

ATTENTION!!! ATTENTION!!!

FALL ARMY WORM (SPODOPTERA FRUGIPERDA)

4. Cultural Methods

- ◆ Farmers should plant early and adhere to regional planting calendar and avoid late and off-season planting.
- ◆ Farmers should avoid planting new crop near infested plants .
- ◆ Farmers should use recommended fertilizers and keep fields weed free to boost plant vigor.

5. Mass Trapping

Set up 4-6 FAW Pheromone traps per Ha to suppress the moth population

6. Chemical Control

- ◆ The potential effective insecticides against this pest include: Diazinon, Alpha Cypermethrin, Chlorpyrifos, Diflubenzuron Triclorfon (Dipterex), Chlorantraniliprole, Spinetoram, Emamectin benzoate, Indoxacarb and Lambda Cyhalothrin.
- ◆ For effective control in maize, spray at least three times starting two weeks after emergence, at knee high and just before tasseling.
- ◆ However these products need to be used appropriately at right environmental conditions to minimize development of pest resistance.
- ◆ All farmers in a given locality should spray to avoid neglected farms, which become breeding grounds for the insect and a source of re- infestation.

7. Restrict Movement of Infested Plant Materials

The public is discouraged from moving infested plant materials to areas where the pest has not been reported.

For further enquiries, contact: County Agriculture Offices or Plant Protection Services Division, P.O. Box 14733-00800, NAIROBI.
Email: ppsdoffice@ymail.com

Compiled by: State Department of Agriculture
FAW Consortium Members
(KALRO, KEPHIS, PPSD, PCPB & CABI)



MINISTRY OF AGRICULTURE

FALL ARMY WORM (SPODOPTERA FRUGIPERDA)

ATTENTION!!! ATTENTION!!!

Fall Armyworm Moth; is a migratory pest native to North and South America. This pest occurs in large numbers and its caterpillars cause severe damage to more than 80 plant species especially cereal crops such as: maize and rice.



NEW PEST ON CEREALS AND PASTURE IN KENYA

Government Efforts to Manage the Pest

The Ministry of Agriculture, Livestock and Fisheries constituted a multi-institutional technical team with experts drawn from public and private sector. The institutions represented include: KALRO, KEPHIS, CABI, PCPB, ICIPE and Plant Protection Services; State Department of Agriculture. The team has developed a strategy to guide efforts towards management of this new pest.

Status of Fall Army Worm Spread in Africa

From the African continent, this pest was first reported in September 2016 in the West Africa region. It has now been reported in Central, Southern and East African regions. In Kenya, FAW infestation was first detected in Trans Nzoia County in the second week of March, 2017 on off-season irrigated maize.



Infected maize crop

Spread and Likely Economic Impact of FAW in Kenya

A field survey conducted in March 2017 and other current reports have confirmed presence of fall army worm in the following counties: Trans Nzoia, Bungoma, Kakamega, Uasin Gishu, Nandi, Kericho, Baringo,

reduce fertilization and hence grain formation reduction. The pest has quarantine status in Europe and its presence therefore has implications on international trade. This is critical due to the wide host range.

Management of FAW

No studies in the country have been undertaken, therefore, the suggested management options are based on publications from other countries. Strengthening national and county capacity in surveillance, diagnostic skills and management of fall army worm by training public-private extension service providers, seed inspectors, agrochemical dealers, spraying teams, researchers, farmers and the general public is critical to fast track adoption of the following strategies to mitigate against the threat of this new migratory pest:

1. Early Warning

For detection and early warning mount at least one FAW specific pheromone trap per Ha.

2. Monitoring/Scouting

Scouting for signs and symptoms of the pest should start one week after crop germination.

3. Mechanical Control

- ◆ Deep ploughing exposes the pupae to predators and solar heat.
- ◆ Planting varieties with hard husk cover provides a barrier.
- ◆ Use hands to squash the caterpillars. Remember killing one caterpillar prevents more than 1500 -2000 new caterpillars after a period of less than 4 weeks.
- ◆ Collect and drop caterpillars in hot water to drown them.

Comparison with other Caterpillars

Infestation by stalk borer is different from FAW damage. The stalk borer caterpillar bores into the stalk/stem. The FAW caterpillar feed more on peripheral foliage, making larger more ragged holes. They also tend to burrow through the husk instead of feeding down through the silks

How is FAW Spread

Long distance introduction of FAW is mainly through great flying capacity of adult moths. In addition, the large number of eggs laid enables the pest to quickly establish in a new area. Movement of infested plant materials; (green or dry stover for animals, green maize cobs) can aid in carrying the different FAW stages within the same farm or in the locality. In Kenya, long distance movement of green maize for roasting is a thriving business, which can contribute to the spread of the pest.

Implication of fall Army Worm Infestation

This pest causes severe damage to plants such as maize, rice, pasture, sorghum, pear millet, cotton and some vegetable crops. This results into economic loss which impacts negatively on national food security and income. So far in Kenya the pest has been noted only on maize. Attack on maize at vegetative stage can result to 100% crop loss if no control is taken. Attack on young maize can totally reduce plant density, warranting re-planting. Infestation on grain in the cob predisposes such to fungal attack.

Destruction of the silk results to reduced pollination and hence grain formation. In addition, attack on tassels affect pollen provision, which

Nakuru and Busia. The pest is causing damage on off-season maize in irrigated areas of these counties.

This pest is spreading rapidly and has potential to cause 100% loss in a wide range of crops such as: maize, rice, pasture, sorghum, millet, cotton and some vegetable crops. This will result into national food insecurity and loss of income unless urgent measures are implemented.

How to Identify FAW

The fall armyworm caterpillars are green, brown or black in color depending on development stage. A mature caterpillar has a distinct **white line between the eyes, which form an inverted “Y” pattern on the face** (this is seen when the worm is placed facing you). In addition, there are pronounced **four black spots** aligned in a **square** on the top of the **8th segment** near the back end of the caterpillar. From first to third instar, the caterpillars are small and their initial infestations on crops often go unnoticed.



Inverted Y on head and four black spots

Photos by Russ Ottens, Bugwood.org

ATTENTION!!! ATTENTION!!!

FAW Host Range

This pest mainly attacks cereals: (maize, sorghum, rice, millet, wheat, barley), fodder grasses: (Bermuda grass, Hay grass, and Napier grass), sugar cane and cotton. Others susceptible crop includes: kales, cabbages, legumes/pulses, banana, tomatoes, capsicum, ginger, spinach, amaranths, onions, sugar beet, citrus, cucumber and sunflower. It can attack over 80 different plants.



On whorl



On stem



FAW Life Cycle

This pest undergoes complete metamorphosis: eggs- larva- pupa- adult.

Eggs: The female lays 'egg masses' on the host plant - about 150-200 tiny eggs which are covered with protein sheath to protect from attack by natural enemies and pesticides. In her lifetime, a female lays 1,500-2,000 eggs. Eggs hatch in 2 to 7 days depending on weather conditions.

Larva: The larval stage is the destructive phase feeding on plant soft tissues. Before pupating, caterpillars go through 6 instars with their color changing from light green to dark brown. The upper side of the body

FALL ARMY WORM (*SPODOPTERA FRUGIPERDA*)

retains a light color above longitudinal stripes. FAW caterpillars take 2-3 weeks to mature, are 3-4 cm long, and have 8 prolegs with additional pair on last abdominal segment.

Pupa: The pupa is shiny brown and found underground (2.5 cm -3.7 cm deep) from which an adult emerges in 1-5 weeks depending on soil temperature.

Adult Moth: are active at night and mates in the evening. The females (1.7mm x 3.8mm) are slightly bigger than the males (1.6mm x 3.7mm) in wingspan. The male forewing is mottled; (light brown, grey, straw) while

Damage Caused by FAW

The caterpillars feed and damage leaves and inside whorls of young maize plants resulting in small shot holes or large ragged and elongated holes on the plant. Severe feeding gives the appearance of maize that has been damaged by hail. After feeding, FAW caterpillars leave behind large amounts of moist sawdust-like frass near the whorl and upper leaves. FAW infestation cause stunting and destruction of developing tassel and kernels, thereby reducing grain quality and yield.



Almost tasseling stage



On the tassel



Spots holes leaves