

ABSTRACT

Two field trails were carried out at Fayoum Governorate, Egypt during 2002 and 2003 seasons, to detect the possibility of benefit from using bio-nitrogen fertilizer (Rizobacterien) as only source of nitrogen to supply grain sorghum plants (c.v. Dorado) by its needs of nitrogen or in combination with the different mineral sources of nitrogen (Urea, Ammonium nitrate and Ammonium sulphate) as compared with the previous nitrogen mineral alone under different numbers of equal portions of it (2, 3 and 4 splits).

Results illustrated significant decreases depend on Rizobacterien as mean source of nitrogen from grain sorghum plant for growth characters i.e., plant height, number of leaves /plant, leaf area index (L.A.I) and number of days to 50% flowering during the two seasons compared with the general mean of the other nitrogen applications.

The same trends of results were found in yield and yield components studied characters as well as return L.E/fed. and total cost L.E/fed. Ammonium nitrate as nitrogen source get the significant best results for growth, yield and yield components traits followed by urea.

The obtained results indicated that, all growth, yield and yield components traits significantly increased by adding 100 kg N/fed. from mineral source as compared by 75 kg/fed. (mineral) + Rizobacterien during the two seasons.

The number of equal split doses of mineral nitrogen had no significant effect on the most characters studied. All studied interaction had insignificant effect on growth, yield and yield components during the two seasons with the exception of 1000 grain weight.

The highest gross profit of sorghum was obtained from the application at the rate of 100 kg (mineral) N/fed. as ammonium nitrate with two equal doses of nitrogen fertilizer. While, the lowest of gross profit of sorghum was obtained by using 75 kg N/fed. + Risobacterien (usual rate of bio-fertilizer $\frac{1}{2}$ kg Risobacterien/fed.) as ammonium sulphate under the condition of four equal split doses of nitrogen fertilizer during the two seasons.

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