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Vegetable Program
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Organic Management of Wireworm in Sweet Potatoes, 2021

The experiment was conducted at the University of Massachusetts Research and Education Farm in Deerfield, MA in a field with soil classified as a Hadley silt loam. Soil was amended with 20, 75, and 430 lbs per acre of Ca, N, P, and K, respectively, in the forms of gypsum, bloodmeal, and potash. 'Beauregard' sweet potato slips were planted on June 7 into raised beds covered with black plastic, with 2 drip lines per bed. Beds were on 5-foot centers. Sweet potatoes were planted in 2 lines per bed. Plots were arranged in a randomized complete block design and were 16 feet long, consisting of 17 plants per plot, with 10 feet of planted buffer between plots in the bed. The trial was irrigated for 4 hours following planting.

Wireworm and damage on sweet potato

Treatments were as follows:

- Untreated control (water only)
- Brigade 2EC 9.6 fl oz/A (positive control, industry standard)
- Majestine 8 qt/A
- BoteGHA ES 8 oz/1000 row ft
- Seduce 1 lb/1000 sq ft

We made two applications of each treatment. The first application was made on June 15, excluding Brigade which was applied on June 16. The second application was made on July 6, excluding Seduce which was re-applied on July 7. Brigade, Majestine, and BoteGHA were applied by pouring 200 mL of product (diluted to the labeled per acre rate) into each opening in the black plastic around each slip. Seduce was applied by sprinkling granules onto the soil around each slip and incorporating by hand approximately ½-inch deep. The untreated control plots received 200 mL of water only per slip.

Sweet potatoes were harvested and evaluated on October 5. During harvest, white grubs and wireworms were both observed in the plots. We were not able to distinguish between grub and wireworm damage during rating, so all holes and tunneling were counted and rated together. All tubers from each plot were harvested, weighed, then washed. 20 average-sized tubers were selected from each plot for damage evaluation. For each tuber, the number of tunnels and percent of the tuber surface area with damage were recorded.

Average air temperatures (°F) were 71.4 from June 7-30, 69.5 in July, 73.1 in August, 64.7 in September, and 56.8 from October 1-5. Total rainfall (inches) was 2.18 from June 7-30, 10.81 in July, 4.06 in August, 4.16 in September, and 2.15 from October 1-5.

All data were analyzed using a general linear model and means were compared using Tukey's honestly significant difference test ($P = 0.05$) in SAS (SAS v.9.4, SAS Institute, Cary, NC).

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Seduce was the only treatment to significantly affect any metric measured—Seduce significantly reduced the percent feeding damage on tubers compared to the untreated control and Majestine, reducing percent feeding damage from 12.688% (UTC) and 12.438% (Majestine) to 6.50% (Seduce). The Seduce treatment had numerically but not significantly lower percent feeding damage compared to Brigade 2EC and BoteGHA ES. There were no significant differences between treatments for yield or average number of tunnels per tuber. Brigade 2EC, Majestine, and BoteGHA ES did not significantly reduce the numbers of tunnels per tuber or the percent tuber damage compared to the untreated control, nor did they significantly increase yield compared to the untreated control.

All treatments from one replication of this trial.

	Tunnels per tuber	% Damage	Yield
UTC	13.28	12.688 b	52.41
Brigade 2EC 9.6 fl oz/A	11.06	11.105 ab	54.46
Majestine 8 qt/A	13.71	12.438 b	55.2175
BoteGHA ES 8 oz/1000 row ft	9.65	10.813 ab	50.4025
Seduce 1 lb/1000 sq ft	9.125	6.500 a	51.8475
p-value	ns	0.0039	ns

Data were analyzed using PROC GLM and means were separated using Tukey's HSD. Numbers within each column followed by the same letter are not significantly different from each other.

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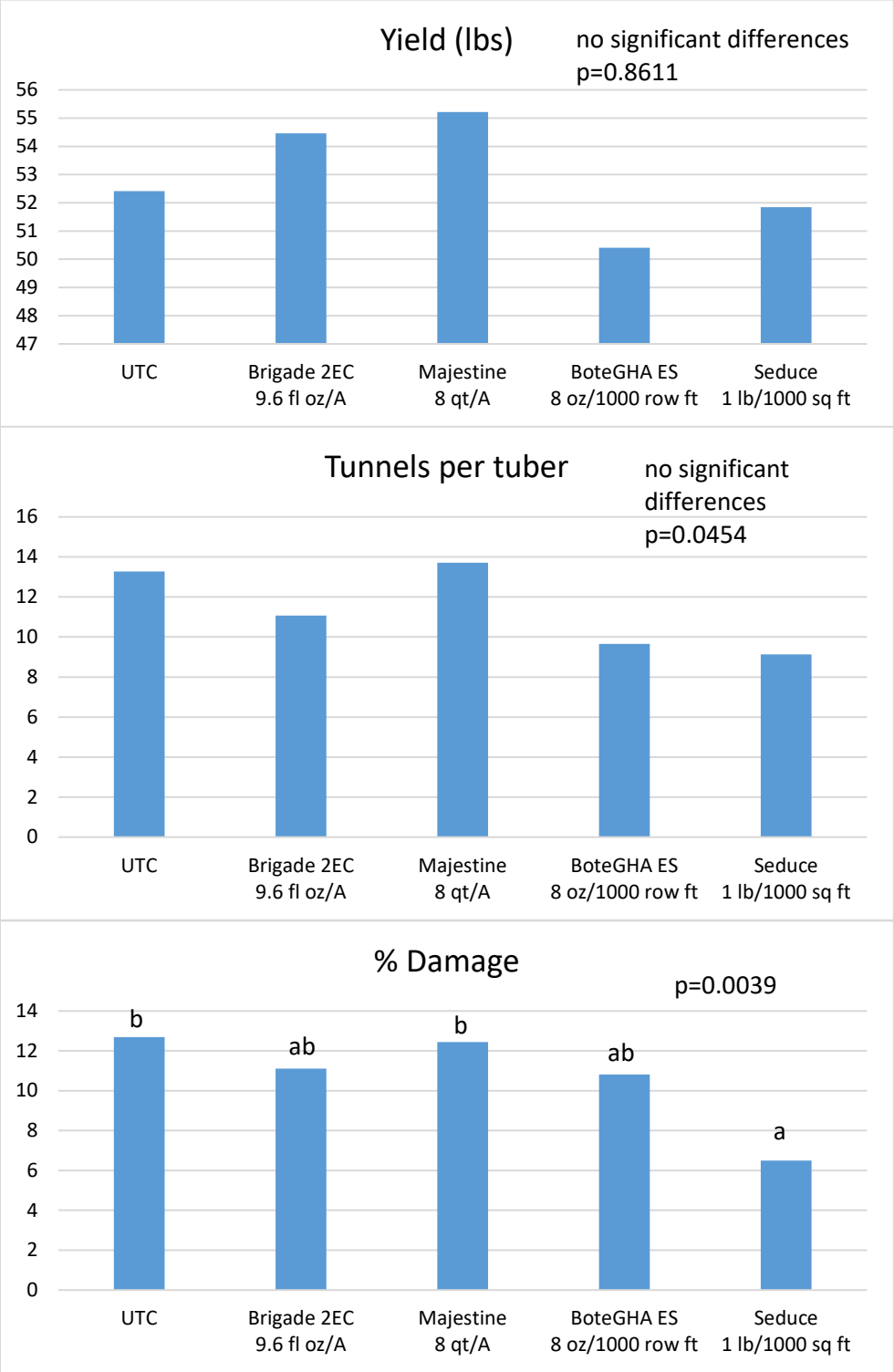

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