

# INTEGRATED CROP MANAGEMENT

## Herbicide-tolerant crops and plant diseases

Crop management is a dynamic activity that changes as technologies are developed. During winter extension activities, there were some discussions on soybean diseases observed on Roundup-Ready soybeans. This article takes a proactive approach to address some concerns that were commonly raised about herbicide-tolerant crops, herbicides, and the occurrence of plant diseases.

A new infusion in crop management is the advent of herbicide-tolerant crops. Soybean varieties tolerant to glyphosate (Roundup-Ready) and sulphanyl urea (STS) and corn tolerant to imazethapyr are already on the market. Glyphosate-tolerant corn will be a new addition to the pool of existing herbicide-tolerant crops. Although these crops have become the focus of scientific and social debate, they are conquering much farm acreage. In the 1997 growing season, many observations were circulated indicating high susceptibility of Roundup-Ready soybeans to diseases. Research is currently being conducted to investigate these observations in more detail, and until these data are in, it is premature to establish a connection between herbicide tolerance and disease occurrence.

The fact that many Roundup-Ready soybean varieties do not have a good disease resistance package may explain some of the observed occurrence of diseases in 1997. This situation may change as more disease-resistance genes are bred into Roundup-Ready soybeans and other herbicide-tolerant crops. Roundup-Ready soybeans with resistance to *Phytophthora* root rot or to soybean cyst nematode are already available. It is certain that more disease-resistant Roundup-Ready soybeans will be available in the future.

Although many early studies showed that herbicides have side effects on plant diseases, these effects are variable. Incidence and severity of some diseases have been shown to increase with herbicide applications, whereas a decrease was reported with other diseases. In fact, high levels of resistance to some diseases were recorded following the application of certain herbicides.

Resistance should not be a concern in selecting Roundup-Ready soybeans for a field if a disease has not been a problem in the past. When disease is a concern, some questions that should be addressed are, What is the disease history of the fields where the cultivar is to be planted? and Is the cultivar tolerant or resistant to the diseases anticipated? If your chosen cultivar does not have a package against the anticipated disease, it would be advisable to implement a rigorous scouting program to detect any early symptoms.

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