COMPLETED PROJECT REPORT

Project Title: Review of California Ground Squirrel control using zinc phosphide.

Research Agency: University of California – UC Davis

Principal Investigator: Salmon and Whisson

Budget: $61,125.00

Summary:

The final report was sent to CDFA. An abstract of the final report is given below. We also completed a paper summarizing the results from this study. The paper, given by T. P. Salmon, at the 19th Vertebrate Pest Conference in San Diego, March 2000, and is titled: "Use of zinc phosphide for California ground squirrel control". The paper will be published in the proceedings of the conference.

Abstract: Zinc phosphide (ZP) is the only acute rodenticide currently registered for control of the California ground squirrel (Spermophilus beecheyi). Research studies have shown ZP gave excellent control of sciurid rodents, but operational control programs in California have reported poor and inconsistent control. We examined the literature and conducted 7 field trials between 1996 - 1999 in order to identify factors affecting the field efficacy of ZP and to develop best management guidelines for improved efficacy. Important factors identified from the literature include bait acceptance, prebaiting, and timing of control operations in relation to ground squirrel and vegetation phenology. We used ground squirrel counts or burrow counts as a measure of ZP efficacy in the field trials. Treatment consisted of either mechanical broadcast or spot baiting of 2% ZP-treated oat groats. In the 2 original field trials in Monterey County conducted without bait acceptance tests and prebaiting, control was inconsistent, ranging from none on 1 plot, poor on 3 plots (45 - 63%), to good on 2 plots (84 - 87%). In 3 subsequent field trials in 1998 in San Joaquin, San Luis Obispo, and Monterey counties conducted with bait acceptance tests and prebaiting, control was excellent (90 - 100%) on 11 of 12 plots and good (88%) on the remaining plot. Follow up counts of ground squirrels in March 1999 on the Monterey site treated in October 1998 showed squirrel numbers had returned to or surpassed the pretreatment levels on 3 of the treated plots. Based on our field trials from 1996 - 1998 and other studies in the literature we developed a set of best management guidelines intended to maximize control efficacy. However, 2 trials in 1999 in Madera and Monterey counties following the guidelines resulted in good control (80 -90%) on 5 plots, but poor control (60 - 79%) on 2 plots and no control on 1 plot. We revised the best management guidelines based on the 1999 results and until further research is conducted retract the earlier suggestion that ZP labels be revised to

require prebaiting for ground squirrel control. We recommend further research on: 1) the relationship between vegetation phenology (presence of green vegetation) and efficacy, 2) a revised technique to assess bait acceptance, 3) the value of prebaiting in increasing bait acceptance by California ground squirrels, 4) the ability of ground squirrels to locate and consume a lethal dose of bait and the potential for bait shyness in relation to spot baiting vs. broadcast baiting, and 5) the relationships between fall treatment with ZP, the proportion of adults vs. juveniles still active in the fall, and the impact on squirrel populations the following spring.

Last Updated:

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