

Irrigation Water Effect In Soybean Crop In Uruguay

Otero A¹, Montoya F¹, Ferreira A², Canepa P²

¹*National Institute of Agricultural Research of Uruguay, INIA Salto Grande, Camino al Terrible, Salto, Uruguay.*

²*Departamento del Agua. Regional Norte. UDELAR, Salto, Uruguay.*

E-mail: aotero@inia.org.uy

Abstract

In the last 10 years, soybean crop area has increased strongly, being 309x103 ha in 2005 to over 106 ha in 2015. Uruguayan climate conditions allow the soybean sowing between October to December according to crop cycle, and its cycle is completed between March to April. However, the irregular rainfall throughout the crop cycle causes short periods droughts that may trigger an important yield decrease, depending on the stage crop. The supplemental irrigation allows to reduce the water deficit in particular crop periods, given to farmer a high and stability yield. The need to have a good farm irrigation strategy according to the different soybean cycle length is the main reason for soybean yield response studies under supplemental irrigation. The experiment was conducted at Salto (Northwest of Uruguay) during 2013-2014 crop season. Four soybean crop length cultivars (4990, 5500, 6.2i, 8000) were used. Two treatments were applied, rainfed and irrigation, with three replications randomized block design. Irrigation treatment received the 100% of maximum crop evapotranspiration according to FAO56. Crop cycle length was 140 days with a total rainfall of 575 mm. Sprinkler irrigation system was used with an average rainfall of 6.6 mm hour⁻¹. The average water depth was 232 mm distributed in 7 irrigation events between December and January. Regardless of crop cycle, irrigation treatment showed a higher yield than rainfed treatment (differences about 80%). Long cycles soybean cultivars, irrespective of the irrigation treatments, reached a higher yield than the shorter ones (differences over 50% and 20% in rainfed and irrigation treatments, respectively). Therefore, in the North of Uruguay, soybean crop with long cycle, and under supplemental irrigation, should allow a greater yield to the farmers with the aim to reach a high profit margin.

Keywords: soybean cultivars, supplemental irrigation, sprinkler irrigation, yield