Pest Management in Organic Soybeans-Paul Hunter and Wayne Wangness Farms-2002

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Materials and Methods

Soybean variety FTE 8205 was planted at Hunter's on May 21, 2002 and at Wangness's on May 25 at 175,000 and 172,000 seeds/acre, respectively. Plots were established in a randomized block design on with 5 treatments and 4 replications on June 6. Plots measured 30 feet long and 4 rows wide (30 in. at Hunter's and 38 in. at Wangness's). Treatments included the following with application rate: Insecto™, 40 lb/acre; Surround™, 25 lb/ac; Neemix ™, 1 pt/ac; Garlic Gard™ plus fish oil, 1 gal. and an untreated Control.

Treatment application occurred after the first aphid observation at each site. Data was collected each week and treatments were applied every other week beginning July 2. Aphids were counted by choosing five random plants in the middle of the plots. Total plants were counted when plants were less than 1 ft. or when very few aphids were present (July 9 at Hunter, Aug. 13 at Wangness). When plants were taller, 3 leaves (trifoliates) were counted per plant. The number of aphids and beneficials including ladybeetles, lacewings, nabids, minute pirate bugs, and syrphids were recorded.

Insect cages were set up at Hunter's on June 27 and lady beetles and lacewings were introduced to monitor beneficial insect predation effects on aphid populations. Unfortunately the cages were short lived due to a severe thunderstorm and heavy winds.

Plots were harvested on Oct at Hunter's and on Oct 24 at Wangness's. Yield was recorded at both sites and percent staining was recorded at Wangness's.

Results

Aphids were first observed at Hunter's on July 2 and July 9 at Wangness's. The aphid infestation started earlier and heavier at Hunters, with an initial peak on July 16, wherein the population declined until July 30. By August 13, the aphid population peaked again, near the level of the initial population peak, 300 aphids/plant (Fig 1). At Wangness's the aphid population was still very low on July 30 but began to rise to a population peak of 800 aphids/plant on Aug. 13 (Fig. 2). Beneficial insect populations followed the aphid population at both sites (fig 3, 4).

***Paul Hunter site*:** On July 9, significantly higher aphid populations were found on plants in the Surround (177 ± 58 aphids/plant) and Control (153 ± 37 aphids/plot) plots (Fig. 1). Syrphid populations, on July 16, were significantly higher in Surround treated plots (6 ± 1.7 insects/plant) compared to all other treatments. On Aug. 6, aphid populations were significantly lowest in Neemix treated plots and highest in Surround treated plots. On

Aug. 13, Neemix treated plots had significantly lower population of aphids and untreated plots had significantly higher ladybeetle population compared to other treatments.
***Wayne Wangness site*:** On August 6, 13, and 20 Neemix treated plots had significantly lower populations of aphids compared to the Control, Insecto and Surround treated plots and on Aug. 20 Neemix treated plots were also significantly lower than Garlic Guard treated plots. On Aug. 20, Neemix treated plots had a lower beneficial insect population than Insecto and Surround treated plots.

Yield was not significantly different at Hunters, averaging 39.35 ± 0.63 bu/ac across all treatments (Fig. 5). Yield also was not significantly different among treatment at Wangess's (Fig 6) but Garlic Guard had significantly higher staining compared to all other treatments (Fig.7).

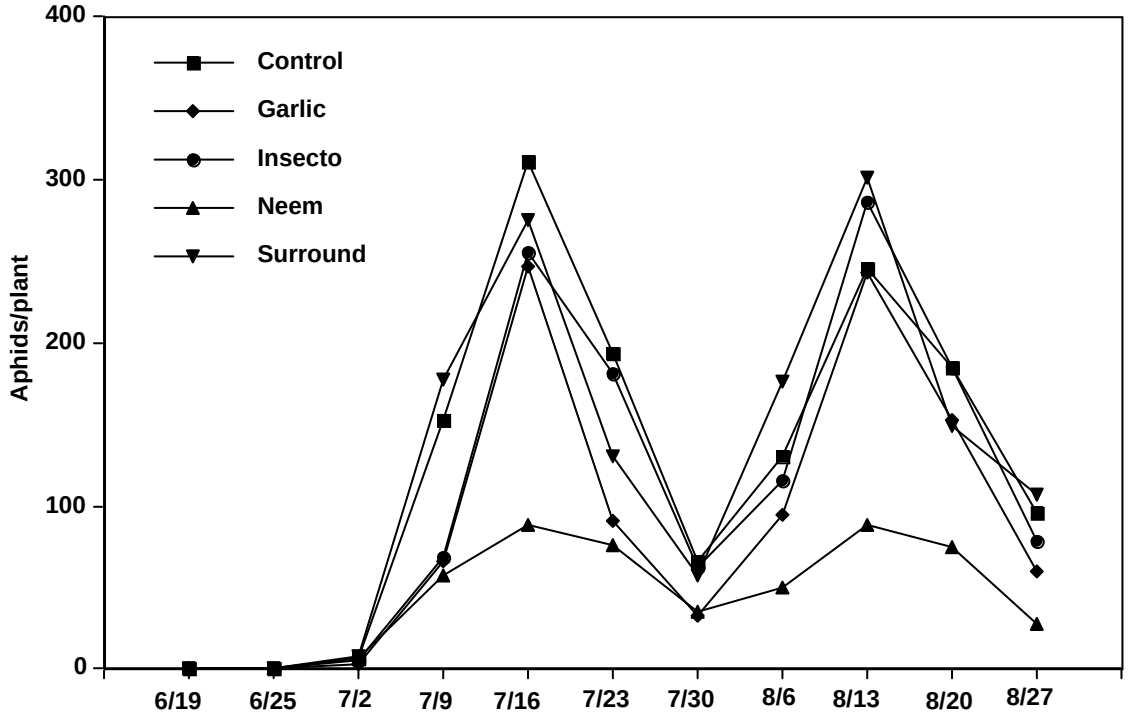

Figure 1. P. Hunter soybean aphid population, 2002.

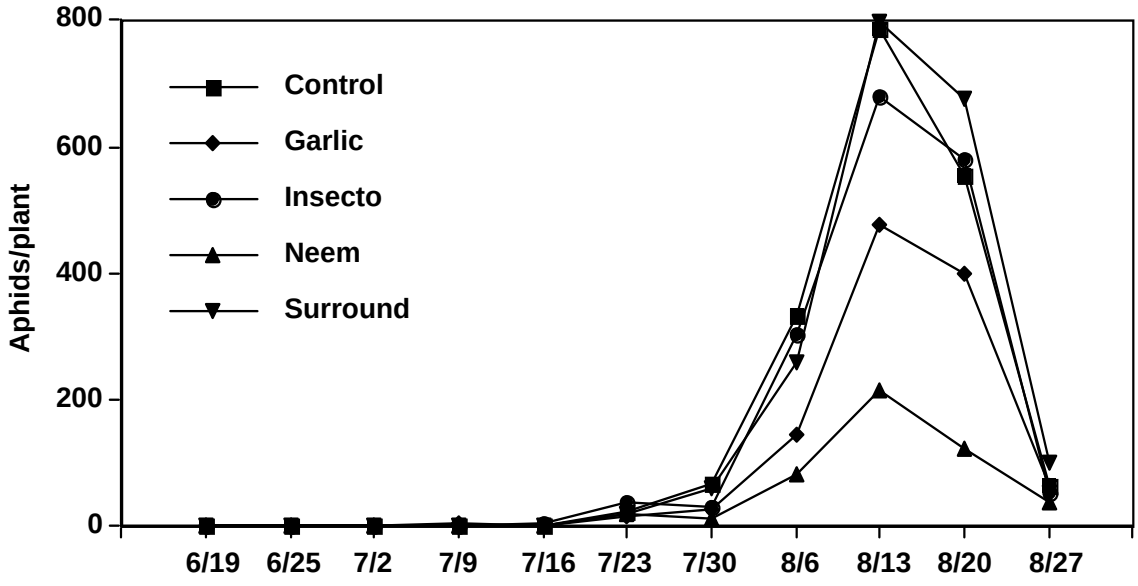

Figure 2. Wayne Wagness soybean aphid population, 2002.

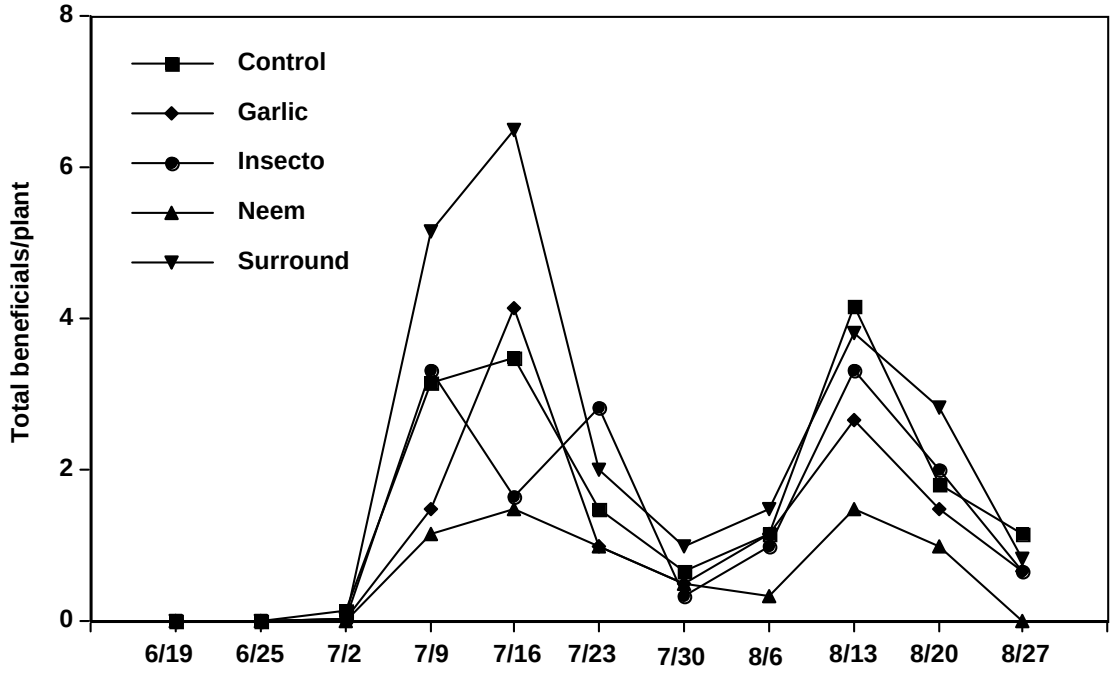

Figure 3. Paul Hunter, total beneficial insects population, 2002.

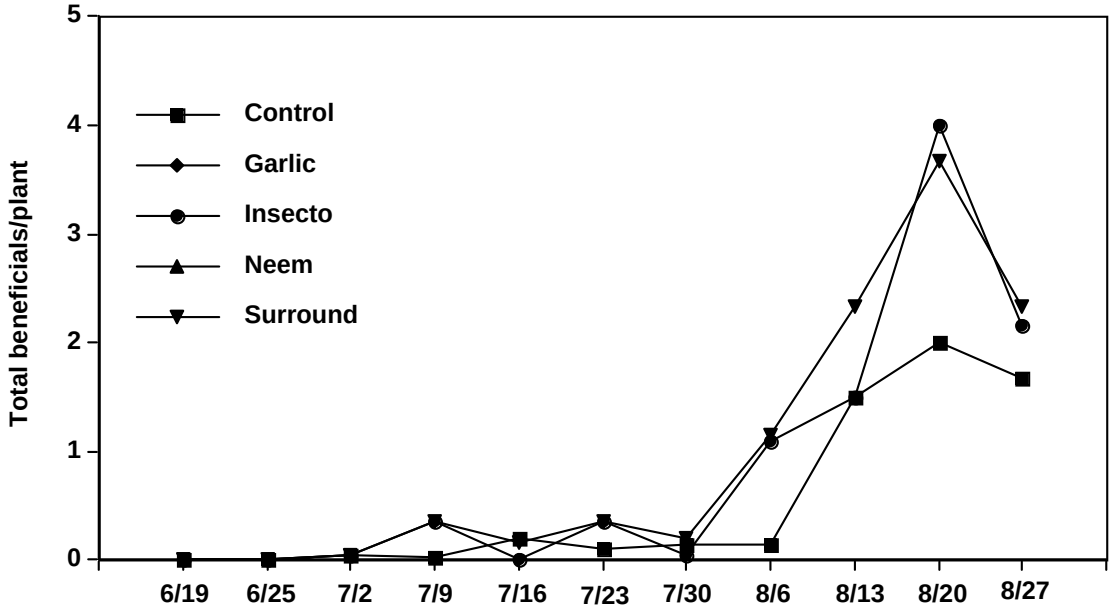

Figure 4. Wayne Wagness total beneficial insects population, 2002.

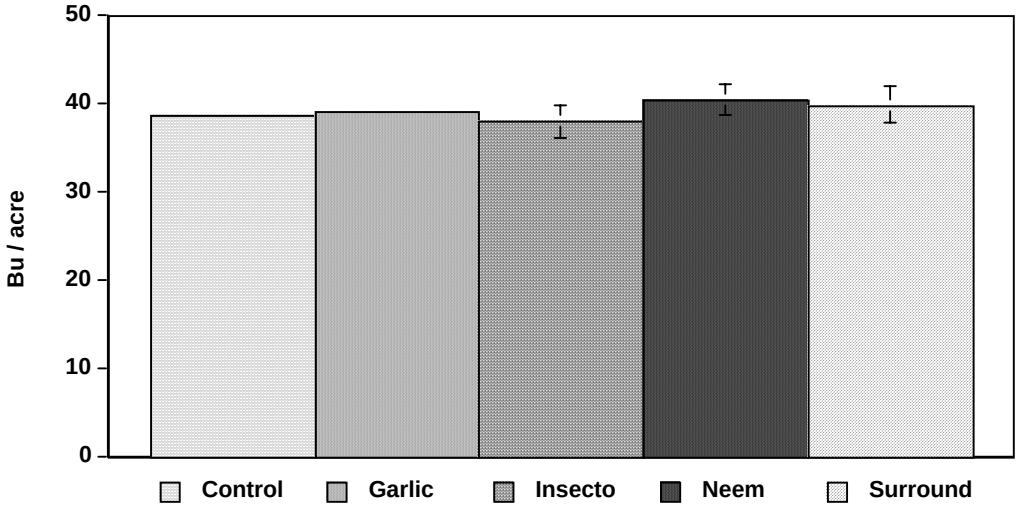

Figure 5. Paul Hunter soybean yield, 2002.

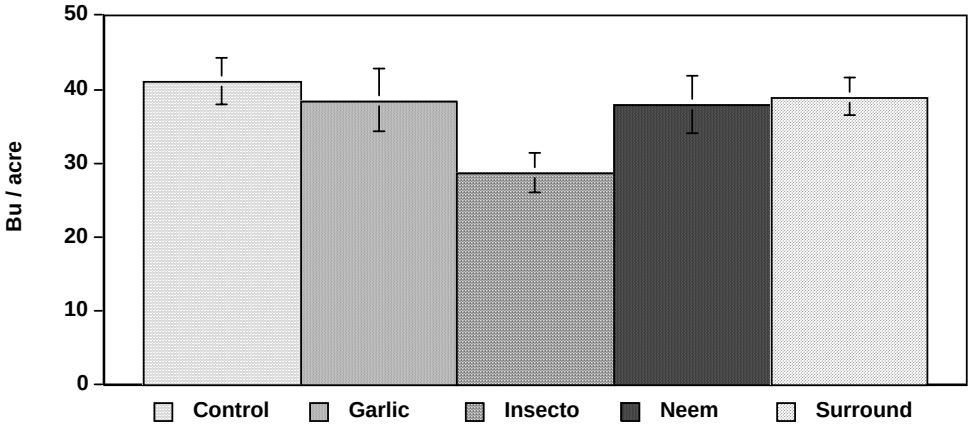

Figure 6. Wayne Wangness soybean yield, 2002.

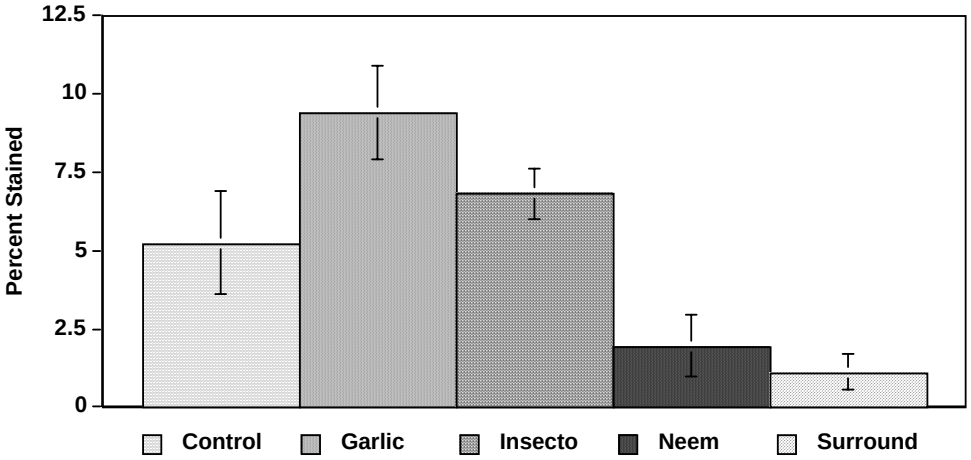

Figure 7. Wayne Wangness stained soybeans, 2002.