

## Fungicide Resistance

### Overview

Fungicides are important in managing many diseases, but their usefulness is threatened by increasing rates of resistance. Understanding how resistance develops can help protect the effectiveness of fungicides.

### What you should know

- Resistance occurs when a fungus develops a genetic adjustment that makes it less sensitive to a fungicide. Once the frequency of resistant strains comes to dominate that fungi population, the fungicide will no longer be effective. Fungicide resistance has been documented for nearly 200 diseases.
- Resistance tends to be more of an issue with foliar diseases that require multiple treatments. Resistance is less common with seed treatments and treatments for soilborne diseases.
- Factors that affect resistance risk include properties of the fungicide, fungus biology and management practices.

### Action steps

1. **Rotate chemistries:** On subsequent applications, use fungicides with different modes of action.
2. **Try a tank-mix:** Select a partner fungicide with multi-site inhibitors and a low-resistance risk profile. Check whether your tank-mix partner already includes a combination of chemistries to make sure you're not doubling up on the same class of chemistry.
3. **Reduce disease pressure:** Too much irrigation, continuous cropping and excessive nitrogen application can all contribute to spread of fungal diseases, raising the risks of resistance. Some pathogens survive on plant residue for multiple years, allowing them to be exposed to fungicides (and develop resistance) over time.
4. **Use fungicides according to directions:** Following recommended spraying practices and concentrations helps reduce resistance risk and the need to apply treatment multiple times.

Damicone, J. "Fungicide Resistance Management." 2014. Oklahoma Cooperative Extension Service. <http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Version-6953/EPP-7663web.pdf>.



*Resistance is more likely to develop with fungicides used for foliar diseases that require multiple treatments.*



### 30-Second Summary

- Fungicide resistance is a growing problem in crop production, with 200 diseases showing resistance.
- Chemistry rotation and proper application help reduce development of resistance.
- Good management practices that prevent development and spread of fungal diseases also helps reduce resistance risk.

### NOTES:

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For more information, contact:



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