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RESEARCH ARTICLE

MANAGEMENT OF GRAM POD BORER *H. armigera* IN CHICKPEA WITH NEEM SEED KERNEL EXTRACT AS A NATURAL PEST MANAGEMENT PRACTICE IN BHOJDARI VILLAGE

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ABSTRACT

Present investigation was carried out on chickpea, *Cicer arietinum* Linnaeus by using Neem Seed Kernel Extract (NSKE) suspension compared with control plot against the incidence of gram pod borer, *Helicoverpa armigera* (Hubner) at Bhojdari village of Sangamner, Ahmednagar district (Maharashtra) during Rabi season, 2012-13. The results indicates that Neem Seed Kernel Extract (5%) effectively reduce the *H. Armigera* larval population as compared with control plot when used in regular three sprays. *H. armigera* has been observed to be a major pest in village and requires more attention to get rid of its infestation. Gram pod borer has been also categorized as a national pest in India.

INTRODUCTION

Chickpea, *Cicer arietinum* L. is the World's third most important pulse with India its largest producer (FAO, 2010). Its seeds eaten as green vegetable, fried, roasted, as snack food and ground to obtain flour and dhal (Hulse, 1991). The crop is damaged extensively by gram pod borer, (Reed *et al.* 1980; Lal *et al.*, 1985; Naresh and Malik, 1986; Deka *et al.*, 1987) as it feeds on tender shoots and young pods (Lal, 1996). In addition to making holes in tender pods of the plant also inserts their half of its body inside the pods to eat the developing seeds (Kadam and Patel, 1960). It is a very serious pest and has assumed the status of a national pest in India reaching the damage upto 10-30% in grain yield (Qadeer and Singh, 1989) or even up to 60% (Vaishampayan and Veda, 1980). The present study was executed to determine the effect of Neem Seed Kernel Extract (NSKE) 5% on management of pod borer in chickpea crop in project village. The borer damaged crops in *rabi* season in Bhojdari every year and farmers had to control it using various means including chemical sprays. To promote natural pest management practices among the farmers of this village, training on preparation of various organic formulations such as Neem Seed Kernel Extract, Amritpani, Jeevamrit, Tobacco extracts, Chilli extracts and Vermiwash was imparted in order to disseminate the knowledge of natural pest control strategies. These various formulations are helpful in minimizing the pest and disease incidence where, used in a regular cycle of number of sprays depending on type of crop and degree of pest and disease manifestation.

MATERIALS AND METHODS

The experiment was carried out on farms in Bhojdari village of Sangamner in Ahmednagar region (Maharashtra) during *Rabi* season, 2012-13. This trial was laid out in randomized block design. Plot size

was kept 4m X 3m, in which row to row and plant to plant distance was maintained at 30cmX10cm. Local variety of Chickpea was sown in third week of November at selected ten farmers of Bhojdari village and one farmer was selected for control plots from the same village. Three NSKE sprays had been applied to check the population of gram pod borer. Observations on number of larvae per 3 meter of row length in each plot had been recorded on third, seventh and fifteenth days after each spray. For preparation of Neem Seed Kernel Extract (NSKE 5%), 5 kg of Neem Seed Kernel (well dried) was ground into powder form and soaked overnight in 10 liters of water. Next morning, the solution was stirred with a wooden plank till it became milky white and was, filtered through double layer of muslin cloth. The volume now made up to 100 liters. Thus, the 5% concentrated solution of NSKE was ready to be sprayed in the fields. Observations on the population of larvae after each spray were recorded before and after the 3rd, 7th and 15th days of each spray on plants of 3m rows selected randomly for each plot. These observations are presented spray wise in Table 1 below.

RESULTS AND DISCUSSION

Data presented in Table 1 indicated that larval population varied significantly among the treatments during each spray and pooled. Among the treatments, during first spray of NSKE 5%, it has been observed that the larval population was significantly reduced after 3rd, 7th and 15th days as compared with untreated control. Data shows that 2.5, 2.1 and 2.1 were the transformed values observed for number of larvae respectively on 3rd, 7th and 15th days after spraying, whereas 3.31, 3.67 and 3.93 were the transformed values observed for number of larvae respectively on 3rd, 7th and 15th days in untreated control plot. Second spray of NSKE 5% shows that the larval population was significantly reduced after 3rd, 7th and 15th days as compared with untreated control. Data shows that 2.81, 2.27 and 2.24 were the transformed values observed for number of larvae respectively on 3rd, 7th and 15th days after spraying, whereas 3.47, 3.79 and 4.03 were the

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Table 1. Effect of NSKE 5 % on Mean population of gram pod borer larvae/ 3 m row

Treatments	Mean population of larvae/ 3 m row												Pooled mean
	1 st spray				2 nd spray				3 rd spray				
	3	7	15	Mean	3	7	15	Mean	3	7	15	Mean	
T ₁ : NSKE 5%	2.50	2.10	2.10	2.40	2.81	2.27	2.24	2.64	2.42	1.90	2.15	2.35	2.46
T ₂ : Control	3.31	3.67	3.93	3.47	3.47	3.79	4.03	3.62	3.21	3.52	3.75	3.38	3.49
S. Em \pm	0.05	0.08	0.10	0.04	0.03	0.10	0.11	0.05	0.16	0.27	0.26	0.17	0.062
C.D.	0.15	0.24	0.32	0.15	0.09	0.30	0.34	0.15	0.53	0.86	0.84	0.56	0.18

Figures in Table 1 denote transformed values \sqrt{x}

NSKE-Neem Seed Kernel Extract, S.E.-Standard Error of Mean; C.D.-Critical Difference

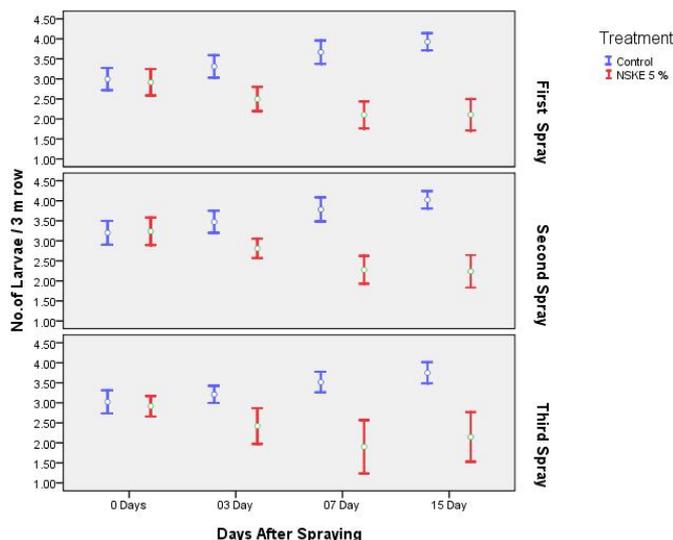


Fig. 1. Comparison of Larval Population in NSKE 5% Treated and Untreated Control Plot

transformed values observed for number of larvae respectively on 3rd, 7th and 15th days in untreated control plot. After third spray of NSKE 5 % similar results have been observed on larval population as in case of first and second spray of NSKE. Pooled data of all 1st, 2nd and 3rd spray indicates that Neem Seed Kernel Extract (NSKE)5% treated plot has significantly reduced the *H. armigera*. population as compared to untreated plots (Gupta, 2007).

Conclusions

1. Natural pest management practices must be disseminated upto grass root level *i.e.* to rural community.
2. Quantity and frequency of NSKE must be properly used for effective control of Gram pod borer.
3. Incidence of gram pod borer may be effectively and safely managed by two or three sprays of 5 % NSKE.
4. More trainings should be conducted for the farmers for preparation of various on Natural pest management formulations such as NSKE, Dashparni ark, Garlic-Chilli extract, Tobacco extract etc.

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