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Evolution and current state of soybean production in northwestern Argentina

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Soybean production in northwestern Argentina (NWA) dates back to the late 1960s. NWA is a subtropical region, located between Latitude 22º and 29º south and Longitude 63º and 68º west. In the 2015/16 season, 4,204,458 t of soybean were produced in a 1,679,521 ha area, which amounts to a 2.6 t/ha average yield. From 1970/71 through 2015/16, soybean production, planted area and yield grew at average annual rates of 14.6%, 12.3% and 1.6%, respectively. This study analyzed soybean production and changes in crop management in NWA.

During the 1970s and 1980s, tillage and soybean mono-cropping caused soil degradation. In the 1990s no-tillage reduced erosion, improved yields and reduced costs. Since early 2000s, 99% of soybean area has been under no-tillage systems and transgenic glyphosate-resistant cultivars (RG) with high yields have been planted. Mono-cropping and use of glyphosate has become widespread with negative consequences.

Distribution of cultivars in the 1980s was maturity group (MG) VIII (70%) and IX (30%). In the 1990s, due to no tillage and RG soybean planting, MG distribution changed, in the 2015/16 season was MG VIII: 50%; VII: 30%; VI - V: 20%. Also 70% of NWA is planted with glyphosate Bt resistant cultivars.

Currently herbicide resistant weeds, like *Sorghum halepensis, Echinocloa colona, and Amaranthus sp,* are the biggest problem. Most important pests are a complex of curculionids: (*Rhyssomatus subtilis* is the most aggressive), cutting worms, caterpillars (*Rachiplusia nu, Pseudoplusia* sp.). Stings bugs population increased following Bt soybean planted area. Main pathogens are *Cercospora kikuchii, Macrophomina phaseolina, Fusarium spp* and *Sclerotinia sclerotiorum*.

Research, adoption of technologies by farmers, and high prices recorded, allowed soybean grew in NWA. Although a model based in mono-cropping and high use of inputs increased costs and affect environment. Farmers need to find new strategies to achieve a more balance and rentable system.