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SHORT COMMUNICATION

Efficacy of Foliar Applied Insecticides against The Banana Root Borer (*Cosmopolites Sordidus* Germar) in Bihar

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ABSTRACT
The banana is one of the oldest fruits known to human being. Its utility and importance in our dietary schedule hardly needs any explanation because of its caloric value (61-137 of calories per 100 gm), Carbohydrate (27%), Protein (1.2%), fat (0.3%) and rich source of vitamins A, B, C, D and minerals like phosphorus, Potash, Calcium and Iron. Out of various insect pests of banana, root weevil cosmopolites sordidus Germ is the most serious insect pest in Bihar. Present investigation was carried out to evaluate the efficacy of foliar applied insecticides against the banana root borer. On the basis of the result of investigation, it is evident that Monocrotophos and carbaryl gave best result in controlling the root weevil of banana.
Keywords: Efficacy, Foliar Insecticides, Banana, Root weevil, Rootborer, Cosmopolitus sordidus, Bihar.

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INTRODUCTION

The banana is one of the oldest fruits known to human being. Its antiquity can be traced back to the garden of paradise where Eve was said to have used its leaves to cover her modesty. It may be one of the reasons why the banana is called "Apple of Paradise" and botanically named *Musa paradisiaca*. Its utility and importance in our dietary schedule hardly need any explanation because of its caloric value (61-137 of calories per 100 gm), Carbohydrate (27%), protein (1.2%) and fat (0.3%) contents. Banana is rich in vitamins (A, B, C & D) and also contains large amount of potash, phosphorus, calcium and iron than an apple and an orange [6]. India is the largest banana producer in the world with 29, 124, 000 tones production volume per year. In our country, Bihar is the sixth largest state in banana production. In India, about 30 insect pests are known to attack on banana crop, but only few of them cause serious damage in Bihar [8], *cosmopolites sordidus, Nodostoma viridipennis, Nodostoma subcastatum* and *Odioporus longicollis* have been found serious insects pests of banana in Bihar. Kumar et al., [5] reported that out of various insect pests of banana, root weevil *Cosmopolites sordidus* Germ is the most serious insect pest in Bihar. As a result of heavy pest infestation, plants weaken and yield decreases. In view of the seriousness of this problem, present investigation was carried out in Muzaffarpur district of Bihar during 2022 & 2023 to evaluate the efficacy of foliar applied insecticides against the banana root borer *cosmopolites sordidus* Germ.

MATERIAL AND METHODS

Insecticidal trails were conducted for two years i.e. 2022 & 2023 in banana orchard at Kurhani, Muzaffarpur to assess the comparative efficacies of different insecticides as spray formulations. There were six treatments including check. They were replicated four times in a randomized block design. The insecticides used in the trail were Endosulfan 35 EC, Malathion 50 EC, Monocrotophos 36 EC, Quinalphos 25 EC and Carbaryl 50 WP, each applied @ 0.5 kg ai./ha. Each insecticide was replicated four times at an interval of 45 days after the date of planting. The observations regarding the incidence of weevil were taken on plants basis by recording the ovipositional slits. The percentage of damaged plants was

determined after harvesting the bunch. The number of fruits harvested also computed in dozes per plant and per hectare.

RESULTS AND DISCUSSION

Percentage of damaged plants was determined after harvesting the crop by splitting open the psendostems. The data of the percentage of damage and yield under each treatment is presented in Table -1. From the data of the table-1, it is evident that all the insecticides used as foliar application against the pest were significantly superior to control. In 2022, the maximum damage (70.00 %) was recorded in control as against 46.00 % in malathion, 38% in endosultan and 37.00% in quinalphos treatments. Monocrotophos and carbaryl treated plants gave superior result in comparison to other insecticides. The percentage of damage in monocrotophos treated plants was 20 while in carbaryl treated plants was 22. The yield (doz/ha) was also maximum (24610) in monocrotophos treated plants followed by carbaryl treated plants (24215 doz/ha).

In 2023 also monocrotophos and carbaryl gave superior result in comparison to other insecticides. The percentage of damage in monocrotophos treated plants was 18 while in carbaryl treated plants was 21. The yield was also maximum (24715 doz/ha) in monocrtophos treated plants followed by carbaryl treated plants (24235 doz/ha).

With regards to efficacy of foliar insecticides against the banana weevil, it was evident that all the insecticidal sprays were significantly superior to control and preventing the damage. The minimum damage was observed in plants treated with monocrotophos in both years of trails. More or less similar results were obtained by Cheng [3], Batcheldor [1], Bullock and Everts [2] and Singh [7] with regard to prevent the damage from the pests. Tinzaara et al. [9] reported that the crude extracts of chinaberry tree (*Melia azedarch* L.), maxican marigold (*Tagates* spp.) and castor oil (*Ricinus communis*) were most effective against *cosmopolites sordidus*. According to Elyeza *et al*. [4], the banana weevil is a major pest of African highland bananas and plantains. Its larvae bore in corm tissue damaging the root system, disrupting nutrients and water uptake, compromising plants anchorage, reducing yield and shortening plantation life. Yield losses in bananas and plantains may exceed 50%.

Table-1: Effect of foliar applied insecticides against the banana root borer (*Cosmopolites sordidus* Germar)

Treatment	Dose Kg a.l/ha	2022			2023		
		Percentage of damage	Yield (doz/plant)	Yield (doz/ha)	Percentage of damage	Yield (doz/plant)	Yield (doz/ha)
T1 Endosulfan	0.5	38.00	7.44	22605	36.00	7.52	22712
T2 Malathion	0.5	46.00	7.04	21015	44.00	7.16	21045
T3 Monocrotophos	0.5	20.00	8.11	24610	18.00	8.18	24715
T4 Quinalphos	0.5	37.00	7.42	22445	35.0	7.40	22450
T5 Carbaryl	0.5	22.00	7.97	24215	21.00	7.98	24235
Control (Untreated)	-----	70.00	5.65	17450	68.00	5.56	17320

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