

## Plant Pathology Fact Sheet

# Seed Treatment Fungicides for Soybeans: Issues to Consider

Donald E. Hershman  
*Extension Plant Pathologist*

Kentucky soybean producers frequently ask the question “Is it advisable to treat soybean seed with fungicides?” There is no pat answer to this question because of the many variables involved. Historically, soybean has not been treated to the same extent that corn and wheat have in the U.S. There are many good reasons for this, and some of them are discussed below. However, the trend is toward greater use of fungicide seed treatment on soybean, both in Kentucky and nationally. This trend is the consequence of the high cost of soybean seed, increased focus by farmers on maximum attainable yields, high soybean prices, and the marketing trend towards greater use of a range of seed treatment products (i.e., insecticides, fungicides, nematicides, etc.) as part of a value-added marketing strategy.

There is a wide array of commercially available seed fungicides and their cost is relatively low compared to most other crop inputs. Available seed treatment fungicides are either broad-spectrum or narrow-spectrum. Broad-spectrum fungicides



SEED TREATMENT FUNGICIDES HELP PROTECT GERMINATING SEED AND YOUNG SEEDLINGS FROM PHYTOPHTHORA DAMPING-OFF (LEFT). A HEALTHY STAND OF SOYBEAN IS SHOWN ON THE RIGHT.

provide fair to very good control of numerous soil- and/or seed-borne fungi. Narrow spectrum fungicides, on the other hand, are highly effective against specific fungal genera (like *Pythium* and *Phytophthora*), but are ineffective against many common fungi that can limit stand establishment. Both types of seed treatment fungicides have their place in soybean fields in Kentucky. In fact, many fungicide manufacturers are now marketing products that contain both broad-



NARROW SPECTRUM SEED TREATMENTS ARE EFFECTIVE AGAINST SPECIFIC GENERA OF FUNGI THAT CAUSE DAMPING-OFF, SUCH AS PYTHIUM, ABOVE.

spectrum and narrow-spectrum products in an effort to maximize overall disease control possibilities.

Some would argue that the low cost of most fungicides compared to the good they can do is justification enough to treat all soybean seed prior to planting. Some plant pathologists, agronomists, and crop consultants, in fact, make this blanket recommendation. Most producers in Kentucky, however, apparently do not buy this argument as they do not treat their seed. But this is changing, albeit slowly, as farmers pay more attention to small production details, like seed treatments, in an effort to maximize yield potential.

There are several interplaying reasons why soybean producers have historically chosen not to sow fungicide-treated seed. The overriding factor is that most producers perceive disease-related stand establishment problems as being relatively minor in Kentucky. Based on many years of research, this is a reasonable conclusion when high quality seed are planted into sufficiently warm soils (e.g., temperatures above 60°F), and short term flooding is not a concern. The significant acreage of late-planted/doublecrop soybean in Kentucky assures that about one quarter of the state's

soybean acres planted each year will not be exposed to the cool, wet soil conditions that tend to be most associated with stand establishment problems. Except for a few specific situations where seed treatment fungicides can make the difference between a great stand and the need to replant, more times than not seed treatments will either not noticeably enhance soybean yields or yield improvements will be very modest (less than 2 bushels per acre). The proven ability for soybean to compensate for minor stand losses is the main reason why seed treatment fungicides often fail to increase yields over non-treated seed. This said, an added 2 bushels per acre (and perhaps more) is significant when the price of soybean is high.

If logistical and market factors are eliminated from the picture, one could effectively argue that the low cost of seed fungicides and the good they *can* do, make treating seed with a fungicide an excellent "insurance" investment for all soybean producers. Just like car or life insurance, you don't necessarily expect to recoup your investment in insurance premiums, but when you need the insurance it is there. Similarly, all soybean fields are subject to situations (minor herbicide or fertilizer injury, cool/wet/temporarily saturated soils, insect damage, soil crusting, planting too deep or variable planting depth, planting less than high quality seed, etc.) which can increase the potential for seed and seedling diseases to reduce stands. Your management style, and risk aversion strategies, will likely decide if the insurance analogy applies to your farm operation or not.

In any event, the benefits of seed treatment are most likely to be realized in the following situations:

- Soybeans planted mid-April to early-May, especially no-till or minimum till with abundant crop residue.

- Fields with a history of post-planting problems (minor soil crusting, temporary flooding, soil compaction, poorly drained soils).
- When low seeding rates are used.
- When seed planted is of moderate germination or the germination rate is unknown (note: use of seed of unknown or low germination is strongly discouraged).
- When precision of seeding rate, fertilizer application and/or herbicide application cannot be assured.
- Where *Phytophthora* is a historical problem, in which case a *Phytophthora*-tolerant soybean cultivar should be planted that has been treated with either metalaxyl- or mefanoxam.

For information on which seed treatment fungicides are available, check with your local ag dealer and/or fungicide salesperson.

## Additional Resources

The following University of Kentucky publications are available at County Extension offices, as well as on the Internet.

- Kentucky Integrated Crop Management Manual for Soybeans  
<http://www.uky.edu/Ag/IPM/manuals/ipm-3soy.pdf>
- Phytophthora Root and Stem Rot of Soybean, PPFS-AG-S-04  
[http://www.ca.uky.edu/agcollege/plantpathology/ext\\_files/PPFShtml/ppfsags4.pdf](http://www.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/ppfsags4.pdf)

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*Photos by Don Hershman (Phytophthora seedling blight, pg. 1 & Pythium damping-off, pg. 2) and Paul Bachi (soybean seeds, pg. 1), UK Department of Plant Pathology; Stephen Patton, UK Agricultural Communications Services (soybean planting, pg. 1)*

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