EFFECT OF CORN SEEDING RATE ON AGRONOMIC OPTIMUM NITROGEN RATE

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Presentado en: 7th World Congress on Conservation Agriculture. 2017.

In Rio Cuarto region (Cordoba, Argentina) corn is the most sown crop. Most of the crop is grown in no tillage systems that improves soil structure and rise the organic matter as consequence of the less mineralization and the stubble. As consequence of this more nitrogen (N) fertilization is needed. There are different method to estimate N rates but none of them takes in account the interaction with N and seeding rate (SD). The aim of this research was to evaluate the interaction between dose of N and seeding rate. Four experiments were stablished during 2016/17 growing season in Rio Cuarto Region. A combination of four N rates (between 0 to 300 kg ha^{-1}) and four seeding rates (between 30000 to 130000 seed ha^{-1}) were tested. The Agronomical Optimum N Rate (AONR) was determined for each seeding rate. The criteria for the field selection included soybean as predecessor crop and at least 10 years of no tillage system. The experiments were harvested with yield monitor connected to a GPS. The data was analyzed with general models with spatial correlation. The results shown that there was significate interaction between N and SD ($p<0.0001$). The response to N and the AONR varied with SD in all sites. In site I AORN ranged from 115 to 147 kg N ha^{-1} for 40.000 and 90.000 seed ha^{-1}, in site II the rage of rates were 159 and 187 kg N ha^{-1} for the mentioned rates. In sites III and IV the AORN ranged from 0 to 300 kg N ha^{-1} for the low and the high seeding rate evaluated respectively. N requirements increase while increasing seeding rate and the magnitude of the increase was related to the site productivity.