

EFFECT OF IRRIGATIONS NUMBER AND PHOSPHORUS FERTILIZATION ON YIELD AND ITS COMPONENTS OF FABA BEAN IN NORTH NILE DELTA

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ABSTRACT

Two field experiments were conducted at Sakha Agricultural Research Station Farm, Kafr El-Sheikh Governorate, Egypt during the two successive seasons of 2005/2006 and 2006/2007 to study the effect of irrigations number and phosphorus fertilization levels on faba bean production, consumptive use and water use efficiency. Irrigation was applied at three treatments i.e. 3, 4 and 5 irrigations including sowing irrigation, whereas phosphorus fertilizer was added at three levels i.e. 0, 15 and 30 kg P₂O₅/fed. in both seasons.

The main results revealed that increasing number of irrigations caused an increase in yield and yield attributes of faba bean. Also, increasing P-rate caused an increase in all previous characteristics in both seasons. The highest consumptive use values were scored from treatment irrigated with five irrigations. The highest water use efficiency values were obtained from treatment irrigated with four waterings however, the lowest value was obtained from treatment received three watering.

Means values of seasonal water consumptive use of faba bean were 30.0, 34.8 and 42.0 cm/fed. for I₃, I₄ and I₅, respectively.

Seasonal irrigation water applied were 35.2 cm (1482 m³/fed.), 41.2 cm (1732 m³/fed.) and 49.5 cm (2077 m³/fed.) for irrigation treatments I₃, I₄ and I₅, respectively.

Therefore, irrigation of faba bean with 4-waterings including sowing irrigation since the reduction in seeds yield was 5% for 15% of saving irrigation water applied compared with irrigation 5 waterings including sowing irrigation.

INTRODUCTION

Faba bean (*Vicia faba*) is one of the major winter-sown legume crops grown in the Mediterranean sea region, and has considerable importance as a low coast food rich in proteins and carbohydrates, when carefully managed, it can yield more than 6 t/ha of seed (Saxena *et al.*, 1986). Additionally it helps in restring the fertility of soil in crop rotations through biological nitrogen fixation (Dyke and Prew, 1983). The period during which the crops evaporative demand is high coincides with the end of the rainy reason, thus faba bean experiences considerable soil moisture stress during the reproductive growth stage and often produces poor yields. Moreover, Bond *et al.* (1985) reported that drought is an important factor limiting yield and most faba bean crops in arid climates give a substantial and often economic response to well time irrigation. found that increasing the duration between planting irrigation and the first post planting irrigation form 3 to 8 weeks caused a clear decrease in plant height, 1000 seed weight, seed yield, straw yield and biological yield.

As for phosphorus, is very important nutrient for crop growth and high yield with good quality. It plays a key role in metabolic process such as the conversion of sugar into starch and cellulose. In the context, yield and its