

Comparison of Pest Management Practices in Peanut Planted into a Cereal Rye Cover Crop

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Determining interactions among pest management practices, especially across disciplines, can be important in developing effective strategies for peanut production systems. Cereal rye has been shown to reduce weed populations in peanut and other crops and minimize injury from thrips. Leaf spot disease can also be lower when cereal rye is used as a cover crop compared with reduced tillage without a cover crop or conventional tillage. The effectiveness of a cereal rye cover crop on pests has not been determined in North Carolina. Research was conducted in 2022 to compare pest reaction, yield of the peanut cultivar Bailey II, and estimated financial return when peanut was grown with various levels of leaf spot, insect, and disease management in a desiccated cereal rye cover crop terminated in April or May. Treatments consisted of two levels of insect management (systemic insecticide for thrips control vs. systemic insecticide for thrips control and three applications of indoxacarb for suppression of spotted cucumber beetle, the adult stage of southern corn rootworm), two levels of leaf spot management (an inexpensive but risky three-spray fungicide program vs. an expensive three-spray program with fungicides containing a broader window of protection), and two levels of weed management (herbicides only vs. herbicides and hand-removal of escaped broadleaf weeds or clethodim to control escaped grass weeds).

Peanut leaf spot incidence and defoliation, southern corn rootworm pod damage, peanut wilting, peanut yield, and estimated net return on investment was affected by rye cover crop termination date, insecticide use, weed management measures, and fungicide use. Peanut plants wilted less in August and September when the cover crop was terminated in May compared with termination in April within two weeks prior to planting. At the location with the coarser-textured soil, termination in May had a lower leaf spot incidence and late season defoliation than termination in April. At this location, the less expensive fungicide program offered better protection from leaf spot incidence throughout the season and less defoliation by leaf spot in the later part of the season compared with the more expensive fungicide program. Three applications of indoxacarb and rye termination date had no effect on the damage from southern corn rootworm or peanut yield. Yield was lower when peanut was planted into rye that was terminated May compared with yield when rye was terminated in April, possibly due to greater early season interference of rye with peanut. Generally, there was no financial return on investment or a loss on investment for the three applications of indoxacarb or the additional weed control (hand weeding or clethodim application). There was a positive financial return when rye was terminated in April compared with termination in May, most likely due to differences in peanut yield due to rye termination date. Peanut yield and financial return were similar for the inexpensive fungicide program and the more expensive fungicide program.