Background

Current production trends are resulting in soybean being planted earlier in the spring than has traditionally been the case in Kentucky. For example, late-April planting dates are no longer abnormal in some counties, and very early May planting dates are now commonplace. With this trend towards earlier planting, questions naturally arise about the consequences of this practice on diseases.

Unlike corn which can be planted into soils in the mid-50’s °F range, soybean is best planted when soil temperatures are in the mid-60’s °F range. When planted in less than ideal soil conditions, especially when soil is cool and wet, seed germination is adversely affected and stand establishment can be a problem. Not all stand problems are disease related, but cool and wet soils do favor attack of germinating seed and young seedlings by a number of fungi.

Diseases Negatively Impacted by Early Planting

One of the most common pathogens under cool, wet soil conditions is *Pythium ultimum*. This pathogen is estimated to be associated with 75% of the seed emergence problems in situations where quality seed is planted into cool, wet soils. Occasionally, stand losses under these conditions are caused by infection by *Phytophthora sojae*. In some fields both pathogens may be active. When contemplating planting quality soybean seed early, consider treating seed with a fungicide containing either metalaxyl or mefamoxam; both do an excellent job where *P. ultimum* or *P. sojae* are the culprits. However, be advised that seed treatments are only effective against these pathogens in the seedling stages. In the case of *P. sojae*, additional protection in the form of resistance or tolerance will be required, in addition to seed treatment, when soil conditions favor disease after the seedling stages.

If seed quality is suspect, this is often due to infection by the pod and stem blight fungi (*Phomopsis* spp.). When *Phomopsis*-infected, moderate-germination seed is planted under less than optimal conditions, stand loss can be extensive. This situation can be helped by treating...
seed with any number of available broad-spectrum seed treatment fungicides. However, if soil conditions are extremely poor following planting, do not expect seed treatment of moderate quality seed to be of much value. Moreover, low germination, poor quality seed should not be planted under any circumstances.

Other disease organisms, such as *Rhizoctonia solani*, other species of *Pythium*, and *Fusarium* spp, can also cause stand losses in Kentucky. However, these organisms are not major “players” in terms of stand establishment.

One disease commonly associated with early planting is soybean sudden death syndrome (SDS). This disease tends to be more severe in early plantings because of the soil conditions that frequently predominate in late April to early May tend to favor infection by the SDS pathogen, *Fusarium solani f.sp. glycines*. Note, however, the focus here is on soil conditions and not actual planting date. Soil conditions can favor SDS at any planting date, but the probability is higher that conditions favoring disease will exist in the early part of the soybean planting season. That is why SDS is not common in doublecrop soybean, but it can and does occur. The bottom line is this: if SDS has been a problem in a field in past years, find a disease resistant variety and wait until at least mid-May to plant.

For seed producers, be aware that the seed quality problems discussed earlier in this article (caused by *Phomopsis* spp. infection) tend to be most severe in early-planted soybean. This is especially true where maturity group 3 or early group 4 soybean are concerned. Similarly, southern stem canker also tends to be more severe in early-planted crops. This is because weather conditions that often exist early in the season tend to favor spore production and infection by the causal fungi, *Diaporthe* spp.

**Diseases Not Impacted by Early Planting**

There are some diseases that are little impacted by planting date, or early planting may actually be beneficial. Soybean cyst nematode, for example, is not impacted by planting date to a significant extent. Soybean mosaic virus (SMV) and bean pod mottle virus (BPMV) often have less impact on early-planted crops. This is related to the biology of the insect vectors for these two viruses (aphids for SMV, and bean leaf beetle for BPMV), and the relationship between crop stage and time of infection in regards to yield loss. In early planted crops, plants usually reach the reproductive stages before populations of the insect vectors reach a critical mass. By the time the populations of vectors are substantial, the bean crop is more or less determined. However, late-planted crops can be severely damaged in the presence of the same vector population, because infection will occur when plants are developmentally younger.

So you see, planting soybean early is a “mixed bag”. This publication has only considered some of the disease relationships with early soybean planting. However, the impact on agronomics and other pests should also be considered and studied when deciding how early you can plant and still achieve excellent yield results.

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