

Comparison of Fluopyram and Aldicarb for Root-Knot Nematode and Disease Control along with Yield Response of Peanut, 2013 to 2020

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Except for 2019, the efficacy of fluopyram and aldicarb for control of the peanut root-knot nematode, non-target effects on leaf spot diseases and stem rot, along with the yield response was compared from 2013 to 2020 on an irrigated site with an established population of *Meloidogyne arenaria* Race 2 at the Wiregrass Research and Extension Center in Headland, AL. A factorial design arranged in a split-plot with year as the whole plot, and nematicide program as the split-plot treatment was used. Plots consisted of four 30-ft rows spaced 3-ft apart. Fluopyram at 18.5 fl oz/A was applied over the seed in the open seed furrow (IF) with a single drop nozzle as a standalone treatment or was followed by an at-pegging broadcast application of fluopyram + prothioconazole at 13 fl oz/A. Aldicarb at 7 lb/A was applied in-furrow. A no-nematicide control was included. At-plant and at-pegging treatments were watered in with 0.5 in. water delivered with a lateral irrigation system. The peanut root-knot susceptible cultivar 'Georgia-06G' was cropped behind one year of cotton (*Gossypium hirsutum* L.) in 2013, 2017, 2018, and 2020; one year of sunn hemp (*Crotalaria juncea* L.) in 2015; and peanut (*Arachis hypogaea* L.) in 2014 and 2016. Leaf spot defoliation, stem rot incidence, root-knot-related pod and root galling, final root-knot juvenile counts, and plant vigor were recorded. While similar vigor ratings were noted over the seven study years, greater ratings were recorded for all aldicarb and fluopyram programs compared with the no nematicide control. Significant year × nematicide treatment interactions for leaf spot defoliation and stem rot incidence indicated that the response of these variables to the nematicide inputs differed by study year. In 2016, 2017, and 2020, leaf spot defoliation was greater for aldicarb compared with fluopyram alone or in combination with fluopyram + prothioconazole at-peg program. Stem rot incidence was greater for aldicarb compared with fluopyram alone or with the fluopyram + prothioconazole at-peg program only in 2013. When compared with the no-nematicide control, pod and root galling was significantly reduced with aldicarb but not either of the fluopyram programs. Pod and root galling also differed by study year with 2016 and 2020 having the greatest and lowest damage ratings, respectively. While significant differences in final *M. arenaria* juvenile populations were noted between study years, similar populations were noted for all nematicide programs and the no-nematicide control. When compared with the no nematicide control, significant yield gains were obtained with aldicarb and fluopyram programs with fluopyram + prothioconazole producing greater yield than the aldicarb but not fluopyram alone. Yield also differed by study year with the peanut following peanut rotation in 2014 and 2016 having equally low mean yield.