Response of Grain Crops to Previous Rotations Associated with Peanut-Based Cropping Systems in North Carolina.

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Price of grain crops increased significantly during the past 5 to 7 years, and during that time period until 2011, price of grain crops was often more attractive than the price of peanut, especially given risk associated with economic investment in production of these crops. This scenario led to reductions in peanut acreage in many counties in North Carolina and a transition to grain crops. Cotton price during this time period was also relatively low compared with price of grains. For example, in 2004 approximately 12,000 acres of peanut were planted in Edgecombe County compared with a low of 3,500 acres during 2009 and 5,500 acres during 2011. Corn, soybean, and wheat acreage increased in some years as a replacement for lost peanut acreage. A series of experiments was conducted in North Carolina during 1997-2006 to compare crop yield in peanut-based rotation systems that included corn, cotton, soybean, and tobacco depending on location. Peanut was included in all plots during 2006 following various cycles of peanut and other crops. During 2007-2011, the same grain crop was planted in all plots each year and included corn or wheat/soybean double crop to simulate a transition out of peanut-based cropping systems into grain production systems. At one location in Bertie County (Peanut Belt Research Station near Lewiston-Woodville), corn yield (2007, 2009, and 2011) and wheat/soybean yield (2008) were not affected by previous rotation while during 2010 yield of both wheat and soybean was affected by previous rotation. Peanut yield during 2006, prior to planting grain crops, ranged from 2600 lbs/acre to 5900 lbs/acre and reflected expected response based on the number of years between peanut plantings prior to 2006. At a second location in Edgecombe County (Upper Coastal Plain Research Station near Tarboro), differences in corn, soybean, and wheat yield due to previous peanut-based rotation were noted in 1 of 3, 0 of 2, and 2 of 2 years, respectively. At this location during 2006, peanut yield ranged from 2400 to 3770 lbs/acre based on previous rotation. At a third location in Columbus County (Border Belt Tobacco Research Station near Whiteville), yield of corn (2007 and 2009) and tobacco (2008) did not differ following previous rotations of peanut-based cropping systems.