

FODDER QUALITY AND QUANTITY OF SOME MIXTURE CROPS UNDER DROUGHT CONDITIONS

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ABSTRACT

Three field trials were performed at the Agricultural and Veterinary Experimental Station, King Faisal University during the winter season 2000/2001 and repeated in the second season of 2001/2002. The aim was to evaluate forage quantity and quality in the monoculture and mixtures of Egyptian clover + ryegrass, Egyptian clover + barley and Egyptian clover + oat with different seeding rates under different irrigation regimes and nitrogen fertilizer levels. Each one of the three aforementioned mixture was performed in a separate experiment. A split split-plot design laid out in randomized complete block with four replicates was used. The main plots were assigned to three irrigation intervals, i.e. irrigation every 7, 14 and 21 days with the volumes of water namely; 500, 650 and 800 m³/ha/irrigation, consuming an irrigation water of 13000, 9200 and 7600 m³/ha/season, respectively. while the sub plots were devoted to four nitrogen levels (45, 90, 135 and 180 kg N/ha). The sub sub plots were assigned to the following seeding rates of berseem and rye grass or barley or oats in the mixture:

- 1- Egyptian clover (100%).
- 2- Ryegrass or barley or oats (100%).
- 3- 75% clover + 25% ryegrass or barley or oats
- 4- 50% clover + 50% ryegrass or barley or oats.
- 5- 25% clover + 75% ryegrass or barley or oats.

Results indicated that the highest fresh and dry forage yields/ha/season were obtained with the irrigation at 7 days intervals and this was obvious for all three mixtures. Increasing nitrogen levels up to the highest rates (135-180 kg N/ha) was associated with marked increases in fresh and dry yields as well as dry matter contents in all mixture trials. In the experiment of Egyptian clover and ryegrass mixture, the highest fresh and dry forage yields/ha/season was obtained from the mixtures of 75 or 50 % Egyptian clover with 25 or 50 % rye-grass. Meanwhile, in the experiments of Egyptian clover and barley or oat mixtures, the monoculture of Egyptian clover produced the highest fresh yield/ha/season. However, the mixtures of 75 % Egyptian clover and 25 % rye-grass, barley or oat were the suitable and might be the recommended mixing rate for getting the highest fodder yield with best quality of mixtures. The interaction between irrigation intervals X seeding rates of mixtures and irrigation intervals X nitrogen levels and nitrogen levels X seeding rates had marked effects on forage fresh and dry yields. In general, it can recommended with mixing Egyptian clover at the rate of 75 % seeds with ryegrass, barley or oat with seeding rate with the rate of 25 % seeds in case of irrigating at the regular interval of 7 days and fertilizing with 135 – 180 kg N/ha for raising mixture forage quantity and quality under Al-Hassa conditions.