CONCLUSIONS

In recent years considerable research has been conducted on the differences between plant species and cultivars within species in nutrient uptake ability. The results of the present study have illustrated one of the practical implications of such differences between sunflower cultivars which had been shown to vary considerably in leaf nutrient levels (Blamey *et al.*, 1980). PNR 40-S was shown to contain less B in the topmost mature leaf at flowering than SO 320 particularly in the absence of B fertilization. This difference resulted in yield increases of *c.* 1,200 kg/ha in PNR 40-S and *c.* 800 kg/ha in SO 320 with B fertilization. Furthermore, along with these yield increases, oil level in the seed was increased resulting in oil yield increases of the order of 600 kg/ha in PNR 40-S and 400 kg/ha in SO 320. In spite of a decreased protein concentration in the seed with B fertilization, protein yields were increased by *c.* 230 kg/ha in PNR 40-S and by *c.* 150 kg/ha in SO 320.

The magnitude of the differential response of the two cultivars to B fertilization has important practical implications for the farmer since in the absence of B fertilization a smaller yield decrease would be expected with SO 320 than with PNR 40-S. However, both cultivars required B fertilization in excess of 1 kg B/ha/annum to ensure maximum yields of more than 2,400 kg/ha. With the finding that the two cultivars differed in susceptability to B deficiency, largely through differences in B-uptake ability, further studies should be carried out to establish whether it would be possible to breed cultivars efficient in B-uptake ability.

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EFFECT OF PHOSPHORUS AND NITROGEN FERTILIZATION LEVELS ON THE YIELD AND OIL CONTENT OF SUNFLOWER (*HELIANTHUS ANNUUS* L.).

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ABSTRACT

The experiments were carried out during the summers of 1979/80 and 1980/81 at 3 sites near Coronel Pringles and Huanguelen in the south-west of the province of Buenos Aires, under field conditions. The hybrids used were Cargill S 400 and SPS 891 with three levels of phosphorus fertilization (0, 40 and 80 kg P_2O_5 ha^{-1}) and two levels of nitrogen (0 and 60 kg N ha^{-1}). There was a positive correlation between the pre-existing phosphorus level in the soil and the effect of the fertilizers. In the two years there was no response to nitrogen application in these soils. Taking into consideration the cost factor, the results indicate that the application of 46 kg ha^{-1} P_2O_5 may be recommended.

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