Tank-Mixing Fungicides...

Over the years, I have seen and heard about some pretty interesting tank-mixes that have been concocted in both research and commercial settings to target Cercospora Leaf Spot in sugarbeet. While some of them 'played together in the sandbox' pretty well and gave decent disease control, others often created either a 'snot-based gel' or a spray tank full of something that resembled cottage cheese. In either case, there are two basic principles that I have learned:

1. The more stuff you put into the spray tank, the more stuff that is likely to go wrong
2. Any person (myself included) who tells you that they know exactly what will happen with a specific tank-mixture on any given day is full of you know what.

Factors including the type of chemical(s), formulation of chemical(s), water volume applied, pH, water temperature, water hardness (Ca, Mg, etc.), agitation, adjuvants utilized, etc. almost make each tank-mixture unique in its own special way. This is why accurately predicating the final outcome of many of our CLS tank-mixtures is almost impossible. That being said, there are several key guidelines that can REALLY help you avoid chemical precipitation in the tank when spraying multiple fungicides together in the same application.

Considerations for Successful Tank-Mixing of CLS Fungicides...

- When in doubt, perform a simple jar test. Mix commensurate rates of the products in a mason jar of water from the spray tank and stir (agitate) to gauge compatibility. Make sure you do this BEFORE you load the sprayer - better to find out something doesn't work on a small scale as opposed to a 1,000 gallon batch
- Always have the spray tank half-way filled with water before adding any products and have the tank agitation active from the get go
- Add products to tank SLOWLY and in the correct mixing order (more on this later)
- Although you may have little control over the temperature of the water, fungicides are more soluble in warm water than cold water. With this in mind, make sure you allow plenty of time during the mixing process for the products utilized to completely disperse, emulsify or dissolve before adding the next product to the tank. Avoid using water colder than 50 degrees
- Once mixed, apply the tank-mixture as soon as you are able. If you are forced to have the tank-mix sit overnight, consider dropping a sump/sewage pump into the spray tank to help keep agitation active
- Clean tank, lines, and strainers thoroughly after each fungicide application is finished. Chemical residues that hang around in the sprayer can cause complications next time you use it
- Read the label. As boring as they are, they do contain a LOT of information including the fungicide formulation and preferred mixing orders

Mixing Order for CLS Fungicides...

Mixing order is probably the single greatest controllable factor to avoid chemical precipitation in your spray tank. It is dependent upon product formulation and in the absence of specific mixing instruction provided by the label, NDSU recommends the A.P.P.L.E.S. method:

Agitate the Spray Tank

Powders (Soluble)

- Agri Tin (dry)
- Champ
- ChampION++

Powders (Dry)

- Badge X2
- COC
- Cuprofix Ultra
- Dithane DF
- Penncozeb
- Roper
- Koverall
- Cercobin
- Manzate
- Champ
- T-Methyl 85
- Incognito 85
- Super Tin (dry)
- Basicop
- Topsin WSB

Liquids (Flowable & Suspensions)

- Manex II
- Dithane F45
- Champ Form 2
- Agri Tin (liquid)
- Super Tin (liquid)
- Topsin 4.5FL
- Incognito 4.5
- Manzate Max
- Mancozeb
- Manzate
- T-Methyl 4.5F
- Eminent
- Minerva
- Proline
- Badge

Emulsifiable Concentrates

- Inspire

Solutions

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There's an App For That!!!

'Mix Tank' from Precision Laboratories is an iPhone and Android smartphone app designed to assist agricultural applicators with the proper tank mixing sequence of crop protection products. It can be found for each respective phone platform in either the Apple App Store or on Google Play. It can also be downloaded directly from the following website:

www.mixtankapp.com