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Field Trials on the Efficacy of Two Sources of Vitamin D3 (Cholecalciferol) in Various Crops

Y Saxena and S S Chandna *
Toxicology Lab. II, Department of Zoology, University of Rajasthan, Jaipur– 302004
** Incharge, Scene of Crime Van, Office of DIG (Police), Hisar Range, Hisar– 125001*

Experiments conducted in five crops at Bawani Khera (Bhiwani), Haryana during November 1990 revealed that higher number of tunnel openings were present in the crop fields of sweet pea, *Pisum sativum*. Individual variations were observed pertaining to two categories of rodents.

In the past rodents were controlled with of traditional rodenticides which lack specificity and develop poison aversion and behavioural resistance in rodents (Prakash *et al.* 1975, Dubock 1980). However, with the advent of multiple anticoagulant rodenticides and Vitamins (Vit. D2 & D3) and acute as well as chronic rodenticides, the rodent control strategy has attained almost complete check (Saxena & Chandna 1991). There is a dire need to manage the rodent pests, both for public health and economic reasons. Chemical control is the most expedient in reduction of field populations to tolerable level. Therefore, studies on efficacy of Vit D3 (Cholecalciferol) against mixed populations of field rodents were carried out.

Ten g of wax block or of pelleted feed was placed at different bait points near the freshly excavated openings. The bait material which was left unconsumed was reweighed. To avoid neophobia pre-baiting was carried out with baked moist wheat flour smeared in groundnut oil prior to setting up of the experiment. One ha of cultivated land for individual source of Vitamin D3 and crops of wheat and bengal gram during germination, sugarcane, cauliflower and sweet pea was selected during blooming in the village Bawani Khera, during November 1990. Burrow openings ha^{-1} of land were counted and after plugging these with plaster of paris, the freshones were recounted. Dead rodents were counted and secondary poisoning hazard, if any was also observed.

It is evident that higher number of burrow openings were recorded in the following order : Crop fields of sweet pea, sugarcane, wheat, bengal gram and cauliflower. There is no significant difference in the consumption of wax cake and of pellets in any of treated crops. Therefore, both the formulations of Vitamin D3 are equally liked by field rodents. It is apparent that Indian gerbils, *Tatera indica* (Hardwicke) died little late (8.46 days) as compared to other species of rodents (6.34 days) when fed on wax cakes. However, with pellets, *T. Indica* died early (6.66 days). Interestingly with wax cakes higher percentage of Indian gerbils, *T. indica* died as compared to pellet form of fresh bait.

Semi-arid climate of Haryana and agricultural practices are often conducive to maintain large rodent population which ultimately lead to extreme rodent damage. Therefore, use of cholecalciferol as rodenticide can certainly reduce rodent menace, since with both the formulations to mortality of field rodents ranged from 5.74 to 8.46 days. Therefore, any source of Vit. D3 may be used. Trials with brodifacoum cakes in wheat and rice fields respectively in Pakishtan have resulted in 33 reduction in damage (Kaukeinen 1979 Khan & Choudhary 1978). Unconsumed cakes are environmentally stable and relatively easy to find them. Wax cakes have been found to be more difficult for

Table 1. *Cropwise comparison of twosources of ready to use poisoned baits in field rodents.*

	WAX CAKES					PELLETS				
	Wheat	Gram	Sugar cane	Cauli flower	Sweet pea	Wheat	Gram	Sugar cane	Cauli flower	Sweet pea
No. of burrows ha^{-1}	46	57	66	28	74	35	49	64	25.	63
No. of active burrows ha^{-1}	37	34	39	21	49	31	30	41	22	52
Quantity of bait Placed (g)	370	340	390	210	490	310	300	410	220	520
Quantity of bait consumed (g)	216	221	212	129	205	209	196	218	115	270
Total rodents died	59	49	43	29	34	55	43	40	39	70
Days to death (Indian gerbils)	8.4	9.0	8.8	8.1	8.0	6.3	6.4	6.6	7.2	6.8
Days to death (other than gerbils)	6.8	6.5	6.0	6.3	6.1	5.9	6.1	5.5	5.9	5.3
Poisoned bait intake(g) $rodent^{-1}$	3.7	4.5	4.9	4.4	6.0	3.8	4.6	5.5	2.9	3.8
Quantity of bait material consumed	58.4	65.0	54.4	60.9	41.8	67.4	65.3	53.2	52.3	51.9
CD at 5% (Between wax cakes and pellets) pertaining to										
(a) Bait intake, and	N.S.	N.S.	0.41	0.87	1.17					
(b) Quantity of bait material consumed.	1.23	N.S.	N.S.	2.12	2.98					

birds of poultry to eat, thereby reducing avian hazards (Ku 1979).

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