

## COMPLETED PROJECT REPORT

**Project Title:** Cottontail rabbit control

**Research Agency:** University of California - Cooperative Extension

**Principal Investigator:** C. Wilen

**Budget:** \$49,883

### **Background:**

Rabbits, particularly cottontail rabbits are a serious problem in southern California. Of particular interest is the damage they do to nurseries including reducing plant quality and killing plants as well as breaching irrigation systems. One large commercial tree nursery in San Diego County reported \$20,000 to \$30,000 annual cost for repairing irrigation lines alone. Damage to plants from rabbit feeding and from water stress due to damaged irrigation lines has not been determined but is believed to be significant.

Currently there are few control methods available for cottontail rabbits and their use is still subject to legal interpretation. Until recently, Orange County CDFA anticoagulant bait listed cottontail rabbits on their label, despite questions about the legality of controlling these game animals with toxicants. Despite changes within the past year in the California Code intended to clarify this situation, major questions still remain concerning the use of toxicants for cottontails. It does not appear that bait for cottontails will be available anytime soon. In the meantime, growers must rely on other methods for rabbit control.

Cottontail rabbits can be controlled by exclusion with 3-ft fences secured tightly to the ground. This is expensive and is often ineffective where there is rough terrain or constant machinery traffic. Also, there is the impracticality of fencing in large areas where rabbits trapped inside are likely to remain, reproduce, and continue the damage. Repellents have been tried with little success. Trapping is not generally recommended because it is thought that cottontails are quite wary of entering traps.

Little is known about the actual impact to nursery production caused by rabbit damage. Since rodenticides have not been a major factor in controlling rabbits, no data exist about their use and therefore nothing can be inferred about the damage cottontail rabbits cause. Growers are frustrated by the lack of solutions to this economically important problem.

### **Objectives:**

1. Determine the characteristics of nursery production (planting density, irrigation system, etc.) and their relationship to rabbit occurrence and damage.
2. Determine the presence and movements of rabbits in and around a commercial nursery.

3. Using information from 1 and 2 above, develop drift fences and measure their impact on rabbit movements.
4. Incorporate coral traps into drift fences and test their effectiveness.
5. Develop overall rabbit control strategy for nurseries.
6. Develop outreach material on rabbit control in nurseries.

### **Summary:**

The final report has been completed. An Executive Summary is provided below.

We investigated a number of different methods for mitigating cottontail rabbit (*Sylvilagus audubonii*) damage in container nurseries. The study entailed characterization and GPS mapping of the growing practices at a commercial nursery, development of protective irrigation line covers, testing drift fencing and trapping, using exclusionary fencing, and determining habitat using radiotelemetry.

The nursery growing areas were characterized by irrigation type, container type, planting density, and canopy width and height. GPS way points were collected by nursery staff to record rabbit damage on a weekly basis. These characteristics were used determine if they had an effect on rabbit damage.

We found that most of the rabbit damage to irrigation was associated with drip irrigation using 1/4" spaghetti tubing and 15 gallon containers planted at high density. Beds with hanging drip lines or 3/4" tubing received significantly less damage. Based on these results we developed and tested various covers to protect the small diameter tubing. The most promising material tested was poly tubing. This provided adequate protection from the rabbits' chewing, was easy to apply, and inexpensive since it was tubing that was previously used for other purposes.

Exclusionary fencing was effective for smaller areas and high value crops. Electric fencing was also helpful but maintenance in a nursery environment can be problematic. Rabbits were caught using corral traps, trapping within the beds, or fencing in concert with traps but this did not have an effect on damage.

Using radio telemetry, we found that rabbits hid in a number of places in the nursery including natural areas, wood and recycle piles, under trailer buildings, in drainage pipes, and in the landscaping plants. Modification of these areas would reduce shelter for rabbits.

Based on our findings, this report includes a number of recommendations for container nurseries to implement in order to reduce damage from cottontail rabbits.

**Final Update:** 09/27/06