

# Vertebrate Pest Review

A VPCRAC Update

Volume 1, No. 1; 2000

## California's Rodenticide Surcharge Program: Protecting Agriculture

Each year ground squirrels, pocket gophers, voles, rats, birds and other animals cause millions of dollars of damage to California agriculture. Farmers, park managers, foresters, and others use an integrated approach to deal with these important and sometimes devastating pest problems.

An essential part of these management programs is the use of rodenticide baits such as anticoagulants, zinc phosphide, burrow fumigants such as gas cartridges, and bird control devices.

To address the serious vertebrate pest problems in the state, the California Department of Food and Agriculture



Serious meadow vole problems in alfalfa are being addressed by VPCRAC.

(CDFA) maintains the registration of nine field use rodenticides that are sold by 36 county agricultural commissioner offices. These materials, along with those registered by private manufacturers, are essential to farmers, public health agents and others dealing with many vertebrate pest problems.

Changes in federal law established new scientific requirements for all new and existing pesticides. As a result, the U.S. Environmental Protection Agency (EPA) notified CDFA that it must submit additional scientific data about the toxicology, use and environmental fate of its zinc phosphide and anticoagulant baits. Complex research projects, some costing well in excess of \$100,000, were now required. If EPA did not receive this requested data, CDFAs rodenticides would be prohibited from use in agriculture—a devastating consequence to California.

To address this problem, the California Legislature passed a bill in 1990 to collect a 50 cent per pound surcharge for vertebrate pest control material sold, distributed, or applied by the county agricultural commissioners. The legislation specified that all money generated be used to fund research required to maintain current registrations, to improve existing rodenticides, and to find new materials and methods to solve vertebrate pest problems. The bill established an external advisory committee, the Vertebrate Pest Control Research Advisory Committee (VPCRAC), to set priorities for vertebrate pest research projects and recommend to the Secretary of CDFAs research projects that should be funded. In 1995, the surcharge program was extended for another five years. Legislation is pending to extend the VPCRAC program to 2006.

The surcharge program has been extraordinarily effective. At 50 cents per pound of bait, it has raised over \$2.4 million to help meet its objectives:

- maintain current CDFAs rodenticide registration
- improve the use of existing materials
- expand our knowledge about controlling vertebrate pests, and
- find alternative control materials and strategies.



### Who is VPCRAC?

Representation on the Vertebrate Pest Control Research Advisory Committee is specified by law. Current committee representatives are:

Charles Crabb	California State University
Lenord Craft	California Agricultural Commissioners
Art Foster	Agricultural industry
Ellen Des Jardin Hirth	Agricultural industry
Marvin Meyers	Agricultural industry
Gerry Miller	California Department of Food & Agriculture
Joe Pozzi	Agricultural industry
George Simpson	Public member
Robert Timm	University of California
Kenneth Townzen	California Department of Public Health
Edward Tully	Agricultural industry

Committee Secretary and contact:

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## New Repellents Hold Promise for Horned Lark Control

California is the leading producer of a wide variety of vegetables. Growers have long experienced bird damage to the seedlings of these crops, which include lettuce, broccoli, carrots, beans, peas, spinach, tomatoes, melons, onions, peppers, and flowers. Other important crops damaged in the seedling stage include sugar beets and alfalfa. As an example, in 1996 bird damage to California lettuce seedlings alone was estimated at \$4.6 million, based only on the amount invested at the time of seedling emergence.

The horned lark is the major bird pest of seedling crops. Damage typically begins when the seedlings first sprout and the larks either nip off parts of the seedlings or pull entire plants from the soil.

Prior to 1990, farmers used strychnine to control horned larks. However, due to a court order, strychnine has



The horned lark is a major pest of seedling crops and the focus of a study to develop repellents for use in lettuce.

## Improving Bait Quality

To be effective, a rodenticide must be attractive to the rodents so they will eat it. Experience has shown that using fresh grain is important for good bait acceptance. We also know that quality ingredients and proper manufacturing are the keys to bait qualities. VPCRAC is funding research to test additional bait manufacturing processes and ingredients to ensure bait of the highest quality is available to solve the many rodent problems in the state.



Current studies on anticoagulant baiting strategies and bait quality aim to improve control of the California ground squirrel.

not been available for bird control since 1990. Today most growers use hazing methods such as shooting and propane cannons to limit damage, but few believe these methods are effective. Recognizing the tremendous damage caused by birds and the need for new control materials, VPCRAC funded a research project to evaluate several candidate materials as potential bird repellents in lettuce.

The laboratory and field studies were conducted by researchers from the National Wildlife Research Center

(NWRC) in Colorado. Among the materials originally tested were clay coatings for seed protection, and activated charcoal, fipronil, lime, methiocarb, and methyl anthranilate as repellents on seedlings. Results from feeding trials with horned larks in an aviary showed that clay coating reduced feeding on lettuce seeds by



## Overview of Types of Research Projects Funded by VPCRAC

Primary subject of research	Number of studies	Approximate amount funded (\$)
Bird control	4	274,000
Chemical or laboratory pesticide procedures, or residue analyses	10	588,000
Economics	2	104,000
Endangered or nontarget species	4	155,000
Ground squirrel control	16	1,237,000
Miscellaneous	3	70,000
Pocket gopher control	4	289,000
Rat, mouse, or vole control	8	255,000
<b>Total</b>	<b>51</b>	<b>2,972,000</b>

## New Anticoagulant Baiting Strategies for Ground Squirrels

Anticoagulant baits for ground squirrel control can be applied in bait stations or by multiple broadcasts over a period of days. While effective, these methods often require extensive resources to achieve acceptable control. Current VPCRAC-funded research is evaluating different baiting strategies that have the potential to reduce the amount of bait used and the time required to apply it.

over 95%. In a second aviary trial, the five candidate repellants were sprayed on flats of lettuce seedlings. Results showed that methyl anthranilate and methiocarb were the most effective repellents.

In December 1997 and January 1999 researchers used portable aviaries placed over newly sprouted lettuce rows to test methyl anthranilate, methiocarb, and a new, sixth candidate material, anthraquinone. The materials were applied as foliar sprays to the lettuce seedlings. Six horned larks were released into each aviary, a number equivalent to about 6000 horned larks per acre! Under this intense pressure, 100% of the nontreated seedlings were consumed. All three repellents had significantly less damage, with the best, methiocarb, having only 20% of the seedlings consumed.

Researcher filling the bait hopper of a specially modified ATV used in anticoagulant and zinc phosphide studies.



Neither methiocarb nor anthraquinone are currently registered as foliar sprays for lettuce seedlings; however, two companies are pursuing registration. The Gowan Company, of Yuma, Arizona, is resuming product registrations for Mesuro<sup>®</sup>, the trade name for the methiocarb formulation. Environmental Biocontrol, of Wilmington, Delaware, is supporting registra-



California ground squirrels destroyed all the lettuce seedlings in the corner of this field near Salinas.

tion for Flight Control<sup>™</sup>, the anthraquinone formulation. VPCRAC-funded work has been instrumental in demonstrating the potential of these repellents.

### Current Research Projects Funded by Surcharge Monies

PROJECT TITLE	FOCUS OF STUDY	RESEARCH AGENCY
Cholecalciferol/pocket gopher burrow builder field study	Efficacy of cholecalciferol to control gophers	NWRC
Lab study of cholecalciferol grain baits for California ground squirrels	Efficacy	NWRC
Review of California ground squirrel programs using zinc phosphide	Efficacy, control strategies	UCD
Chlorophacinone and diphacinone residues in rangeland grasses	Residue levels needed for EPA registration of ground squirrel baits used on rangelands and pastures	NWRC
Anticoagulant baiting strategies for California ground squirrels	Development of baiting strategies	UCD
An operational crow control program using broadcast calls	Efficacy of broadcast distress calls	UCD
Seasonal uptake of oat groat bait by pocket gophers	Bait acceptance	NWRC
Malted oats as a carrier for zinc phosphide baits	Improved bait acceptance by Belding's and California ground squirrels	NWRC
Evaluation of potential bird repellents to reduce bird damage to sprouting crops, with emphasis on lettuce	Efficacy of repellents for horned larks	NWRC
Best management practices	Simulation models, long-term control, bait quality, new learning/use strategies	UCD
Electronic systems for bird control in orchards and vineyards	Development of bird sensing systems with remote activation of control outputs	UCD

## Sections 18 and 24c Explained

A pesticide must be registered by EPA first and then by the California Department of Pesticide Regulation (DPR) before it can legally be sold or used in California.

The DPR registration process begins with review of a package that includes complete scientific data and the proposed label. If the label is acceptable and the accompanying data package is complete, then scientific evaluation of the data by staff scientists begins. DPR requires all the EPA-required data plus additional information for special California conditions. In this process, DPR further evaluates acute and chronic toxicology, product chemistry, residues, worker health and safety, efficacy, phytotoxicity, fish and wildlife impacts, and environmental fate.

After the scientific evaluation is completed, the decision to register or deny the product is posted for a 30-day public comment period. If the final decision is to register the product, a Certificate of Registration is issued and the product can be legally sold for use in the state.

There are two special situations where an additional label can be issued by the state, even though the manufacturer does not have the use approved on the existing EPA label. These two situations—the Special Local Need Registration and Emergency Exemption—must meet very specific criteria.

### Section 24c - Special Local Need (SLN) Registration

- A residue tolerance is already established for the active ingredient on the particular crop.
- The label is issued with site and uses specific to the special use.
- The label, identified by its California SLN number, is used in conjunction with the federally registered label.
- The SLN use is not a restricted materials use unless the product itself, or its prior use, was previously classified as federally or state restricted.
- Most SLNs are issued for an indefinite time; there is no expiration date.

### Section 18 - Emergency Exemptions

- Issued to meet an emergency pest situation that has been well documented.
- Issued on a food or feed crop that has not had a residue tolerance established for the particular pesticide.
- The label includes the specific site and directions, and is to be used in conjunction with the federally registered label.
- Under a Section 18 the product automatically becomes a "Restricted Use Material" and a permit must be obtained from the county Agricultural Commissioner for its use.
- The emergency exemption has an expiration date of one year or less from issuance.
- The EPA issues the Section 18 to the state, unlike the SLNs that the state issues without prior EPA approval.

### Meadow Voles in Alfalfa

Meadow voles, sometimes called meadow mice, can be a big problem for alfalfa growers. Voles like dense vegetation and alfalfa fields provide both plentiful food and cover. They live in shallow burrows and feed primarily on the alfalfa above ground. Vole populations seem to fluctuate from year to year, and, left unchecked, they can increase rapidly. Unfortunately,

ly for alfalfa growers, there have been no rodent baits registered to control this pest.

On January 18, 2000, the California Department of Pesticide Regulation (DPR) issued an Emergency Exemption (Section 18) that allows agricultural commissioners to issue permits to use 2% zinc phosphide-treated grain bait in alfalfa crops to control voles. In certain counties, this action was a direct result of the VPCRAC and was only possible because of the research previously funded by this committee.

In 1995, VPCRAC identified the prohibition of in-crop use of rodent baits in alfalfa as a major problem. The committee funded research to analyze potential residues when using zinc phosphide baits in alfalfa. The research was completed last year, and the results have since been used to petition EPA to issue a Special Local Needs (24c) registration for California. The fact that VPCRAC had conducted the residue studies was instrumental in decisions by DPR and EPA to grant the Section 18 emergency registration. CDFA is following the registration process closely and will continue to push for the Section 24c labels for voles in alfalfa by next year when the Section 18 expires.

### Section 18 Granted for 2% Zinc Phosphide for Voles in Alfalfa

**Product:** Zinc phosphide-treated grain (2%) sold by California Agricultural Commissioners

**Location:** Use limited to 21 California counties

**Crop/site/commodity:** Alfalfa

**Target pest:** California and montane voles

#### Special application requirements:

- 1) May be applied by ground or air
- 2) Bait acceptance with non-toxic bait must be demonstrated prior to application
- 3) Must be applied before alfalfa attains a length of 2 inches
- 4) Maximum of two applications per year
- 5) Applications spaced at least 30 days apart
- 6) 30 day pre-harvest interval
- 7) 12 hours restricted entry interval

There are other requirements when applying this material. For example, a written recommendation from a pest control advisor licensed in the Vertebrate Pest Category is required. Also, before a recommendation can be made, snap-traps must be set in the field to determine the level of infestation. The Section 18 label specifies that a 10% infestation level (10 mice caught per 100 trap-nights) is necessary to warrant using this material.