



INTRODUCTION

1. INTRODUCTION

Oil consumption in Egypt has increased at a very rapid rate in the past decade along with the growing population and higher consumption patterns. Presently, over 80% of oil consumed in Egypt is imported from abroad, due to limited local production. To fulfill the local oil requirements, there are different alternations; one of them is introducing new oil crops such as spring types of rapeseed (*Brassica napus* L.). Several advances are favoring rapeseed to grown in Egypt such as limited matter requirements, high seed yield in new reclaimed soils and relatively high oil content. Unfortunately the new reclaimed soils for agricultural expansion are sandy having poor nutritional properties. Cultural practices i.e. fertilization rates that may affect canola growth and production under local conditions is an important task to undertake. Since percent oil content of this a major consideration in breeding for oil quality improvement, the modifying effect of mineral nutrition of the crop on this trait should be interest to oilseed producers.

Canola, a type of oil seed rape with low glycosinolates and low eurcic acid, is an important oil crop of temperature regions and it is for its industrially important oil. Balanced and effective fertilizer management is critical to optimize crop yields and profitability, to ensure crop quality and sustain soil productivity. The quantity of fertilizer nutrients required to optimize production depends on the yield potential of the crop, the method and form of fertilizer application and the levels of available nutrients in the soil.

Canola is a heavy user of plant nutrients. Moreover, it requires as much or more nitrogen and phosphorus than cereal crops. Sulphur is required for plant growth in quantities equal to and sometimes exceeding those of phosphorus. Deficiencies of S may severely restrict canola yield on many soils, particularly if high rates of N are applied. Sulphur enhances the utilization of N, and high oilseed and protein crops require more S. On S-deficient soils, application of high rates of N and other fertilizers results in faster depletion of S in soil and increases instances of S deficiencies in canola during the growing season. This can result in a substantial reduction in seed yield, apparently due to N:S imbalance in canola.

Micronutrients in general do not limit crop production to the same extent as the macronutrients. However, on reclaimed soils, micronutrient deficiencies may severely limit crop yield. Oilseed crops, such as canola, tend to be more sensitive to deficiencies of certain micronutrients than do cereal crops. Increase in canola yield with application of zinc and boron have been reported in field studies.

Balanced nutrient management is essential for optimum yield of canola. As with any plant, yield is limited by the first nutrient which becomes restricting. Application of high levels of one nutrient when another nutrient is deficient will at best be ineffective in increasing yield and at worst lead to a yield reduction. Interaction can also exist between macronutrient and micronutrient. The P-Zn interaction is well documented in a number of plant species. Balanced nutrition on canola is important to ensure optimum seed and quality as well as the most economic response to applied fertilizer.

Therefore, the objective of this investigation is to study the interaction of combined applications of (N&S), (N&B) and (P & Zn) and the subsequent influence on growth characters, yield and its components, seed quality, as well as, chemical composition of canola seeds and straw.