

Apple growers fight mites

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depends on withholding miticides as long as possible to give the Stethorus predator time to become well-established.

If you treat too soon, you may reduce lady beetle numbers to a point where they can't provide effective biological control. But if

the mites get out of hand, they could cause crop losses.

To guard against this happening, entomologists have established a population threshold for the mites. As long as numbers remain below that level, the crop is considered safe from economic injury. The scientists also know how many Stethorus are needed for

satisfactory biological control. Routine scouting is required over the growing season to maintain a count of both insects. Graustein's assistant Joanne Whithead trained and supervised the scouts needed for the Delaware pilot program.

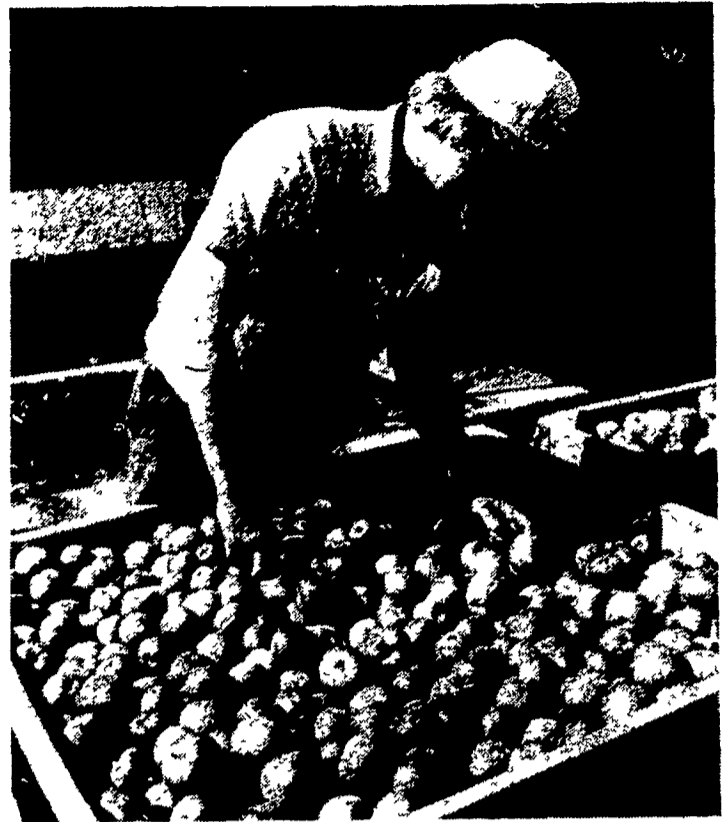
IPM worked so well in 1980 that this year the program was expanded to include a total of eight orchard blocks, all using integrated pest management practices. Blocks ranged in size from 15 to 40 acres, averaging around 25 to 30 acres. Most of the trees involved were red delicious, the variety most susceptible to mites.

Before adoption of the IPM program, most blocks in the Smith and Fifer orchards averaged three to four miticide applications a season. This year, under IPM, even blocks that did require treatment needed only one or two sprays, thanks to superior predator control. This represents a savings of about \$8 per acre per spray in chemical costs, Graustein estimates.

One 15-acre block with a history of severe mite problems (including resistance to miticides) was treated six times in 1980 under a conventional pest control schedule with only marginal results. Last summer, under IPM, that same block required only one and one-half treatments for excellent control. This represents a savings in chemicals alone of about \$36 an acre, or \$540.

Graustein is quick to credit the program's success to the skillful management of Smith and Fifer. Both did an excellent job of pruning to permit better spray coverage when chemicals were used. And foliar feeding may have helped trees become more tolerant of low-level mite infestations.

When they did spray, both growers used fungicides and insecticides known to have limited



Charles Smith of T.S. Smith & Sons, Bridgeville, Del. checks over fresh-picked apples. Firm fresh-packs 10 to 20,000 bushels of apples a year, and sends another 100,000 to the processor.



Carlton Fifer of Fifer Orchards, Wyoming, Del. poses beside load of fresh apples. Some will be sold through local stores, others may end up in England, South America or Japan.

toxicity to the Stethorus predator. The result of their efforts was a 50-percent reduction in miticide sprays in some orchard blocks last summer and no miticides at all in others.

Looking back, Charles Smith admits that at first he was pretty nervous about leaving the mites alone at the start of the season while Stethorus numbers grew. "It's always been the practice of our farm to spray as soon as you see mites," he says. But though he had some anxious moments waiting for the beetle to take over, he's glad now that he did.

"The scouting saved me at least

two sprays on my apples this year," says Smith. Scouting is a big part of pest management with field crops on the Smith farm, but applying the concept to apples was a new idea. He now wholeheartedly supports the program and plans to use a scout on all his apple acreage next year.

Fifer is equally pleased. "When we first heard about Penn State's apple mite program, we were spending a lot of money on miticides and only one was really working. So we were ready to try something else," he says. "The program really paid off for us this year. We'll definitely do it again."

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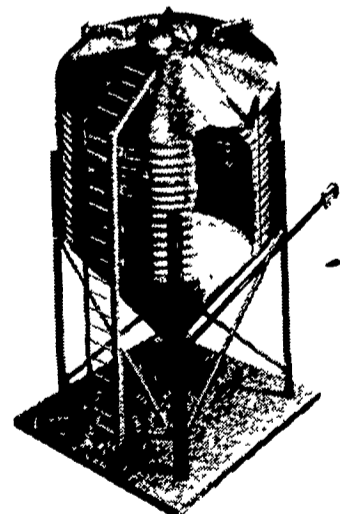
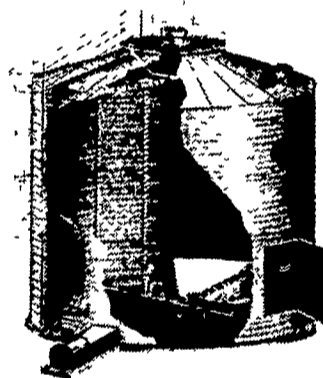
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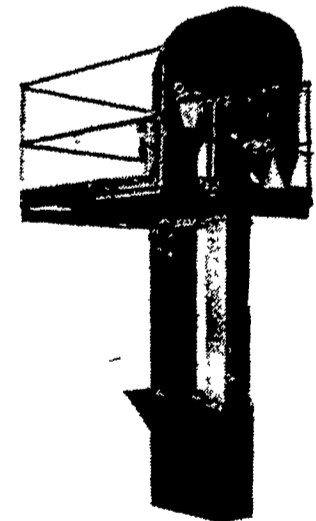
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