

## BREEDING SOYBEAN FOR DISEASE RESISTANCE IN BRAZIL

**OLIVEIRA M F & ARIAS C A A**

National Soybean Research Center, Embrapa Soybean, CP 231, 86001-970, Londrina,  
PR, Brazil

E-mail: [marcelo@cnpso.embrapa.br](mailto:marcelo@cnpso.embrapa.br)

As a major crop, soybean has received the most attention from public and private plant breeding companies in Brazil, especially concerning biotic stresses caused by diseases. Genetic resistance, when available, remains the most economic and practical solution for the farmers. Diseases long present in Brazil such as frogeye-leaf-spot (*Cercospora sojina*), stem canker (*Diaphorte phaseolorum* f. sp. *meridionalis*) and bacterial pustule (*Xanthomonas axonopodis* pv. *glycines*) have been controlled by introgression of resistant genes into cultivars. Among the remaining fungal diseases, Asian soybean rust (ASR - *Phakopsora pachyrhizi*) is a priority because of its large economic impact both in the cost of chemical control and direct yield losses. New cultivars resistant to ASR are now available as a useful tool for this disease management but market participation of these cultivars is just beginning. White mold (*Sclerotinia sclerotiorum*) has increased in several regions but no effective resistance source is available for breeding purposes. Root rot caused by *Phytophthora* remains important in the states of southern Brazil but there are commercial, high-yielding, resistant cultivars. Increased occurrence of target spot (*Corynespora cassiicola*) has been reported in several soybean regions and some resistant genotypes have already been selected and are being used in breeding programs. Among the nematodes, the soybean cyst nematode (SCN) and gall nematodes (*Meloidogyne javanica* and *M. incognita*) have been managed with moderate resistant cultivars. SCN has increased in importance and more than 50 Brazilian soybean cultivars were developed from sources that normally provide resistance to race 3 or to races 1 and 3. Gall nematode is dispersed in all Brazilian regions and there are cultivars with resistance to one or both species of *Meloidogyne*. The crop management system involving a second crop has increased the problems with the lesion nematode (*Pratylenchus brachyurus*) and the preliminary studies are showing that the inheritance is relatively complex. Among the viruses, soybean mosaic virus is apparently under control and there are some resistant cultivars. Despite the problems observed with the stem necrosis virus in some regions in recent years, there are tolerant cultivars.