Tillage Rotation: Chisel Plow Benefits in the Corn-Soybean-Wheat/Doublecrop Soybean Rotation. (S06-grove122331-Oral)

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Abstract:

Some growers believe that occasional tillage in otherwise continuous no-tillage soil management systems is beneficial to crop productivity. The impact of chisel plowing once every three years was evaluated for each year in the corn-soybean-wheat/doublecrop soybean (4 crops/3 years) rotation. Rotation components were arranged in four randomized blocks with tillage treatments as main plots and fertilizer nitrogen rates for corn (0, 67, 135 and 202 kg N/ha) or wheat (0, 45, 90 and 135 kg N/ha) as subplots. Yields of all crops, as well as non-legume N nutritional responses, were followed from 1999 until 2002. Corn and soybean yield failure, due to severe drought, occurred in both 1999 and 2002. Chisel tillage was generally not beneficial to corn or soybean yield in 2000 and 2001. Chisel tillage was beneficial to wheat in 2001 and 2002, but not 1999 and 2000. Tillage often reduced the optimal fertilizer N rate for both corn and wheat, but was more influential on the optimal rate for wheat than for corn. First and second year no-tillage soil management were little different from one another for all crops.

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