

Whirlybirds Will Get the Worms

M A R Y B A R N E T T

This spring, when leaves are budding and caterpillars are emerging, the voice of the spray rig will be heard in the land around downtown Felton.

About the same time, probably in March, residents will hear the familiar chop-chop of the helicopter, just as in the good old Med-fly days. Over the vociferous objections of County Supervisor Joe Cucchiara, who represents the San Lorenzo Valley, the State Department of Food and Agriculture (DFA) has decided on ground-spraying of a 175-acre area in and around downtown Felton in an attempt to eradicate the dread gypsy moth, scourge of north-eastern American forests.

Seven of the critters were found in Felton last summer. It was the largest number found in any location in the state.

In addition, the DFA will spray the microbial insecticide *Bacillus thuringiensis* (Bt) over a 250-acre area including Felton, the San Lorenzo River (where carbaryl can't be sprayed) and steep slopes

where spray rigs fear to tread.

Cucchiara is appalled. He wanted the DFA to use only Bt—harmless to humans and, indeed, to everything except caterpillars—and to spray it on the ground. He and other carbaryl opponents cite adverse environmental effects of the carbamate pesticide and human health concerns about the popular product of Union Carbide—made in plants like the one at Bhopal, India. Some of them are:

★ Carbaryl kills honeybees. Beekeepers will be warned by DFA to get their bees out of harm's way when spraying starts. However, that doesn't help wild bees.

★ Carbaryl promotes outbreaks of other pests by killing predator and beneficial insects.

★ Some laboratory studies show that carbaryl causes birth defects in animals. Teratogenic (birth defect causing) effects were shown in beagles at extremely low doses in a DFA study in 1968. The experiment has been repeated by other researchers and its effects confirmed. At higher dosages, carbaryl

has caused birth defects in guinea pigs and rabbits.

★ Carbaryl has been shown in studies of human blood cells to enhance the action of pathogenic viruses, indicating a particular hazard to children.

★ Though not a cancer-causing agent itself, carbaryl can cause mutagens when reacting with nitrates, either in the stomach or when auto exhaust containing nitrous oxides is inhaled.

Nobody has a kind word for gypsy moths, and the spectre of these voracious insects munching away on forests from Felton to San Francisco is enough to terrify most of us. But Cucchiara and other critics of the DFA decision point out that Bt is a well accepted gypsy moth control that has no known adverse effects on human beings or other animals. It's a specific control for caterpillars, harming no other insects and no other forms of life.

However, the DFA's Scientific Advisory Panel voted six to one to approve ground-spraying of carbaryl in Felton, supplemented by aerial spraying of Bt. The only carbaryl opponent was Dr. Donald Dahlston, professor of entomology and chairman of the Division of Biological Control at UC Berkeley. Like Cucchiara, he favored ground-spraying of Bt only.

Why did the panel majority favor using carbaryl despite its negative effects? The official position is that the state is interested in eradication, not just control, of the gypsy moth, and only carbaryl can guarantee eradication.

However, critics of the state decision point out that Bt has been widely used against gypsy moths throughout the United States with excellent results. In the past two years, Bt has been sprayed in 20 different locations in Oregon and Washington and in the Midwest with no gypsy moths found following the spraying, reports Stephen Dreistadt, research associate at Citizens for a Better Environment and one of Dahlston's graduate students in entomology at UC Berkeley.

"In Oregon last year, they sprayed 16 locations with Bt and in 14 locations they found no moths following the spraying," Dreistadt reports. "In one area they found one moth, and in another area two moths, but before the spraying there were several hundred moths. That's quite a different situation than in Felton.

The DFA will sadly inform you that in an attempt to use Bt in San Diego in 1983, Bt alone failed to prevent reappearance of the moth the following year. Not quite correct, says Dreistadt. He adds, "In San Diego, they acrially sprayed Bt

along the river [not even the DFA supports spraying carbaryl where it can reach the water supply] and ground-spraying carbaryl in residential areas. After the spraying, they found one moth in the river area, but they didn't know where it came from. It might have been a new moth brought in from another area. Or, there's a dump nearby. It might have come in on some household junk dumped there. In San Diego the department of agriculture was happy with the Bt program."

San Diego isn't the only place happy with Bt. A study showing that carbaryl enhanced susceptibility to viruses caused the state of Maine to cancel aerial sprayings of carbaryl against gypsy moths. In fact, Dreistadt claims, most other states are now using Bt. United States Department of Agriculture guidelines for forest pest management in 1979 list both Bt and carbaryl as controls. The difference is that under safety restrictions the notation for Bt is "none," whereas the warning for carbaryl is "avoid direct application to food, feed and water. Toxic to bees."

"California is the only western state using carbaryl," Dreistadt says. "There's a real tendency for the bureaucracy to do things the way they have always done them. A lot of people in DFA are from agricultural backgrounds. Carbaryl acts the right way for them. You spray it, and the caterpillars drop out of the trees. Bt is a disease. It takes several hours, even days, to develop. People used to using pesticides like that immediate reinforcement.

"A lot of the decisions made by DFA are political. California has a corporate agriculture, and DFA is closely tied to it. They don't want to admit the hazards of pesticides."

Dreistadt thinks the DFA's scientific Advisory Panel might have supported ground-spraying of Bt alone except for the strong carbaryl support from the panel chairperson, Dr. Marjory Hoy, a UCB entomology professor whose research interest is development of pesticide-resis-

tent beneficial insects "so they can still spray."

In Washington State, where Bt was used against gypsy moth successfully last year, Bt spraying has a strong supporter in Dr. Ruth Shearer of Issaquah. Shearer, who has her Ph.D. in molecular genetics, has served for the past four years as a consultant in genotoxicology to the Environmental Protection Agency, public agencies and individuals.

She says, "In my opinion, carbaryl presents a definite risk to human health applied in residential areas or other areas where human exposure is inevitable."

The Santa Cruz City Council voted unanimously Tuesday night to ask the DFA to use a biological control such as Bt to control the gypsy moth before considering the use of "toxins such as carbaryl."

However, even as the Council was passing the resolution at the recommendation of Water Department Director Morris Allen, councilmembers noted that they probably aren't going to have any effect on the state's actions. State Agriculture Director Claire Berryhill has made his decision for use of carbaryl. And he's the guy who can do it.

Oh, there'll be a meeting in Felton in late January, but it will be to answer questions and to tell people what to do about the spraying (such, presumably, as sending the beagle out of town for a few days). It won't be for public input. DFA isn't interested in anything like that.

As Rick Bergman, Deputy Agricultural Commissioner in Santa Cruz County, says, "Calls for a public hearing are kind of beside the point. The law mandates that the decision be made by the director. The agriculture department has nearly 100 years of precedent for past eradication."

Old precedents die hard. But maybe someday the DFA will join the rest of the western states, and most of the rest of the country, in switching to a safe biological control such as Bt.

