



SOUTHERN ARMYWORM, A NEW ALIEN INVASIVE PEST IDENTIFIED IN WEST AND CENTRAL AFRICA

Farmers near Ubiaja in south-eastern Nigeria experienced an outbreak of caterpillars that caused severe defoliation on cassava in a 450-hectare field in mid-December 2016. Alcohol-preserved samples of immatures (larvae) were sent for diagnosis to the Biodiversity Center at the IITA Station in Bénin. The species appeared to have related origins and closely resembled the African cotton leafworm *Spodoptera littoralis* (Boisduval). In the absence of adult moths, it was concluded that the latter species, widespread in tropical Africa and known to feed on various kinds of food, must have attacked some sweet varieties of cassava that are less toxic to potential insect pests. Similar observations were made in early 2017 when farmers submitted alcohol stored samples of immatures for identification following complaints about dense caterpillar colonies in their cassava fields in the areas surrounding Dasso, southern Bénin. Moths were finally obtained from tomato fields attacked in Yaoundé, Cameroon, and samples of adults from the University of Masuku in Franceville, Gabon. The examination of the outer features of the moths together with the genitalia of both sexes allowed an unambiguous identification of the southern armyworm (SAW) *Spodoptera eridania* (Stoll). However, in order to verify its identity at the molecular level, larval and adult samples collected from all present sites were recently sent to the Germplasm Health, Virology, and Diagnostics Unit at the IITA headquarters in Ibadan for DNA barcode analysis. Results confirmed the findings.

The southern armyworm belongs to the cosmopolitan genus *Spodoptera* that encompasses 31 species worldwide including many of the most important agricultural armyworm caterpillars such as the other recent invader, the fall armyworm (FAW) *S. frugiperda*. The detection of the new pest adds to the eight species already known to occur on the African continent. Caterpillars, particularly



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Caterpillar of the southern armyworm, *Spodoptera eridania*

mature instars of the SAW, are extremely variable in their general appearance and can therefore hardly be identified based on morphological characters alone. Thus, in Africa,

forms that bear a row of dark triangles on each side of the back along the length of the body can easily be mistaken for *S. littoralis* or the beet armyworm *S. exigua* (Hübner). Accurate identification of adults is not less challenging since *S. eridania* belongs to the category of

Spodoptera moths lacking strong contrasting patterns on the forewings. They measure 33-38 mm in length, are commonly cream or gray in ground color, bear a faint kidney-shaped spot, and look identical in both sexes. The only constant feature is a dark brown streak at the inner margin of the forewing. Some forms exhibit a large bar extending from the center to the margin of the forewing (see below picture). The high variability and difficult identification of the species are evidenced by its 20 Latin synonyms.



Male and female adult specimens of the southern armyworm

The southern armyworm is native to the Americas, occurring widely from southern USA to Argentina. With records of more than 200 host plants belonging to 58 plant families including many important crops, the species is probably the most polyphagous species within the genus *Spodoptera*. Depending on the host plant and temperature, the SAW can complete its life cycle within 30-40 days and is able to produce 1500- 3000 eggs over its lifetime.

Although the species has been known only sporadically until now as a serious pest in southern USA, in recent years it

has emerged as an important pest of soybean in the cotton growing areas of South America. In addition, recurrent interceptions on internationally traded goods by quarantine authorities at entry points in Europe have led to a new risk assessment for the species. In 2015, *S. eridania* was newly ranked as an A1 quarantine pest recommended for regulation on the list of the European and Mediterranean Plant Protection Organization (EPPO). In Africa, spectacular outbreaks comparable to those caused by FAW have not been observed; however preliminary data show that the species is present in at least four countries in West and Central Africa, where it can be found on cassava, tomato, amaranth, and maize.

It is uncertain how long the southern armyworm has been present in West and Central Africa and its possible pathways of introduction into the continent are also unclear. Since their identification is difficult, populations may have remained latent in the field and only been sporadically noticed, especially when young caterpillars aggregate on individual host plants before they disperse upon maturation. The fact that adult males react on pheromones of other *Spodoptera* species calls for a more thorough assessment of pheromone trapping when FAW populations are monitored. An

interesting circumstance is that the SAW and FAW share many important natural enemy species in South America. While this trait may become a significant stabilizing factor for common natural enemy populations, more research is urgently needed to assess its effective pest status in tropical Africa.

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FEED THE FUTURE INNOVATION LAB FOR INTEGRATED PEST MANAGEMENT MEETING

From May 28 to May 30, the Feed the Future Innovation Lab for Integrated Pest Management at Virginia Tech met for an annual Technical Advisory Committee (TAC) meeting in Phnom Penh, Cambodia.



Feed the Future Innovation Lab for Integrated Pest Management Technical Advisory Committee members

During the first and second day, principal investigators and collaborators of each of the Innovation Lab's eight projects presented on the progress, updates, and impact of their ongoing work in Africa and East Asia. Project successes include, but are not limited to, fruit bagging to eliminate pests in Vietnam, the modeling and tracking of invasive species movement in Nepal, and the decreasing

incidence of plant disease using *Trichoderma* in East Africa. After presentations, the meeting members traveled to Thom Village in Prey Veng province to visit the Ecologically-based Participatory IPM Packages for Rice in Cambodia (EPIC) demonstrations, where trials and trainings of IPM technologies are currently taking place. Farmers from across the community attended the visit, with an overwhelming attendance by female farmers interested in learning more about IPM technologies. Following Prey Veng, the TAC meeting members travelled to the Royal University of Agriculture, where IPM trials are performed by students with major success.

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The IAPPS Newsletter is published by the International Association for the Plant Protection Sciences and distributed in *Crop Protection* to members and other subscribers. *Crop Protection*, published by Elsevier, is the Official Journal of IAPPS.

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It seeks to provide a global umbrella for the plant protection sciences to facilitate and promote the application of the Integrated Pest Management (IPM) approach to the world's crop and forest ecosystems.

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