EFFICACY TRIALS USING ZINC PHOSPHIDE OAT BAIT FOR CONTROLLING FIELD RODENTS IN MONTANA

by

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JUSTIFICATION

Cancellation by EPA of previously used field rodenticides such as sodium monofluoroacetate (1080) and above ground use of strychnine (currently registered for below ground use for pocket gopher control only) has left zinc phosphide baits as the primary field use rodenticide for economical, large acreage means of reducing crop and equipment damage caused by field rodent activities. Although other alternatives such as burrow fumigants, shooting, trapping, crop rotation, and flood irrigation are available, these methods are time consuming, labor intensive, expensive, or require specific environmental conditions. This restricts their use to small areas or specific timing.

Field use has proven that while zinc phosphide can be an effective rodenticide, specific conditions are needed. For example, dry, arid conditions are needed with a lack of green vegetation for effective control on ground squirrels and prairie dogs. It is also recommended to apply clean, untreated grain (prebait) prior to treatment with zinc phosphide. This practice accustoms the rodents to a new food source and provides more effective control. However, prebaiting also doubles the labor and increases the cost of control.

Hopkins, Inc. has recently developed a 2.0% zinc phosphide oat bait using high quality roasted oats. This bait reportedly increases acceptance and kills any germination of oat kernels, thus preventing unwanted sprouting and growth of oat plants in croplands.

Field efficacy tests need to be conducted to determine acceptance by prairie dogs and ground squirrels in Montana under various timing and environmental conditions with and without prebaiting.

STUDY AREA

The prairie dog portion of this study will be conducted on private
ranch lands in the vicinity of Billings, MT. Baiting trials for Columbian ground squirrels will be in the Helena, MT area. Test plots for Richardson ground squirrels will be located near Wilsall, MT.

METHODS

Multiple efficacy trials will be conducted under varying conditions during the time prairie dogs and ground squirrels are active. Study plots will contain at least 30 or more rodents each. Rodent activity on each treatment and control plot will be monitored pre and post treatment. Three counts will be made from a common vantage point using binoculars each of three consecutive days pre and post treatment. The highest of these counts provides pre and posttreatment indices. Percent reduction in activity will be computed by the formula:

\[
\% \text{ Reduction} = \frac{\text{Pretreatment AI} - \text{Posttreatment AI}}{\text{Pretreatment AI}} \times 100
\]

Application time, amount of bait, and cost of materials will be recorded. Any nontarget effects will also be noted.

BUDGET

<table>
<thead>
<tr>
<th></th>
<th>Bait</th>
<th>Prebait</th>
<th>Mileage</th>
<th>Meals</th>
<th></th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prairie dog:</td>
<td>furnished by Hopkins</td>
<td>furnished by Hopkins</td>
<td>1000 miles @ $.25/mile</td>
<td>8 @ 4.00 each X 2</td>
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<td>$314</td>
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<td>Richardson ground squirrel:</td>
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<td>2000 miles @ $.25/mile</td>
<td>8 days @ $15.50/day</td>
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<td>Columbian ground squirrel:</td>
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<td>8 nights @ $31.20/night</td>
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<td>$624</td>
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