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Sink-source Relationship of Corn at Different Plant Densities and Nitrogen Levels in Mamasani Conditions, Fars Province

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Abstract

This experiment was conducted to study the effect of plant densities and nitrogen levels on yield and sink-source limitation of corn at Mamasani, Fars Province. The factors of the experiment consisted of four plant densities (75000, 90000,105000, and 130000 plant ha^{-1}) and three nitrogen levels (200, 300, and 400 kg ha^{-1}). Results showed that with increasing plant population from 75000 to 130000 plant ha^{-1}, the grain yield significantly increased from 12910 to 16890 kg ha^{-1}. Under the condition that 50 percent air grain was omitted, the effect of density, nitrogen application and their interactions on kernel weight was significant. The density of 130000 plant ha^{-1} and 200 kg ha^{-1} nitrogen application had the highest source limitation about 22.4 percent for the kernel weight; the density of 75000 plant ha^{-1} and 300 kg ha^{-1} nitrogen application had the lowest source limitation about 8.6 percent for the kernel weight. With removing tassel and upper leaves of ear, the effect of density and nitrogen application on source limitation for kernel weight was significant. By increasing plant density from 75000 to 130000 plant ha^{-1}, source limitation significantly increased from 12.7 to 25.8 percent, and by increasing nitrogen rate from 200 to 400 kg ha^{-1}, source limitation significantly decreased from 22.8 to 13.9 percent for the kernel weight. According to the results, 200 kg ha^{-1} nitrogen application and the density of 130000 plant ha^{-1} was the best treatment in this region.

Keywords: *Plant density, Nitrogen, Corn, Yield, Sink and source limitation*