Seepage vs. Center Pivot for Snap Bean Production in Florida

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INTRODUCTION

- Seepage irrigation is the predominant irrigation for snap bean production in Florida, but poses problems for water conservation and quality.
- Overhead irrigation has significantly greater water-use efficiency than seepage irrigation, and can be used in snap bean production.
- Objective: to explore the feasibility of converting seepage to central pivot irrigation for commercial snap bean production in southwest Florida.

RESULTS

Water Level

- Seepage irrigation was 0.1-0.2 m higher than center pivot irrigation in water table.

Soil Moisture

- Soil moisture contents in the root-zone (top 12 inches) were greater for center pivot irrigation than for seepage irrigation.
- No significant differences in NO₃-N concentrations in the surface soil were observed between the seepage and center pivot plots at harvest (P>0.05).

N Level in Soil at Harvest

- No significant differences in NO₃-N concentrations in the surface soil were observed between the seepage and center pivot plots at harvest (P>0.05).

Snap Bean Yield & Quality

- Seepage irrigation showed significantly greater yield and Length/Diameter ratio (P<0.05).

CONCLUSIONS

- Center pivot irrigation systems can save over 50% of water compared to seepage irrigation.
- A more suitable fertilization program is required.

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