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Each year ground squirrels, pocket gophers, voles, rats, birds, and other animals cause 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 (CDFA) maintains the registration of nine field use rodenticides that are sold by county agricultural commissioner offices. These materi-

als along with those registered by private manufacturers, are essential to farmers, public health agents, and other dealing with many vertebrate pest problems.

Changes in federal law established new scientific requirements for all new and existing pesticides. As a result, the United States Environmental protection Agency (USEPA) 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 the USEPA did not receive the required data, CDFA's rodenticides would be cancelled and 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 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 mate-

rials 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 CDFA research projects that should be funded. In 1995 and again in 2000 the surcharge program was reauthorized and extended and will sunset in 2006.

The surcharge program has been extraordinarily effective. At 50 cents per pound of bait, it has raised over \$6.0 million to help meet its objectives:

- Maintain current CDFA rodenticide registrations
- 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. The current committee representatives are:

Charles Crabb	California State University
Art Foster	Agricultural Industry
Ellen Des Jardin Hirth	Agricultural Industry
Marvin Myers	Agricultural Industry
Duane Schnabel	California Department of Food & Agriculture
George Simpson	Public Member
Dan Spangler	Agricultural Industry
Robert Timm	University of California
Mark Tognazzini	California Agricultural Commissioners
Kenneth Townzen	California Department of Health Services
Edward Tully	Agricultural Industry

Committee Secretary and contact:

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Vertebrate Pest Control Education Outreach

The California Department of Food and Agriculture (CDFA) in cooperation with the Vertebrate Pest Control Research Advisory Committee (VPCRAC), the California Agricultural Commissioners and Sealers Association (CACASA), and the University of California are developing a statewide vertebrate pest control educational outreach program. The educational outreach program should be completed by the summer of 2003. The proposed components of this educational outreach program are:

- Development and distribution of the Vertebrate Pest Review publication

- Development of presentations on vertebrate pest control methods and technologies

- Development of a CDFA hosted vertebrate pest control web page

- Development and distribution of a revised California Vertebrate Pest Control Handbook

The Vertebrate Pest Review will be revised, published

and distributed annually through direct mailing and internet access. The presentations on vertebrate pest control methods and technologies will be available for presentation to California agricultural commissioner's staff, growers, ranchers and other interested parties. The internet web page will be a comprehensive vertebrate pest control information site with CDFA developed information as well as external links to additional vertebrate pest control information. The California Vertebrate Pest

Control Handbook will be revised and made available in both printed and electronic formats.



Vertebrate Pest Control Education Workshop

FIFRA Section 24c and 18 Activities

"The Vertebrate Pest Control Research Advisory Committee (VPCRAC) supports and recommends research funding to obtain federal regulatory approvals for vertebrate pest control materials for use in California."

The Vertebrate Pest Control Research Advisory Committee (VPCRAC) supports and recommends research funding to obtain federal regulatory approvals for vertebrate pest control materials for use in California. These efforts are coordinated through the California Department of Food and Agriculture (CDFA).

CDFA has completed and submitted a 24c Special

Local Need (SLN) label amendment to The Department of Pesticide Regulation (DPR) to add the use of zinc phosphide on alfalfa to control voles by broadcast methods.

In addition CDFA has submitted a petition for tolerance request to IR-4 (Inter-Regional Program) to establish a tolerance for zinc phosphide on alfalfa. The

IR-4 program has completed and submitted the petition request to the USEPA for the federal 2003 Work Plan.

CDFA has also completed and submitted a Section 18 Emergency Exemption request to DPR for the use of zinc phosphide on alfalfa to control voles by broadcast methods. This exemption will be for the 2002/2003 use season.

VPCRAC Research Projects (1990-2002)

Primary Subject of Research	Number of Studies	Approximate Amount Funded (\$)
Bird Control	7	665,000
Chemical or laboratory pesticide analysis	17	1,041,000
Economic	2	104,000
Endangered or non-target species	4	155,000
Ground squirrel control	17	1,497,000
Miscellaneous	4	97,000
Pocket gopher control	5	389,000
Rat, mouse, rabbit, or vole control	11	605,000
Total	67	4,553,000



Featured Research: Pest Control Strategies for Voles in Artichokes

The California vole (*Microtus californicus*) is considered a significant pest to the California artichoke industry. Without adequate vole control artichoke production would be severely limited.

In 1983, the California Artichoke Research Association funded research by R.E. Marsh, W.E. Howard, and T. P. Salmon with the University of California, Davis, to develop pest control options for artichoke production. As a result of this original research the use of chlorophacinone treated artichoke bracts for vole control in artichokes was implemented.



California Artichokes

Initially, this method proved quite successful and growers adopted it despite the significant costs and complex nature of the manufacturing process and application method.

Recently artichoke growers have expressed concerns over the chlorophacinone baiting program. Problems with bait consistency, potential genetic resistance, and poor efficacy have been reported.

To verify the findings of the original research and to identify improvements or alternatives for vole control in artichokes, The Vertebrate Pest Control Research Advisory Committee (VPCRAC) has recently recommended funding research to investigate the concerns of artichoke growers.

Dr. T.P. Salmon with the University of California, Davis, is coordinating the research efforts. The current research will focus on:

- Field efficacy verification of existing materials and methods
- Efficacy of chlorophacinone at alternative strengths, dose and dose response of voles to chlorophacinone
- Chlorophacinone resistance identification and management strategies in voles
- Baiting strategies for effective control of voles in artichokes
- Identification of alternative chemical treatments for vole control in artichokes

The research is ongoing with preliminary identification of some concerns, additional research is needed to confirm the preliminary findings.

One of the concerns identified as a result of the research is the discontinuance of the current commercial product of choice for the formulation of the artichoke bracts because of federal pesticide registration requirements.

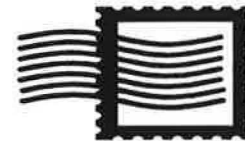
As a result VPCRAC has recommended additional research to develop an alternative formulation and process. The focus of the reformulation research is to find a cost effective formulation method that is practical to implement, provides minimal worker health and safety issues and produces an efficacious artichoke bract bait.

The reformulation research is underway and has identified possible alternative formulation processes. These processes will be investigated and scientifically verified.

VPCRAC solicits, evaluates, and recommends funding of vertebrate pest control research to benefit California growers and ranchers. For more information on vertebrate pest control research in California please contact VPCRAC.

Current Research Projects by VPCRAC

Project Title	Focus of Research	Research Agency
Anticoagulant Baiting Strategies for Voles in Artichokes	Efficacy and development of baiting strategies	UC Davis
Indexing Technique for Vole Abundance	Develop and evaluate indices for measurement of vole populations	UC Davis
Development of Crow Repeller	Develop a broadcast crow repeller system for field implementation	UC Davis
Deer Mouse Bait Station	Laboratory and field development of a bait station for deer mice	UC Davis
Jackrabbit Control Systems	Test and evaluate jackrabbit control techniques	UC Davis
Immunocontraceptive Control of Crows	Laboratory and field development of a chemical crow contraceptive	NWRC
Artichoke Bract Reformulation	Reformulation and evaluate the artichoke bract registration	UC Davis
Anticoagulant Baiting Strategies for Pocket Gophers	Efficacy and development of baiting strategies	UC Davis



Vertebrate Pest Control Research Advisory Committee

Protecting California's Agriculture

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DPR Continuing Education Course Credit Offered by VPCRAC

The Vertebrate Pest Control Research Advisory Committee (VPCRAC) now sponsors continuing education course credit for the semi-annual committee meetings. Two meetings are held annually, one in the fall and one in the spring, in various locations around the state. The meeting is one day in length and the continuing education credit typically consists of 4 hours laws and regulations credit and 4 hours other credit. Attendance is at no cost and open to any member of the public that is interested in vertebrate pest control research.

The VPCRAC solicits, evaluates and recommends funding to research:

- Maintain current CDFA rodenticide registrations
- Improve the use of existing vertebrate pest control materials
- Expand our knowledge about controlling vertebrate pests, and
- Find alternative control materials and strategies for vertebrate pests.

This is an excellent opportunity to learn about vertebrate pest control research efforts in California and receive continuing education credits.

The fall VPCRAC meeting will be held at the Visalia Convention Center in Visalia, California on October 16, 2002. Please mark your calendars for this continuing education opportunity.

For more information contact:
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