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A BOON OR A BURDEN: SCREENING GREENHOUSES FOR THRIPS CONTROL

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Screening the vents of greenhouses with cheesecloth previously dipped into insecticide does control thrips! Research results obtained during the summers of 1954 and 1955 at six rose ranges on Long Island allow us to make such a positive statement. The major question which remains is will you, the growers, accept our results? Already, objections have been raised: "I'll have to spray anyway," states one grower; "It will cost too much in time and money," says another; "The houses get too hot," speculates a third. Let us examine the situation in greater detail and see if these objections are really valid.

In May of 1954, six greenhouses were screened on the side vents only. Bolts of cheesecloth 100 yards long and one yard wide were dipped into 25% heptachlor emulsifiable concentrate or 15% dieldrin emulsifiable concentrate. An additional two greenhouses were screened with untreated cheesecloth to test the value of screening without any insecticide. After drying in the sun, the cloth was stapled to the outside of the lower edge of the vents and to the side header (transom sill). The slack was taken up by folding the cloth at the edges in such a manner that only a slight amount of billowing would occur in the cloth when the vent was fully cracked. Pieces of wood lath about six inches long and one inch wide were used on some greenhouses to strengthen the screening. The edges of the cloth were folded around these wooden strips and the staples placed into the house through both the wood and cloth, the lath strips being spaced at intervals of eight to twelve inches. Pockets of excess cloth were formed at the ends of houses and between vents to allow for one vent being opened while the adjacent one was still closed. A 150' house could be screened by one man in a morning. Screening thus erected lasted a full summer season without any need for replacement or repair.

During 1955, screening was erected in the same manner but the top vents were also screened on five greenhouses. Dieldrin-treated, heptachlor-treated, and untreated cloth were again tested. In addition, malathion-treated cloth was also tested.

Samples of rose blossoms were taken from screened and unscreened houses at each range and counts of the numbers of thrips present in the blossoms were made every three or four days throughout the thrips season during the two summers of study.

The results indicate that even with the poorest treatment, untreated cheesecloth only on the side vents, better than 50% control was achieved while in the greenhouse screened top and side with dieldrin-treated cloth, nearly 100% control was achieved. The results from the other insecticides ranged between these two extremes. Of the three insecticides tested, dieldrin gave the best and most consistent control and is the

material we are recommending for use. All of the insecticides gave better control than did the untreated cloth although, as we have previously indicated, it also gave better than a 50% reduction in the number of thrips. Screening both the top and the side vents always gave better control than screening only the side vents. These are the facts. How do they answer the objections raised in the opening paragraph?

Is spraying necessary even with screening? It is impossible to give an absolute yes or no answer to this question since it will vary with the severity of the thrips problem and whether or not both the top and side vents are screened. A grower who screens both the top and side vents with dieldrin-treated cloth may assume that he will have to spray inside the greenhouse with less frequency, perhaps not at all. A grower who screens only the side vents with dieldrin-treated cloth will obtain a reduction in thrips numbers great enough to justify the expense of screening although he probably will have to spray occasionally but not as often as he did without screening. The individual grower must evaluate the economics of screening as it particularly affects him. Some growers employ workers who can put up top screening, others will have to hire outside help. Cheesecloth and insecticide for screening cost money. However, time, labor, and insecticide saved from an indoor spray schedule should more than offset the costs of screening.

Do the houses get too hot as a result of screening? This is another real problem that must be answered. Screening both the top and side vents raises the temperature of the screened greenhouse an estimated ten degrees, while greenhouses screened only on the side vents have a somewhat smaller gain in temperature. Apparently this gain in temperature did not effect the quality of the rose crop. Admittedly, it is less pleasant for a worker to perform his duties in the warmer houses but a problem exists which may force acceptance of the warmer conditions. Thrips are rarely, if ever, seen on the foliage in rose houses. Apparently they are attracted directly to the blossoms. Since this attraction is probably based on color or odor, many of the thrips are attracted to blossoms which are partially opened and will be cut shortly. These thrips are then removed in the cut blossoms and are not a problem. When a grower sprays, he probably kills most of the remaining thrips present in the house. However, the residual insecticide which he deposits on the foliage possibly is of no value since, as we have indicated, thrips entering the greenhouse probably fly directly to blossoms and do not land on the treated foliage. If a high infestation of thrips is blown into the greenhouse the day after treatment, the grower will get little if

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any results from having sprayed the day before and left a residue of insecticide upon the foliage. Some value is undoubtedly gained from the residual insecticide which is left upon blossoms which won't open or be cut for several days and once again it becomes a question of economics. Perhaps, screening, despite the discomfort of warmer houses is the most economical and practical procedure.

In conclusion, we would like to emphasize the following:

1) Screening greenhouses with dieldrin-treated cheesecloth does give thrips control which approached 100% effectiveness when both top vents and side vents were screened. The effectiveness can be expected to vary, however, with the severity of thrips infestation and the care with which the screening is erected. Some spraying inside the greenhouse may still be necessary.

2) Screening only the side vents also gives control but to a lesser extent than that achieved with both the top and side vents screened. Economically, it may be practical for some growers to screen only the side vents in connection with a reduced inside spraying schedule. Respraying the cheesecloth with dieldrin, once or twice during the thrips season, while it is in place over the vents would appear to offer the possibility of maintaining or improving control although this

has not been checked experimentally.

3) Screened greenhouses are approximately ten degrees warmer than unscreened houses. While this apparently does not effect crop quality it offers less desirable working conditions.

4) The possibility has been presented and will be checked experimentally this coming summer that inside spraying as it has been practiced is partially ineffective and perhaps uneconomical. Screening is offered as an alternative and it has been indicated that each grower must evaluate the advantages and disadvantages for himself and decide wherein the best solution to his thrips problem may be found.

5) Any of the authors will be glad to answer questions concerning procedures and materials for screening and to hear further opinions concerning this subject.

Warning: Carefully follow all precautions printed on the labels of insecticide containers. Dieldrin is poisonous if swallowed, inhaled or absorbed through the skin. Wash thoroughly with soap and water after handling and before eating or smoking. Wear clean clothing. In case of accidental spillage on person or clothing, immediately remove clothing and flush skin or eyes with plenty of water; for eyes, get medical attention. When treating and applying screening, wear clean synthetic rubber gloves and respirator passed by the U. S. Department of Agriculture for dieldrin.