

## News Column

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### **Considerations for split fungicide treatments on wheat**

Fungicides are an effective way to reduce the risk of yield loss caused by leaf diseases on wheat in Kansas. Research continues to demonstrate that it is often possible to achieve high levels of disease control with a single fungicide applied between flag leaf emergence and heading growth stages. The yield response to this fungicide application is influenced by the level of disease risk (amount of disease and predicted weather conditions), variety resistance to the most threatening fungal diseases, yield potential of the crop, foliar fungicide efficacy, and other factors.

Fungicides can also be applied in a split application, with an early application made between “spring green-up” and jointing, followed by a later application at flag leaf to early heading stage. That approach adds a little extra expense, and may or may not pay off compared to the single application approach, as the majority of the yield response is normally associated with the flag leaf application. It is also important to remember that fungicides will only protect the leaves present at time of application; thus, an application during jointing does not substitute for a flag leaf application, as any leaf that emerged after the application will not be protected. Some fungicide labels are stating excellent systemic activity, but at this time K-State has no studies to validate that leaves not present at the time of spraying a fungicide will be protected.

When making split applications, the early application often uses a lower rate than the flag leaf/heading applications. While this lower rate helps to keep the product cost down, it also reduces residual life of the fungicide relative to applications made at the full-rate. With the prevalence of low-cost generic fungicides on the market now, some producers are using a full rate of fungicide for the early application. The full-rate of most fungicides provides about two weeks of good protection, followed by a third week of partial protection to the leaves present at the time of application. Using a full rate early, however, could have implications for the second application. Growers will need to select a product and rate that stays within the labeled limits on the amount of each active ingredient used in a single season. You don't want an early fungicide application to remove the ability to apply your preferred product at flag leaf.

### **Advantages and limitations of split applications**

Some *advantages* to making an early application include:

- **Low cost.** There is no additional cost for application if the fungicide is tank mixed with other products, such as liquid nitrogen fertilizer or herbicide. Often, however, the optimal timing for an early fungicide application is not until after the wheat has jointed – with one or two joints present. This is usually sometime in mid- to late-March in southern Kansas

and a little later in northern Kansas. Top-dressed nitrogen and many post-emergence herbicides should be applied before this stage to be most effective, so the optimal timing of both applications may not match. A separate trip for an early fungicide application adds to the cost.

Since the payoff for an early application is less certain than with later applications, it is perhaps best to consider using a low-cost generic fungicide for the early application and saving more expensive products, if desired, for the later application.

The *limitations* of early-season fungicide application include:

- Leaves not present at the time of application will not be protected. Therefore, these applications will not control leaf rust or stripe rust epidemics that come in from the south at later stages of growth. The early applications are most effective when combined with a second, later application of a fungicide.
- Additional product cost may not pay off under some conditions, especially this growing season when the wheat prices are low. Remember, the second application does the heavy lifting in the dual-application approach. If capital resources are limited because of low prices, it may be best to invest your money where you are likely to see the largest yield response.

## **Conclusions**

The main conclusions we can draw from recent studies in Kansas and Oklahoma are:

- In K-State studies, the greatest average profit has come from the flag leaf application of fungicides. Fungicides applied prior to jointing are less likely to result in a positive profit.
- The likelihood of profit for an early-season fungicide application is greatest for susceptible varieties in continuous wheat systems with a high level of surface wheat residue.

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