

## Fruit Tree Research At Ag Progress Looks At IPM

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The most common disease, according to Travis, is apple scab, which causes branches to turn brown and fall off. Through use of varieties, the researchers have seen some good control.

"It can be a major problem if even one or two fungicide sprays are missed," he said. "Even just one mistake can cause complete loss of the whole crop."

There are 11 different apple tree varieties in one test plot, of which nine are disease-resistant, according to Tom Clark, research aid, Department of Horticulture. The tree root stock is carefully examined in combination with varieties

to discover which are the best at disease resistance.

Also, root stock and variety combinations and resistance to insects — and whether or not certain combinations draw certain amounts and types of insects — are under test at the research farm, according to Rajotte.

Several varieties of peach trees are under test for their resistance to cytospora canker, which is a fungus that attacks the dead wood. The disease, if unchecked, travels to the trunk, and can destroy the tree.

Pruning and overall care is important to control certain peach tree diseases that attack the fruit, particularly brown rot. Removal of the "mummies," or decomposing and dead fruit completely away from the tree, is vital.

Proper pruning is essential. Tra-



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Insect infestation, particularly of the lesser peach tree borer, can be a problem for peach growers. The research department has been investigating the numbers of infestation with special pheromone traps that measure the amount of the males of the borer in the area, according to Ed Rajotte, associate professor of entomology.



Apple tree root stocks, including the Mark, are in research at Penn State. Here, Jim Travis inspects a special slender-spindle free-standing trellising system.



One of the ways that growers can reduce the current levels of fungicides and get control is through the use of planting disease-resistant varieties, according to Jim Travis, associate professor of plant pathology, in the panama hat. There are several under research, which control apple scab, cedar apple rust, and powdery mildew. Also, the root stock resistance to a common disease such as fire blight is being researched.

vis and Clark emphasized the importance of keeping the tree open to air and sunlight, and keeping the area at the foot of the tree clean and free of rotted fruit and dead branches.

"One of the most important things you can do to eliminate brown rot is take all the peaches out of the tree — take them out and get rid of them," said Travis. He told the growers to make sure there are no peaches remaining on the ground or in the tree.

Pruning should be when bud-break occurs, because if the tree is pruned before that time, the canker fungus can take hold.

Clark said that peaches must be thinned when the fruit size is small, about 1/2 inch. They should be thinned to 8-10 inches apart. By keeping them thinned, fruit size can be increased significantly, according to Clark.

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"If you have more information about when things are coming into the orchard, you can be more efficient about any pesticides you may have to use," said Rajotte. "Do some thinking about managing your pests before you apply a chemical spray."

Overall, it is important to get the exact information about the weather at the right times by carefully monitoring the weather at the exact site to determine what kind of pest controls to use. That's why gathering weather and environmental data is important, according to the researchers.

Several on-site environmental



Several on-site environmental monitors, such as the Austrian-built KMSP system (which measures temperature, relative humidity, leaf wetness, and rainfall at each site), help predict the likelihood of possible disease or pest problems with crops. How the machines compare (some costing from \$1,700-\$2,000) and how accurately they measure is part of the research being undertaken by doctorate student Dave Truxell.

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"What we're trying to do is find

a better source of weather data that's easy for someone to use and is also very convenient and that will help them in their decision-making," said Truxell.

But for many growers, knowing how much pesticide to use, when, and if at all is a balancing act.

"It's easy to reduce pesticide use, but often, if you don't do it wisely, then you'll end up with lots of problems with diseases and insects," said Travis.



Apple trees were under attack from an insect called the spotted tentiform leafminer at the test site. Leaves bear the signature of the miner, "an insect that makes a 'mine' in the leaf," said Ed Rajotte, associate professor of entomology at Penn State. A small moth lays eggs on the apple leaf, and a caterpillar emerges. The caterpillar is so small, said Rajotte, that it's able to go "in between the upper and lower layers of the leaf and makes a little tunnel inside the leaf."