



Central Valley Specialty Vegetables

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Whiteflies — *La Mosca Blanca*

There are different species depending on the area of California and specific crop or ornamental. Some of the more important include the greenhouse whitefly (of major concern for strawberry growers on the coast), sweet potato whitefly, ash whitefly, banded winged whitefly, iris whitefly, giant whitefly, and the silverleaf whitefly (our major vegetable problem in the Central Valley).

Whitefly Lifecycle: All whiteflies have a similar lifecycle. They pass through four instars or stages from egg to adult. Eggs are laid on the undersides of the leaves. The first stage has legs and antennae, but these are lost after the first molt and the flattened, oval shaped larvae remain in one feeding spot until the adult stage. Just before the adult stage the larvae stop feeding and form a pupa where the larvae undergoes a transformation into an adult with wings. The adults emerge from the pupae through a T-shaped slit and soon mate and reproduce. There are many generations each year. Whiteflies overwinter on weeds and ornamentals (thousands on spotted spurge now through the fall).

Whitefly Damage: Whiteflies can seriously injure plants by sucking juices from them causing wilting, stunting and even death. They also secrete a sticky

substance called honeydew which causes leaves to appear shiny and sticky. In addition, several molds may grow on this sweet honeydew resulting in a black color on the leaves. Ants are also attracted to the honeydew.

Whitefly Population and Growth: Whiteflies increase in numbers exponentially, that is 2 become 4, 4 become 8, 8 become 16 and so on. A single female whitefly may lay 150 to 300 eggs during her lifetime. During the warm summer months, they can develop from egg to adult in as little as 16 days. In 32 days, for example, 40,000 whiteflies would result from one adult female which lays 200 eggs; then, each of those 200 lay another 200 eggs. A harsh cold winter helps to reduce numbers the following summer, but only a few light frosts might mean a bad problem the next year.

Whitefly Control: Whiteflies are very difficult to control. Their location underneath the leaf, rapid reproduction potential, and resistance to insecticides result in severe problems in all cucurbits (cucumbers, melons, moqua, sinqua, squash) and bean (green and long) crops in particular, along with 500 other host plants. Biological control from parasites and predators is of some benefit, but limited due to the excessive honeydew production. Insecticides help, and the best control seems to come from combinations of several insecticides. In several trials conducted in Fresno county, a combination of Thiodan® and Lannate®, or Thiodan® and Asana® gave the best control. Summer oils and Trilogy® reduced numbers but not as well as the combinations.

For More Information: Contact Richard or Michael at (559) 456-7555.

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The Early Bird Gets The Worm – or The Early Crop Gets The Higher Price

Every year some growers try planting warm season vegetables such as green beans, tomatoes, or squash about February 15 in hopes of getting an earlier crop and thus a better price. And three times out of five they lose, and the plants are frosted back and killed. Some construct tunnels with wire hoops, some try bed tunnels (“poor-man” tunnels) and plant into a bed ditch covered with plastic, and some try running water down the furrow when temperatures start dropping below freezing (some heat is produced from the running water). All of the above can result in warmer temperatures of one to several degrees.

A trial was conducted in Southern California to look at bed orientation and angle. Keith Mayberry and Dr. Tim Hartz found that beds running East to West and sloping to the South with at least a 40° angle was best. Using Dasher cucumbers planted on February 27 in Riverside, a 2-3° temperature increase was observed over a flat bed planting during mid-day. Although final yields in all treatments were similar, there was a substantial earliness advantage with sloped bed configurations.

Eggplant Problems??

Some growers are experiencing a problem in eggplants which seems to be growing in the county and we need your help. If you have parts of your field in early summer where plants are stunted, yellow (chlorotic), and the new growth results in leaves which appear ‘stringy’ (like they have been chewed by caterpillars) or deformed, then it may be starting. We have seen the problem in Japanese, Chinese, and American type eggplants. A laboratory found a virus several years ago, however, nothing was found in 1999 or 2000. We are looking at possible nutritional or insect causes.

If you have some of the above symptoms, please call our office, and we will come out to inspect your field. The more information we can gather about this problem the faster we can hopefully find a solution – call (559) 456-7555.

New or Updated Publications:

UC Guide to Solving Garden and Landscape Problems

A simple to use CD for your computer. Answers questions on over 600 pests of vegetables, fruits, and ornamentals.

Pests of the Garden and Small Farm: A must for the Small Farmer

Covers pest problems and controls for many fruits and vegetables.

Organic Apple Production Manual

A 72-page reference which discusses pest management, soil fertility, post-harvest handling, marketing, and economic analysis.

Winter Squashes

This type of squash gets its name from the fact that the mature fruits can be stored into the winter months, in contrast to the summer squashes such as zucchini, scallop, and crookneck, which are harvested immature and must be eaten very soon after harvest. The price for some of the varieties can be quite good, but it varies from year to year and month to month. Unlike summer squash, winter squash will not get overripe if you do not pick it right away.

Cucurbita pepo types such as acorn, spaghetti, and delicata are suited for fall eating. These turn orange inside (except spaghetti) and develop an orange spot where the fruit touches the ground. *Cucurbita maxima* types include buttercups, hubbards, banana, and kabocha squash. These are best eaten in late winter (December/January) and the sweetness actually improves during storage. *Cucurbita moschata* types can be stored the longest and the best known example is butternut squash.

In the kitchen, substitutes for acorn squash include buttercup (drier), butternut (nuttier flavor and easier to peel raw), banana squash (larger), or turban squash (sweeter). Buttercup is one of the more highly regarded winter squashes with creamy pulp that tastes a bit like sweet potatoes. Kabocha is sweeter and drier than other winter squashes. In our own kitchen, given the choice between butternut, kabocha, and spaghetti baked fruits, the butternut won, hands-down. It was moister and sweeter than the other two. A brown sugar glaze makes it better yet. (From the September/October issue of Organic Gardening magazine.)

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Research:

Ginseng: In the coming months we will be reporting on results of research we are conducting with these plants. Ginseng (species *panax*) has been used medicinally for thousands of years for a wide range of ills. Scientists are still largely in the dark about its medicinal benefits, but its chemical properties have been studied thoroughly. The plants active ingredients are called 'ginsenosides' of which there are 13 types, along with volatile oils, sugar, fats, B vitamins, minerals, and plant hormones.

There are at least three types of ginseng with different properties – *Panax quinquefolius* (American ginseng) is on the endangered specie list because it has been harvested so intensively as a cash crop; *Panax ginseng* (Korean or Asian ginseng) is grown all over Asia; *Eleutherococcus senticosus* (Siberian ginseng) is not regarded a true ginseng.
(UC Berkeley Wellness Letter, July 2000)

Capers: Currently, the best method for propagation seems to be from cuttings. Seed germination results following a 60-day stratification process gave 0% germination. Seed may have been too old.

Lemongrass: Different planting methods (stem, root, stem and root) as well as several different varieties and species are being evaluated in a replicated trial.

Green Beans: A planting of 11 different varieties was established in the late summer for evaluation. It will be repeated again in the spring of 2001.

Edamame: Or edible soybean is valued for its nutritional value as well as exceptional flavor. Seeds are eaten green (not dried) and often sold in pods and sometimes still attached to the plant. 10 different varieties are under evaluation.

Long Beans: An observational trial was established in late summer to look at 14 different varieties of long beans. Yield, color, pod length, and virus resistance will be evaluated.

Bits and Pieces

1. GMO's and biotechnology – two new yellow summer squash varieties are now available from Asgrow seed company with resistance to three viruses

– CMV (cucumber mosaic virus), WMV (water-melon mosaic virus), and ZYMV (zucchini yellow mosaic virus). The new varieties are Destiny III and Liberator III. Genes were added to the squash plant to improve the plant's defense against these three viruses. There are 1-2 other viruses which can still attack the squash plants in the Valley; however, with this resistance, the problem is improved.

2. A 'Nitrate Quick Test' kit can save the grower money by telling the grower whether nitrogen levels in the soil are adequate. It can reduce over-fertilizing or tell a grower that the soil is low in nitrogen. Check with Richard or Michael about the availability of these test kits.

3. **Meetings**

October 11, 2000

Field Day

Vegetable Pest Management and Specialty Crops

UC Kearney Field Station in Parlier

8:00 a.m. - 12:00 noon

No charge (See insert)

October 31 – November 2

Marketing Conference: California Feeds the World

Modesto, California

Co-Sponsored by Cal Poly, USDA, and the Small Farm Center

November 17-19, 2000

California Farm Conference

Santa Rosa Junior College

\$90.00 Pre-registration

www.californiafarmconference.com

December 12, 2000

'Plagas, Suelos, y Cultivos para Agricultores'

A workshop in Spanish to discuss pests, soils, and crop culture in the Central Valley.