

# TANK MIXING FUNGICIDES

*Natalia Peres, Assistant Professor and Tom Kucharek, Professor,  
Department of Plant Pathology, University of Florida Gulf Coast  
Research and Extension Center*



**T**ank mixing is a common practice that allows the grower to reduce the number of times spray machinery is used, reducing costs, soil compaction, damage to the crop, and spread of diseases. It is a complex issue and although some tank mixes are beneficial, others may be deleterious. As the number of ingredients increase in a tank mix, chances for incompatibility increase, particularly at lower spray volumes.

Loading the spray materials into the spray tank should be done with the tank at least half filled with water. The agitation system should be operating to attain thorough mixing. This minimizes the risk for physical and chemical incompatibilities because of the dilution effect of water. Dry formulations should be added to the tank first followed by the liquid formulations. As a general guide, the loading order for spray tanks should be: Wettable powders, Prills (DF's, DG's, and WDG's), Soluble powders, Flowables, Adjuvants, Emulsifiable concentrates (EC's), and Oils.

The use of adjuvants in a tank mix is a controversial topic. Adjuvants are chemicals, generally classified as non-pesticidal, that when added to a spray mix are supposed to enhance chemical effects or spray delivery. The key to success with adjuvants is to use them as little as possible because they can also cause damage to plants. Some adjuvants reduce the waxy-like coatings on the exterior of the plant. When these coatings are reduced, plants are more susceptible to chemical damage and are more likely to transpire water resulting in increased sensitivity to dry weather. The adjuvants most likely to damage plants when used with fungicides are crop oils, petroleum-based oils, and those with alcohols. Besides these adjuvants possessing phytotoxicological properties themselves, the tank mixing of them with some chemicals increases the probability for additional phytotoxicity. Another group of adjuvants that are of concern are silicon-based adjuvants. While this type of adjuvant is likely to be very beneficial in attaining entrance of herbicides into weeds and insecticides into insects, it does increase movement of bacteria into plants.

Success with tank mixing is based upon slowly acquired experience. It is not possible to test the numerous combinations that exist so if your cocktail works, don't change it until you have tested the new idea on a small scale or have asked informed sources for their opinions. While tank mixing is often essential, the grower should tank mix only what is necessary. The more chemicals that are used in the same mix, the more likely that an adverse effect on the crop will occur, and the less likely that a professional can determine what caused a problem related to the tank mix.

For more information contact : Natalia Peres (813) 744-6630 or Tom Kucharek (352) 392-1980  
[takucharek@ifas.ufl.edu](mailto:takucharek@ifas.ufl.edu).

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