GROWERTALKS

Columns

10/28/2016

# Growing With Griffin: Tank Mixing Pesticides: Yea or Nay?

*Rick Yates*

Tank mixing pesticides is a practice employed by nearly all growers at one time or another for a variety of reasons. Labor savings and improved efficacy are the leading reasons to use a tank mix. Consideration of a tank mix should lead to questions about compatibility. When growers inquire about tank mixes, they're most often seeking to confirm plant safety. Plant safety is obviously important, but other factors should be considered as well, including pesticide resistance and the physical compatibility of the tank mix partners.

Tank mixes do save time and can broaden control. Combining a foliar fungicide for Botrytis with an insecticide for thrips may be done to combine two applications into one. Tank mixing fungicide drenches may be done in order to create a broad-spectrum treatment for water molds (Pythium, Phytophthora), at the same time as fungal diseases (Fusarium, Rhizoctonia, Thielaviopsis).

Growers sometimes ask about tank mixing soil drench treatments, such as a fungicide and an insecticide, or PGRs. Even if these pesticides are compatible together, the required drench volumes may not match. For example, Citation and Bonzi have different drench volume requirements based on pot size. Be sure to consult your supplier before attempting these types of tank mixes.

Another common use of a tank mix is to create a synergistic effect. A synergism occurs when the combination of two pesticides produces control that's better than these pesticides being applied separately: 1 + 1 = 3, so to speak. For example, several years ago GGSPro stopped recommending Avid alone for thrips control due to growers reporting a loss of efficacy. However, tank-mixing Avid with a neem-based IGR—e.g., Azatin O, Azaguard or Molt-X—yields better results than either product alone. While very effective in certain cases, this type of tank mixing does require using two modes of action at one time, which may limit future rotation decisions.

Pesticide resistance is an ongoing threat that can be mitigated through effective rotation strategies. Combining two or more pesticides to control a single pest is a common practice. However, using two pesticides with the same mode of action (MOA) generally adds little or nothing in terms of efficacy, and this practice does nothing to reduce resistance pressure on that MOA. It's well worth taking the time to understand the modes of action of the pesticides in your arsenal.

Combining two pesticides to control different life stages of the same pest to enhance control or lengthen the period of control can be very effective, but may limit options for effective rotation in the following applications. Whitefly control provides a perfect example of this situation: Resistance has significantly whittled down the list of effective MOAs for the Q biotype. If a tank mix employing two different MOAs is made, fewer MOAs remain available for rotation purposes as the control program continues.

A complicating factor is that many of the newer pesticides limit how many times a crop can be treated with that product. Some go so far as to limit use to twice per crop, in an effort to slow resistance. This makes good sense from a pesticide stewardship perspective, but it makes careful planning more important than ever.

Pesticide labels often note known tank-mix incompatibilities. Naturally, not all possible tank mixes can be evaluated, so the lack of a specific caution doesn't necessarily give a green light to tank mix. Some pesticide labels contain language such as, "can be used in conjunction with most other pesticides." While this provides some general information about overall compatibility with other pesticides, it doesn't remove the need for testing and trialing under your conditions.

In some cases, the tank mixes are physically incompatible and a reaction occurs. Precipitates, clumping, coagulation and occasional exothermic (heat producing) reactions may result. These more-obvious types of problems can be observed and avoided ahead of time by employing a "jar test." Contact your supplier or crop advisor to request details on the jar-test process and the correct order in which to add pesticides and adjuvants to a tank mix.

In some instances, the tank mixing has been done for you. There are many examples of pesticides that contain more than one active ingredient. A few examples include Banrot, Mural, Orkestra, Pageant Intrinsic, Sirocco and Spectro. In these cases, the manufacturer has ensured that the active and inert ingredients are compatible with each other.

Give extra consideration to tank compatibility when using generic pesticides. The so-called "inert ingredients" in pesticides can vary from one formulation of an active ingredient to another one. If you have an established safety record with a name-brand pesticide, don't assume that the generic pesticide will also have the same inert ingredients and, therefore, yield the same tank-mix performance you've come to expect. Better safe than sorry; test them as you would any new pesticide.

Tank-mixing discussions often start with plant safety for good reasons. Mixing more than one pesticide or adjuvant can cause unexpected results. Phytotoxic reactions or antagonisms that reduce pesticide performance may still occur even if the tank mix tests don't reveal obvious incompatibilities. Growers should always perform small-scale trials with all pesticides and tank mixes that they haven't previously used on a particular crop. Test as many different varieties as possible, as there can be differences noted even within a single plant species.

Tank mixes do bring benefits to production, as long as precautions are taken and the tank mix has been proven safe for your crops. Pesticide labels are the law and they contain lots of valuable information. Always read and follow the pesticide labels. **GT**

*Rick Yates is GGSPro Technical Support Manager for Griffin. He can be reached at ggsprotech@griffinmail.com.*