Efficacy of different insect traps in sweetpotatoes

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Introduction

The sweetpotato is among the most important alternative vegetable crops in the Unites States with enormous economic potential for limited-resource farmers valued at $462 million annually (Anonymous 2014). Many soil and foliage feeding insects such as rootworms (*Diabrotica* spp.), several species of wireworms and flea beetles, sweetpotato weevil (*Cylas formicarius*), white grubs (*Phyllophaga* spp.) and whitefringed beetles (*Graphognathus* spp.) can cause economic damage to the crop (Reed et al. 2009, Williams 2005). Repeated applications of persistent insecticides with long residual activity are required in order to achieve desirable control. Effective monitoring of field populations of pest insects can reduce their unnecessary exposure to the chemical insecticides which have many adverse effects on the environment (Waliwitiya et al. 2005). More than 800 insect species have become resistant to synthetic insecticides (Philogene et al. 2005). Preliminary studies (Rashid et al. 2010) indicate that purple band traps are more attractive to several species of click beetles (adult wireworms) and 12-spotted cucumber beetles. The sampling study was repeated with modified size of purple band trap.

Objectives

- To compare the attractiveness of yellow and purple sticky traps to insects in sweetpotato fields

Materials and Methods

Commercially available Trece yellow sticky traps (28 x 23 cm) were compared with two sizes (28 x 23 cm and 76 x 25 cm) of purple band traps coated with Tangletrap insect trap coating (Gempler's, Madison, WI). Four replications of each trap (Fig. 1) were installed adjacent to sweetpotato fields in Calhoun, Sharkey, Washington and Bolivar Counties in the Mississippi. Traps were checked on 2, 17, 31 August and 14, 28 September. Insect samples were collected and identified.

Fig.1. Yellow & purple trap placements adjacent to sweetpotato fields

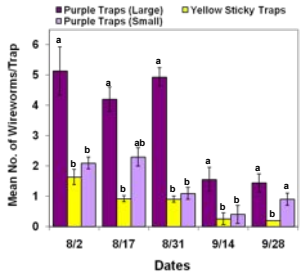

Fig. 2. Click beetles collected in traps

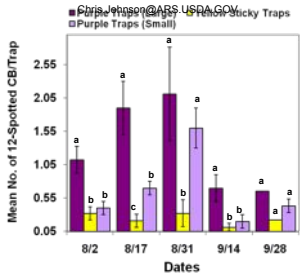

Fig. 3. Spotted cucumber beetles collected in traps

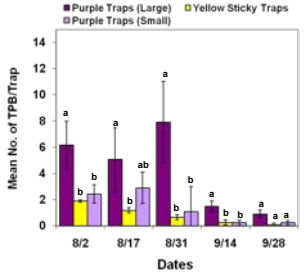

Fig. 4. *Lygus lineolaris* collected in traps

Results

- Significantly (*P*<0.001) higher numbers of click beetles (adult wireworms, mostly *Conoderus vespertinus*) were collected in large purple traps in August and mid September than in small purple or yellow sticky traps (Fig. 2). Small purple traps were comparable to large traps at least on two sampling dates (8/17 and 9/28) for attractiveness to the click beetles (Fig. 2).
- The numbers of *Diabrotica undecimpunctata* collected in both large and small purple sticky traps on 17 and 31 August were significantly (*P*<0.001) higher than those collected in yellow traps (Fig. 3).
- The large purple sticky traps were also significantly more attractive to *Lygus lineolaris throughout the season* than small purple or yellow sticky traps (Fig. 4).

Conclusions

- Monitoring field populations of adult click beetles and *D. undecimpunctata* can provide estimates of their larval population densities.
- Purple sticky traps may provide a viable monitoring tool for insect pests of sweetpotatoes in Mississippi.
- This is an ongoing study. The modification in trap size and design, and establishing a relationship between adult and larval field populations of sweetpotato insects will be useful in timely application of insecticides to reduce larval damage later in the growing season.

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