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# Field Efficacy of Four Second Generation Anticoagulants in Controlling Rodent Infestation

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The present communication describes the relative efficacy of four second generation anticoagulants viz. Bromadiolone. Difethialone Brodifacoum and Flocoumafen a tested against field rodents, mostly the desert gerbil, *Meriones hurrianae* and the Indian gerbil, *Tatera indica*.

The field trial was conducted at a village Muhana, 22 km from Jaipur of during the months of December-January 1992-93. Treament was carried out in four different plots of approximately 4ha each. The predominant species of rodents infesting the area were *Meriones hurrianae* and *Tatera indica*. The pre-treatment level of rodent infestation was estimated by adopting the burrow count method (Barnett & Prakash 1975, Rao 1977). The burrows were located, checked for occupancy and plugged with wet soil and lime in experimental plots. The reopened burrows on the next day were treated with packets of 20 g of poison bait (0.005% concentration) of each *i.e.* bromadiolone, difethialone, brodifacoum and flocoumafen, being placed deep inside the burrows in the four plots. After treatment burrows were closed and marked. The experimental plots were kept under strict vigil. The efficacy of rodenticides was evaluated on the basis of burrow reduction recorded upto twelfth day.

*Bait formulation* : Bromodiolone, brodifacoum and difethialone were in the form of ready to use bait, whereas flocoumafen bait of 0.005% was prepared with millet flour mixed with 1% groundnut oil + 1% sugar.

There was a uniform progressive burrow control achieved by (Table 1) all the rodenticides. Maximum effect was observed with brodifacoum followed by bromadiolone, though the difference between the two was not significant.

Difethialone is a new highly effective and potent second generation anticoagulant. It shows 84.85% control success in the present study, whereas Saxena and Bhasin (1991) reported 90% control success with difethialone at 0.05% concentration in the field. It was further supported by Lochevin (1987) reporting its efficacy against two native field rodents of Europe (*Arvicola* sp. and *Pitymys* sp.) with the does of 0.025% active ingredient.

Observations suggest that the time taken in the reduction of live burrows was fastest in the experimental plots where brodifacoum was used, followed by bromadiolone. However, the two other anticoagulants were relatively lower in action.

All the four rodenticides evaluated were observed to be acceptable to rodent species and non-hazardous to non target species, confirming the reports of Bhandari and Saxena (1991), Saxena *et al.* (1988) and Dubey *et al.* (1991).

**Table 1** *Efficacy of four second genertion anticoagulant rodenticides against field rodents*

| Rodenticides (Conc 0.005%) | Pre-treatment live burrow count | Per cent reduction in live burrows (days after treatment) | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2nd | 4th | 6th | 8th | 10th | 12th |
| Bromadiolone | 466 | 75.53 | 78.11 | 80.04 | 84.76 | 89.48 | 92.27 |
| Difethialone | 482 | 62.86 | 64.73 | 68.67 | 72.20 | 76.14 | 84.85 |
| Brodifacoum | 476 | 80.01 | 82.14 | 84.03 | 88.66 | 90.13 | 94.12 |
| Flocoumafen | 488 | 66.59 | 70.49 | 74.79 | 78.89 | 82.58 | 86.88 |

From the above observations, it can be concluded that at the concentration of 0.005% all the four rodenticides were found effective against field rodents.

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## References

Barnett SA & Prakash I 1975 *Rodents of Economic Importance In India*. Arnold-Hinemann, New Delhi and London, 1-175

Bhandari T & Saxena Y 1991 Bioefficacy of Flocoumafen (WL-108366) bait (0.005%) in houses and field. *The Indian Zoologist*, **15** (1 & 2) 175-177

Dubey OP, Awasthi AK & Agrawal RK 1991 The bioefficacy of bromadiolone and flocoumafen against rodents. *Pestology*, Vol. XV No. 4, 39-42.

Lochevin JC 1987 Laboratory and field tests on difethialone for the control of field rodents (*Arvicola terrestris* and *Petymys duodecimostatus*). *Compilation of Abstracts EPPO Conf. on rodents, Rome* 45.

Rao AMKM 1977 *Studies on Some Ecological Aspects of The Indian Field Mouse Mus Booduga Gray*. Ph.D. Thesis. University, Tirupati.

Saxena Y & Bhasin H 1991 Agility of novel second generation anticoagulants against field rodents. *National Academy of Science Letters* **14** 483-485

Saxena Y, Sharma V, Kumar D & Singh R 1988 Toxicity of rodenticides to non-target animals. *The Idian Zoologist* **12** 87-88

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