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Evaluation of Response Sesame Water Productivity to Modern Chemigation Systems in New Reclaimed Lands

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Abstract : Field trials were conducted in successive seasons in the agricultural sectors of the splinter farm research and production center for the National Research Bustan area, in the province of Nubaria lake. Egypt. Experiments investigated the evaluation of some factors affecting the chemical injectors performance under Egyptian conditions and the effect of different drip irrigation systems: (SUR) surface drip irrigation and (SUB) sub-surface drip irrigation irrigation under different ETc levels 100, 80; 60% of (IR1, IR2; IR3), and Fertilization treatments:(traditional method of fertilization; fertigation technique) on sesame yield, water productivity (WP) and the (NUE) nitrogen use efficiency. The obtained results could be abstracted as follows: Fertilizer injection rate increased with increasing the pressure difference percentage at different operating pressures, Fertilizer injection rate by using a venturi effecting to the distance of the venturi from the suction level and also, the fertilizer tank position relation to the injector. The highest seed yield (kg/fed.) and NUE (kg/ kg nitrogen) value were 485 kg/fed. and 5.105kg/ kg N, respectively observed under subsurface drip irrigating using 80% of the ETc and fertigation technique. Meanwhile, the lowest value was 152kg/fed. and 1.6kg/kgN, respectively obtained with 60% of the irrigation water requirements and traditional method under Surface drip irrigation system. The highest and the lowest WP value were 0.292 kg/m^3 and 0.109kg/m^3, respectively. observed under subsurface drip irrigating using 60% of the ETc and fertigation technique and 80% of the irrigation water requirements and traditional method under Surface drip irrigation system.

Keywords: Sesame, deficit irrigation, fertigation, seed yield, water productivity, Sandy soil.

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