GROWERTALKS

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Surfactant Superpowers: Optimizing Pesticide Performance

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Everyone would like to maximize the performance of their pesticides. One way to accomplish that is by increasing the pesticide's contact with the leaf surface. Water droplets naturally bead up on waxy leaf surfaces and "hairy" leaves tend to keep spray droplets suspended above the leaf surface, out of reach of the intended targets. For these reasons, most of the insecticides and fungicides used by greenhouse and nursery operations perform best in conjunction with a high-quality surfactant added to the spray tank.

Surfactants improve the performance of pesticide applications by breaking the surface tension of the spray droplets. Another way to explain the effects of surfactants is that they cause water droplets to flatten out and spread uniformly across leaf surfaces, leading to more consistent coverage of the leaves and stems. The more uniformly the plant surfaces are covered, the higher the percentage of pests that are contacted.



This photo demonstrates the spreading ability of CapSil. Poinsettia growers routinely utilize surfactants when making calcium sprays to bracts, as they maximize nutrient uptake by increasing the amount of leaf area covered by the application.

Use of surfactants brings other benefits as well. Foliar sprays of certain wettable powder and flowable formulation pesticides can leave chalky puddles on plant foliage. This diminishes the appeal of the finished products and may discourage some consumers from making a purchase. The spreading action of surfactants reduces the prominence of these deposits by spreading them uniformly across the foliage.

While using a surfactant enhances the performance of most pesticides, there are a handful of pesticides for which the label indicates that a surfactant should not be used. In some cases, the pesticide already contains a surfactant; in other cases, it can interfere with the product's performance. Contact your pesticide supplier or consultant for details.

Surfactants are beneficial for other typical greenhouse activities, too. Foliar fertilizers can also benefit from the addition of surfactants, as they maximize nutrient uptake by increasing the amount of leaf area covered by the application. Poinsettia growers routinely utilize surfactants when making calcium sprays to bracts.

Propagators of rooted cuttings have learned to take advantage of the spreading activity of surfactants to make mist droplets cover the foliage more efficiently. Reducing the amount of water needed to keep cuttings turgid can reduce nutrient leaching, media saturation and the risk of disease.

CapSil is a high-quality organo-silicone surfactant that we've recommended successfully to growers for several years. Used as directed, CapSil has demonstrated excellent plant safety. The photo shown here demonstrates the spreading ability of this product. There are other organo-silicon surfactants on the market and they may also perform well. Be sure to trial any new product on a small scale prior to widespread use.

Green Cypress Ag Aide, an OMRI-listed surfactant based on 100% yucca extract, is available for growers wishing to use an organic product. This dual-purpose product can also be used as a wetting agent for soils.

Uptake is a quaternary, ammonia-based wetting agent and soil adjuvant that can also be used to improve the spreading ability of pesticide sprays and drenches when used according to label instructions. **GT**

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