VALUE OF NEONICOTINOIDS IN MID-SOUTH ROW CROP SYSTEMS

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Abstract

Neonicotinoid insecticides are under worldwide public scrutiny for their potential link to the decline of honey bee, *Apis mellifera* L., and other pollinator populations. Neonicotinoids are one of several effective seed treatment options for control of early season insect pests in cotton, *Gossypium hirsutum* L., production in the Mid-South. A meta-analysis was performed on 102 neonicotinoid insecticide seed treatment trials from Arkansas, Louisiana, Mississippi, and Tennessee to determine the value of neonicotinoid seed treatments in cotton production systems across the Mid-South region of the United States. The analysis compared neonicotinoid insecticide seed treatments with a fungicide to seed only treated with fungicide. When analyzed by state, cotton yields were significantly greater in all states when neonicotinoid seed treatments were used compared to fungicide only treatments. Cotton treated with neonicotinoid treatments yielded 86.0 kg ha^{-1}, 149.0 kg ha^{-1}, 117.0 kg ha^{-1}, and 140.0 kg ha^{-1}, higher than fungicide only treatments for Arkansas, Louisiana, Mississippi, and Tennessee, respectively. Across all states, neonicotinoid seed treatments yielded 127.0 kg ha^{-1} compared to fungicide only treated seed. Net returns from neonicotinoid seed treatment usage were \$1,849 per ha^{-1} compared to \$1,686 per ha^{-1} for fungicide only treated seed across the Mid-South. Economic returns for neonicotinoid seed treatments were significantly greater than fungicide only treated seed in ten out of fifteen years. When analyzed by state economic returns for neonicotinoid seed treatments were significantly greater than fungicide only treated seed in Arkansas, Louisiana, Mississippi, and Tennessee, respectively.