

## Fungicides – Do they work?

Simple answer is yes they do. Unfortunately in farming, as in life, there are no simple answers. The majority of fungicides for cereal, oilseed, and pulse crops fall into only 3 main groups. Fungicides are grouped on the method in which a fungicide kills a fungal disease.

### Group 7 – Carboxamides

These fungicides perform as expected on a range of fungi. They inhibit mitochondrial function and are considered a single site of action (SOA). They are also systemic, meaning they travel through the tissue, not only preventing disease but possibly killing the disease that is already in the plant (curative).

### Group 3 – Triazoles

These are the workhorse fungicides. Relatively dependable on many different crop diseases, they have been around a long time and offer reasonable protection on diseases ranging from leaf spot diseases to sclerotinia and mycosphaerella. They are partially systemic. They also only work on a SOA, causing cell disfunction, which can lead to resistance in fungi if overused.

### Group 11 – Strobilurins

These are the sweetheart of the fungicides. They provide some curative properties and are quite lethal killing a high percentage of the fungus it comes into contact with. It has, like group 3, only a single site of action; It inhibits mitochondrial respiration. The SOA combined with its ability to kill most of the fungal population is also its downside, as the fungi that are

not killed have an inherent tolerance to a normally lethal dose leading to fungicide resistance.

### Other Groups

There are a few other groups that control diseases in our common crops and will not be discussed. There are several more for potato growers as well. Then there are a few biological groups such as Contans and Serenade, both of which this author is uncertain on their effectiveness.

- Best management practices
  - Scout fields to determine disease pressure, canopy density, and noon canopy moisture.
  - Determine if environmental conditions are favorable for diseases
  - Select fungicides with more than one group.
  - Use the correct rate.
  - Spray at the correct plant stage
  - Use at minimum 10 gal/ac up to 20 gal/ac
  - Use medium droplet sizes at 60 psi
  - Keep speeds down
  - Use directional nozzles where appropriate
  - Keep good records and rotate your fungicide groups each year to prevent resistance

### Using fungicides.

Most fungicides are protective. This means they need to be applied prior to the infection event. They provide a barrier to the fungus, preventing it from getting established in plant tissue. Some fungicides have curative properties, meaning they kill fungi that have already invaded plant tissue. When we see yellow and or dead plant tissue, the plant has the disease already in the tissue. We may be able to stop the fungus from spreading to new tissue, but cannot recover damaged tissue.

### Application Timing

All fungicides have application timing windows determined. As an applicator, you need to determine if the environment is favorable for disease transmission and apply at a time that will prevent the disease from doing the most damage, especially if the fungicide used is mostly preventative and not curative. Fungicides work if the disease is present, the crop is susceptible and the environment favorable to the disease.