

CASE STUDY:

Control onion pests using RepelGro silver mulch and environmentally safe pesticides Ecozin (neem) and Bacillus thuringiensis

Harry Ishihara, Cooperating Green Onion Grower

Location: Kalaheo, Kauai



Situation

Green onions have several insect pests that can affect marketable yield including the onion thrips, agromyzid leafminers (maggots), and the Asiatic onion leafminer (caterpillar). The onion thrips have rasping-sucking mouth parts and their feeding causes a stippling type of damage that looks like the leaf has been punctured with needles. The thrips hide in the base of the leaf sheaths. The leafminer maggots tunnel into the leaf tissue and create white trails. The caterpillars chew through the leaf and hide in the hollow onion leaf. They feed on the inner leaf tissue without chewing completely through.

Few pesticides are registered for green onions and use of diazinon may soon be discontinued.

Reflective silver mulch or aluminum mulch has been used to reflect sunlight to repel certain insects such as whiteflies, aphids, and thrips. Other colors have been used to aide vegetable ripening like red mulch for tomatoes. The mulch also helps to reduce soil heat loss and retains soil moisture. This helps the plant grow faster and reduces irrigation.

Alternative pesticides include pesticides that are environmentally safe and less



Overview of Sustainable Techniques Used

Reflective silver mulch

Neem extract

Bacillus thuringiensis

toxic. Bacillus thuringiensis is a bacteria that is used in a pesticide and helps to control certain insect pests like caterpillars. Ecozin is a neem extract. The neem tree is from India and extracts from the seeds are known to control certain insects. Ecozin was sprayed at label rates at 10 oz/acre every two weeks. Both pesticides are considered environmentally safe, less toxic, and are used in organic gardening.

Method

Green onion plants are planted in beds made up of four rows. Each treatment was 20 feet long. This trial has four treatments. 1) RepelGro silver mulch 2) Bacillus thuringiensis (Bt) insecticide only 3) Ecozin (neem) insecticide



ticide only 4) no pesticides 5) Bt and diazinon. The Ecozin was sprayed at label rates of 10 oz/acre every two weeks except when raining.

Results

The green onion plants grown in the RepelGro silver mulch had much less damage than the other treatments. Ecozin and Bacillus thuringiensis treated green onions were heavily damaged as was the control plants. The Ecozin might be more effective if sprayed every seven to ten days. The RepelGro mulch plus Ecozin probably would result in better thrips control. The grower practice of Bacillus thuringiensis plus diazinon resulted in better control than the Ecozin and Bacillus thuringiensis alone.



Field Demonstration

Three growers attended the field demonstration along with twenty high school agriculture students. One of the growers tried a sample RepelGro silver mulch. She grew 200 feet of peppers. The crops pests were thrips, fruit flies, and solanaceous bugs. She also grew some peppers in a greenhouse. Her comments were 'Very impressive. Best pepper yields ever!! Richard – mulch has so far kept all pests away. We have a control & some greenhouse plantings that are not doing as well as mulched crop.'



Participants

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