

## Corn yield response to crowding stress and cropping season

### ABSTRACT

Corn (*Zea mays* L.) is planted in two seasons per year in northern Iran (mid-April as a main crop and mid-June as a second crop). The main objective of this study was to determine whether corn yield response would differ between these two seasons and different plant populations. Two field experiments were conducted at the Agricultural Research Center of Golestan - Iran in 2007 and 2008 at different planting densities. The results showed that the values of grain yield and most traits were significantly lower in the second season. Maximum grain yield was observed at planting densities of 6.5 plants m<sup>-2</sup> in the first season, whereas in the second season grain yield was the same for planting densities between 2.5 and 12.5 plants m<sup>-2</sup>. Based on the second-year experimental results, the following functions were fitted to show the relationship between yield ha<sup>-1</sup> (Y) and planting densities (X) for the first and second seasons, respectively: ( $Y = -167.6X^2 + 2672.2X + 511.77$ ;  $R^2 = 0.992$ ) and ( $Y = 1200.1 \ln(X) + 2924.4$ ;  $R^2 = 0.935$ ). This study found that the optimum plant population was 6.5 plants m<sup>-2</sup> under low heat stress, and should be reduced to 2.5-4.5 plants m<sup>-2</sup> under heat stress conditions.

**Keyword:** Cropping season; Crowding stress; Maize; Yield; Yield Components