



Q: I've heard conflicting opinions about soybean resistance to diseases. What should I know about disease resistance while I select varieties for 1999?

A: Selecting soybean varieties resistance to important diseases is your most cost effective method of reducing disease incidence and improving profitability. However, our knowledge of disease resistance is incomplete and there are several important soybean diseases in Missouri for which we have no identified genetic resistance.

Laura Sweets, MU's soybean pathologist, speaks of a disease triangle in explaining diseases incidence. At each corner are "pathogen", "host", and "environment". This means that all three factors must be present for a disease to occur. Selecting for genetic resistance is our attempt to remove "host" from the equation. However, even without genetic resistance we may not see a disease. This occurs because either the pathogen was not present in sufficient numbers (inoculum) or the environment was not conducive for disease incidence.

Missouri's three most damaging diseases are soybean cyst nematode (SCN), *Phytophthora*, and seedling damping off caused by several fungi, including *Pythium*. Other important or at least newsworthy diseases include SDS, pod and stem blight, and purple stain. The pathogens that cause these diseases are widespread in soybean fields in Missouri. We have a reliable soil test for SCN and it's important to perform this test for SCN to determine if the pathogen is present. But, we don't have easily performed or commercially available tests for the other diseases. So we cannot prove that the pathogens are present, but I believe we can assume that these fungi are in our fields. Returning to the disease triangle, the pathogen is probably present.

Thus, the environment becomes an important determinant of disease incidence.