Crop rotations and their benefits to agriculture have long been known. Like many other topics in agriculture, the role of crop rotations is subject to many truisms seemingly substantiated by a great many observations over a long time. The scientific and popular literature provide a number of explanations for the general observation that crops grown in rotation often yield more than when grown in monoculture (Arnon, 1972; Curl, 1963; Mannering and Griffin, 1981). Certain crops in rotation, however, can be detrimental to succeeding crops through increased pest problems, allelopathy, or high-consumptive water requirements. Although the use of crop rotations declined with the introduction of fertilizer and pest and disease control chemicals, problems do exist with monoculture (USDA, 1973). In addition, there is renewed interest in rotations in the 1980s associated with the following developments.

1. In today's era of decreased commodity prices, renewed interests in rotations has evolved as a means of increasing farm profitability, in part through diversification.

2. Yields of crops grown using conservation tillage systems, particularly no-till, may improve when crops are grown in rotation rather than in monoculture (Mannering and Griffin, 1981; Triplett, 1986). Therefore, increased adoption of conservation tillage systems should increase interest in crop rotations.

3. Concerns over agriculture's impact on environmental quality, particularly surface and groundwater quality, continue to mount. Systems that reduce chemical inputs in agricultural production (low input or "sustainable" agriculture) are of growing interest to agronomists, soil scientists, and ecologists. Rotations play an important role in this area as discussed by Schepers (1988) and Radke et al. (1988) in this publication.

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