

damage is done at night when the worms climb the plants. During the day, the worms can be found under trash or in cracks in the soil around the plant.

Cutworms are controlled best by baits which should be applied late in the afternoon.

Wireworms These insects are one of the most damaging of all soil insects. The larvae are slender, hard, and have a shiny appearance most commonly yellow-brown in color. The adult is known as the "click beetle." The worms can live for several years, deep in the soil, and attack suddenly.

Control is achieved through crop rotation by carefully keeping records of pest history. Insecticides applied prior to planting, and thoroughly incorporated, continue to be the most effective method of control.

Mole crickets This nocturnal pest damages plants by tunneling in, under, and around plant root systems only occasionally feeding on them. Mole cricket activity is highest in warm, moist soils.

Mole crickets are best controlled by baits or applications of soil insecticides. Baits must be broadcast late in the afternoon when soils are warm and moist.

Weed control

Optimum vegetable production depends on successful control of weed species. Weeds reduce yields by competing with the crop for nutrients, water, and light. In addition, certain weeds may be alternate hosts for plant disease organisms and insects. It is important to understand certain weed problems because they can differ in the same field and in different years. Annual grasses and broadleaves sprout from seed and complete their life cycle in one year. The weeds must be anticipated and control strategies planned before the crop is established. Perennial weeds, such as bermuda grass, live continually from year to year, and therefore can be found prior to field preparation.

An important aid in weed control programs, is a weed map. Weed maps, developed through the season, will detail areas in the field where specific weeds exist, and as a result, help the grower plan a more efficient weed control strategy.

Control of weeds is similar to control of plant disease and insects since it involves an integrated management system where several control strategies may be combined. These measures include mechanical means, crop rotation, cover cropping,

crop competition, mulching, and herbicides. Included in this strategy is record keeping on the various weed species present in a particular field. This will help in planning a weed control program for next season.

Mechanical means include such mechanical weed control measures as plowing, disking, cultivation, hoeing, mowing, and hand-pulling. Cultivate only deep enough to achieve weed control. Excessive cultivation could damage crop roots, or lead to rapid soil drying.

Crop rotation helps control weeds by providing a different crop/weed interaction. Different weed control strategies might be available on one crop that may not be available, or as effective for another crop. Rotating to a crop that is more competitive with a certain weed, or for which a specific herbicide is labeled, might be a good strategy for dealing with a weed problem.

Cover cropping allows a grower to place a crop in the field to compete with weeds during the "off-season". Competition reduces the weed's ability to reproduce, and thus can reduce the potential for weed problems in the next season.

Special attention needs to be placed on ensuring the crop's capability to compete with weeds. This includes providing optimum water, fertilizer, and pest control so that the crop has a competitive advantage. Optimum plant and row spacing will provide the highest economic degree of crop competition with weeds.

Careful selection of approved herbicides can be effective tools for weed control. Care must be exercised to ensure these materials are used at proper rates and timing to avoid crop damage. For specific recommendations on chemicals and proper use, consult the Weed Control Guide for Commercial Vegetable Production in Florida, Circular 196-H.

The use of black polyethylene mulch on tomato beds will greatly reduce weed problems in the row. Fumigants used under mulch will help reduce weed and pest problems. Weeds may still appear in plant holes in the mulch or in alleys between beds. Usually timely application of a herbicide with a shielded sprayer or manual cultivation will remove weeds in alleys.

This Pest Management information was compiled by George Hochmuth, for tomato growers, from the Vegetable Sections written by Gary Simone, Fred Johnson, and Bob Dunn, respectively, in the following IFAS publications: Disease Control Guide, Insect Control Guide, and Nematode Control Guide.