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OVIPOSITION BEHAVIOUR OF MAIZE STEM BORER *CHILO PARTELLUS* SWINHOE ON GENOTYPES OF MAIZE IN NAGALAND

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ABSTRACT

Oviposition behaviour of maize stem borer (*Chilo partellus* Swinhoe) on different genotypes of maize was studied at the School of Agricultural Sciences and Rural Development (SASRD), Nagaland University during 2013-2014. Eight genotypes viz., Tsük mendi, Boboü, Nashi nukjang temüsungla, DC61-A (Improved), Asubokipileu, Yetaü, Ayeghüu and Vijaya (composite) were evaluated. Reduction in oviposition showed significant variations in both the choice and no-choice tests: maximum reduction was in Nashi nukjang temüsungla (98.06%) followed by Yetaü (80.21%), Ayeghüu (69.81%) and Tsük mendi (63.51%) in choice test and Nashi nukjang temüsungla (75.70%) in no-choice test. The least reduction was exhibited by Boboü of 27.84% and 26.76% in both choice and no-choice tests.

Key words: *Chilo partellus*, maize, genotypes, oviposition preference, choice and no-choice tests, Nashi nukjang temüsungla, Yetaü, Ayeghüu, Tsük mendi

Maize is the second largest cereal crop in North East Hill Region and the entire region has a high potential for maize cultivation. However, insect-pests play an important role in lowering the productivity of the crop. Among the major insect pests in Nagaland, MSB (*Chilo partellus* Swinhoe) is the most destructive pest (Kumar et al. 1993). Since, widespread use of synthetic pesticides causes development of insect resistance, pest resurgence and development of secondary pests; therefore, it is the need of time to tackle these pests. The studies on the oviposition behaviour of the insect attain the utmost importance for developing rational strategy for the control of maize stem borer. These studies on the oviposition will help to know the distribution pattern, early dispersion and decision for selective management strategy.

MATERIALS AND METHODS

The investigation was carried out at the School of Agricultural Sciences and Rural Development (SASRD), Nagaland University, during 2013-2014. Eight genotypes viz., Tsük mendi, Boboü, Nashi nukjang temüsungla, DC61-A (Improved), Asubokipileu, Yetaü, Ayeghüu and Vijaya (composite) were evaluated. Oviposition of *C. partellus* was conducted under no-choice and choice tests in net house. In order to get a continuous supply of test insect in a particular stage in sufficient number, the insect was reared in net house (Waldbauer and Marciano, 1979).

In no-choice experiment potted plants were covered separately by nylon net and replicated three times in CRD. One pair of *C. partellus* (male and female) was released, and observations on number of egg masses laid recorded after 5 days. The % reduction in oviposition on genotypes was calculated by using the formula.

$$\text{Reduction \% of egg laying} = \frac{\text{No. of eggs laid in susceptible genotypes} - \text{No. of eggs laid in other genotypes}}{\text{No. of eggs laid in susceptible genotypes}} \times 100$$

In choice test all the potted plants were covered by single nylon net and replicated thrice in CRD Adults (20 males and females each) were released into the nylon cage having different genotypes. An observation was made as in the case of no-choice test. The data were transformed into angular transformation and were subjected to ANOVA, and CD values were calculated.

RESULTS AND DISCUSSION

The data on reduction in oviposition under choice test revealed that oviposition was observed on all the genotypes although there was a significant variation. The effect of genotypes on oviposition preference of *C. partellus* was found to be highly significant at p= 0.05. When moths were given a choice test, Boboü was the most preferred genotype, with minimum oviposition deterrence of 27.84%; and the local genotype Nashi nukjang temüsungla was significantly less preferred, with maximum reduction in oviposition of 98.06%, followed by Yetaü (80.21%), Ayeghüu (69.81%) and Tsük mendi (63.51%) respectively (Table1). Thus these genotypes were superior than the improved genotype DC61-A which exhibited 55.58% of oviposition reduction. Similar findings on oviposition deterrence to genotypes were reported by Venkateswaran et al. (2012). However, in no-choice test, the effect of genotypes was highly significant at p=0.01, with reduction in oviposition ranging from 26.76 to 75.70%. The genotype Nashi nukjang temüsungla exhibited the maximum reduction (75.70%) and was significantly superior than the improved genotype DC61-A (43.86%); and Boboü was the most preferred (reduction only 26.76%) followed by Asubokipileu (41.49%).

Table 1. Reduction in oviposition of *C. partellus* on maize genotypes

Treatments	Reduction (%)* Choice test	No-choice test
Tsük mendi (local)	63.51 (47.53)	64.46 (47.95)
Boboü (local)	27.84 (30.43)	26.76 (29.82)
Nashi nukjang temüsungla (local)	98.06 (67.15)	75.70 (53.09)
DC61-A (Improved)	55.48 (43.94)	43.86 (38.61)
Asubokipileu (local)	41.08 (37.28)	41.91 (37.68)
Yetaü (local)	80.21 (55.28)	67.55 (49.34)
Ayeghüu (local)	69.81 (50.36)	65.67 (48.50)
Vijaya (composite) control	0.00	0.00
Sem ±	= 11.93	= 4.36
CD@5%	= 35.61	= 13.00
CD@1%	= NS	= 17.86
CV	= 31.61%	= 20.18%

*Mean of three replications; Figures in parentheses arc sine transformed values; NS- non-significant

Thus, all the genotypes showed reduction in oviposition *C. partellus* with more deviation as the eggs were laid in batches in case of no-choice test. Eggs were also laid singly which might be due to antifeedant property. The most preferred genotype for oviposition was Boboü and the least preferred was Nashi nukjang temüsungla. The present finding is similar to that of Rebe et al. (2004) who reported that all the landraces were highly susceptible, with more larval masses of *C. partellus* recovered from Motale and Patalets. Obonyo et al. (2008) reported no significant differences in the mean numbers of egg batches/ plant, eggs/ batch, eggs laid/ plant between the plants in both choice and no-choice tests.

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