

Some Fungicide Application Basics – how not to blow a great tool

Anne Dorrance, Pierce Paul, and Dennis Mills

We have learned of some interesting new practices for fungicide applications this season and while not directly “off-label” they are cause for concern. As plant pathologists that utilize these tools and depend on these tools at times to manage epidemics caused by fungi – we thought this would be a good time for a few reminders.

- 1. What is fungicide? This is a compound applied to crops to manage a multitude of fungal and fungal-like plant pathogens. Fungicides have been instrumental in managing late blight of potato, apple scab in apples, powdery mildews in wheat, cucurbits, and apples. Fungicides are primarily needed when a susceptible host is grown and the environment is highly favorable. Both conditions must occur at the same time. Better weather models, and now predictive models, disease scouting are all used to save producers monies in that the fungicides will be applied only as needed. Many crops now have resistance to many of these pathogens and so the use of these fungicides is not warranted.**
- 2. There are different classes of fungicides – basically this means that there are different chemistries and these have different features – ie: systemic movement in plants – some move up and down a few leaves, some don’t move at all. Some can be applied shortly after infection has started and have a “curative” effect – but none can be applied after the field has high levels of disease and lots of spore production. Know your chemistry so you know how to use it correctly. Don’t know what your chemistry is, check out these resources for more information:**

<http://oardc.osu.edu/soyrust/> - chapter 7 has a nice discussion on fungicide basics.

- 3. Do fungicides provide a “plant health” benefit? This is questionable for Ohio. Across the US from a number of University based studies in fields with out disease there has been both a negative and positive response. From our data to get the dramatic yield results – disease was always present. Another fact hidden in some data was insect pressure. Many of the strategies that have been promoted are an insecticide/fungicide combination and again where most of the dramatic results come from pertains to fields where insects had become an issue. Remember those aphid years of 2003 and 2005?**

4. **Timing is critical. Fungi (including the water molds) only have certain life stages that are vulnerable to fungicides. If the fungicide is applied too early – it is not effective; if the fungicide is applied too late – it is not effective. The recommendations and guidelines are based on the most up-to-date compilation of studies to optimize the best timing. Read the labels – if the recommendation says to apply at flowering – then a week earlier will not work nor will a week later.**

5. **The other fact about fungicides – is they don't last. Many fungi have developed resistance to these very important tools. Based on history – some things that favor fungicide resistance are i) overuse or repeated applications of one chemistry – constantly apply one type of chemistry repeatedly – even if it is a different product (a strobilurin is a strobilurin is a strobilurin no matter who makes it! And don't forget the mixtures – a strobilurin combined with a triazole is still applying a strobilurin and not rotating) ii) half rates – we don't know who came up with this idea but it is a really bad one. A half rate won't be effective in killing the pathogens that you are trying to manage. The pathogens that survive this application have a high potential to be less sensitive to the fungicide the next time around; iii) applying fungicides when pathogen populations/disease levels are already high – this increases the chance that some will survive. You can't rescue a bad field – let it go and learn the lesson to have better scouting and timing next time.**

6. **Fungicides don't cure environmental problems – fungicides are not the answer for poor fertility; flooding, freeze, frost or hail damage; herbicide mistakes, or anything else. This is not the "take an aspirin" and it will feel better, fungicides are not placebos. If you've got a bad field – go home and forget about it, call the insurance guy and learn from it—don't spray it.**