

मि० सं० / F.No.7-5/2018-AE(Pt.-1) (FTS P-50921)

भारत सरकार / Government of India

कृषि एवं किसान कल्याण मंत्रालय / Ministry of Agriculture & Farmers Welfare
कृषि, सहकारिता एवं किसान कल्याण विभाग / Deptt. of Agri., Coopn. & Farmers Welfare
विस्तार निदेशालय / Directorate of Extension

विस्तार सुधार एकक / Extension Reform Unit

कमरा सं० / Room No.546,

कृषि भवन / Krishi Bhawan

नई दिल्ली / New Delhi-110001.

Dated the 26th April, 2019.

To

The State Nodal Officer
Extension Reforms (ATMA) Scheme
(All States/UTs & MANAGE)

Subject: Package of Practice (POP) for the management of Fall Army Worm (FAW) - regarding.

Sir/ Madam,

Please find enclosed herewith a copy of Office Memorandum No.12080/37/2018-PP-I dated 15.04.2019, received from Director(Plant Protection) of this Department, which is self explanatory, for wider dissemination of Package of Practice (POP) prepared by the subject matter specialists of the Indian Council of Agricultural Research (ICAR) for the management of FAW.

2. You are, therefore, requested to share it with all Project Directors, ATMA for further dissemination with farmers.

Yours faithfully,

Encl: as above

(Balram Singh)

Joint Director(Extension Reforms)

TeleFax No.011-2338 1764

Copy to:

1. Joint Director(Ext) & Scheme Officer of KCC, Directorate of Extension, Krishi Vistar Bhawan, New Delhi.

4035231/2019/CR
20/4/19

F. No. 12080/37/2018 -PP-I
Government of India
Ministry of Agriculture & Farmers Welfare
Department of Agriculture, Cooperation & Farmers Welfare
Plant Protection-I

Krishi Bhavan, New Delhi.
Dated: 15th April 2019.

OFFICE MEMORANDUM

Subject: - Package of Practice (POP) for the management of Fall Army Worm (FAW)-
reg.

The FAW was noticed during Kharif 2018 on Maize crop in the State of Karnataka. Thereafter, its presence has been reported from the State of Telangana, Andhra Pradesh, Tamil Nadu, Maharashtra, Chhattisgarh, Odisha, Gujarat, Madhya Pradesh, Rajasthan, Bihar and West Bengal. The FAW is an exotic and invasive pest, which can feed on 80 different crops.

2. Given the gravity of the situation, the subject matter specialists of the Indian Council of Agricultural Research (ICAR) has prepared a POP for the management of FAW.

3. The same is being shared with all the division in the Department with a request to circulate it through the organisations/bodies/Directorate, etc. under their administrative control for its wider dissemination to the Stakeholders.

Encl: As above

Alh
24/4

Dir (Entm)

out 15/4/19
(Rajesh Malik)
Director
Plant Protection

Distribution

All Divisional Heads

Copy for information:

JD/IE/RIS
- PLS share with state
ATMAS; MANAGE
- Also to KCC

- 1. PPS to Agriculture Commissioner, DAC&FW
- 2. PPS to JS (PP)

on file

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Management strategies of Fall Armyworm (FAW), *Spodoptera frugiperda* on maize

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

Scouting:

Start scouting as soon as maize seedlings emerge

1. At Seedling to early whorl stage (3-4 Weeks after emergence)- Action can be taken if 5% plants are damaged.
2. At Mid whorl to late whorl stage (5-7 weeks after emergence) –Action can be taken if 10 % whorls are freshly damaged in mid whorl stage and 20% whorl damage in late whorl stage.
3. At tasseling and post tasseling (Silking stage)- Do not spray insecticides (No insecticide application). But 10% ear damage needs action.

Cultural Measures

1. Deep ploughing is recommended before sowing. This will expose FAW pupae to predators.
2. Timely sowing is advised. Avoid staggered sowings.
3. Intercropping of maize with suitable pulse crops of particular region. (eg. Maize + pigeon pea/black gram /green gram).
4. Erection of bird perches @ 10/acre during early stage of the crop (up to 30 days).
5. 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.
6. Clean cultivation and balanced use of fertilizers.
7. Cultivation of maize hybrids with tight husk cover will reduce ear damage by FAW.
8. Application of Sand + lime in 9:1 ration in whorls in first thirty days of sowing.

Mechanical control:

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

Bio Control:

1. *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
2. Augmentative release of release of *Trichogramma pretiosum* or *Telenomus remus* @ 50,000 per acre at weekly intervals or based on trap catch of 3 moths/trap

3. Biopesticides: Suitable at 5% damage in seedling to early whorl stage and 10% ear damage with entomopathogenic fungi and bacteria
 - a. Entomo pathogenic fungal formulations: Application of *Metarhizium anisopliae* talc formulation (1×10^8 cfu/g) @ 5g/litre whorl application at 15-25 days after sowing. Another 1-2 sprays may also be given at an interval of 10 days depending on pest damage or *Metarhizium rileyi* rice grain formulation (1×10^8 cfu/g) @ 3g/litre whorl application at 15-25 days after sowing. Another 1-2 sprays may also be given at an interval of 10 days depending on pest damage
 - b. *Bacillus thuringiensis* v. *kurstaki* formulations @ 2g/l (or) 400g/acre

Chemical Control:

1. **Seed treatment:** Chemicals for seed treatment are under consideration of the Registration Committee and will be conveyed after approval of the Registration Committee.
2. **First Window (seedling to early whorl stage):** To control FAW larvae at 5% damage to reduce hatchability of freshly laid eggs, spray 5% NSKE / Azadirachtin 1500ppm @ 5ml/l of water.
3. **Second window (mid whorl to late whorl stage):** To manage 2nd and 3rd instars larvae at 10-20 % damage spray *Emamectin benzoate* @ 0.4 g/l of water OR *Spinosad* @ 0.3 ml/l of water OR *Thiamethoxam 12.6% + lambda-cyhalothrin 9.5%* @ 0.5 ml/l of water OR *Chlorantraniliprole 18.5% SC* @ 0.4 ml/l of water.
Poison baiting: Poison baiting is recommended for late instar larvae of second window. Keep the mixture of 10 kg rice bran + 2 kg jaggery with 2-3 litres of water for 24 hours to ferment. Add 100g thiodicarb just half an hour before application in the field. The bait should be applied into the whorl of the plants.
4. **Third Window (8 weeks after emergence to tasseling and post tasseling):** Insecticide management is not cost effective at this stage. Hand picking of the larvae is advisable.

All the sprays should be directed towards whorl and either in the early hours of the day or in the evening time.

Capacity building and mass awareness

1. Application and timely plant protection measures to avoid spread of the insect from the abandoned crop.
2. Creation of awareness among important stake holders through trainings /group discussions.
3. Community based and area-wide approach for implementing management strategies.