

Field Efficacy Evaluation and Synergistic Effect of Two Rodenticides Zinc Phosphide and Brodifacoum against Field Rats of the Pothwar Region, Pakistan

Authors : Nadeem Munawar, David Galbraith, Tariq Mahmood

Abstract : Rodenticides are often included as part of an integrated pest management approach for managing rodent species since they are relatively quick and inexpensive to apply. The current field study was conducted to evaluate the effectiveness of formulated baits of zinc phosphide (2%) and the second generation anticoagulant brodifacoum (0.005%) against field rats inhabiting a wheat-groundnut cropping system. Burrow baiting was initiated at the early flowering stages of the respective crops, and continued through three growth stages (tillering / peg formation, flowering, and maturity). Three treatments were done at equal time intervals, with the final baiting being about 2 weeks before harvest. Treatment efficacy of the trials was assessed through counts of active rodent burrows before and after treatments at the three growth stages of these crops. The results indicated variable degrees of reduction in burrow activities following the three bait applications. The reductions in rodent activity in wheat were: 88.8% (at tillering), 92%, (at flowering/grain formation), and 95.5% (at maturity). In groundnut, the rodent activities were reduced by 91.8%, 93.5% and 95.8% at sowing, peg formation, and maturity stages, respectively. The estimated mortality at all three growth stages of both wheat and groundnut ranged between 60-85%. We recommend that a field efficacy study should be conducted with zinc phosphide and brodifacoum bait formulations to determine their field performance in the reduction of agricultural damage by rodent pest species. It is a promising alternative approach for use of the most potent second-generation anticoagulant (brodifacoum) in resistance management, particularly with respect to reducing environmental risks and secondary poisoning.

Keywords : brodifacoum, burrow baiting, second-generation anticoagulant, synergistic effect

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