is commonly known as Kawlchaw theihai (Kawlchaw being the former name of Kaochao). At present, more than 50 farmers have taken up large scale plantation of mango orchard and during the fruiting season, mango from the village reaches almost every part of Mizoram, with the highest distribution percentage to Aizawl, the capital of Mizoram.

Most of the farmers who took up mango orchard as their main business owns 1-2 hectares of land. While some orchard are producing mango for a decade now, there are also some orchard which are just being started.

Baseline survey and problem diagnosed:

Proper baseline survey on existing pests and diseases as well as beneficial insects were carried out. The major pests infesting the mango were Mango Stone Weevil and mango Fruit Fly. While fruit borer affects almost 40% of the fruit, since the farmers can still sell their fruits with the borer inside, it does not cause a huge economic loss as compared to damage caused by fruit fly. The other minor pests observed were Mango hoppers, mealy bug, Bark Eating caterpillar, Flower Gall Midge, Mango Leaf Webber, etc. The diseases observed were Alternaria leaf spots, Anthracnose and Black mildew.

KVK interventions:

To overcome the problems diagnosed in mango orchard, the following interventions were undertaken by KVK in collaboration with ICAR-NCIPM, New Delhi.

The following IPM strategies were followed :

1. For management of Mango Stone Weevil (*Sternochetus mangiferae*), the following measures were undertaken:
   a) Collection and destruction of all fallen fruits at weekly intervals till harvest.
   b) Cleaning of junctions of branches on the trunk with old brooms prior to flowering (October).
   c) Spraying of Acephate 75 SP @ 1.5g/l of water when the fruits are of lime size (2.5 – 4 cm diameter).
   d) Destruction of all leftover fruits and seeds in the orchard after harvest.
2. For management of mango fly (*Bactrocera spp*), the following measures were undertaken:
   a) Picking of infested or dropped fruits every day.
   b) Installation of mango fruit fly pheromone traps @ 20traps per ha.
   c) Smoking of orchard in the evening every week.

Output and Outcome:

The increase in yield percentage after adopting IPM measures was 23.8% which was a good outcome. The fifty (50) selected beneficiary farmers were given training and method demonstration on different IPM technologies. Mango fruit fly pheromone traps and Acephate 75 SP were distributed to these selected farmers. One foot pedal sprayer for long distance spraying, two petrol operated sprayer and five manually operated knapsack sprayers were also given to this selected mango farmers which was intended to be used as hire system for each farmers as and when necessary.

Result & Discussion:

Package of practice	% of Stone weevil	% of Fruit fly	Yield (q/ha)	Gross Cost (Rs/ha)	Gross Return (Rs/ha)	Net Return (Rs/ha)	BCR
IPM	13%	7%	121	98,000	4,23,500	3,25,500	4.32
Farmers practice	57%	31%	94	85,000	3,29,000	2,63,000	3.87

Impact: The farmers were really happy to observe such a huge increase in yield and quality of mango through adoption of simple IPM technologies and this trial has been carried forward as frontline demonstration in other mango orchards of Siaha District. The quality of fruit and its economic value was also immensely increased as there was a considerable decrease in pest infestation specially by stone weevil and mango fruit fly.

SUCCESS STORY ON INTEGRATED PEST MANAGEMENT (IPM) IN OKRA BY A FARMER OF KAOCHAO 'E' VILLAGE, SIAHA DISTRICT, MIZORAM

Name of the KVK:
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Photo

Name of the farmer:
Ngongia
D/o HC Valai
DOB – 14/10/1992
Age:- 29 Years
Education qualification: 6th Standard
Land holding: 1 hectare
Farming experience: 4 years
Other crops grown: Maize, Beans, Mustard, Roselle, etc
Village – Kaochao 'E'
Siaha District
Pin - 796901
Mizoram
Adhaar card no. 2128-4842-9321

Mobile Number: 6009452022

Mail id: nil

Introduction:

Mrs. Ngongia is a hard working farm woman whose busy schedule is shared between raising her kids and cultivating vegetable crops in rabi season. Maize, okra, beans, mustard, pumpkin, roselle, carrot, brinjal, etc are some of the crops cultivated by Mrs. Ngongia of Kaochao 'E' village.

Baseline survey and problem diagnosed:

Proper baseline survey on existing pests and diseases as well as beneficial insects were carried out. The major pests infesting the crops were Fall Army Worm, Whiteflies, Thrips, Leaf Miner, Aphids, Leaf Webbers, Cabbage Butterfly, Brinjal Shoot and Fruit Borer, Red Pumpkin Beetle, Tobacco Caterpillar,etc. Some of the diseases diagnosed in the field were Yellow Mosaic Virus, Wilt disease (Fusarium and Verticillium), Anthracnose, Rusts and Powdery Mildew.

KVK interventions:

To overcome the problems diagnosed in vegetable crops, the following interventions were undertaken by KVK in collaboration with ICAR-NCIPM, New Delhi.

The following IPM strategies were followed :

1. Cultural practices : Summer ploughing, selection of healthy seeds, timely planting, raising of healthy nursery, removal of weed from field, balanced use of fertilizers as per recommendations are followed.
2. Mechanical practices: Removal and destruction of pest infested plant parts, hand picking of larvae and egg masses.
3. Biological control practices: Bio-control agents like Coccinelids, spiders, damsel flies, dragonflies, etc. were conserved.

For IDM in Yellow Vein Mosaic Disease in Okra, the following technology was implemented (Source of Technology - TNAU, Coimbatore, Tamil Nadu, 2011)):

1) Use of IDM resistant variety (var. Arka Anamika).
2) Spray of Chlorpyriphos 2.5ml + neem oil @ 2ml/lt of water for control of vector (*Bemisia tabaci.)*

Output and Outcome:

The increase in yield percentage after adopting IPM measures was 14.81% which was a good outcome. Pest incidence in untreated plot was 37% whereas it was only 5% in treated plot.

Result & Discussion:

Problem Diagnosed	KVK Intervention	Technology Adopted	Parameters of Assessment	Net Return	BC Ratio
Low yield due to high incidence of Yellow Vein Mosaic Disease in Okra	IDM on Yellow Vein Mosaic Disease in Okra	1)Use of IDM resistant variety (Arka Anamika) 2) 2) Spray of Chlorpyriphos 2.5ml + neem oil 2ml/lt of water for control of vector (*Bemisia tabaci.)*	1.Yield – 62q/ha 2.% of disease incidence - 5% 3.Cost of Cultivation- ₹75,000 4.Gross return - ₹1,86,000 5.Yield increase- 14.81%	₹ 1,11,000	2.48
			Farmers Practice 1.Yield .- 54 2.% of disease incidence – 37% 3.Cost of Cultivation - ₹86,000 4.Gross Return - ₹1,62,000	₹82,000/-	1.88

Impact :

The farmers were really happy to observe such a huge increase in yield and quality of okra through adoption of simple IPM technologies and this trial has been carried forward as frontline demonstration by other farmers of Siaha District.


OFT ON
IDM ON YELLOW VEIN MOSAIC
DISEASE IN OKRA

SUCCESS STORY ON INTEGRATED PEST MANAGEMENT (IPM) IN CABBAGE BY A FARMER OF NOAOTLAH-III VILLAGE, SIAHA DISTRICT, MIZORAM

Name of the KVK:
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Tel. No.: +91 9862222958, +91 6033023828
Email : kvksaiha@gmail.com

Photo

Name of the farmer:
Jonathana
S/o Lalsiama
DOB – 02/05/1986
Age:- 35 Years
Education qualification: 8th Standard
Land holding: 2 hectare
Farming experience: 11 years
Other crops grown: Tomato, Strawberry, Grape, etc
Village – Noaotlah-III,
Siaha District
Pin - 796901
Mizoram
Adhaar card no: Nil

Mobile Number: 7630973677

Mail id: nil

Introduction:

He used to grow local variety of any winter vegetables he can procured in his farm land since 2012. KVK have already conducted OFT & FLD in his field for improved varieties of vegetables. He started attending various training programmes of KVK including IPM programme sponsored by NCIPM, New Delhi which in turns result in regular visit of scientists to his field for inspection and suggestions. He now grows only improved variety of cabbage (Bahar) sometimes he also grows Rareball and Ryzoki variety and tomato (Arka rakshak and Samrudhi) from 2017 onwards. Every year he encountered sporadic to high infestations of *Pieris brassicae* and *Spodoptera litura* but now he manages effectively by spraying pesticides recommended by the KVK Scientist.

Technology

- Plough the soil to expose and kill the pupae
- Set up light trap @1/ha
- Hand pick grown up larvae and kill them
- Poison bait: Rice bran 5 Kg + Molasses or Brown sugar 500g + Carbaryl 50 WP 500g+ 3lit of water/ha
- Spray chlorpyriphos 20 EC 2 lit/ha or dichlorovos 76 WSC 1 lit/ha
- Spray insecticides like quinalphos 25 EC @1000 ml

Output and Outcome

He earned a net profit of Rs. 2,59,000/ha in just 6 months period The harvest weight of the Bahar variety balls ranges from 1 to 1.5 kg which is preferred by customer for consumption rather than bigger and higher weight ball. He accepted this variety and popularized in his village. Seeing the yield of variety Bahar and value of net return, lots of farmers in the vicinity was also motivated to grow this particular variety.

Impact:

The IPM strategy he implemented in his fields was very successful and now others cabbage growers in the village were also adopting IPM strategy to combat pest infestation. Before KVK interventions the farmers were not using pesticides properly and without consulting Agriculture and allied departments they just spray whatever chemicals they purchased from the market without observing proper dose or frequency of spray. It was observed that they spray around 5 to 8 times during the cropping period. After implementation of IPM strategy only 3 sprays is required for one cropping season and the farmers profit level increased significantly due to lesser numbers of sprays. Moreover, less use of chemical reduced the environmental risk associated with pest management and also provides healthy economic benefits. After seeing the result, the adjoining village cabbage growers also want to adopt IPM strategy for pest management.

Result & Discussion:

Package of practice	**% of *S. litura***	**% of *P. brassicae***	**Yield (q/ha)**	**Gross Cost (Rs/ha)**	**Gross Return (Rs/ha)**	**Net Return (Rs/ha)**	**BCR**
IPM	5.50	4.00	177	95,000	3,54,000	2,59,000	3.73
Farmers practice	28.00	22.00	123	80,000	2,46,000	1,66,000	3.10

SUCCESS STORY ON INTEGRATED PEST MANAGEMENT (IPM) IN CABBAGE BY A FARMER OF NOAOTLAH-III VILLAGE, SIAHA DISTRICT, MIZORAM

Name of the KVK:
Krishi Vigyan Kendra
Siaha District, Siaha
Mizoram
INDIA
PIN - 796901
Tel. No.: +91 9862222958, +91 6033023828
Email : kvksaiha@gmail.com

Photo

Name of the farmer:
Vanhmingthanga
S/o HC. Lengkhara
DOB – 02/05/1986
Age:- 35 Years
Education qualification: BA
Land holding: 1 hectare
Farming experience: 7 years
Other crops grown: Tomato, Pumpkin, Okra and Brinjal
Village – Noaotlah-III,
Siaha District
Pin - 796901
Mizoram
Adhaar card no: 3120 7953 6275

Mobile Number: 7630973677

Mail id: nil

Introduction:

He cultivated all kind of vegetables in his 1 ha farm land during kharif and rabi seasons. In rabi season, he mostly cultivated cabbage variety rareball. He reported that the cabbage was extensively damaged by some insects and asked for help during 2019. Diagnostic visit was conducted to his field and the pest was identified as *Pieris brassicae* and *Spodoptera litura*. After discussion with the cabbage growers adjacent to his field, they readily adopted IPM technology. Now, all the cabbage growers in Noaotlah-III village successfully adopted IPM technology and very happy with the outcome.

Technology adopted:

- Plough the soil to expose and kill the pupae
- Set up light trap @1/ha
- Hand pick grown up larvae and kill them
- Poison bait: Rice bran 5 Kg + Molasses or Brown sugar 500g + Carbaryl 50 WP 500g+ 3lit of water/ha
- Spray chlorpyriphos 20 EC 2 lit/ha or dichlorovos 76 WSC 1 lit/ha
- Spray insecticides like quinalphos 25 EC @1000 ml

Output and Outcome

He earned a net profit of Rs. 2,55,000/ha during rabi season of 2019 by adopting IPM management strategies. He popularized the variety in his village and other cabbage growing village.

Impact:

The IPM strategy he implemented in his fields was very successful and now others cabbage growers in the village were also adopting IPM strategy to combat pest infestation. Before KVK and NCIPM, New Delhi interventions, the farmers was not using any pesticides and just used to harvest the healthy yield after pest damaged. After seeing the benefits of IPM, the adjoining village cabbage growers also started adopting IPM strategy for pest management.

Result & Discussion:

Package of practice	**% of *S. litura***	**% of *P. brassicae***	**Yield (q/ha)**	**Gross Cost (Rs/ha)**	**Gross Return (Rs/ha)**	**Net Return (Rs/ha)**	**BCR**
IPM	6.50	3.75	175	95,000	3,50,000	2,55,000	3.68
Farmers practice	31.00	19.00	121	80,000	2,42,000	1,62,000	3.02

SUCCESS STORY ON INTEGRATED PEST MANAGEMENT (IPM) IN TOMATO BY A FARMER OF NOAOTLAH-III VILLAGE, SIAHA DISTRICT, MIZORAM

Name of the KVK:
Krishi Vigyan Kendra
Siaha District, Siaha
Mizoram
INDIA
PIN - 796901
Tel. No.: +91 9862222958, +91 6033023828
Email : kvksaiha@gmail.com

Photo

Name of the farmer:
N. Lalsiama
S/o Rungerha
DOB – 16/04/1955
Age:- 66 Years
Education qualification: 5th Standard
Land holding: 2 hectare
Farming experience: 25 years
Other crops grown: Strawberry, cabbage, grape, etc
Village – Noaotlah-III,
Siaha District
Pin - 796901
Mizoram
Adhaar card no: 4714 4733 7448

Mobile Number: 7085625717

Mail id: Nil

Introduction:

He started farming from 2008 and used to grow local variety of any winter vegetables he can procured. He first started cultivating tomato unsuccessfully in 2015 and shifted to other vegetables. Again he cultivated tomato during 2018 and later reported to KVK that he encountered rotten and excessive fruit drops. The succeeding year *i.e* on 2019 KVK conducted trial on IPM of tomato in his field with the assistance from NCIPM, New Delhi. High infestation of *Helicoverpa armigera* was noticed and subsequently spraying of pesticides was done to control the pest. That year, he harvested plenty of healthy fruits and quite contended and he was totally convinced to grow tomato as sole crop. He also popularised tomato cultivation in his village.

IPM Technology Adopted:

1. Dipping of seedling roots in imidacloprid solution
2. Wider spacing 90cmX60cm
3. Soil application of neem cake 20 days after transplanting @ 250kg/ha
4. Spraying of Dimethoate 2ml/litre of water

Output and Outcome

He sold 1kg of tomato at a rate of Rs. 40 to middle man and earned a net profit of Rs. 5,65,000/ha. He accepted tomato variety Arka Rakshak and popularized in his village. Seeing the yield potential of the variety and benefits of IPM strategy, numbers of farmers in the vicinity was also motivated to grow this particular variety to earn substantial income.

Impact:

The IPM strategy he implemented in his fields was very successful and now others tomato growers in the village were also adopting IPM strategy to combat pest infestation. Before KVK interventions the farmer was not using any pesticides in managing tomato pests. It was observed that the farmer was reluctant to use pesticides due to health reason. But after attending training and demonstration conducted by the Kendra he readily adopted IPM technology and experienced the benefits.

Result & Discussion:

Package of practice	**% of *H. armigera***	**Yield (q/ha)**	**Gross Cost (Rs/ha)**	**Gross Return (Rs/ha)**	**Net Return (Rs/ha)**	**BCR**
IPM	7.50	195	1,95,000	7,80,000	5,65,000	4.00
Farmers practice	48.00	158	1,70,000	6,32,000	4,62,000	3.72

SUCCESS STORY ON INTEGRATED PEST MANAGEMENT (IPM) IN TOMATO BY A FARMER OF NOAOTLAH-I VILLAGE, SIAHA DISTRICT, MIZORAM

Name of the KVK:
Krishi Vigyan Kendra
Siaha District, Siaha
Mizoram
INDIA
PIN - 796901
Tel. No.: +91 9862222958, +91 6033023828
Email : kvksaiha@gmail.com

Photo

Name of the farmer:
Nunuka
S/o B. Sanglinga
DOB – 05/12/1976
Age:- 45 Years
Education qualification: 7th Standard
Land holding: 1.5 hectare
Farming experience: 14 years
Other crops grown: Rice, Okra, Brinjal, Chilli etc
Village – Noaotlah-I
Siaha District
Pin - 796901
Mizoram
Adhaar card no: 8241 1424 1170

Mobile Number: 7628876149, 8131990689

Mail id: Nil

Introduction:

He started farming from 2012 and used to grow local variety of during kharif season and during rabi season he mostly cultivated tomato for sell in the local market and other vegetables for family consumption only. He first started cultivating tomato variety Arka Rakshak in 2017. He procured the seeds from KVK and cultivated in less than 1 acre of land to see the results. The results was successful with little pest infestation so he cultivated tomato again during 2018 and reported to KVK that he encountered high pest infestation which caused excessive fruit drops. During 2019 KVK conducted IPM of tomato trial in his field with the assistance from NCIPM, New Delhi. That year, he harvested plenty of healthy fruits and quite happy. He was totally convinced to adopt IPM in the future and happy to popularised tomato cultivation and benefit of IPM in his village.

KVK Intervention:

KVK realising the seriousness of the situation intervened by training and farmer field school on Integrated Pest Management in collaboration with ICAR-NCIPM, New Delhi. Moreover, regular visit of scientists to farmer field for inspection, technical guidance and provision of pesticides.

IPM Technology Adopted:

1. Dipping of seedling roots in imidacloprid solution

2. Wider spacing 90cmX60cm
3. Soil application of neem cake 20 days after transplanting @ 250kg/ha
4. Spraying of Dimethoate 2ml/litre of water

Output and Outcome

He sold 1kg of tomato at a rate of Rs. 40 to middle man and earned a net profit of Rs. 5,65,000/ha. He accepted tomato variety Arka Rakshak and popularized in his village. Seeing the yield potential of the variety and benefits of IPM strategy, numbers of farmers in the vicinity was also motivated to grow this particular variety to earn substantial income.

Impact:

The IPM strategy he implemented in his fields was very successful and now others tomato growers in the village were also adopting IPM strategy to combat pest infestation. The intervention has led to bountiful harvest and the farmer was happily spreading the intervention made by the Kendra and NCIPM, New Delhi. Before interventions the farmer was not using any pesticides in managing tomato pests. It was observed that the farmer was reluctant to use pesticides due to health reason. But after attending training and demonstration conducted by the Kendra he readily adopted IPM technology and experienced the benefits.

Result & Discussion:

Package of practice	**% of *H. armigera***	**Yield (q/ha)**	**Gross Cost (Rs/ha)**	**Gross Return (Rs/ha)**	**Net Return (Rs/ha)**	**BCR**
IPM	6.75	192	1,98,000	7,68,000	5,70,000	3.88
Farmers practice	42.50	151	1,75,000	6,04,000	4,29,000	3.45