CAPTAN

Resistance Management

No Fungal Resistance To Captan Has Ever Been Reported In 50 Years Of Use.

During the past decade a number of new fungicide chemistries have entered various agricultural crop markets. Some of these materials are systemic fungicides that are very specific in the diseases they target. Their single-site mode of action and specificity make them high risk to trigger fungi that will be resistant to them.

At the same time these products were in development, a few fungicides that had been on the market a decade or more began to lose their effectiveness against disease. The problem was that they were used so often on the same fungal species that resistant populations were selected and able to flourish.

These resistance fears and problems with old and new fungicides alike underscore the importance of the remarkable fact that fungal resistance to Captan has never been reported in 50 years of use. No claims regarding loss of effectiveness of Captan have ever been recorded. The reason for Captan's ongoing effectiveness is believed to be due to the fact it is not a systemic fungicide. It is a contact fungicide with multiple sites of activity against a broad spectrum of fungal pathogens.

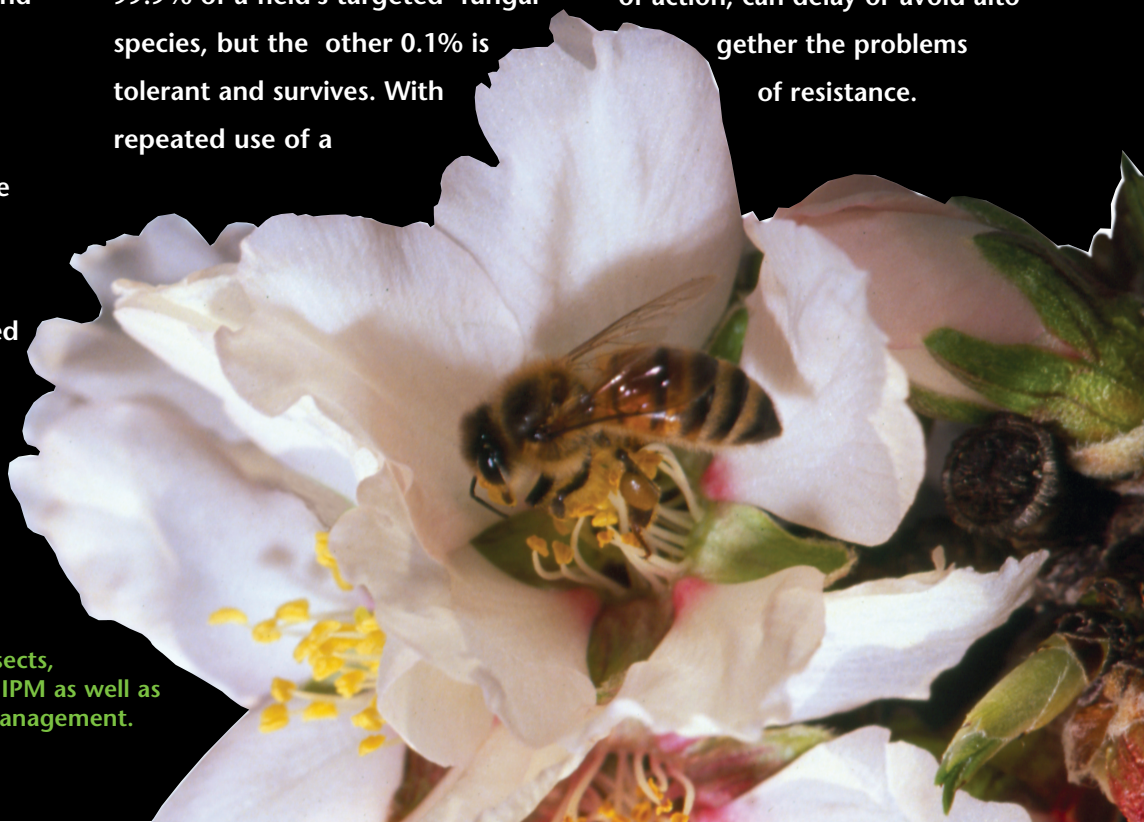
How Resistance Develops

Resistance to a fungicide can occur rapidly when a grower – or even his neighbor – over-uses it. Many fungi are airborne at some point in their lifecycle and resistant populations can migrate from one farm or orchard to another.

Resistance occurs when a fungicide kills even as much as 99.9% of a field's targeted fungal species, but the other 0.1% is tolerant and survives. With repeated use of a fungicide that is high risk for resistance, the tolerant fungal pathogens continue to survive, reproduce and become the resident field population – resistant to the fungicide.

The same scenario takes place among weeds developing resistance to a herbicide and among insects repeatedly exposed to the same insecticidal mode of action.

Growers who develop pesticide programs that incorporate Integrated Pest Management (IPM) and Resistance Management strategies, such as rotation of fungicides having different modes of action, can delay or avoid altogether the problems of resistance.



Safe for beneficial insects, Captan is perfect for IPM as well as Disease Resistance Management.

Careful attention must be paid to product labels and literature to determine the chemical families and modes of action of products. Otherwise, the grower may inadvertently rotate fungicides with the same mode of action. A case in point is the "triazole" family of compounds. The active ingredient propiconazole and the active ingredient tebuconazole may have different names, but both are in the triazole family and are sterol synthesis inhibitors in their mode of action. Rotation of these two products would not diminish the likelihood of fungal pathogens developing resistance.

In fact, over-use of either or both in rotation might accelerate that process.

However, using Captan in rotation with any of the triazoles on crops such as stonefruits, nuts, grapes and strawberries would not result in duplication of the mode of action. The two compounds have distinctly different modes of action. Should the triazole fail to kill any resistant fungi within the Captan spectrum of control, Captan will finish the job and control the disease.

Giving Longer Life to New Fungicides

Captan may have an even more important role to play in extending the life of the new single-site, systemic, highly target-specific fungicides in the triazole and the strobilurin classification. Because they are systemic in mode of action, the chances are even greater that resistant fungi will develop. Including a contact fungicide such as Captan in a rotational Disease Resistance Management program will greatly improve the chances of eliminating all the targeted fungi.

Finally, regardless of what fungicides are part of your Disease Resistance Management and Integrated Pest Management programs, read and follow label directions carefully. Pay close attention to application techniques. Poor application techniques not only result in poor control, they also greatly increase the chances for resistance. That is in part the case because when results disappoint, more treatments with higher doses are often mistakenly thought to be the answer.

In addition to the outstanding efficacy of Captan, it is economical. This makes it both the wise choice for disease management and a very affordable one. That is why so many local, regional and international university plant pathologists, agricultural crop consultants and regulators recommend Captan as a cornerstone of Disease Resistance Management and IPM.

Always consult with local or state agricultural Extension Service and regulatory advisers to learn the most effective Disease Resistance Management and IPM programs for your crops. Identify the strategies that are most complementary to the products you are planning to use.

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