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GREEN CHOPPED BAIT FOR THE CONTROL OF THE OREGON GROUND SQUIRREL

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ABSTRACT: In 1972 at the Fifth Vertebrate Pest Conference, my predecessor, Loring White, described "The Adaptation to a Changing Environment of the Oregon Ground Squirrel." Today, ten years later, I will bring you up-to-date on what we are doing to control this persistent ground squirrel to a point where we can keep our farming operations going in spite of this pest.

Bait-shyness or poor bait acceptance has forced us to use a green bait. For efficiency, aircraft broadcasting has become the common method of application. So that you might have a better perspective of our ground squirrel operations, I will illustrate my presentation with a series of slides.

In northeastern California, and especially in Modoc County, one of our most important pests is the Oregon or Belding ground squirrel, *Spermophilus beldingi oregonus*, or as previously named, *Citellus oregonus*.

In 1972 at the Fifth Vertebrate Pest Conference, my predecessor, Loring White, described "The Adaptation to a Changing Environment of this Ground Squirrel." Today, ten years later, I will bring you up-to-date on what we are doing to control this persistent ground squirrel to a point where we can keep our farming operations going in spite of this pest.

With the increase of sprinkler irrigation and continual improvement in farming methods, we are giving the ground squirrel a better environment. With this better environment, the squirrels have more food and moisture and their juvenile survival rate appears to have continued to increase.

We still have problems with bait-shyness or poor bait acceptance. It is now virtually impossible to obtain adequate acceptance of grain baits.

Our farming operations are for the most part on a large scale and we can no longer afford to use labor-intensive methods such as treating every hole as we did in the past with the fumigants carbon bisulfide or methyl bromide. The cost of labor for this purpose is prohibitive. These are the reasons we have over the years switched to use of a green chop for bait.

Dandelion is the green bait that is best accepted by the squirrel. However, dandelion is hard to obtain at the right time and in quantities large enough to carry on a large-scale ground squirrel control operation. Cabbage is the next best green bait and it is practical and economical to use. We purchase the cabbage from the southern part of the state and have it trucked to Modoc County.

In 1972 we started treating fields by using a pickup to ride in while placing 1080-treated cabbage out by hand. It soon became apparent we could not keep up with the growing population of squirrels and the many grower requests for our services, although the treatments resulted in 95 to 99% squirrel control.

Besides this being a slow method of application, we were quite often held up by fields that were still wet from the winter storms. We were mixing a wet 1080 slurry over the cabbage and hence there was no problem with the bait getting wet; the problem was getting our equipment stuck in wet fields. It became apparent that we needed to improve on our method of bait application.

Paul Macy of Macy's Flying Service who had previously worked with us on our rodent-grain programs was contacted concerning the possibility of converting the hopper gate and aircraft assembly to apply cabbage bait rather than grain bait. This was not an easy task. The cabbage falling from the airplane gave us an even distribution, but the problem was getting the chopped cabbage to flow through the hopper and out the gate. The cabbage was chopped into approximately 1/2-inch squares, but in early experimental trials it would bridge up in the hopper and not come out the gate. Many corrective measures were tried and a lot of money in manpower and equipment was spent. After about two years of experimenting, we developed a consistently trouble-free application.

Modoc County Department of Agriculture then turned their attention to building a chopper and mixer and working out a way to have a fast, efficient method of chopping the cabbage, mixing it with the toxicant and loading the airplane. Our efforts have paid off and for the last several years things have worked well. We can now get fresh chopped cabbage bait to readily flow through the plane's hopper. We can now treat up to 2,000 acres a day with a single airplane and a four-man ground crew. This means we are putting 10 tons of cabbage on 2,000 acres in one day.

The cabbage is flown in swath strips approximately 50 feet wide with 50 feet between strips. We average 10 pounds of 1080 treated cabbage per acre. In 1981 we flew on approximately 80 tons of cabbage over 16,000 acres.

This baiting program is quite effective, but it is not the cure-all. We still have several unresolved problems. We have fields in which squirrel control is so effective we can skip two or three years before retreating; however, we also have fields that must be controlled each year. Some of our

problems seem to be squirrel populations moving in from nearby nontreated areas. Problems with bait acceptance have not been totally resolved and additional information is needed on food preferences of this squirrel following emergence from hibernation.

This spring, new research will commence under the direction of the University of California Cooperative Extension and the Division of Wildlife and Fisheries Biology in cooperation with the California Department of Food and Agriculture and the Modoc County Agricultural Commissioner's Office, with the funding coming from the Modoc County Farm Bureau and the Hay Growers Association. Hopefully, this research will provide us with additional information upon which to further improve our ground squirrel control program.