# PROBLEMS WITH SWEETPOTATO WHITEFLY ON POINSETTIA ON THE INCREASE IN 1993

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The sweetpotato whitefly (spwf) is a significant pest in greenhouse production and is particularly troublesome in the production of poinsettias. Since 1987, when the insect was first found in Georgia, the whitefly has increased its range of distribution and is currently found throughout the state. Problems with the insect in poinsettia production seemed to increase in 1987 through 1991. In 1992, there was a reduced incidence of spwf problems on poinsettia. However, observations of spwf populations in 1993 indicate an increase in levels of infestation early in this crop season.

Growers have reported higher population levels and more difficulties in controlling the pest during the first weeks of the 1993 poinsettia crop. Some growers have allowed spwf populations to develop on mother blocks used for propagation material or have placed the new poinsettia crop in areas containing plant materials already infested with spwf. As a result, growers start the season with a high population of whitefly and find it difficult to successfully bring them under control. In addition, some growers have unknowingly introduced populations of spwf on crops started from rooted cuttings. In both situations, it is critical to control spwf populations before the crop canopy becomes so dense that one can no longer get good coverage of infested plants with insecticides.

Once inside a greenhouse, whiteflies develop and when adults emerge, they quickly become distributed over an entire crop or move to other available host plants. In addition, chemical control programs directed at the pest often have limited success. Two life stages, the egg and pupa, are tolerant of most insecticides. Control procedures are also complicated by the insects clinging onto the underside of foliage, making them difficult to reach with chemical sprays.

## CONTROL STRATEGIES

A good control program for whitefly begins prior to the arrival of a susceptible crop. Following are some specific practices that should begin before the crop arrives and continue until the crop is delivered.

**Exclusion.** Make sure entry points to the greenhouse are properly fitted with screening that excludes whitefly from entering. In a large greenhouse range, consider using screening within the greenhouse to isolate certain areas and prevent potential spread of whitefly from one age crop to another or between different crops.

**Sanitation.** The first objective is to eliminate all possible sources of residual whitefly infestations. Totally eliminate all weeds and plant debris inside and immediately outside the greenhouse as they can harbor immature or adult whiteflies. Collect the weeds and debris in covered containers or seal them in plastic bags. Infested plant debris stored in open containers may continue to produce adult whitefly that may quickly migrate back onto crops inside the greenhouse!

**Cultural Practices.** If possible, allow the growing range to stand empty for one week prior to bringing in a new crop. If no host plants or weeds are present, one week provides sufficient time for adult whiteflies to starve and ensures that you start with a whitefly free house. If it is not feasible to empty the greenhouse, scout the area thoroughly. If infested plants are found, discard them or remove leaves with eggs and nymphs, or move the infested plants to another area. Then, apply an insecticide treatment to remaining plants to eliminate any adults that may be present.

**Scout and Monitor.** When plants arrive, prior to their placement in the greenhouse, examine each and continue to scout and monitor the crop frequently for the presence of whitefly. Look for nymphs, pupae and eggs as well as the adults. Do not place infested plant material next to clean plants.

Once or twice a week systematically examine each greenhouse for developing whitefly populations. Examine the greenhouse in the same manner each trip. Look at the crop and note differences in color, size, or vigor of plants in each area. Next, select and closely examine several plants from each bench (10 plants per 1000 square feet should provide an adequate sample). Begin at the top of each plant and work to the bottom and examine both the upper and lower surfaces of each leaf for the presence of whitefly eggs, nymphs, or adults. The undersides of the lower leaves need to be examined more closely for immature whiteflies. If whiteflies are found, it may be useful to mark the leaf on the plant so that it can serve as an indicator plant for future monitoring trips. Indicator plants are useful in monitoring life cycle development as well as the efficacy of insecticide application.

Use yellow sticky traps throughout the crop as a tool to detect whitefly populations early. For best results in trapping whiteflies, hang one to four yellow sticky cards per 1000 square feet level with the crop canopy. The adults are attracted to the yellow and will stick to the adhesive surface of the card. Check

each card during every scouting trip and note the number of whiteflies found. Develop a monitoring system so that you can keep a record of where whiteflies have been found and if the number of whiteflies trapped in each area is increasing or decreasing. Monitor whiteflies and replace traps as frequently as needed, but at least on a weekly basis. It is difficult to detect a population change on a sticky card that has an accumulation of insects.

**Chemical Control.** When choosing a pesticide to control whitefly, the first step is to identify the life stages of the whitefly that are present. Select an insecticide from Table 1 that is effective against the most prevalent stages. Remember that whitefly pupae and eggs are difficult to kill. Watch the population closely and apply the insecticide when first stage nymphs or adults have emerged. In heavy whitefly populations of mixed life stages, 2 to 3 applications per week may be necessary to bring the population under control with a contact insecticide.

Proper application of the insecticide is also a key component to a successful control program. It is necessary to deliver the insecticide to the underside of leaves to achieve good control. As many greenhouse crops mature, a dense canopy of foliage forms that interferes with pesticide delivery. With these crops, it is necessary to control whiteflies prior to the formation of this canopy or to space plants so that they can be treated adequately.

When making any pesticide treatment, the method of application is dependent on the formulation of pesticide used. Read and follow all application procedures carefully. All plant surfaces need to be thoroughly covered, especially the lower leaf surfaces, where whiteflies feed and reproduce.

Because whitefly populations can develop resistance to pesticides, it is best to rotate products used in a control program. To avoid the development of resistance, switch among products from different chemical classes (Table 1 lists products by the chemical classes, i.e. pyrethroids, organophosphates, carbamates, chlorinated hydrocarbons and miscellaneous). Avoid making more than two consecutive applications of any product classified as an organophosphate, carbamate or chlorinated hydrocarbon insecticide before switching chemical classes. Avoid the use of pyrethroid insecticides for more than one application before rotating to a product from a different chemical class. It may be best to save fumigant type materials (fogs, smokes) for use late in the crop cycle when dense foliage makes coverage of the underside of lower leaves difficult.


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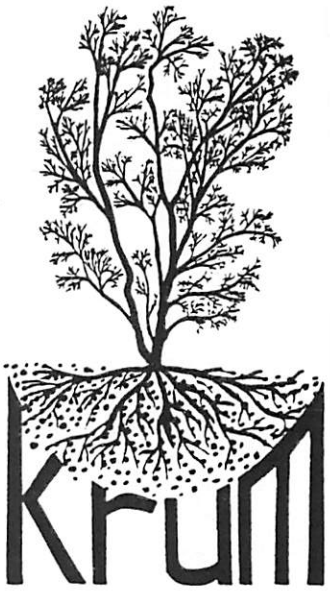


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Table 1. Insecticides registered for control of whiteflies. Check pesticide label for registered crops, application information, rates and application frequency.

| Chemical Class: | Common Name | Brand/ Formulation | Life Stages Affected |
|---|---|---|---|
| Pyrethroid and pyrethrum: | | | |
| | bifenthrin | Talstar 10WP | nymph, adult |
| | cyfluthrin | Tempo 2E | nymph, adult |
| | | Decathlon 20WP | |
| | d-phenothrin | Sumithrin 2EC | nymph, adult |
| | | PT 1400 | |
| | fenpropathrin | Tame 2.4EC | nymph, adult |
| | fluvalinate | Mavrik 2F | nymph, adult |
| | permethrin | Pramex | nymph, adult |
| | resmethrin | SBP-1382 | nymph, adult |
| | | PT 1200 | |
| | pyrethrum | PT 1600A | nymph, adult |
| | | PT 1100 | |
| Organophosphate: | | | |
| | acephate | PT 1300* | nymph, adult |
| | | Orthene 75S | |
| | malathion | Malathion (fog) | nymph, adult |
| | naled | Dibrom (vapor,smoke) | nymph, adult |
| | sulfotepp | Plantfume 103 (smoke) | nymph, adult |
| | chlorpyrifos | Dursban 50WP | nymph, adult |
| | | Duragard | |
| | diazinon | PT 1500R Knox Out* | nymph, adult |
| Carbamate: | | | |
| | oxamyl | Oxamyl 10G | nymph, adult |
| | methiocarb | PT 1700 | nymph, adult |
| | bendiocarb | Dycarb 76WP | nymph, adult |
| Chlorinated Hydrocarbon: | | | |
| | endosulfan | Thiodan 2EC, 3EC, 50WP | adult |
| Miscellaneous: | | | |
| | kinoprene | Enstar II | egg, nymph, pupa, adult |
| | insecticidal soap | M-Pede | nymph, pupa |
| | horticultural oil | Sunspray Ultrafine | nymph, pupa |
| | azadirachtin | Margosan-O | nymph, pupa |
| | nicotine alkaloid | Nicotine smoke | nymph, adult |

Trade and brand names are used only for information. The Cooperative Extension Service, The University of Georgia College of Agricultural and Environmental Sciences does not guarantee or warrant the standard of any product mentioned; neither does the use of a trade or brand name imply approval of any product to the exclusion of others which also may be suitable.