

Tolerant Capacity of Organically and Inorganically Raised Rice against Rice Yellow Stem Borer, *Scirpophaga Incertulas* Walker (Pyraustidae: Lepidoptera)

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Abstract: Yellow stem borer, *Scirpophaga incertulas* Walker is one of the important pest that attack rice and to reduce damage different organic manures viz., Goat manure, Cow dung and Neem cake were tried in this experiment. Among the organic manures, neem cake recorded lowest mean per cent damage and was followed by goat manure, Cow dung. Inorganic fertilizers, recorded highest damage.

Keywords: *S.incertulas*, organic manures.

1. INTRODUCTION

Rice (*Oryza sativa*) is regarded as an important staple food in India (Khush, 2005). Globally rice is cultivated over an area of 158.8 million hectares with the annual production of around 740.9 million tonnes (Mt) including the average productivity of 4.25 metric tonnes ha⁻¹ (Statista, 2016). Rice production faces a number of problems that threatens many rice producing Asian countries ability to support the food needs of their rapidly growing populations these constraints include pest outbreak and diseases.

In addition excessive water usage, environmental degradation due to pesticide and nutrient contamination, methane emission and ammonia volatilization are a few of adverse effect of rice production requiring urgent attention (Kuenemans, 2006).

One of the important constraints in achieving higher rice yield is losses cost by insect pest rice crop serves as an ideal source for harbouring more than 200 insect species out of which 20 species are economic importance (Mishra, 2004). Stem borers are major pests of rice. Among them, Yellow stem borer, *Scirpophaga incertulas* Walker (Lepidoptera: Pyralidae) is distributed all over India and considered to be most destructive species (Catling *et al.*, 1987 and Ooi *et al.*, 1994). The major triggering practice for rice stem borer population is excessive application of nitrogenous fertilizer.

By minimizing the dependence on chemical fertilizers, as the major insect out break control strategy, and also an ecological approach through organic pest control appears to be the best solution for the rice pests like leaf folder, yellow stem borer, brown plant hopper and hoppers. In this experiment, influence of organic manures on the damage potential of rice stem borer was studied.

2. MATERIALS AND METHODS

Cement pots of 1.5 x 2 feet in size was filled with 3 kg of clay soil and 150 such pots were arranged in 15 rows. Each row consists of 10 pots. Three replications were followed. The treatments followed were goat manure of 100gm/pot, cow dung

manure of 140 gm/pot, neem cake 80 gm/pot and chemical fertilizer such as urea 15g, super phosphate 10g, potash 5g/pot. A control was also maintained without any fertilizer application.

Rice seedlings (ADT 36) of 20 days old were transplanted @ ten seedlings per pot. Then after 30 days larvae of yellow stem borer *Scirpophaga incertulus* were released on to the plants. 10 larvae of 3rd instars were obtained from our laboratory culture. The larvae were released in evening hours. After release the pots were covered by iron cages which were covered with nylon cloth. After 10 days, observations were made on white ear/dead heart.

3. RESULTS AND DISCUSSIONS

Bore holes were appeared after 24 hours of larval release. After 10 days of releasing larva the dead heart symptom begin to appear. T₃-Neem cake was observed that lowest mean per cent damage of (11.16%) and was followed by T₁- Goat manure and T₂- Cow dung. Next best treatment in managing the per cent damage was T₄- Chemicals. Then T₅- Control was largely affected by the larvae and severe damage was observed (Table 1). Goat manure and neem cake were statistically on par.

Table 1: Effect of organic manure on the incidence of rice stem borer

Treatment	*percent dead heart/white ear
T ₁ . Goat manure	12% (20.24) ^a
T ₂ . Cow dung	15% (22.77) ^b
T ₃ . Neem cake	11.16% (19.50) ^a
T ₄ . Chemical fertilizer	17% (24.33) ^c
T ₅ . Control	27.83% (31.82) ^d
CD(0.05)	1.29

*Mean of 3 replications

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