

COTTON ROTATIONS IN NEW MEXICO

Robert Flynn

Extension Plant Sciences Department

New Mexico State University

Artesia, NM

Abstract

Declining water supplies and changing markets has forced a closer look at how rotations benefit cotton production in New Mexico. Cotton has decreased in acreage from 24% in 1980 to only 10% of all irrigated acreage in 2000. Rotations should conserve water and produce a profit while reducing pest pressure. Rotations should also reduce soil erosion caused by wind, a very common phenomenon in New Mexico. A farm in eastern New Mexico was selected to evaluate using yield records from 1994 - 2002. Benefit to rotation was calculated as the difference from one cotton year to the next as well as the difference from the farm average. Rotations in place at this farm included cotton to cotton, peanuts to cotton, and chile to cotton. The estimated water use for cotton over a two year cycle was 36-54 inches, a peanut to cotton water use was 40 to 50 inches, and chile to cotton 48 to 57 inches. The irrigation method for all rotations was center pivot. Under limited water conditions half of the pivot is planted to cotton while the other half is planted to a crop requiring more water (chile or peanuts). Wind erosion control is accomplished by planting a winter annual cereal between the cropped rows and then killing the crop with a herbicide prior to cotton emergence. On this farm there were 56 occurrences of cotton to cotton; 61 occurrences of peanuts to cotton; and 18 occurrences of chile to cotton. The maximum years of continuous cotton was three years. Peanuts were grown for a maximum of two years prior to cotton and chile was always rotated to another crop after one year of production. Beneficial yield increases were seen in 68% of the fields where cotton followed cotton while 63% of the cotton crops benefitted following peanuts. Cotton following chile responded positively eighty percent of the time. The average yield increase for cotton following cotton was 124 pounds per acre, cotton following peanuts increased 141 pounds per acre, and cotton following chile increased 219 pounds per acre. The maximum yield increase was 571 pounds per acre in continuous cotton, 800 pounds per acre when following peanuts, and 585 pounds per acre following chile. The most common rotation was peanut - cotton - cotton.