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INFESTATION OF BORER *SCIRPOPHAGA INCERTULAS* WLK; IN DIFFERENT RICE VARIETIES TRANSPLANTED ON DIFFERENT DATES.

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Abstract

The larval infestation (White heads and dead hearts) were significantly higher in Lateefy (3.8%) transplanted on June 25th.However, the borer infestation increased as the transplanting time was delayed and the larval infestation of *Scirpophaga incertulas* walker reached to its peak in all the rice cultivars transplanted on August 24th.

The paddy yield varied significantly with the transplanting time. A critical review of the data showed that the paddy yield of DR-48 (811.5g/m2) was significantly higher when transplanted on June 25th.

Keywords: Infestation, *Scirpophaga Incertulas, Different Rice varieties*

Introduction

Yellow stem borer, *Scirpophage incertulas* WLK. is has become destructive pest of rice crop among the other borer. The rice stem borer population in Sindh was comprised as: *Tryporyza incertulas* 99.22, *Tryporyza innotata* 0.61, *S. inference* 0.04 and *Chilo* sp 0.12 percent (Moiz, 1967). Dholiwal and Singh (1982) reported that in field tests to evaluate the incidence of borers on different varieties, the average percentage of dead hearts and white ears were highest in Basmati-370 after 60-70 days of transplanting as compared with semi dwarf varieties.

Material and Method

These studies were carried out at Rice Research Institute, Dokri, Larkana Sindh. Different rice varieties such as IR-6, DR-82, DR-45, DR-43, DR-47, DR-44. Lateefy, Basmati – 370, Basmati –385 and Pokli were sown. After transplantation into field 10 plants were selected from each variety at random for taking observation at weekly intervals on the infestation of the larvae of *Scirpophaga incertulas* WLK. these observation were continued till the harvest of crop.

All the cultural practices carried out as normal under natural field conditions and no insecticide was applied inside and surrounding areas of this experimental plot. The fertilizer doses for all the varieties were 135Kg /ha Nitrogen and 67Kg /ha phosphorus, which were applied in three different times in three splits as:

1.45 Kg/ha Nitrogen + 67g/ha Phosphorus: one day before transplantation.

2.45 Kg/ha Nitrogen 25 days after transplantation

3.45 Kg/ha Nitrogen 55 days after transplantation

The number of tillers/hill were counted along with the number of dead hearts and white heads during the vegtative and after ear head formation of rice plants respectively. All infestation percentage were complied with the help of formula.

$$\frac{\text{Number of infested tillers}}{\text{Total number of tillers}} \times 100 = \text{Inf: \%}$$

Results

The result on stem borer infestation in the rice cultivars transplanted on different dates are presented in Table 1. A persual of the data prevailed significant variation in larval infestation on various rice cultivars and dates of transplantation. The larval infestation (dead hearts & white

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heads)was significantly highest in Lateefy (3.8%) transplanted on June 25th followed Basmati –385 (2.9%), DR – 47 (2.8%) IR – 6 (2.7%), DR – 45 (2.1%), DR – 82 (1.9%) , Pokali (1.8%) and DR – 43 (1.7%). However, the variations amongst IR – 6, DR – 47 and Basmati – 370 were statistically non significant (P = 0.05). Similarly the different between DR – 82, DR – 43 and pokali were also statistically non-significant. The patterns of borer infestation in different rice cultivars remained almost similar at all transplanting dates except slight variations in mean values. However the borer infestation increased as the transplanting time was delayed the larval infestation of *S.Incertulas* reached to it's peak in all the rice cultivars transplanted on August 24th. The overall performance of rice cultificantly overall transplanting time indicated that rice variety Basmati – 370 harbored significantly higher borer infestation and DR – 47 was comparatively less sustible to *S. incertulas*. It is also evident from the data that fine rice varieties were comparatively more prone to the infestation of Yellow rice stem borer.

The results on the effect of different transplanting dates on paddy yield (g/m^2) of various rice cultivars (Table. 2) indicated that the paddy yield varied significantly with the transplanting time. A critical review of the data showed that the paddy yield of DR–48 (811.5 g/m^2), was significantly highest when transplanted on June 25th. This was followed in descending order, by DR – 82 (712.5 g/m^2) DR – 47 (6 94.5 g/m^2), DR – 43 (708.5 g/m^2), Dr – 47 (696.8 g/m^2), Dr – 45 (660.4 g/m^2), IR – 6 (608.5 g/m^2), Lateefy (599.8 g/m^2), Basmati – 370 (584.8 g/m^2), Basmati – 385 (587.7 g/m^2) and Pokali yield was significantly the least paddy yield (486.1 g/m^2). The analysis of variance revealed significant variation amongst different rice cultivars, however new DMR test indicated non- significant differences (P =0.01) amongst DR- 82, DR – 43, DR – 47. Similarly the variations amongst IR – 6, Lateefy, Basmati – 370 and Basmati – 385 were also statistically non-significant. A perusal of data showed that the paddy yield of all the rice cultivars decreased as the transplanting time was delayed and minimun paddy yield was obtained when the rice cultivars which were transplanted on August 24th. The yield potential of all the rice cultivars was similar on all the transplanting dates, as the yield data indicated similar pattern. The overall yield potential of DR – 44 (659.3 g/m^2) was significantly the highest when compared with rest of the rice cultivars and Pokali yielded significantly the least paddy.

Table-1 Mean percent borer infestation in the rice cultivars transplanting at different dates.

Rice Cultivars	% borer infestation in rice transplanted on					
	June 25	July 10	July 25	August 09	August 24	Mean
IR – 6	2 . 7c	5 . 2b	6 . 9c	11 . 6b	11 . 9 c	8 . 66
DR – 82	1 . 9c	4 . 9c	7 . 8b	9 . 7d	18 . 9d	8 . 64
DR – 45	2 . 1d	3 . 2e	6 . 8c	10 . 7c	17 . 6e	8 . 08
DR – 43	1 . 7e	4 . 2d	7 . 2c	8 . 7e	14 . 8f	7 . 32
DR – 47	2 . 8c	3 . 9d	5. 8d	9 . 5a	12 . 8g	6 . 96
DR – 44	3 . 1b	4 . 7c	7 . 9b	11. 8b	19 .7c	9 . 44
Lateefy	3 . 8a	6 . 9a	7 . 8b	14 . 7a	21. 8b	11 . 00
Basmati–370	2 . 9c	4 . 9c	9 . 6a	13 .7a	24 . 7a	11 . 16
Basmati – 385	3 . 2b	5 . 6b	6 . 9c	11 . 9b	19 . 8c	9 . 48
Pokali	1 .8e	3 . 2e	5 . 6d	9 . 8d	14 . 7f	7 . 02

Means with similar letter show non – significant variations (P = 0.05) .

Table-2 Mean paddy yield of different rice cultivars as influenced by transplanting time.

Rice Cultivars	Mean paddy yield gm/m^2 when transplanted on					
	June 25	July 10	July 25	August 09	August 24	Mean
IR – 6	608 . 5d	586.8d	504.9c	350. 8d	208 .6d	451.9
DR – 82	712 . 5b	7 .3.7b	654.8c	405. 8c	312 .5c	557.9
DR – 45	660 . 4c	651.7c	598.4b	359.7d	216.8d	477.4
DR – 43	708 . 8b	701.5b	600.7b	468.5b	378.5b	571.5
DR – 47	694 . 8b	645.8c	548.7c	318.5c	218.5d	485.3
DR – 44	811. 5a	804.5a	764.8a	501.8a	413.7a	659.3
Lateefy	599. 8d	546.7e	498.7c	345.8d	211.5d	440.5
Basmati–370	584.8d	564.7d	418.7d	315.7e	199.8d	416.7
Basmati – 385	581.7d	576.8d	501.8c	350.7d	196.7d	441.5
Pokali	486.1e	475.8f	358.7d	201.7f	106.8e	325.8

Mean with similar letters show non-significant variations (P = 0.05).

Discussions

The larval infestation dead hearts (D.H) & white heads (W.H) was significantly the highest in Lateefy (3.8%) transplanted on June-25th followed by Basmati – 385 (2.9%) and DR-47 (2.8%), IR-6 (2.7%) DR-45 (2.1%), DR-82 (1.9%), Pokali (1.8%) and DR-43 (1.7%). However, the variations amongst IR-6, DR-47 and Basmati –370 were statistically non-significant (P=0.05). Similarly the difference between Dr-82, DR-43 and Pokali were also statistically non-significant. (Table:1). The pattern of borer infestation in different rice cultivars remained almost similar at all transplanting dates except slight variations in mean values. However, the borer infestation increased as the transplanting time was delayed and the larval infestation of *Scirpophage incertulas* reached to its peak in all the rice cultivars transplanted on August –24th. The overall performance of rice cultivars overall transplanting time indicated that rice variety Basmati 370 harbored significantly higher borer infestation and DR-47 was comparatively less sustible to *Scirpophage incertulas*.

A critical review of the data showed that the paddy yield of DR-48 (811.5 g/m^2) was significantly higher when transplanted on Junr-25th. This was followed g/m^2 in descending order, by DR-82 (712.5 g/m^2), DR-47 (694.5g/m^2), DR-43 (708.5 g/m^2), DR-47 (694.8 g/m2),DR-45 (660.4g/m^2), IR-6 (608.5 g/m^2), Lateefy (599.8 g/m^2), Basmati–370 (584.8 g/m^2), Basmati –385 (587.7 g/m^2) and Pokali yield significantly the least paddy yield (486.1 g/m^2), Table:2) A perusal of data showed that the paddy yield of all the rice cultivars decreased as the transplanting time was delayed and minimum paddy yield of all the rice

Cultivars decreased as the transplanting time was delayed and minimum paddy yield was obtained when the rice cultivars were transplanted on August-24th. The yield potential of all the rice cultivars was similar on all the transplanting dates, as the yield data indicated similar pattern. The overall yield potential of DR-44 (659 g/m^2) was significantly the highest when compared with rest of the rice cultivars and Pokali yield significantly the least paddy. Ooi (1976) reported that the highest rate of damage tillers 50 days after transplanting was 5.47% which indicates significant yield losses unlikely under existing conditions. Saroji (1982) reported that the infestation was assessed 60 days after transplanting by recording the number of dead hearts and silver shoots. It was found that infestation by yellow stem borer was below the econoic threshold (5%) in crops planted in September and December –June. The normal planting time of three annual crops (September, January and June) are therefore ideal. The highest yield was obtained from the crop planted in January within a season. The crop planted early or late should be protected by timely application of insecticide. Dhaliwal and Singh (1982) reported that in field tests evaluate the incidence of borers on different varieties. the average percentage of "dead hearts" and white heads"were highest in Basmati – 370 after 60-70 days of transplanting as compared with dwart varieties.

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