

Efficacy and Profitability of Nematicide, Insecticide, and Fungicide Chemistries and Pre-Mixes for Pest Management in Peanut

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Peanuts are impacted by a variety of pests including nematodes, insects, and fungal pathogens; effective management of these pests is critical for maximizing yields. Several in-furrow pesticides with activity against different combinations of pests are available, and these products are highly variable in cost. Thus, the cost-effectiveness of a particular pesticide is likely to be dependent on the level of pest pressure in a particular field. The objective of this study was to evaluate the efficacy and yield benefits of pesticide products containing fluopyram (a nematicide with some fungicidal activity), imidacloprid (an insecticide), prothioconazole (a fungicide), and aldicarb (a nematicide/insecticide). The experiment was conducted in southeastern Virginia over two years (2016-2017) in six different fields varying in pest pressure. Tested products included Admire Pro (imidacloprid), Velum Total (imidacloprid + fluopyram), Propulse (fluopyram + prothioconazole), and Proline (prothioconazole). In the second year of the study, an AgLogic (aldicarb) treatment was included. All products were applied in-furrow at planting, and broadcast treatments of Proline and Propulse at pegging were also included. Treatments were applied in a randomized complete block design with four to six replicates. Thrips numbers and damage, disease incidence and severity, and soil populations of plant parasitic nematodes were evaluated throughout the growing season. Following harvest, peanut yield and quality were determined. Thrips pressure was moderate to high, and treatments including imidacloprid (Admire Pro and Velum Total) or aldicarb (AgLogic) reduced thrips numbers and damage in all experiments. One field in 2016 had low numbers of crop parasitic nematodes, but the remaining five fields had moderate to high levels of root-knot, ring, and/or sting nematode. However, there were no detectable differences in nematode populations among treatments in any of the experiments. Sclerotinia blight and southern stem rot were observed late in the season in both years, and despite the application of a leaf spot fungicide program to all plots, there were outbreaks of late leaf spot in two of the fields in 2017. Soilborne disease incidence did not vary among treatments, but treatments including fluopyram and/or prothioconazole had reduced leaf spot severity. Though significant differences in yield among treatments were only detected in 2016, in-furrow treatments of Velum Total followed by a pegging application of Propulse resulted in the most consistently high yield response across locations with moderate to high nematode pressure. In the field with low nematode pressure, the Proline in-furrow treatment resulted in the highest yield. Treatments including a fungicide (prothioconazole and/or fluopyram) resulted in higher yields compared to treatments without a fungicide (Admire Pro and AgLogic) indicating fungal diseases were limiting yields in all experiments. Treatments had no effect on quality parameters. When considering cost of the pesticides, Velum Total in furrow without a pegging treatment provided the most consistent return on investment if a field had moderate to high nematode pressure. Results of this study demonstrate the benefits of insecticides, nematicides, and fungicides in peanut production, but results also indicate pest pressure must be considered to select the most cost-effective pesticide program.