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EFFECT OF APPLICATION OF GRANULAR INSECTICIDES ON DAMAGE BY COSMOPOLITES SORDIDUS GERM AND YIELD OF BANANA

Rajeev Gupta[1] and Manendra Kumar[2*]

[1]Research Scholar, University Department of Zoology, B.R.A. Bihar University, Muzaffarpur, Bihar, India.

[2*]Former Professor & Head, University Department of Zoology, B.R.A. Bihar University, Muzaffapur, Bihar, India.

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***Corresponding Author**
Manendra Kumar
Former Professor & Head, University Department of Zoology, B.R.A. Bihar University, Muzaffapur, Bihar, India.

ABSTRACT

Banana is a very popular and healthy fruit of India. Its utility and usefulness in our dietary schedule hardly requires any explanation because of its coloric value (67-137 Calories per 100 gm), vitamins (A,B,C & D) and minerals (Calcium, Phosphorus, Potash and iron). India is the largest banana producer in the world with 29, 124, 000 tonnes production annually. In India, Bihar is the sixth largest state in banana production. 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 infestation, plants weaken and yield decreases. Present investigation was carried out to evaluate the efficacy of application of granular insecticides against root weevil of banana and it was observed that the application of carbofuran and phorate minimized banana infestation by *Cosmopolites Sordidus* and enhanced the yield of banana.

KEYWORDS: Banana, Granular insecticides, cosmopolities sordidus, Root Weevil, carbofuran, phorate.

INTRODUCTION

Fruit crop is rich source of protein, carbohydrate, fat, vitamins and minerals, which are essential for dietary requirements of human body. The banana is one of the oldest fruits known to mankind. Its utility and usefulness in our dietary schedule hardly needs any

explanation because of its caloric value (67-137 of calories per 100 gms), Carbohydrate (27%), protein (1.2%) and fat (0.3%) contents. Banana is rich in vitamins (A, B, C & D) and also contains sufficient amount of potash, phosphorus, calcium and iron than an apple and an orange (Roy and Sharma, 1952). Banana is the staple food in many pacific and Atlantic tropical islands (Singh etal. 1967). An acre of Banana yields 15 million calories of energy as compared to one million of wheat (Madhava Rao, 1984). India is the largest banana producer in the world with 29, 124, 000 tonnes production annually. In our country, Bihar is the sixth largest state in banana production (Gupta & Kumar, 2023). In India about 30 insect pests are known to attack on banana crop, but only few of them cause serious damage in Bihar (Wadhi & Batra, 1964). *Cosmopolites sordidus, Nodostoma subcastatum, Nodostoma viridipennis* and *Odioporus longicolis* have been found serious insect pests of banana in Bihar. Kumar etal., (2009) 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 infestation, plants weaken and yield decreases. In view of the seriousness of the problem, present investigation was carried out in Kurhani of Muzaffarpur district of Bihar during 2022 & 2023 to evaluate the efficacy of granular insecticides on damage by *cosmopolites sordidus* Germ and yield of banana.

MATERIALS AND METHODS

Granular insecticides have become more popular amongst the farmers because of the easiness in handling, economy in application, no extra labour and compatibility with fertilizers. At the same time, it has broad spectrum activity against majority of insect pests. Ragupathy (1973) reported that the application of granular insecticides in the soil was more effective than foliar applications against the majority of insect pests.

To determine the efficacy of different granuler insecticides as soil application, field trails were conducted in Kurhani, Muzaffarpur for two consecutive years i.e. 2022 & 2023 in a randomized block design with six treatments including check. They were replicated four times. Five granular insecticides namely BPMC 4G, Carbaryl 4G, Carbofuran 3G, Phorate 10G and Quinalphos 5G. These granular insecticides were applied as side dressing as well as whorl application followed by mild irrigation. All insecticides were applied in two split dosages, Half of the insecticides was mixed with the soil and was placed around the banana plants (distance between two plants was 2 metres) after one month of planting while the remaining half was applied in whorl after three months of first application. observation

regarding the incidence of banana weevil was made after harvesting the bunch. The percentage of infestation and yield of the fruits were statistically analysed.

RESULTS AND DISCUSSION

Result was summarized in Table-1. This is evident from the data of the table that in case of soil application, carbofuran being at par with phorate. Again BPMC and carbaryl applications were at par with each other in 2022. In respect of yield/ha. carbofuran (28110 doz/ha.) was at par with BPMC (25860 doz./ha) in 2022. But in 2023, phorate was at par with carbofuran application.

Again on pooling the data together, the treatment carbofuran was at par with phorate and seemed by far the best treatment both in terms of keeping the damage due to banana weevil comparatively at lower level and boosting the yield/ha. Inspite of higher percentage of plant damage in check in 2023 (58.84), the yield (20310 doz./ha) was not significantly different from carbaryl and quinalphos.

Application of granular insecticides as soil application in the whorl of leaves have become popular amongst the cultivators due to its easy handling and economy in application. Such treatments worked as plant growth regulator also. According to Easwarmoorthy (1976) and Krishnaiah et al; (1976) the soil application of granular insecticides provided good protection from the insect pests. Ragupathy (1973) reported that the application of granular insecticides in the soil was more effective against the insect pest in comparison to the other methods of control. Medina etal; (1973), vilardebo et al; (1975) and Velasco (1977) also reported similar result.

CONCLUSION

On the basis of the present findings, it may be concluded that the application of carbofuran and phorate minimized banana infestation by *cosmopolites sordius* and enhanced yield.

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Table 1: Effect of application of granular insecticides on damage by Cosmopolites Sordidus and Yield of banana.

Treatment	Dose Kg. a.i/ha	2022			2023			Pooled		
		Percentage damage	Yield (doz/ plant)	Yield (doz/ ha)	Percentage damage	Yield (doz/plant)	Yield (doz/ha)	Percentage damage	Yield (doz/plant)	Yield (doz/ha)
T1 BPMC	1	33.00 (34.97)	8.62	25860	19.00 (25.63)	7.50	22500	26.00 (30.30)	8.06	24180
T2 Carbaryl	1	32.00 (34.32)	6.94	20820	32.00 (34.46)	7.96	23880	32.00 (34.39)	7.45	22350
T3 Carbofuran	1	17.00 (24.25)	9.37	28110	11.00 (16.86)	8.25	24750	14.00 (20.55)	8.81	26430
T4 Phorate	1	23.00 (28.64)	7.78	23340	13.00 (21.10)	8.82	26460	18.00 (24.87)	8.30	24900
T5 Quinalphos	1	34.00 (35.52)	7.21	21630	44.00 (41.50)	7.40	22490	39.00 (38.51	7.35	22065
T6 Check (untreated)		76.00 (60.74)	6.79	20370	70.00 (56.94)	6.75	20250	73.00 (58.84)	6.77	20310
C.V %		10.77	10.57	10.57	18.10	8.42	8.41			
C.D. at 5%		5.91	1.24	3720	8.93	0.99	2970	10.55	0.7	2100

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