Alfalfa yield, forage quality, and maturation in a black walnut alley-cropping practice

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INTRODUCTION

Alfalfa (Medicago sativa L.) is noted for its superior forage quality and yield potential and can be readily sold as a hay crop. There is interest in growing alfalfa in an alley-cropping practice; however, little information is available on how alfalfa responds to environments that exist under trees.

Our objective was to compare alfalfa grown in a black walnut (Juglans nigra L.) alley-cropping practice to alfalfa grown in the open for forage yield, quality, and maturity.

RESULTS

Forage Yield:
Yield harvested from the centers of wide alleys was similar to alfalfa in the open plots in every harvest but the final harvest of 2004 (Tables 1 and 2). Yields from both driplines and the center of the narrow alleys were always less than in the open.

Forage Maturity:
Alfalfa harvested from the center of the wide alleys had similar maturity as in the open plots (Tables 1 and 2).

Alfalfa from both driplines and the center of the narrow alleys tended to be less mature than alfalfa growing in open plots; however, the differences were not always significant.

Forage Quality:
Alfalfa harvested from the center of the wide alleys had similar CP concentration as in the open plots (Tables 3 and 4).

Alfalfa harvested from both driplines and the center of the narrow alleys had similar CP concentration as alfalfa in the open but in all but three harvests. Differences among the three harvests were not consistent (Tables 3 and 4).

Alfalfa in the centers of the wide alleys had similar ADF and NDF concentrations as in the open plots at every harvest (Tables 3 and 4).

Alfalfa from the dripline of both the wide and narrow alleys and center of the narrow alleys had similar or less ADF and NDF concentration than in the open.

CONCLUSIONS

Alfalfa grown between rows of 20-year-old black walnut trees planted at 24.4-m spacing had similar yield, maturity, and forage quality to alfalfa grown in the open. Alfalfa yield was reduced and maturity delayed when grown near the dripline or in alleys with 12.0-m tree spacing. Few differences in forage quality were found and these were not consistent.

Our data indicate that alfalfa may have potential for use as an alley crop with black walnut, but wide tree spacings are needed to assure good yields.

REFERENCE


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