

# DESTROY ARMYWORM WITH SYNGENTA PRODUCTS



# BEFORE IT DESTROYS YOUR CROP

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# THE FALL ARMYWORM

(FAW) *SPODOPTERA FRUGIPERDA* IS A NEW INVASIVE PEST IN AFRICA

## **i** QUICK FACTS

### Fall Armyworm

- ▶ Highly destructive pest if not controlled – yield losses estimated between 21–53% of annual maize production. (data from 12 countries).
- ▶ Prefers maize, but can feed on more than 100 crops.
- ▶ Crops are vulnerable from seedling until grain.
- ▶ Multiple generations per year – the female moth can lay up to 2000 eggs in her lifetime.
- ▶ The FAW moth can fly up to 100 km per night.
- ▶ Present in all major corn growing countries in Africa.

Source: CABI evidence note report on Fall Armyworm - September 2017

**THE FAW ORIGINATES FROM THE TROPICAL REGIONS OF SOUTH AMERICA (E.G. BRAZIL, ARGENTINA) AND THE CARIBBEAN REGION; IT IS ALSO PRESENT IN SOME SOUTHERN STATES OF THE USA (E.G. TEXAS, FLORIDA) WHERE IT IS A SERIOUS PEST ON ESPECIALLY MAIZE/CORN.**

It was first reported in South-West Nigeria in late January 2016 and quickly spread to almost all maize growing countries in Africa. The pest arrived in South Africa early January 2017. Most countries were caught off guard not knowing with what pest they were dealing or the devastation it could cause. Malawi, Namibia, Zambia and Zimbabwe suffered huge crop losses (30-60%) due to this

unfamiliar pest. In Zambia an estimation of 223,000 ha were affected, 90,000 maize, Malawi 17,000 ha, Namibia 50,000 ha (maize & millet), Zimbabwe 130,000 ha, etc. (source: FAO meeting Harare 14-16 Feb 2017). The pathways of the pest's introduction into Africa are yet unknown, there are multiple possibilities, but it likely traveled on board of freight ships and planes.



## MOTHS

Moths are very strong flyers, travel vast distances per week, using wind or air currents and weather patterns to their benefit. Adult females can live up to 21 days, on average 10 days. Moths are night fliers, dull to dark grey

with an irregular pattern of light and dark areas on the front wings. After mating a pre-oviposition period of 3-4 days follows. The female normally deposits most of her eggs during the first 4-5 days.

Leaf damage caused by FAW larvae

## EGGS

Eggs are laid in masses, egg parcels vary greatly in numbers from 50 up to 100 or 250, even as many as 400 per parcel were recorded. The total egg production per female averages on 1,500 eggs,

with the maximum greater than 2,000 eggs. Eggs are often deposited in layers, but most eggs are spread over a single layer attached to foliage. The eggs are covered by a layer of grayish scales.

**EGGS HATCH IN ONLY 2-3 DAYS DURING THE SUMMER MONTHS**



Egg parcels of FAW



Newly hatched FAW larvae



**4 BLACK SPOTS  
ALIGNED IN A  
SQUARE ON THE  
TOP OF THE 8TH  
SEGMENT NEAR  
THE BACK ARE  
CLEARLY VISIBLE**

Four black spots in the form of a square on the back of larva

## LARVAE

Larvae show variation in color from green to pinkish, brown or black with a distinct white line between the eyes forming an inverted Y pattern on the face. The eyes have a net-like pattern.

The body has a broad pale band along the top, contrasted by dark striping on the sides. Armyworms are very small at first, causing little plant damage and infestations and often go unnoticed.

Larvae feed for 2-3 weeks, full grown larvae are between 2.5 and 3.8 cm long. Armyworms consume 80% of their total food intake during the last few days of development.

**THEY HAVE AN IMMENSE APPETITE, OCCUR IN GREAT NUMBERS AND CAN DAMAGE ENTIRE FIELDS IN A FEW DAYS.**



Young larvae

**MAIZE IS THE  
PREFERRED CROP,  
BUT THE FAW CAN  
ATTACK AND SURVIVE  
ON MORE THAN 100  
CROPS IN AT LEAST  
27 PLANT FAMILIES**

Severe damage to cob



FAW pupae

## PUPAE

Once the armyworm completes feeding, mature larvae tunnel into the soil and pupate about 2.5 cm deep. Pupae can also form within leaf sheaths or in stems or cobs.

The life cycle takes about 1 month (24-40 days) in the summer and several months in winter. Several generations occur per

year, with only recorded overwintering in southern Florida & southern Texas.

**AFRICAN COUNTRIES  
DO NOT REALLY  
HAVE COLD WINTERS  
AND CONSTANT  
GENERATIONS  
MIGHT OCCUR.**

## CROPS RANGE

In Africa the FAW was recorded on maize, sorghum, groundnuts/peanuts, cotton, soybean, pasture and other grasses, spinach, lucerne, sunflower, onions, cabbage and potatoes.

Other hosts listed include wheat and sugar cane. Weeds known to serve as hosts include bent grass, *Agrostis* sp.; crabgrass, *Digitaria* spp.; Johnson grass, *Sorghum halepense*;

morning glory, *Ipomoea* spp.; nutsedge, *Cyperus* spp.; pigweed, *Amaranthus* spp.; and sandspur, *Cenchrus tribuloides*.



Damage to cotton

# FAW CONTROL

## HOW TO CONTROL FALL ARMYWORM?

Syngenta has a broad portfolio of products that have shown excellent control of the Fall Armyworm in many crops, especially in South America where the pest originated.

Controlling Fall Armyworm requires an integrated approach – there is not one product that will silence the pest indefinitely. Seed traits, seed treatment products, foliar pesticide applications and good agronomic practices (including rotation) are all part of the solution.

### The benefits of seed treatment:

FORTENZA™ Duo insecticide seed treatment targets a range of pests from the earliest stage possible and protects the plant for 30 days after emergence. FORTENZA™ Duo is especially effective on Fall Armyworm. Seed treatments are a crucial part of an effective FAW control strategy. They protect the seed from the start and can mitigate a few of the challenges that occur with foliar applications. Protecting seeds and young plants from the very beginning gives them the opportunity to survive during the critical first days after planting, even under high insect pressure conditions.

### FORTENZA™ Duo suppresses the first occurrence of the pest on the crop which leads to:

- Less insect pressure. FORTENZA™ Duo will significantly reduce the pest present in and around

the crop and will prevent them to reproduce. Less pest pressure will make the follow-up foliar insecticide application more effective.

- Less variety in insect lifecycle stages. FORTENZA™ Duo will kill the first occurrence of the pest in all larvae stages of the pest's lifecycle. The generation of Fall Armyworm that occurs after 30 days – when the effects of the seed treatment have decreased – will be in the same stage of their lifecycle. They will be uniform and therefore easier to spray effectively.

The lower insect pressure and the life cycle stage uniformity makes the first foliar application on a crop treated with FORTENZA™ Duo highly effective compared to the same foliar application on a non-treated crop.

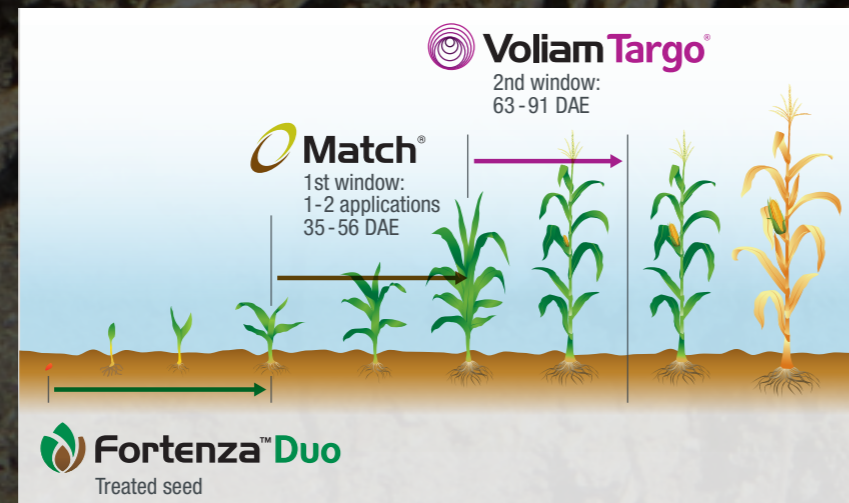
### Extra tips for an effective FAW control program:

- Monitor your field with pheromone traps for early moth flight detection, early infestation and size of

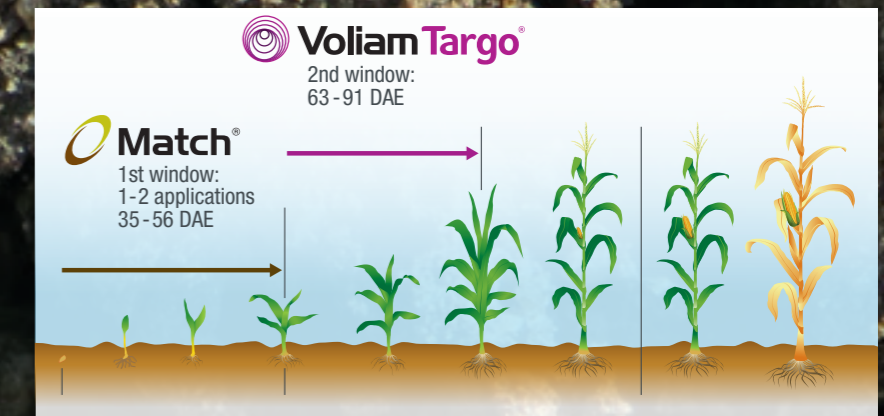
possible infestation. Scout every 2-3 days throughout the crops' lifecycle, inspect the edge rows and the middle of the crop. Search for egg parcels and young or small larvae and any symptoms of wilting or damaged crops.

- Plan your applications based on product availability, type, mixtures and application methods.
- The best control is obtained if the larvae feed exposed on the leaves, the outside of cobs/ears, tassels and where chemicals can reach them.
- Use knapsack tractors or pivot applications to apply foliar insecticides. Aerial applications were less effective.
- Alternate chemical groups – mode of action resistance is a reality. All diamide pesticides (chlorantraniliprole and flubendiamide) must be used with very careful consideration of resistance management.

### FAW control program: including Seedcare



### FAW control program: without Seedcare



# INSECTICIDE APPLICATIONS MUST BE MADE DURING EARLY DEVELOPMENT STAGES OF LARVAE

In germinating crops FAW can damage crops in a similar way as cutworms.

# SYNGENTA'S EXTENSIVE RANGE OF SOLUTIONS FOR FIGHTING FALL ARMYWORM



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## PRODUCT SUMMARY

FORTENZA™ Duo is a next-generation insecticide seed treatment that delivers long-lasting insect control both above and below the ground. Building on proven chemistry, it guarantees optimal crop establishment while providing full-spectrum, early-season pest control to maximize the grower's yield. This convenient and flexible solution delivers superior results in a variety of climatic conditions - even under high pest pressure. It is especially effective on Fall Armyworm.



### PRODUCT CHARACTERISTICS

#### **CONFIDENT AND BOLD**

FORTENZA™ Duo delivers. Building on proven chemistry, its efficacy has been demonstrated time and again around the globe.

#### **RESPONSIBLE AND RELIABLE**

FORTENZA™ Duo will never let you down. Backed by extensive experience, FORTENZA™ Duo has an improved environmental profile over industry standards, reducing the potential risk to the environment and to human health.

#### **COMPREHENSIVE AND SMART**

FORTENZA™ Duo does more with less. It gives plants the best start possible by combining unprecedented crop establishment, improved plant vigor and broad-spectrum protection in one seed treatment solution.

**ACTIVE INGREDIENTS:**  
Cyantraniliprole + thiamethoxam

**FAW CONTROL:**  
FORTENZA™ Duo provides protection up to 30 days after emergence, leading to better management of costs and foliar application, while maximizing yields.

FORTENZA™ Duo is currently under registration for use as seed treatment and is not being offered for sale. Please check with your local representative for further information.



## PRODUCT SUMMARY

An insecticide which combines power and simplicity, AMPLIGO shows excellent efficacy and long-lasting control in many crops on a broad spectrum of Lepidopteran and sucking pests including the FAW.



### PRODUCT CHARACTERISTICS

#### POWERFUL

Rapid knockdown effect stops insect feeding immediately with no further crop damage. At the same time, long residual ensures effective control with less applications.

#### SIMPLE

Whatever the crop or pest, AMPLIGO cleans all. Controls a broad spectrum of Lepidopteran and sucking pests in both vegetables and field crops.

#### PROVEN

AMPLIGO is registered and sold by Syngenta across the globe and is a trusted partner for growers for many years.

#### ACTIVE INGREDIENTS:

Chlorantraniliprole +  
Lambda Cyhalothrin

#### RECOMMENDED DOSE RATE:

200-240 ml/ha

#### FAW CONTROL:

Start application during the early development stages of the larvae or when the 1st egg parcels are noticed

## PRODUCT SUMMARY

DENIM FIT 50 WG is all about healthy crops and big harvests. A specialist product for Lepidoptera control in many crops, it shows excellent efficacy against the FAW too.



### PRODUCT CHARACTERISTICS

#### RELIABLE

Shows excellent activity against Lepidopteran pests and *Tuta absoluta* at very low rates.

#### ROBUST

Works fast and lasts long because it is a unique combination of a fast acting and a long lasting active ingredient thus giving complementary protection and more reliable efficacy.

#### SECURE

Secures harvest of many crops – vegetables, fruits and field crops.

#### ACTIVE INGREDIENTS:

Emmamectin benzoate + Lufenuron

#### RECOMMENDED DOSE RATE:

125-150 gm/ha

#### FAW CONTROL:

Start application during the early development stages of the larvae for effective control



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## PRODUCT SUMMARY

PROCLAIM FIT UV 45WG is all about healthy crops and big harvests. A specialist product for Lepidoptera control in many crops, it shows excellent efficacy against the FAW too.



### PRODUCT CHARACTERISTICS

#### RELIABLE

Shows excellent activity against Lepidopteran pests and *Tuta absoluta* at very low rates.

#### ROBUST

Works fast and lasts long because it is a unique combination of a fast acting and a long lasting active ingredient thus giving complementary protection and more reliable efficacy.

#### SECURE

Secures harvest of many crops – vegetables, fruits and field crops.

**ACTIVE INGREDIENTS:**  
Emamectin benzoate + Lufenuron

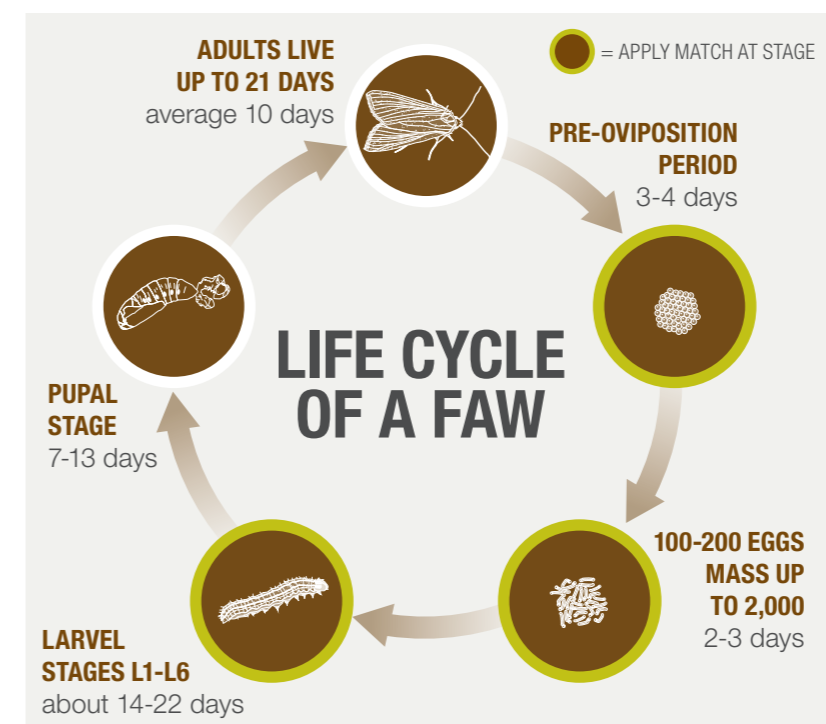
**RECOMMENDED DOSE RATE:**  
125-150 gm/ha

**FAW CONTROL:**  
Start application during the early development stages of the larvae for effective control

## PRODUCT SUMMARY

MATCH is the highly experienced, efficient and expert solution against all Lepidopteran pests including the FAW, a great saver of time and money. MATCH is a specialist in Lepidoptera control. It works in 3 ways:

1. Larvicidal activity: inhibition of chitin biosynthesis, thus interfering with the formation of the cuticle or skin of the larvae, killing the existing crop damaging caterpillars.
2. Ovicidal activity: does not allow eggs to hatch and prevents in this way new caterpillars to emerge.
3. Transovarial activity: the adults that ingest MATCH will lay sterile eggs. Hence, MATCH prevents the next generation.



### PRODUCT CHARACTERISTICS

#### EXPERT

The triple Mode of Action guarantees the high activity and the long lasting effect of MATCH, limits the number of sprays and saves time and money.

#### EFFICIENT

MATCH works mostly by ingestion and hence is safe to beneficial insects.

#### EXPERIENCED

Reliable in any weather, MATCH is an accepted brand for Lepidoptera control since three decades and is an important product within Syngenta's Lepidoptera portfolio.

**ACTIVE INGREDIENTS:**  
Lufenuron

**RECOMMENDED DOSE RATE:**  
500-1000 ml/ha

**FAW CONTROL:**  
Start application during the early development stages of the larvae for effective control





## PRODUCT SUMMARY

VOLIAM TARGO® is an unique 3 in 1 solution for protection against Lepidopteran pests including FAW, *Tuta absoluta*, mites and leafminers.

VOLIAM TARGO has given excellent results on the FAW in Brazil and is one of the recommended products for FAW control by the Ministry of Agriculture in Kenya.



### PRODUCT CHARACTERISTICS

 **STRONGEST**

A solution which controls Lepidoptera and *Tuta absoluta*, also powerful against mites and leafminers.

 **TRUSTWORTHY**

It is fast acting with a wide window of application, long lasting with less sprays, saving costs.

 **FLEXIBLE**

Low residues, as low as 3 day PHI, easy to export, MRLs in more than 60 countries. The product is IPM compatible, with short re-entry intervals for bumble bees and other beneficial insects.

**ACTIVE INGREDIENTS:**  
Chlorantraniliprole + Abamectin

**RECOMMENDED DOSE RATE:**  
300-500 ml/ha

**FAW CONTROL:**  
Start application during the early development stages of the larvae for effective control

## PRODUCT SUMMARY

PROCLAIM® is a water soluble granular translaminar insecticide with stomach action for the control of various Lepidopteran pests such as FAW.



### PRODUCT CHARACTERISTICS

 **FAST ACTING**

Due to strong translaminar action a reservoir of active ingredient is formed within the treated leaves. The larvae are paralyzed and stop feeding shortly after ingestion. Mortality occurs within 1-4 days.

 **EFFICIENT**

It degrades rapidly and is fast absorbed inside the leaf surface making it highly reliable, rain fast and IPM compatible.

 **UNIQUE**

It has a very unique mode of action which makes it a resistance breaker and a valuable rotation partner for resistance management.

**ACTIVE INGREDIENTS:**  
Emamectin Benzoate

**RECOMMENDED DOSE RATE:**  
200 gm/ha

**FAW CONTROL:**  
Start application during the early development stages of the larvae for effective control

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