**Soil water during the critical period for yield definition of maize in center-southeastern of Buenos Aires**

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**Summary**

Because of the importance of early yield prediction, the purpose of this study was to identify the pattern of variations of soil water during the critical period for yield definition (PC) over the region center-southeastern of Buenos Aires from simple methods of simulation of crop phenology and soil water. The objectives were: a) to characterize the position in the calendar of the occurrence of the PC for agricultural scenarios that combine maturity cycles and planting dates and b) evaluate soil water variations within the PC. Six planting dates and three cultivars with contrasting maturity cycles were evaluated at four locations. The growing seasons (1971-2010) were simulated by using degree-days as estimator. Water balances were computed following a reservoir type model (daily step). Soil water was analyzed at intervals around flowering (R1-20d, R1-10d, R1, R1+10d, R1+20d). A pattern of soil water variation during PC (R1-20d and R1-10d>R1 and R1>R1+10d and R1+20d) was repeated in most agricultural scenarios. The time window from R1-10d to R1+10d showed a homogeneous association with R1 across the planting dates, regarding of maturity cycle of the crop. Position of PC varied within the region; however, soil water was not different among locations in most of scenarios.

**Key words:** water balance, planting date, flowering, physiological maturity.