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THE IMPACT OF PHOSPHORUS FERTILIZER SOURCES AND RATES ON CANOLA PLANT (*Brassica napus* L.) GROWN IN CALCAREOUS SOIL

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ABSTRACT

Two field experiments were carried out at El- Areish Agricultural Research Station, North Sinai Governorate during the two winter growing seasons of 2005/2006 and 2006/2007 to study the effect of canola varieties (Serw 4 and Bactol) with superphosphate and rock phosphate at rates (15.5 and 31 kg P_2O_5 /fed.) on some yield components, seed yield and chemical composition of canola plant grown in calcareous soil.

Results can be summarized as follows:

1- Variety Serw 4 was significantly higher than Bactol one for plant height only in the first season. Also, the higher rate of P fertilizer in form of superphosphate was better than other treatments in the first season.
2- Variety Serw 4 gave the highest significant value of seed weight/ plant (g) and oil yield (kg/fed.) in the first season, and oil yield (kg/fed.) in the second season compared to Bactol one. In addition, higher rate of P fertilizer for both P sources was better than lower one for seed weight/ plant (g), seed yield (kg/fed.) and protein % in the first season as well as seed yield (kg/fed.), oil yield (kg/fed.) and protein % in the second season. Variety Serw 4 received any of both P sources at higher level produced significantly better yield and its components than those recorded by other treatments.
3- The treatment of superphosphate and rock phosphate at higher rate gave a significant increase in N- uptake of canola plants in comparison with the other fertilization treatments in both seasons.
4- N- Uptake of variety Serw 4 fertilized with superphosphate at a rate of 31 kg P_2O_5/fed. was significantly higher than those obtained by others treatments.

INTRODUCTION

In Egypt, Canola is considered a new oil seed crop in the newly reclaimed areas, because there is a great shortage in edible oils, and large amounts are imported annually from abroad. Canola, as a winter crop can play an important role to partially cover or reduce this shortage. There is a growing need to understand the effects of bio- and mineral phosphorus fertilization on canola growth, development, productivity, and seed quality especially in the newly reclaimed soils. So, increasing yield of canola requires improving agricultural practices, i.e., chemical and natural phosphorus fertilization to achieve higher seed and oil yields.

Soil phosphorus availability is low in newly cultivated soil, and most soils require Phosphorus additions to produce adequate canola yields. Phosphorus deficiencies result in poorly developed root systems, reduced seed production, and delayed maturity. Severe phosphorus deficiencies show up as a purplish color on leaves. The minimum phosphorus requirement of