

## Original Research Article

# Effect of Staggered Planting of Rice on the Incidence of Stem Borer (*Scirpophaga incertulas*)

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## ABSTRACT

The incidence of yellow stem borer (*Scirpophaga incertulas*) attack on rice crop was assessed during *Kharif* 2020. Owing to the COVID -19 pandemic situation, leading to acute shortage of migratory labor the rice nursery was transplanted in a staggered manner by the farmers in Haryana, India. The incidence of stem borer attack was assessed in different locations following field scouting wherein the rice was transplanted on different dates, though the nursery was raised on common date. Observations on the incidence of stem borer were recorded at fortnightly interval. The rice stem borer borer was found as a dominant insect pests and the incidence was high on late sown crop whereas low infestation was observed in the early sown crop.

### Keywords

Rice, COVID-19,  
Stem borer, Insect  
pest

## Introduction

Rice (*Oryza sativa* L.) is one of the most important food crops which served as a staple food. India is second world's largest producer of rice which accounts for 22% of world's rice production. In India, almost half of the states is cultivated rice with West Bengal leading state in production and Haryana in 10<sup>th</sup> rank. In Haryana, agriculture is the principal occupation and 18 districts of are growing rice crop. Out of which 7 districts are in high productivity group. The different varieties of rice cultivated in Haryana are Basmati 30, 31, PUSA Basmati Rice, 1121 Basmati Rice, Sugandha Rice, PR11, PR47, PR106. In Haryana around 13.5 lakh hectares areas is rice cultivated and around 50 lakh quintals is produced. The top basmati rice exporting state in the country is Haryana (60%). As rice is a water intensive crops which needs large amount irrigation. In

Haryana, most of the farmers have canal and tube well irrigation system which used groundwater and accounts for 100% irrigation.

The onset of green revolution in the country leads to the constant increase in pest population because of the cultivation of high yielding variety, growing of the variety which is less pest resistance. In Haryana, major pest of rice crop are rice stem borer, leaf folder, brown plant hopper and gundhi bug. Among this, leaf folder and stem borer are the major threats to basmati rice. Increase in the infestation of pest is due to high use of fertilizer, weather change. Yellow stem borer is the dominant species that affects the paddy cultivation in Haryana. Stem borers can destroy rice at any stage of the plant from seedling to maturity. They feed upon tillers and causes deadhearts or drying of the central

tiller, during vegetative stage; and causes whiteheads at reproductive stage. Rice Laffolder caterpillars fold a rice leaf around themselves and attach the leaf margins together with silk strands. They feed inside the folded leaf creating longitudinal white and transparent streaks on the blade.

**Materials and Methods**

The study was carried out in the Palwal District of Haryana state during April - November, 2020. The sampling technique was adopted from the procedures developed by Anon. (2011) and ten fields were randomly chosen based on the dates of transplanting. Primary data was collected through the use of structured questionnaire and it was supplemented with the personal interview.

**Results and Discussions**

To control the pest population, farmers used pesticides like chlorpyrifos, quinalfos, malathion because of the easy availability and fast results. But these pesticides cause many harmful effects to environment. It leads to the degradation of biodiversity, loss of soil fertility, effects in human health, makes pesticide resistance to insects. So the state government decides to adopt the Integrated Pest Management System. Instead of using chemicals, they are using cultural,

mechanical and biological practices. For cultural practices farmers are practicing deep summer ploughing, destruction of crop residues, fallowing etc. For biological practices, parasitoids are used like *Sesamia spp.* & *Trichogramma spp.* And also many resistance varieties are used like ITA120, IR4625-132-1-2. And for avoiding the infestation early and late sowing varieties also used (Table-1, 2 and 3).

In conclusion, the pest problem was identified and regular survey was carried out to assess the population through the survey the constraints of availability of the pesticides the lack of visit of the extension worker where also recorded Labour availability indirectly affected results and discussion Table 1 revealed that majority of the farmers faced severe borer attack. Hundred percent of the farmers used pesticides 40 percent of the farmers could utilize the routine recommendations. The infestation of the stem borer was formed to vary from 22 to 45 percent. The results showed net covid-19 disrupted the rice sowing activities and 30 percentage of the farmers followed direct sown method. Direct sown crop and by staggered planting. Pandemic highlighted new challenges to the rice farmers but the study identified the impact was absorbed without any significant effect.

**Table.1** Effect of showing date on stem borer management

| Farmer name | Showing time | varieties    | Stem borer   | Management |
|-------------|--------------|--------------|--------------|------------|
| Shersingh   | 15-06-2020   | Basmati 1121 | AFTER 75 DAS | Furadan    |
| Momchand    | 17-06-2020   | Basmati1121  | AFTER 73 DAS | Furadan    |
| Shiv Jakhar | 20-06-2020   | Basmati1509  | AFTER 67 DAS | Furadan    |
| Saba maan   | 21-06-2020   | Basmati 1509 | AFTER 65 DAS | Furadan    |
| Dhanjay     | 24-06-2020   | Basmati1121  | AFTER 71 DAS | Furadan    |

**Table.2** Effect of showing date on leaf folder management

| Farmer name | Showing time | Varieties    | Leaf folder  | Management |
|-------------|--------------|--------------|--------------|------------|
| Shersingh   | 15-06-2020   | Basmati 1121 | AFTER 30 DAS | Nurelle-D  |
| Momchand    | 17-06-2020   | Basmati 1121 | AFTER 29 DAS | Nurelle-D  |
| Shiv Jakhar | 20-06-2020   | Basmati 1509 | AFTER 27 DAS | Nurelle-D  |
| Saba maan   | 21-06-2020   | Basmati 1509 | AFTER 31 DAS | Nurelle-D  |
| Dhanjay     | 24-06-2020   | Basmati 1121 | AFTER 35 DAS | Nurelle-D  |

**Table.3** Effect of inter cultural operations on insect and pest management

| Week No. | Work done   |
|----------|---|
| Week 1   | Observation in field  |
| Week 2   | Plant measurement is recorded like height, tillers, leaf length, and leaf width                                     |
| Week 3   | Plant measurement is recorded like height, tillers, leaf length, and leaf with And observation for any insect pest. |
| Week 4   | Symptom of leaf folder (use of Cartep Hydrochloride 4% gr Or Fipronil 0.3% gr)                                      |
| Week 5   | Spray of (Propiconazole + Hexaconazole + Lambada-cyhalothrin)   |
| Week 6   | Symptom of stem borer (Use of koragen)  |

### References

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