

ROTATION VS. TANK MIXING

ARC: Resistance management is becoming more important daily as our fungicides are more targeted than they used to be. It is easy to tell a grower to rotate to help keep resistance from developing. I find growers sometimes prefer to tank mix and do agree there are times when one works better than the other. Do you suggest rotation or tank-mixing for resistance management?

MLD: I usually suggest the rotation, simply because it achieves varying the mode of action without having the expense of putting two things in the tank at once. Using the full rate of a material is important for effective management — you never want to expose a pathogen to less than the effective rate of a given active ingredient because that will speed up resistance development. If you choose to use two products full rate, you are doubling the cost of your application.

ARC: I hate to agree with you so quickly, but I am 100 percent with you. I think growers often reduce rates for tank mixes and I definitely tell them not to do so. Unfortunately, some people tell them they can lower rates, and in that case I am pretty sure they are not trying to reduce resistance development but rather cost of application. One of the changes in labeling fungicides is some of them require tank mixing to be used. This is true of Adorn for any use and also SubdueMAXX when used as a foliar spray for downy mildew.

ARC: Absolutely! For instance when there is a mixed infection or good chance of one. This is a common occurrence with root diseases. That is the basis of many standard tank mixes (and premixes these days). And then there's mixing a bactericide and fungicide for a foliar spray or two fungicides to cover the broad range of soil-borne fungi. What is your favorite tank mix for unknown root rot situations?

MLD: And you have mentioned a really important time to tank mix: when the label requires it! I should mention that resistance has ALREADY shown up to mefenoxam (Subdue MAXX, etc.) in impatiens downy mildew in south Florida ... and one suspects that growers or landscapers there might have been breaking all the rules by using mefenoxam alone. Now, in order to use the Adorn label appropriately, growers in an area where resistance has already developed will not be able to combine Adorn with SubdueMAXX any more ... because Adorn has to be combined with an effective material. Can you think of any time you would suggest a tank mix?

MLD: I don't know that I have a favorite, but I tend to compare all other fungicides to a thiophanate-methyl + etridiazole premix (Banrot) or tank mix (using 3336/6672/AllBan + Terrazole/Truban). The combination of etridiazole, which halts Pythium/Phytophthora and thiophanate-methyl, which slows Rhizoctonia and Fusarium and effectively curbs Thielaviopsis, gives a good range of activity. If I were mainly targeting Rhizoctonia or Fusarium, I might shift to a different combo. What tank mixes would you choose if you were after Rhizoctonia or Fusarium as a primary problem?

ARC: If I were fighting Fusarium, I might just go ahead and dump the crop. Most growers would not appreciate that advice, so then I would make sure to have Terraguard, Heritage or Medallion in the mix with something like Subdue MAXX or Segway for the Pythium/Phytophthora that might be there too. I find Rhizoctonia control is still superior with Medallion. By the way, do you have any opinion on whether tank mixing or rotating works better for preventing resistance development?

MLD: We are at best slowing resistance, not preventing it, really — and I believe either style of application (tank mix or rotation) is fine as long as you use the full whammy rate and are using two active ingredients — in different mode of action groups — that are both effective against the target. 



Fusarium wilt on garden mum



A.R. Chase is plant pathologist at Chase Agricultural Consulting LLC and can be reached at archase@chaseresearch.net.



Margery L. Daughtrey is senior extension associate at Cornell University's Long Island Horticultural Research & Extension Center and can be reached at mld9@cornell.edu.