

Potential for Agronomic Crops in a Double Cropping System with Wheat (*Triticum aestivum* L.) in North Carolina.

A.T. HARE*, D.L. JORDAN, K.L. EDMISTEN, R. LEON, and A. POST, Department of Crop and Soil Science, North Carolina State University, Raleigh, NC 26795.

Wheat (*Triticum aestivum* L.) and soybean [*Glycine max* (L.) Merr.] are generally double-cropped in North Carolina. However, if other commodity prices and projected net returns are higher than soybean, growers might consider a non-traditional double-crop system. Research was conducted in North Carolina from 2013-2017 at Lewiston-Woodville to determine yield potential of corn (*Zea mays* L.), cotton (*Gossypium hirsutum* L.), grain sorghum [*Sorghum bicolor* (L.) Moench], peanut (*Arachis hypogaea* L.), and soybean planted in reduced tillage systems within the recommended planting window for full-season production versus planting these crops following wheat harvest. Yield of corn, cotton, grain sorghum, peanut, and soybean in full-season production exceeded that of double-cropping with wheat in 5, 5, 2, 4, and 5 years out of 5 years of the study, respectively. Corn, cotton, and peanut yields varied across years and planting dates. Yield of mid-April and Mid-May planted corn exceeded yield of mid-June planted corn in most instances. Yield of cotton and peanut planted in early May or late May exceeded yield of mid-June plantings of these crops in most years. Estimated economic returns were generated for five different pricing structures using crop and planting date combinations. The analyses used included combinations of the ten-year average (2008-2017) summer crop prices with the ten-year average wheat price, the ten-year average summer crop prices with the ten-year high wheat price, the ten-year high summer crop prices with the ten-year average wheat price, the ten-year high summer crop prices with the ten-year high wheat price, and the ten-year high wheat and average price of soybean versus the ten-year high summer crop and high wheat price. Regardless the pricing structure, grain sorghum consistently produced the lowest estimated economic returns when not influenced by a high wheat price. Double cropped wheat and peanut generated economic return similar to or greater than double-cropped wheat and soybean in most years and pricing structures. In most cases, double-cropping wheat with corn, cotton, or peanut was economically feasible when prices were set at \$0.32/kg, \$2.33/kg, and \$1.02/kg, respectively, compared to double-cropping wheat and soybean.