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## Concerns related to soybean seed quality

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## Concerns related to soybean seed quality

### **Abstract**

During this growing season soybean Asian aphid and charcoal rot were prevalent in Iowa and caused severe damage in many soybean fields. Charcoal rot is reportedly a seedborne disease. Asian aphids transmit a seedborne disease, soybean mosaic virus (SMV). Since these two diseases are considered seedborne, seed quality related to these two diseases has been a concern, especially for SMV.

### **Keywords**

Plant Pathology

### **Disciplines**

Agricultural Science | Agriculture | Plant Pathology

# INTEGRATED CROP MANAGEMENT

## Concerns related to soybean seed quality

During this growing season soybean Asian aphid and charcoal rot were prevalent in Iowa and caused severe damage in many soybean fields. Charcoal rot is reportedly a seedborne disease. Asian aphids transmit a seedborne disease, soybean mosaic virus (SMV). Since these two diseases are considered seedborne, seed quality related to these two diseases has been a concern, especially for SMV. This article looks at what steps you can take to limit the

### Soybean mosaic virus

An Iowa State University study shows that Asian aphid can transmit soybean mosaic virus during a growing season. In northern soybean production, SMV is usually introduced into a field through infected seeds. When infected seeds were used, the disease can build from one percent infected plants developed from infected seeds to more than 90 percent during a season if the population of aphid vectors is high. Therefore, it is critical to prevent the build-up of infected seeds in seed chains.

If you save seeds for next season, check your seeds for virus infection when you find significant proportion of your seeds from an aphid-infested field are discolored. The presence of aphids was necessary for the spread of this disease. The discoloration is an indication of SMV infection. Seed coats of soybean infected with soybean mosaic virus would have black discoloration if hyaline is dark. However, discoloration can indicate other problems, such as severe stress or virus. Bean pod mottle virus spread by bean leaf beetles can also cause seed discoloration and the seedborne nature of this disease is less of a production concern. Seed testing is needed to determine the SMV infection.

### Seeds from plants with charcoal rot

Iowa State University survey data, as well as observations from companies in private sector, show charcoal rot was prevalent this year in Iowa. The disease has been a production problem in southern states and many people have asked what contributes to the outbreaks. The drought was a critical factor for the epidemics of charcoal rot.

According to literature, the causal fungus (*Macrophomina phaseolina*) is present in northern soybean production areas including Iowa, but often in low levels because of limiting moisture and temperature conditions. It is not clear why the disease suddenly showed up in such a high proportion of soybean fields. High levels of infestation also were found in fields that had not been planted in soybean for years. The seedborne nature of the disease has been documented in literature from tropic regions, but the effectiveness of disseminating the

disease through seed in northern production regions is unknown. Consider having seed tested if you plan to save seed from a field with severe charcoal rot.



**Soybean field with charcoal rot.**

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One possible explanation for disease build up is the occurrence of corn stalk rot by *M. phaseolina*. Corn is a host of this pathogen and the fungus could build up its population during corn seasons without being noticed. If you experienced corn stalk rot in previous years and had low soybean yields this season, check for charcoal rot. In this season, because the disease is new to by many producers and not so easy to identify, it is likely that many producers did not see the disease although it did occur in their fields.

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