

Geneva Researchers Bring Precision Management To Vineyards

GENEVA, N.Y. — New York's grape industry is second only to apples as the state's largest fruit crop and is valued at \$45.9 million. But this industry, and thousands of jobs with it, labor under the shadow of *Guignardia biwelli*, the fungus that causes black rot — one of the most serious diseases of grapes in the eastern U.S.

"If we didn't get good control of black rot, we couldn't grow grapes in New York," said Wayne Wilcox, Cornell University professor of plant pathology at the New York State Agricultural Experiment Station in Geneva, N.Y.

Fortunately for growers, grape juice drinkers, wine connoisseurs, and the state of New York, black rot can be effectively controlled. But the traditional control strategy — applying as many as eight fungicide sprays at regular intervals from mid-May until August — was not good enough for Wilcox and fellow Experiment Station pathologists David Gadoury and Robert Seem.

The three plant pathologists turned their attention to a control strategy Wilcox describes as "overkill." "We started looking at spraying more critically, asking growers 'when do you really need to spray?'" he said.

After six years of painstaking research conducted in cooperation with graduate student Lisa Hoffman and technician Duane Riegel, the team is now able to provide growers with a detailed understanding of the biology of the disease and various factors that impact its control. These include when grapevines are most susceptible to the disease, when the disease is most susceptible to the fungicides used against it, the specific traits of these individual fungicides, and precisely when the vineyards should be treated to provide best control. They also proved what has long

been suspected, that sanitation-removal of diseased tissues from the vine during the dormant pruning process — is an extremely valuable component of an integrated management program.

Their conclusion? An excellent level of control, the same as with the six-to eight-spray program, can be achieved with just two or three fungicide sprays, depending on the season provided that standard sanitation practices are employed in the vineyard. The conventional approach was to begin spraying when there were three to five inches of shoot growth, around the middle of May, and continue into August. The latest recommendation is to spray once at the start of bloom and once or twice more at two-week intervals. Additional sprays may be needed to manage other diseases, depending on the grape variety and the year.

Reducing the frequency, and thus the total amount, of applied pesticide has environmental and economic benefits. It saves the growers money, both in the cost of pesticide and the cost of labor, and reduces the amount of chemicals introduced into the environment. Reducing spray frequency also helps prevent fungicide resistance, and ensures that these materials will still be able to control black rot for years to come.

In the annually revised publication, "New York and Pennsylvania Pest Management Recommendations for Grapes," research and extension personnel from the region develop and disseminate the most current guidelines for disease control. While other states' official recommendations call for the same strategy New York used a decade ago, this region's guidelines have been continually refined as a result of the work of these Cornell researchers.

New Equipment Allows Easier Drip Tape Installation, Removal

DAWSON, Ga. — An Agricultural Research Service scientist has developed farm equipment that installs drip tapes on or just beneath the soil surface to precisely irrigate crops after seeds are planted. The same equipment can retrieve the drip tapes after crops are harvested. The apparatus works with reusable or disposable drip tape.

The new equipment was designed by Heping Zhu, an agricultural engineer at the ARS National Peanut Research Laboratory in Dawson, Ga. The device uniformly distributes drip tape, extracts water from it, holds and supports the tape, and guides and adjusts its installation.

The machinery chisels shallow trenches in the soil, places the tape in the trenches and then covers the tape with soil. Depth of drip tapes can be adjusted from 0 to 5 centimeters.

To retrieve disposable drip tapes, a special spool, mounted with a 3-point hitch behind the tractor, was developed to quickly remove the tapes from the unit. The inexpensive apparatus both installs and retrieves the tape.

During removal, Zhu's device layers the drip tape evenly across rotating spools, which squeeze out any remaining water. Retrieval speed can be adjusted by changing the tractor power takeoff speed. The drip tapes can then be reused during subsequent growing seasons.

In many crop production schemes, drip irrigation has advantages over other methods. It has been widely used in various applications throughout the world, resulting in crop yield increases and improved water conservation.

But surface drip irrigation's disadvantage is that users have to install and retrieve drip tapes every year, requiring high labor costs and more time.

So the new equipment should greatly benefit farmers using surface drip irrigation technology by increasing their crop yield and reducing their production costs. ARS is seeking a partner to further develop and commercialize the device.



Gov. Mark Schweiker addresses the crowd in the Large Arena during opening ceremonies last year at the Farm Show.



The Gov. Mark Schweiker family tours the Large Arena aboard the carriage before opening ceremonies at last year's Farm Show.

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