

Occurrence of *Spodoptera frugiperda* (J.E.Smith) (Lepidoptera: Noctuidae) on Proso millet at Agricultural Research Station, Podalukur, SPSR Nellore, Andhra Pradesh, India – A first Report

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ABSTRACT

During the month of September 2021, in the experimental plots of proso millet crop, noticed the incidence of *Spodoptera frugiperda* at Podalukur, SPSR Nellore, Andhra Pradesh, India. Damage observed during September first fortnight in different coded entries of Proso millet was ranged from 1.40 to 10.90 per cent. Based on morphological characterization of larva, the pest is identified as *Spodoptera frugiperda* and its occurrence is first report on Proso millet crop in Andhra Pradesh, India.

Keywords: Proso millet and *Spodoptera frugiperda*.

Proso millet is one of the minor millet crop grown in India. Proso millet plants mature 60-90 days after planting and grown in poor soil and dry weather successfully. Proso millet is an easy crop to grow and adapted to primitive agricultural practices. Proso millet requires less water and converts water to dry matter/grain most efficiently, due to short duration and drought-resistance (Vilas *et al.*, 2015). *Spodoptera frugiperda* (J.E.Smith) is a native of America, known to attack more than 100 hosts. Fall armyworm was invaded India in 2018 and caused damage to maize fields of Karnataka and from there it rapidly spread throughout the India (Ganiger *et al.*, 2018). It is also reported to infest important crops like rice, Maize (Day *et al.*, 2017), sorghum and bajra (Venkateswarlu *et al.*, 2018) and sugarcane and other 23 crops like groundnut, alfalfa, Soybean, potato cabbage, tomato, onion, and millets (CABI, 2019). The high egg laying capacity and dispersal ability of this may help for expansion of geographical range and host range within the country. In this context our present observation of FAW on proso millet shows a commercial significance.

Materials and Methods:

First observations of fall armyworm was noticed in Podalukur region of Nellore District in sorghum crop during *kharif*, 2019, in maize and Sorghum during *Rabi*, 2019-2020 and during Summer

2020 fall army worm infestation was also noticed in Bajra. Experiment was conducted during, *kharif*, 2020, *Rabi*, 2020 and *kharif*, 2021 for studying the fall army worm incidence on the minor millets. During *kharif*, 2021 trial on 15 coded entries of Proso millet was also taken at Agricultural Research Station, Podalukur.

The larvae were collected and reared in the laboratory until pupation. The female and male adults were released for mating and egg laying. All the stages *viz.*, egg, larva, pupa and adult were checked for morphological characters for confirmation of the pest. For recording number of larvae and per cent damage, the plants in 10 m² area were observed. Per cent damage was recorded as damaged plants in relation to the total number of plants in 10 m² area.

Results and Discussion

Occurrence of the *Spodoptera frugiperda* was noticed first time on Proso millet during 1st week of September, 2021 at experimental plots of Podalukur Agricultural Research Station, SPSR Nellore District, Andhra Pradesh. Severe damage of Proso millet was observed during September 2nd week, 2021. Number of larvae per 10 m² area was recorded as 0.30 to 16.0 and per cent damage of plants in different coded entries of Proso millet was 1.40 (PMMLT-13) to 10.90 per cent (PMMLT-11) (Table 1).

Table 1: Incidence of *Spodoptera frugiperda* on Proso millet during *kharif*, 2021 at Agricultural Research Station, Podalakur

Entries	No.of larvae/ 10 m ² area	Per cent damage (%)
LPM - 002	7.3	1.5
TNAU-164	0.3	7.9
LPM - 004	0.7	5.1
VP - 008	1.7	4.7
PMNDL-1	2	7.7
VP - 002	2.7	1.7
TNPM -230	3	2.5
PPV-1	3	8.9
LPM - 19	16	3.9
PMNDL-2	4	3.8
PMNDL-3	5.7	10.9
PMNDL-4	3.7	5.7
PMLT-5	6.3	1.4
LPM-14	3.7	6.1
TNAU -202	8.3	4.1
CV	15.86	14.62
CD 5%	1.21	1.24
SEM	0.42	0.43

Damage symptoms

Initial instar larvae fed by scraping the chlorophyll on leaves which caused presence of white patches on the leaves (Fig.1). Later instar larvae feeding was indicated by presence of faecal pellets in whorls (Fig.2). At reproductive stage larvae also damage ear head of Proso millet showing faecal pellets on ear head (Fig.3) and also cause chaffy ear head (Fig.4).

**Fig.1: Larva feeding on the leaf****Fig.2: Larva inside the whorl****Fig.3: Larva feeding on the ear head****Fig.4: Chaffy ear head**

The mature larva showed typical inverted 'Y' on head capsule and four dark spots on 9th abdominal segment (Fig.5). The pupa was reddish brown in colour, pupated in the plant debris and soil (Fig. 6). Forewings of females showed uniform greyish brown colouration (Fig.7). Fore wings in males were grey brown shaded with triangular white patch and oval spots (Fig.8). They were compared with the original available identification keys specific to *Spodoptera* spp. for confirming the genus and species. All the larval characters resembled those of *Spodoptera frugiperda* (FAO, 2018).



Fig.5: Larva with 'X' mark on head



Fig.6:Pupa



Fig.7: Female



Fig.8: Male

The incidence of *Spodoptera frugiperda* spread from maize, sorghum and bajra to proso millet crop at Podalakur region of Nellore district, Andhra Pradesh, India. As fall armyworm mainly attacks maize, other millets like sorghum and bajra it also has the ability to infest other millet crops like proso millet. The *Spodoptera frugiperda* adults can fly to long distance *i.e.*, during night upto 100km and 2000km entire lifetime. The fall armyworm late larval stages badly infest and damage crops where ever incidence was noticed (FAO, 2018).

Acknowledgments

We are very much thankful to Acharya N.G Ranga Agricultural University, Guntur for encouragement and support for doing the research on fall army worm.

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