Surprising Results from a Cover Crop Trial with Peanut.

B.R. LASSITER*, G.G. WILKERSON, D.L. JORDAN, B.B. SHEW, and R.L. BRANDENBURG, North Carolina State University, Raleigh, NC 27695.

Experiments were conducted during 2005 and 2006 to determine the impact of planting peanut (*Arachis hypogaea* L.) cultivar VA 98R into desiccated cover crops of annual ryegrass (*Lolium multiflorum* Lam.), cereal rye (*Secale cereale* L.), oats (*Avena fatua* L.), triticale (*Triticale hexaploide* Lart.), wheat (*Triticum spp.*) or native vegetation. In these experiments, raised beds were prepared and planted to cover crops in the fall, and then strip tilled in the spring, prior to planting peanut. Glyphosate and paraquat were applied as a burndown treatment to the cover crops, prior to planting. The experimental design was a split plot with cover crops serving as the whole plot unit and weed/disease management combinations serving as sub-plot units. Herbicide regimes in 2005 were: 1) clethodim applied postemergence, 2) metolachlor applied preemergence followed by acifluorfen plus bentazon plus paraquat and clethodim applied postemergence [based on recommendations using the decision model HADSS (Herbicide Application Decision Support System)], and 3) diclosulam plus metolachlor applied preemergence followed by imazapic postemergence. In 2006, treatments included clethodim applied postemergence, 2) dimethenamid applied preemergence followed by bentazon plus paraquat (based on recommendations using HADSS), and 3) diclosulam plus dimethenamid applied preemergence followed by imazapic applied postemergence. Yellow nutsedge (*Cyperus esculentus* L.) and common ragweed (*Ambrosia artemisiifolia* L.) control late in the season and peanut pod yield did not differ among cover crop treatments regardless of herbicide program during 2005 or 2006. Disease management programs consisted of three early season applications of chlorothalonil or five fungicide sprays including the three chlorothalonil applications followed by application of pyraclostrobin and application of chlorothalonil. The combination of a chloroacetamide herbicide plus diclosulam followed by imazapic was more effective in controlling common ragweed (in 2006) and yellow nutsedge (in 2005 and 2006) than a chloroacetamide herbicide followed by herbicides based on HADSS. Common ragweed resistance to ALS (acetolactate synthase inhibiting)-herbicide was found in this field, and confirmed in the greenhouse using seed collected from plants that escaped the combination of a chloroacetamide herbicide, diclosulam, and imazapic. Applying chloroacetamide plus diclosulam followed by imazapic increased yield over the clethodim-only treatment (in 2005 and 2006) and the chloroacetamide herbicide followed by the HADSS recommendation (in 2006). Tomato spotted wilt incidence, early and late leaf spot control, and peanut pod yield did not differ when comparing among cover crops or disease management programs. Research in other states has demonstrated less tomato spotted wilt and foliar disease in reduced tillage systems compared with conventional tillage systems. Although a conventional tillage system was not included in this experiment, results from these experiments demonstrate that cover crops may not influence weed and disease control compared to native vegetation in absence of a cover crop. In these experiments the major winter annual weeds included horseweed [*Conyza canadensis* (L.)] Cronq.), henbit (*Lamium amplexicaule* L.), annual bluegrass (*Poa annua* L.), and Virginia winged rockcress (*Sibara virginica*). These data also suggest that annual ryegrass, cereal rye, oats, and triticale can serve as effective alternative cover crops to wheat with no adverse affect on peanut.