

EFFECT OF IRRIGATION INTERVALS, POTASSIUM FERTILIZER RATES AND STORAGE PERIOD ON SORGHUM (*Sorghum bicolor* L. Mench) SEED VIABILITY AND ITS SEEDLING VIGOR.

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ABSTRACT

Storage studies were carried out at seed Technology Unit Lab. Mansoura, Dakahlia during November 2005 till April 2008 on sorghum (*Sorghum bicolor* L. Mench) seed produced from field experiment which was conducted at the Experimental farm of El-Serw Agriculture Research Station, Dakahlia Governorate in 2005 and 2006 seasons, to study the effect of three irrigation intervals i. e. 14, 21 and 28 days, three potassium fertilizer i. e. 0, 24 and 48 Kg K₂O/fed and four storage periods i. e. 0, 6, 12 and 18 months on germination percentage, seed viability and seedling vigor .

The results revealed that prolong irrigation intervals and storage period reduced germinability (as measured by germination percentage, germination after aging, first count, germination index, germination energy and germination rate) and seedling vigor (seedling length, seedling dry weight and its vigor index), meanwhile, increased mean germination time. Increasing potassium fertilizer rates improved seed viability and seedling vigor traits, on the contrast, decreased mean germination time. High significant effect for the interaction between storage period x irrigation intervals, storage periods x potassium fertilizer rates and irrigation intervals x potassium fertilizer rates were obtained for all studied traits.

The results suggested that sowing grain sorghum (c.v. Dorado) under limited irrigation conditions and fertilized with 48 Kg K₂O/fed plays a prominent role in increasing seed quality under impact of storage periods.

INTRODUCTION

The need for increased food production in Egypt requires the continued development of new agricultural lands which mostly suffer from limited irrigation water. Development of such land is rarely possible without irrigation water regime. Suitable fertilization proved helpful in mitigation the adverse effects of water stress and decreases the deterioration of the resultant seed during storage. The choice of plant materials which posses high efficacy of water utilization or high adaptability for saving water would be great advantage in this context. Such adaptation remains effective until stress conditions are sever or prolonged (Saxena, 1985). Grain sorghum crop (*Sorghum bicolor* L. Monech) is one of the worlds leading cereal crops, providing food, feed, fiber, fuel and chemical/ biofuels feed- stock across a range of environments and production systems. Sorghum plant has an extensive root system and its drought tolerance makes it suitable for limited irrigation conditions. The environment experienced by the mother plant before seed maturity can have large effects on the germination of seed produced