INTRODUCTION

Over the past three years, a precision agriculture has been conducted in central Kentucky in which corn seeding rates have been adjusted according to soil depth. Although there are a few similar studies reported in the literature (e.g., Denholm, et al., 1993; Sadler et al., 1995), none of those reported varied seed population according to a soil property such as topsoil thickness. Reichenberger (1996a, 1996b) described studies in Indiana where yields increased 0.125 to 0.878 Mg/ha as a result of varying the seeding rate.

In 1993, a grower in Hardin Co., KY, Kevin Clark, was interested in our evaluating the potential of a variable-rate planter drive for a corn planter. His perception was that the thin soils were not producing as much when compared with deeper soils. The objectives of this project were as follows: 1) to evaluate the cost effectiveness of varying corn population according to soil depth; 2) to determine whether total yields are higher where populations are varied across the field in contrast to a constant population.

METHODS AND MATERIALS

Four fields were chosen as sites for the variable seeding rate experiment; three of which were in Hardin Co., KY on a farm operated by Kevin Clark. The remaining field was located on the Woodford Research Farm, operated by the University of Kentucky. The Hardin Co. fields are similar and consisted of three soil series: Crider, fine-silty, mixed, thermic Rhodic Paleudalfs; Pembroke, fine-silty, mixed, mesic Mollic Paleudalfs; and Huntington, fine-silty mixed, mesic Fluventic Hapludolls. The Woodford Co. site was mapped as Maury, fine, mixed

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