

EFFECT OF CUTTING STAGES, NITROGEN
FERTILIZERS AND SEEDING RATES ON
YIELD AND QUALITY OF FORAGE SORGHUM
HYBRID [Sorghum bicolor(L.)Moench]

A THESIS

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BY

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SUMMARY

Field experiment was conducted in the farm of Agriculture College, University of Salahaddin, Erbil, Khabat in the autumn seasons of 1984 and 1985, to study the effect of three cutting stages (vegetative stage, 50% flowering and soft dough stages), three levels of nitrogen fertilizer (Zero, 80 and 160 KgN/ha) and two seeding rates (8 and 16 Kg seeds/ha) on some growth characteristics, yield and chemical composition and hydrocyanic acid content in the leaves of hybrid sorghum var. NK 2244.

The experiment was designed according to Randomized Complete Block Design with four replicates each of 18 treatments. The data obtained was statistically analysed to each season separately and the comparisons between the treatment using Duncan Multiple Range Test at (5 %) level of significant. The results can be summarized as follows :

1. Plant height, stem diameter, dry weight/plant, green and dry forage yield, dry-matter percentage, proportion of inflorescence, yield of crude protein and crude fiber and the percentage of non structural carbohydrate were increased when the crop was cut at the soft dough stage comparing with vegetative and 50% flowering stages in both seasons, while cutting the crop at the 50% flowering stage gave higher number of green leaves/plant and higher percentage of crude fiber than other cutting stages. Cutting the crop at the vegetative stage gave high-

est proportion of leaf and highest contents at crude protein and ash in both seasons.

2. Sampling date of the 50 days from planting gave lower concentration of HCN in leaves compared with 20, 30, 40 days from planting in both seasons.
3. The plants of the regrowth after vegetative stage gave taller and thicker plants, higher number of green leaves/plant, higher green and dry forage and dry-matter percentage in both seasons than the other cutting stages.
4. Increasing nitrogen level from zero or 80 to 160 KgN/ha increased plant height, stem diameter, number of leaves/plant, dry wt/plant, green and dry forage and percentage of crude protein and yield crude protein and crude fiber in both seasons. Number of tiller/plant, proportion of leaf and ash content were not affected by N applications, while the percentage of crude fiber and non structural carbohydrates were decreased by N application.
5. In the first season the application of 160 KgN/ha increased the HCN content significantly compared with zero and 80 KgN/ha. While in the second season there were no significant differences between 80 and 160 KgN/ha but both levels increased the HCN content compared with zero N.
6. The application of 160 KgN/ha gave higher green forage yield of the regrowth crop compared with zero and 80 KgN/ha in the first season.
7. Using the seeding rate of 16 Kg/ha gave higher green and

dry forage yield and higher percentage and yield of crude fiber in both seasons, but in the first season gave higher dry-matter content, higher proportion of leaf, stem and inflorescence, higher yield of protein and higher percentage of non structural carbohydrates. While the seed rate of 8Kg/ha gave taller and thicker plants, higher number of green leaves/plant, higher dry wt/plant, higher percentage of crude protein and higher concentration of HCN than 16 Kg/ha seeding rate.

8. The seeding rate 16 Kg/ha gave taller plants and higher green and dry forage yield of the regrowth crop than 8Kg/ha seeding rate.

9. The effect of the interaction between cutting stages and the levels of nitrogen fertilizer was significant on the following characteristics:-

Plant height, stem diameter, number of green leaves/plant, dry wt / plant, green and dry forage yield, dry-matter percentage, proportion of leaf, stem and inflorescence, percentage and yield of crude protein and crude fiber, percentage of non structural carbohydrate and ash and, concentration of HCN in leaves in both seasons.

10. The effect of the interaction between cutting stages and seeding rates was significant on the following characteristics:-

Plant height, stem diameter, number of green leaves/plant, dry wt/plant, green and dry forage yield, dry-matter percentage, proportion of leaf, stem and inflorescence, per-

centage and yield of crude protein and crude fiber, percentage of non structural carbohydrate and ash and concentration of HCN in leaves in both seasons.

11. The effect of the interaction between the levels of nitrogen fertilizer and seeding rates was significant on the following characteristics:-

Plant height, stem diameter, number of green leaves/plant, dry wt/plant, green and dry forage yield, dry-matter percentage, proportion of leaf, stem and inflorescence, percentage and yield of crude protein and crude fiber, percentage of non structural carbohydrate and ash and concentration of HCN in leaves in both seasons.

12. The effect of the interaction between cutting stages, the levels of nitrogen fertilizer and seeding rates was significant on the dry wt/plant, green forage yield, proportion of leaf, stem and inflorescence in the first season.