

# Effect of crop sequence on soil water balance and corn yield in Uruguay

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## Abstract

Soybean (*Glycine max*) is a mayor field annual crop seeded in Uruguay that invariably employs no-tillage management. However continuous soybean has negative effects on soil organic carbon. As consequence, soybean has been included in a cropping system with full season corn (*Zea mays* L.) or double cropping wheat (*Triticum aestivum* L.) –corn (W/C). Shortage of water can restrict corn yield in double cropping W/C system principally in shallow soils. Impact of crop sequence on soil water balance has not been studied; although the value of these rotations has been promote in order to improve soil organic carbon and soil erosion control. The objective of this work was to investigate potential differences in temporal soil water status among rotations over two years in two soil depth. Results showed clearly that in Uruguayan condition, F-C sequence determine higher soil water content at sowing day that W-C sequence. In both years full season corn was seeding with around 30 mm more of available water in the first 30 cm of soil profile. In W-C sequence a full profile of soil water at sowing cannot be assumed in this environment. The amount of soil water observed at sowing ranged from 25 mm in 0-30 cm to nearly the maximum value for each soil (60 mm).

Corn yields were poorly correlated with amount soil water availability at sowing day but there was good relationship with total available water at corn flowering period (critical yield definition period). These results highlight the importance of temporal distribution of rainfall on final yield.

Key words: crop rotation, double cropping, Soil water availability

sa2011\_a0123