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Organic Management of Fall Army Worm in Kharif and Rabi Maize Crop of Sikkim for the Year 2020

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SUMMARY

Fall Army worm (FAW) infestation was reported in maize crop at Rekep village, Challamthang GPU, South Sikkim on 6th April, 2020. After field visit and thorough inspection by Agriculture Department Officials on 7th April 2020, farmers were provided with the necessary Integrated Pest Management (IPM) practices including the organic pesticides and neem based pesticide followed by the demonstrations. First spray with organic pesticide (trade name-Rich Help Guard VII) @ 3ml + Nimbion @ 3 ml/ litre of water was followed at FAW infested maize field. After First spray it was observed that the damage percentage of Fall Army Worm (FAW) in maize fields was found to be less, larvae were found to be deactivated compared to before spray and maize crop vigour and health also has been improved. After 7 days, it was followed by application of Metarrhizium anisopliae @ 10g/ litre water and repeating the former combination of bio-pesticides after 10 days helped in suppressing the pest population drastically.

INTRODUCTION

Fall Armyworm, Spodoptera frugiperda (J E Smith) (Lepidoptera, Noctuidae) is native to the tropical and subtropical region of America. Being a polyphagous pest it is known to cause major damage to economically important cultivated crops like Rice, Millet, Buckwheat, Barley, Oats, Oilseeds and Fruit crops. In India, pest was reported on maize in the month of May 2018 for the first time from Karnataka and has also spread to Mizoram, Manipur and other northeastern states including Sikkim during the year 2019. On the information received on the infestation of Fall Army Worm (FAW) from Rekep, South Sikkim a team headed by Secretary, Agriculture Department along with other officials immediately visited the infested areas of Rekep on 7th March 2020. Hence, to manage the infestation as directed by Secretary Agriculture, Integrated Pest Management (IPM) section of Department of Agriculture has prepared an advisory for the management of FAW.

Integrated pest management strategies for FAW

1. Monitoring

- Installation of pheromone traps @ 5/acre in the current and potential area of spread in crop season and off season.

2. Scouting

- Start scouting in 'W' manner as soon as maize seedlings emerge.
- At seedling to early whorl stage (3-4 weeks after emergence). Action can be taken if 5% are damaged.
- At mid whorl to late whorl stage (5-7 weeks after emergence). Action to be taken if 10% whorls are freshly damaged in mid whorl stage and 20 % whorl damage in last whorl stage.

3. Cultural measures

- Deep ploughing is recommended before sowing. This will expose FAW pupae to predators.
- Timely sowing is advised. Avoid staggered sowings.
- Intercropping of maize with suitable pulse crops of particular region. (eg. Maize+Pigeon pea/black gram/ green gram).
- Erection of bird perches @ 10/acres during early stage of the crop (up to 30 days).
- Sowing of 3-4 rows of trap crops (eg. Napier) around maize field and spray with 5% NSKE or azadirachtin 1500 ppm as soon as the trap crop shows symptom of FAW damage.

- Clean Cultivation and balanced use of bio-fertilizers.
- Cultivation of Maize hybrids with tight husk cover will reduce ear damage by FAW.

4. Mechanical measures

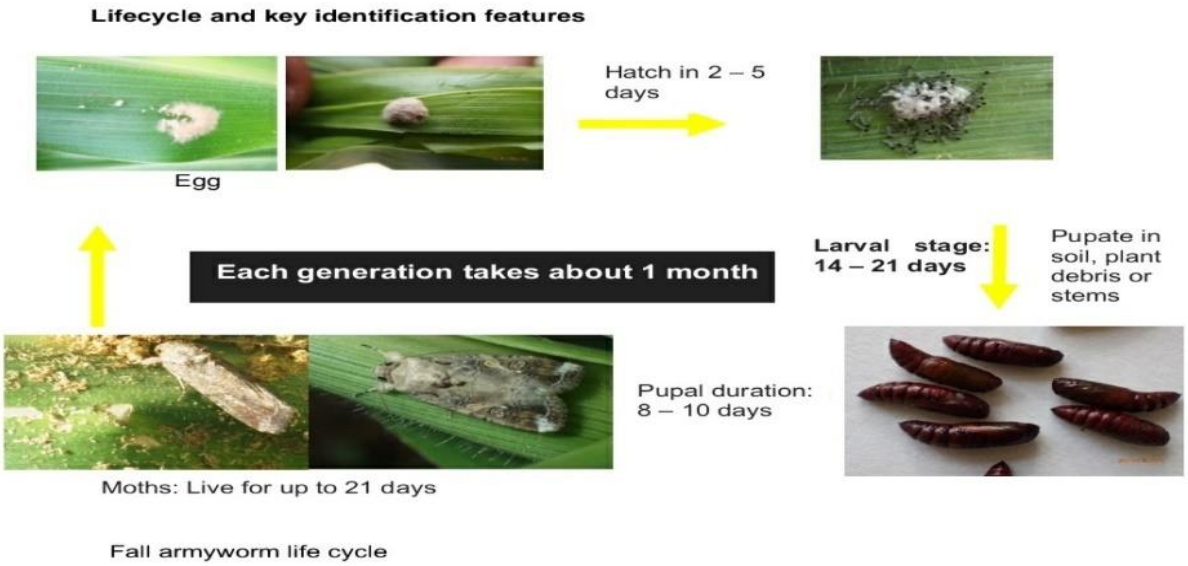
• Hand picking and destruction of egg masses and neonate larvae in mass by crushing or immersing in kerosene water.
• Application of dry sand or soil into the whorl of affected maize plants soon after observation of FAW incidence in the field.
• Mass trapping of male moths using pheromone traps @ 15/acre.

5. Bio-control strategies

Bio-pesticides

- Suitable at 5 % damage in seedling to early whorl stage and 10 % ear damage with entomopathogenic fungi and bacteria.

Fig: 01. Installation of Pheromone Traps and Spraying with Bio-Pesticides



Entomopathogenic fungal formulations

- Application of Metarhizium anisopliae talc formulations (1 x 108 cfu/g) @ 5 g/lit whorl application at 15-25 days after sowing. Another 1-2 sprays may also be given at an interval of 10 days depending on the pest damage.
- In-situ protection of natural enemies by habitat management. Increase the plant diversity by intercropping with pulses and ornamental flowering plants which help in build-up of natural enemies.
- Application of Bacillus thuringienesis var Kurstaki formulation @ 2 g/lit (or) 400 g/acre.

6. Botanical measures

- Neem oil 10000ppm @1-2ml/lit water at 5-10% damage in seedling to early whorl stages.
- Effective ITKs based on farmers like use of extract of Local Herb like Nettle (Sisnu), Agave (Hathibar), Artimesia vulgaris (Titeypati), Bakainu, Banmara can also be helpful.

CONCLUSION

The best and most effective strategy for managing FAW is taking preventive measures and immediate action when the Fall armyworm is detected. Early sowing is also recommended. The action taken will be guided by the extent of infestation. After monitoring and recording the number of maize plants affected by FAW, spraying with bio-pesticides in three different phases with different combinations helped in reducing damage percentage of Fall Army Worm (FAW) in maize fields, larvae were found to be deactivated compared to before spray and maize crop vigour and health also has been improved. The FAW can cause more damage to maize at the early growth stage, which is why the threshold for the use of pesticides is higher than in older maize crops.

REFERENCES

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