Planning for UC Cooperative Extension’s future: Stakeholders can join in during “listening sessions”

UC Cooperative Extension has taken a 30% budget cut during the past 2 years, resulting in a substantial loss of advisor positions statewide, so changes in our organization are planned. Clientele are invited to share on planning for structural and program delivery changes in our organization during a scheduled “Listening Session” held by Agriculture and Natural Resource (ANR) administrators in Davis on February 26. Your experience, vision, and insights are valuable to ANR and listening to your comments will help ensure the success of ANR in the future. For more information and to register online contact http://groups.ucanr.org/directions/ or Lynne Buenz at 510-987-0027.

Crop Production Survey:

The Solano County Agriculture Commissioner is in need of commodity production information for 2003. They are asking growers/producers to provide this information by filling out a survey. To participate in this survey please go to: http://www.solanocounty.com/resources/Agriculture/CropQuest2003/crop_surveys.asp or contact the Solano County Agriculture Commissioner’s office at (707) 421-7465.

Irrigated Lands Waiver

The enclosed brochure from the Central Valley Regional Water Quality Control Board answers questions and provides up to date information on the status of the agricultural waivers for irrigated lands. For more information on pesticides and water quality (including the table I developed with insecticides ranked by their potential to move in runoff from treated areas) see my website at http://ceyolo.ucdavis.edu. Look for the water quality document and scan through for the tables.

Dry Bean Production:

Warrior and MustangMax are now registered for Lygus bug control in dry beans. In my research trials in Solano and Yolo Counties last year, both materials controlled Lygus bugs as well as the Dimethoate treatments. Entomology Specialist Dr. Godfrey found similar results with Warrior in his dry bean trials at UC Davis. NOTE: MustangMax flared black bean aphids and mites that were present in our lima bean plots. If you use MustangMax and have aphids, be sure to use some Dimethoate as well as a miticide in your field application. Warrior provided excellent control of black bean aphids. Warrior also seemed to give some mite suppression (as noted in the label), but I’m not sure if you can count on this material to provide mite control in all dry bean fields. In Dr. Godfrey’s trials at UCD, Orthene gave poor Lygus bug control. Studies are being conducted by to see if Lygus is building up resistance to this insecticide.

Alfalfa Production:

Dr. Terry Salmon, UC Vertebrate Pest Control Specialist, provided the following information on gopher and meadow vole (mice) control in alfalfa.

MEADOW VOLES

Meadow voles (mice), damage alfalfa by feeding on alfalfa roots and stems; they are active all year and are normally found in areas with dense ground cover. They dig short, shallow burrows and make underground nests of grass, stems, and leaves. The peak breeding period is spring with a second, smaller breeding period in fall. Litters average four young. Meadow vole numbers fluctuate from year to year; under favorable conditions, their populations increase rapidly and become very dense. Because the damage voles do to alfalfa can be quite severe, and because of their rapid reproductive rate, initiating a program of habitat modification and/or
population reduction before their numbers explode is important. To detect for voles, look for fresh trails in the grass, as well as burrows, droppings, and evidence of feeding. Routine monitoring of alfalfa fields and surrounding areas is important. Pay attention to adjacent areas that have heavy vegetation because voles can build up in these areas and invade alfalfa.

**Habitat Modification.** When practical, habitat modification is particularly effective in deterring voles. Once they are established in the field however, habitat modification is not applicable since the alfalfa provides an excellent vole habitat. Weeds, heavy mulch, and dense vegetative cover encourage meadow voles by providing food and protection from predators and other environmental stresses. Clearing grassy and weedy areas adjacent to alfalfa fields can be helpful in preventing damage because it will reduce the base area from which voles invade. Weed-free strips can serve as buffers around areas to be protected. The wider the cleared strip, the less apt meadow voles will be to cross and become established in alfalfa. A minimum width of 15 feet is recommended, but even that might not be enough when vole numbers are high.

**Toxic Bait.** When meadow voles are numerous or when damage occurs over large areas you may need to use toxic bait to achieve adequate control. Zinc phosphide is now registered for meadow vole control in alfalfa in California. Place bait in runways or next to burrows where voles will find it, or broadcast in the area where voles are found. When using zinc phosphide, be aware that voles that feed on the bait but do not die may become bait shy. When this happens, they remember that the bait made them sick and will likely not eat it again. For this reason, zinc phosphide should not be used in the same field more than once in a 6 month to 1 year period. Zinc phosphide bait is rapid acting. You may find dead voles within 12 hours of baiting. When practical (e.g. dead voles in the open such as along roads) dispose of dead voles by burying them or placing them in plastic bags and putting them in the trash. Do not handle them with your bare hands. Because zinc phosphide does not accumulate in the tissue of the voles, predators or scavengers such as dogs and cats are not likely to be affected by eating the poisoned rodents. However, children, as well as pets, birds, and other animals, can be affected by the bait, so store it out of reach and use it carefully in a way that will minimize their access to it. Zinc phosphide is a Restricted Use Material. You must obtain a permit from the local County Agricultural Commissioner to buy and use it. Follow label instructions carefully.

**POCKET GOPHERS**
Pocket gophers live by themselves in an extensive underground burrow system that can cover an area of several hundred square feet. These burrows are about 2 inches in diameter, usually located from 6 to 12 inches below ground. They eat a wide variety of roots, bulbs, tubers, grasses, and seeds, and sometimes even the bark of trees. Their feeding and burrowing can damage alfalfa and surrounding areas. In addition, they may damage plastic irrigation lines and their tunnels can divert and carry off irrigation water, lead to soil erosion and cause some structures to fail. Pocket gophers seldom travel above ground. They are sometimes seen above ground feeding, pushing dirt out of their burrow system, or moving to a new area. The mounds of fresh soil that are the result of burrow excavation indicate their presence. Their mounds are usually crescent shaped and are located at the ends of short lateral tunnels branching from a main burrow system. One gopher may create several mounds in a day. Generally, a group of mounds is evidence of 1 gopher. Because of the nature of pocket gopher damage, a successful control program depends on early detection and prompt measures to prevent damage. Most people control gophers in alfalfa by baiting using mechanical baiting probes, hand probes or a tractor-drawn baiting device. Trapping is sometimes used although it is usually too labor intensive to be effective over large areas. Recently, fumigation for pocket gopher control has gained popularity and is something to consider if the gopher problem is severe and the other methods do not seem to be working.

**Baiting.** Strychnine-treated bait is the most common type used for pocket gopher control. When used in alfalfa, this is a Restricted Use Material. This bait is usually effective with one application. Baits containing anticoagulants are available in some areas. These require multiple treatments or one larger treatment to be effective. **Note:** Dr. Salmon studied anticoagulents for gopher control in alfalfa in Yolo County last year, without much success. Anticoagulants control gophers in the lab, but in the field the bait (rolled oats) become moldy and the gophers won’t eat it. Dr. Salmon is evaluating the efficacy of other baits to see if he can find one
that the gophers like, but that won’t break down so quickly in the field. One company uses hard wheat, which may be effective, but needs to be evaluated. All gopher bait is poisonous and should be used with caution. Because gopher bait is placed underground, it is considered safe to use because it is not exposed to most other animals, or to children. However, dogs and other animals can dig up gophers and might be exposed to bait in this way. Always read and follow product label instructions carefully.

Hand baiting. Simple hand probes or hand probe dispensers are used for baiting pocket gophers (see trapping section for probe description). To be effective, baits must be placed in the underground tunnel. After locating the main gopher burrow with a probe, enlarge the opening by rotating the probe or inserting a larger rod or stick. Then place the bait carefully in the opening, taking care not to spill any on the ground. A funnel is useful to prevent spillage. Close the probe hole with sod, rock, or some other material to exclude light and prevent dirt from falling on the bait. Tamp or rake down existing mounds so you can distinguish new activity. If gopher mounding activity continues for more than 2 days after strychnine bait or 7 to 10 days after anticoagulant baits have been used, you will need to repeat your control efforts.

Mechanical baiting. The mechanical bait applicator offers a good way to control gophers over large areas with a once-over operation. This tractor-drawn device constructs an artificial underground burrow and deposits poison grain bait in it at regular intervals and quantities. The artificial burrow should be used only where gophers are active and should not be used as a prophylactic to prevent gophers from invading an area. The artificial burrow will intercept the natural gopher burrow systems in the treated area. Gophers readily explore these artificial tunnels and will consume the bait. In alfalfa, the machine will cut the plants and leave a slight ridge. Soil moisture is critical when you use the machine; if the soil is too wet the tractor will bog down, if too dry the artificial burrows will collapse. The strychnine bait used in this machine is usually a higher strength than those used for hand baiting. Recently, the availability of strychnine bait, especially at higher strengths, has been very limited. Supplies from India near Pakistan may be limited due to the political instability in this area.

Trapping. Successful trapping or hand baiting depends on accurately locating the gopher's active tunnel system that is usually 6 and 12 inches deep. The crescent-shaped mounds visible aboveground are connected to this burrow by lateral tunnels. Because the lateral tunnels are plugged by the gopher, trapping and baiting these will not be successful. Two common traps are the two-pronged pincher trap and the squeeze-type box trap. These traps are triggered when the gopher pushes against a flat vertical pan or wire trigger. To locate the main burrow, use 1/4" diameter probe. Gopher probes are commercially available or can be constructed from a pipe, wooden dowel, or stick. Look for the freshest mounds because they indicate an area of recent gopher activity. You will usually see a small circle or depression on the mound representing the plugged lateral tunnel. This plug is generally bordered on one side by soil, making the mound crescent shaped. Begin probing 8 to 12 inches from the plug side of the mound. When the probe penetrates the gopher's burrow, it should drop suddenly about 2 inches. Often, the main burrow will go between two mounds. To locate the gopher's main burrow you will probably have to probe repeatedly, but your skill will improve with experience. Several types and brands of gopher traps are available. After you have located the main tunnel, open it with a shovel or garden trowel and set traps in pairs facing opposite directions. This placement will intercept a gopher coming from either end of the burrow. The box type is easier for most trappers to set but requires more excavation. Box traps are especially useful when the gopher's main burrow is small (less than 3 inches in diameter) because small burrows must be enlarged to accommodate wire pincher traps. All traps should be wired to stakes so you won't lose track of them. After setting the traps, exclude light from the burrow by covering the opening with dirt clods, sod, cardboard, or some other material. Fine soil can be sifted around the edges to ensure a light-tight seal. If light enters, the gopher may plug the burrow with soil, filling the traps and making them ineffective. Check traps often and reset them when necessary. If no gopher is caught within 3 days reset the traps in a different location. Remove and bury dead gophers or place them in plastic bags in the trash. Do not handle without rubber gloves. Human odor on traps has no apparent affect on trapping success.

Fumigation. Fumigation is not usually considered effective for pocket gopher control although aluminum phosphide (a Restricted Use Material) does work if used properly. Aluminum phosphide tablets react with the
moisture in the air to evolve phosphine gas. To use, probe for a main tunnel. Once found, enlarge the probe hole by using a bigger rod (some growers use a 3/4" PVC pipe) and place the tablets down into the burrow system. Cover the probe hole with soil or close it by sealing the ground. Knock down all mounds in the area. Re-inspect after 48 hours. If new mounds are being formed, retreat the active burrows. While phosphine gas is toxic to all animals, it does not build up in the tissues of the gopher so there is minimal hazard if another animal eats a poisoned gopher. If using a fumigant, be sure not to use it under or near buildings. Read and follow the label carefully. Fumigation with smoke or gas cartridges is usually not effective because gophers quickly seal off their burrow when they detect smoke or gas.

**Other Control Methods.** Pocket gophers can easily withstand normal irrigation but flooding can sometimes force them out of their burrows. When this happens, they are vulnerable to capture. A new device on the market is an exploding gun that pumps propane and oxygen into the tunnel system and ignites the mixture with a spark. While some growers are using this device, little information is available on its effectiveness for pocket gopher control. Repellents are not effective in protecting alfalfa from pocket gophers. Frightening gophers with sound, vibration, electromagnetic radiation, or other means has not proven effective in driving them from an area or preventing their damage. Predators, especially barn owls and hawks eat meadow voles and gophers. Unfortunately, predators are unable to keep rodent populations below damaging levels in most cases. Barn owl nest boxes are being promoted by some to assist in rodent control efforts. Unfortunately, there is no evidence that these predators will control rodents in the alfalfa, even when artificial nest boxes are in place.

Rachael Long,
Pest Management – Farm Advisor

Pest Control Notes

February 12, 2004
Irrigated Lands Waiver

The Water Boards have made some important decisions that are effective immediately and may affect you.

The purpose of this brochure is to explain these decisions and what they mean to you. Growers within the Central Valley who have irrigation return water and/or stormwater runoff leaving their croplands are affected by these decisions. The Regional Board decided on three options for growers to avoid pollution of rivers, streams and creeks by pesticides, fertilizers, sediment, and other pollutants.

Here's What You Need to Do:
First, you must decide which of the three options works best for you:
1. Join a coalition group and apply for a group waiver, or
2. Apply for an individual discharger waiver, or
3. Submit a complete application for a permit.

Participating in a coalition group is the simplest and most economical way to comply with the requirements.

OPTION 2:

How to Apply for, and Comply with an individual discharger waiver.

Growers who do not join a coalition group may submit an individual discharger Notice of Intent to the Regional Board. The individual discharger Notice of Intent form is at our Web site: www.swrcb.ca.gov/rwqct6/programs/irrigated_lands/ or available from the Regional Board.

On acceptance of the Notice of Intent, the Regional Board will issue a Notice of Applicability to the grower.

OPTION 3:
Submit a complete application for a permit.

Growers who do not choose Options 1 or 2 must submit an application called a Report of Waste Discharge to the Regional Board. The application form is at our Web site: www.swrcb.ca.gov/rwqct6/programs/irrigated_lands/ or available from the Regional Board.

The grower may also be required to provide sufficient information for the Regional Board to fulfill the requirements of the California Environmental Quality Act.

Once the Regional Board determines that it has enough information, it may develop and issue a permit to the individual grower. This permit is called a waste discharge requirement.

How will the waivers begin to protect water quality?

The coalition group waiver and the individual discharger waiver require owners and/or operators of irrigated lands to manage their operations so they do not cause or contribute to surface water pollution. The waivers contain conditions that require water quality monitoring, implementation of management practices to address water quality problems and reporting to the Regional Board. The conditional waivers allow time for coalition groups to form, begin to identify and deal with the problems in their watersheds.
The waivers are a part of an evolving water quality protection program. If these waivers are found to be ineffective, permits will be issued.

In order to comply with the conditions of the waivers, coalition groups and individual growers will review the available data for their watershed, develop monitoring plans, and prioritize their efforts to address known problems or pollutants of concern, such as pesticides or nutrients.

Can I lose eligibility to participate in the conditional waivers?

Yes. Growers who do not meet waiver conditions or who do not participate under one of the waivers submit a Report of Waste Discharge to the Regional Board and waste discharge requirements may be issued.

Keep informed!

These conditional waivers are part of a long-term effort to address water quality issues from agricultural discharges. Owners and operators of irrigated lands are encouraged to contact farm bureaus, county agricultural commissioners, RCDs, the NRCS, farm advisors, water agencies, local coalition groups or the Regional Board to learn more about the program, and track progress as these efforts move forward.

For more information, see our Web site: www.swrcb.ca.gov/rwqcb5/programs/irrigated_lands/

- E-mail us at: AgWaiver@rb5s.swrcb.ca.gov
- Call (916) 464-3291