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SHJ Notes:

OCCURRENCE OF WHITE STEM BORER IN AGUSAN DEL NORTE LOWLAND RICEFIELDS[1/]

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ABSTRACT

The occurrence of white stem borer (Scirpophaga innotata Walker) *in relation with other insect pests and natural enemies in the irrigated and rainfed lowland ricefields in Agusan del Norte was studied for two cropping seasons. Seasonal abundance of the white stem borer and associated arthropods were determined through sweep net, quadrat, and pan sampling in 12 individual harvest. There were three generations of white stem borer recorded during the survey as shown by the occurrence of egg masses although overlapping of generations was also noted. However, its population fluctuated as the crop matured.*

KEY WORDS: White stem borer. *Scirpophaga innotata.* Occurrence. Natural enemies. Population fluctuation. Ricefield.

INTRODUCTION

In Mindanao, Philippines, white stem borer (*Scirpophaga innotata)* is considered the most important pest. Farmers experiencing severe infestations reported that harvests are reduced by half due to damage during the reproductive stage that results to production of whiteheads and/or of half-filled grains especially in susceptible varieties.

1/ *Part of the M.S. thesis of the author*

The Philippine Rice Research Institute (PhilRice) promoted pest management techniques with minimal use of chemical pesticides. However, this approach if applied to white stem borer requires a lot of information on the ecology of which include among others pest occurrence, stage of development when insect pests actively damage the crop, and interplay of the populations of insect pests and their natural enemies. These information can guide farmers in deciding whether to apply appropriate control measures or just leave the field for natural control. Thus, this study documented the seasonal abundance of white stem borer in relation to other arthropods in the lowland ricefields of Agusan del Norte.

Four lowland ricefields having an area of approximately 500 sq.m. were selected in Agusan del Norte. Two ricefields (Loksohon and Layaw, Los Angeles, Butuan City) represented the irrigated, while another two ricefields (Camagong-1 and Camagong-2, Nasipit, Agusan del Norte) represented the rainfed.

Sampling was done bi-weekly for two cropping seasons. Samples were taken by sweeping ten times in two locations of the experimental field and through pan sampling in twelve hills along zigzag pattern drawn across the field. Actual counting in four 1-sq.m. quadrats was also conducted to record populations of slow-moving and sedentary organisms, the number of tillers showing deadheart/whitehead, and number of white stem borer egg masses and the number of parasitized egg masses. The arthropods collected by sweep net method and pan sampling method were placed in separate collecting jars containing 70% ethyl alcohol for later sorting, identification and recording in the laboratory.

White stem borer (WSB) was present all throughout the cropping season in all sampling sites during the survey as indicated by the presence of deadhearts/whiteheads or egg masses and adults. Although the occurrence of WSB was low in all sites, farmer-cooperators of the various sites sprayed their fields to ensure a better harvest.

Deadhearts/whiteheads in the field were also observed to be randomly distributed. This can be attributed to the tendency of the first and second instars to disperse and find a new host.

The occurrence of deadhearts/whitehead was generally observed in the sampling period following the time when egg masses were recorded. For example, in Loksohon (July-December 1996 cropping season), egg masses were noted in early August sampling and in the next sampling period, deadhearts were already found. Adults were recorded in September. However, in Layaw (January-June cropping season), tillers showing deadhearts were noted in late February sampling even if there was no record of egg masses in the preceding sampling period. WSB adults were recorded in February to March. This condition is an example of the phenomenon reported by Rubia (1996) that young larvae disperse on to other hills, feed and cause damage leading to deadhearts. This situation can also be due to the feedings of the newly hatched larvae from the egg masses earlier laid in the hill. Rubia (1996) stated that first instars can already bore into the coleoptile of IR64 which took only about 6 minutes, while it took for the newly-hatched larvae 63 minutes boring into the base of IR64.

There were three generations of WSB recorded during the survey as shown by the occurrence of egg masses. If breeding occurred in the early stages of the crop, three generations could be expected since the rice variety used in this study was IR64 that matured in 110 days (Gintong Ani Manual, 1996). Besides, sampling was done until after the crop was harvested, thus egg masses were sometimes recorded even after harvest on new shoots. Dale (1994) mentioned that WSB could have three to five generations per cropping depending on the duration of the variety, time of sowing and transplanting. Overlapping of generations was also observed because of the continuous presence of host.

WSB occurrence in all sites did not result to crop devastation as what had been reported by Soenardi (1967) as cited by Dale (1994) that

grain losses due to this pest reached up to 95%. Many researchers working on stem borers stated that yield losses due to this group was overestimated. In irrigated Lokschon and Layaw, the harvest were 4.0T and 4.2T per hectare, respectively, which was still within the range of the Grain Production Enhancement Program (GPEP) standard. This could be attributed to the proper cultural management of the crop as there was adequate water supply and fertilization plus the combined action of chemical and biological control for pests. Although the population trend of WSB was similar in all sites surveyed, the harvest in rainfed sites was below standard. This result was not solely due to WSB infestation but more on the lack of water, presence of weeds and other factors.

The abundance patterns of the spiders and insect predators were similar in all sites except for the few sampling periods where the spiders were slightly more than the insect predators. This condition suggests that they coexist or had a head-on competition wherein the spiders sometimes outweighed the insect predators.

Parasitism was usually low in all sampling sites. The low degree of parasitism could be related to the behavior of parasitoids to attack only a particular life stage of one or other related species, and only the females search for hosts (Hoffmann and Frodsham, 1993).

LITERATURE CITED

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