

COMPARISON OF VARIOUS PLASTIC MULCH FILM RESINS IN BELL PEPPER

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Introduction

Bell pepper has been traditionally produced on plastic mulch in Georgia for many years. However, the technologies in plastic mulch film production have changed substantially over that time and continue to develop. Ampacet Corporation produces many of the resins from which the mulches are made. Various plastics will differ in color, strength, longevity and many other characteristics. This test was conducted to evaluate the effects of some experimental plastic mulch films on the yield of bell pepper. The company also did additional testing on the plastics themselves from samples taken from the test at monthly intervals during the season.

Methods

Because the nature of installation of relatively small plots of plastic mulches using in combination with fumigation might pose a health risk to workers, the experimental area was fumigated in conventional fashion with methyl bromide (67% methyl bromide:33% chloropicrin) two weeks prior to laying the test plastics. The plastic installed at fumigation was removed before installing the experimental plastics.

Thirteen different plastic mulch films were installed on April 4, 2004. The plastic rolls were 48 inches wide and were installed using a Kennco Blue Boy Plastic Mulch Layer. Plots consisted of 30 row feet of mulch with each mulch replicated four times in the field. Beds were spaced 72 inches apart from center to center with a bed top of approximately 24 inches.

Bell pepper ("Camelot", Seminis Seed Co.) transplants were commercially produced in polystyrene trays at a local plant farm. The transplants were planted into plastic-mulched beds on April 10, 2003. The soil type was a Tifton sandy loam (fine-loamy siliceous thermic Plinthic Kandiudults) soil. Elevation at the CPES is 382 feet. Peppers were planted in an arrangement of two rows per bed. Plots consisted of two rows of 20 plants per row spaced 12 inches apart.

Peppers received a pre plant granular fertilizer application of 500 pounds/acre 10-10-10. All additional fertilization was applied through the drip irrigation system. Total fertilizer application amounted to approximately 150 pounds nitrogen and potassium per acre. Applications were made with a 7-0-7 liquid fertilizer material. Plots were treated with recommended insecticide sprays as needed. Irrigation was applied daily through the drip system.

Peppers were harvested approximately weekly between July 1 and July 21, 2003. Data was taken on yield and average fruit weight. It was generally a wet spring.

Results

There were virtually no differences between the plastics for yield, number or average fruit weight of pepper. The FL-10 and FL-2 plastics did seem to produce a higher yield and number of fruit per acre than the other plastics, but not significantly.

Table 1. Average weight of individual fruit, average number of fruit and average 28-pound boxes of fruit per acre of bell pepper grown on various plastic mulches in Tifton, Georgia in 2003.

Plastic	Average Fruit Wt. (grams)	Avg. Fruit/A	Avg. Boxes/A (28# box)
FL-15	174.1	40647	587
FL-3	188.5	30987	476
FL-16	173.5	29123	420
FL-1	169.6	36376	513
FL-24	178.6	42970	638
FL-12	171.6	34670	490
FL-4	180.9	30854	446
FL-10	180.9	59858	909
Silver	181.4	42770	631
FL-2	180.6	62568	926
FL-11	182.5	44305	683
FL-8	174.1	42181	605
FL-17	175.7	33918	463
Mean	177.8	40863	599
CV (%)	10.0	53.7	58.7
L.S.D. (0.05)	25.6	31479	504.4