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**Summary:** The use of plastic mulch has become a standard practice to control weeds and conserve moisture in vegetable crop production. In this study we evaluated biodegradable paper mulch for in-season deterioration, weed control and broccoli yield. Treatments included three biodegradable paper mulch products and black plastic mulch control.

**Procedures:**

The experiment was conducted at WSU Mount Vernon NWREC. The experimental design was a randomized complete block with replications of four treatments: 1) WeedGuard Black (thin), 2) WeedGuard Plus, 3) WeedGuard Crepe (heavyweight), and 4) standard 0.9 mil black embossed plastic mulch. Plots were 20 feet long, and broccoli was planted in a single row with 2-feet between plants and 12-feet between bed centers. Plots were drip irrigated at a rate of 1 in. of water per week.

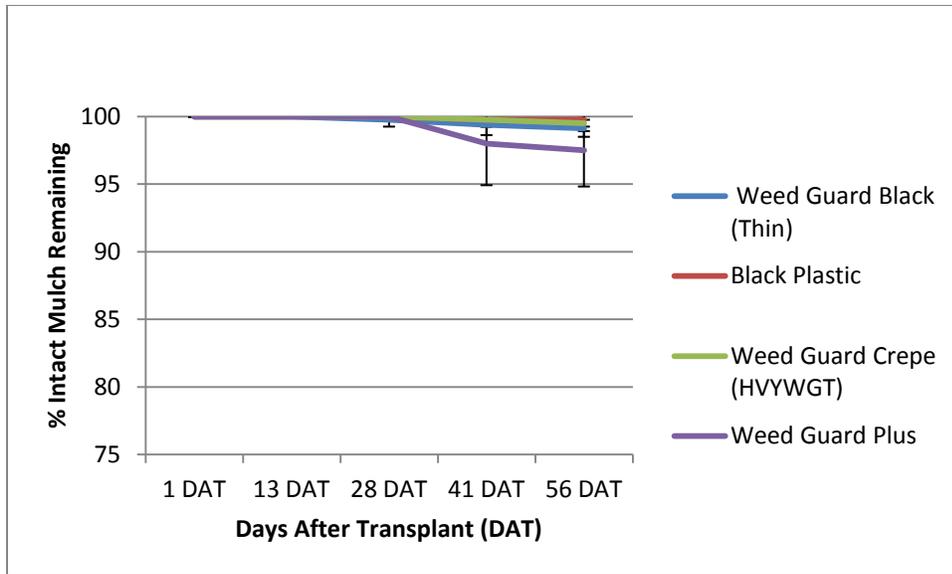
Broccoli was seeded in the greenhouse on June 10. On July 19 beds were prepared. Wil-Gro 8-2-4 Organic fertilizer (Wilbur Ellis Company, Yakima, WA) was broadcast on the center of each bed at a rate of 100 lbs N<sup>-1</sup> acre<sup>-1</sup>. Drip tape (T-Tape, medium flow, 8 mil wall thickness, 8 in. emitter spacing; John Deere Water, CA) was laid in the center of each bed, and beds were covered with mulch treatments. Mulch treatments included three paper mulches (Sunshine Paper Company, LLC, Aurora, Co; Clearwater Supply, Othello, WA) and a black plastic mulch control (Berry Plastics, Evansville, IN). Broccoli seedlings were transplanted to the field on July 24.

Mulch degradation was measured every 2 weeks in the center 6-feet of each plot, from 24 July through 17 September. Mulch intactness was rated on a percent basis such that 100% had no degradation and 0% was completely degraded.

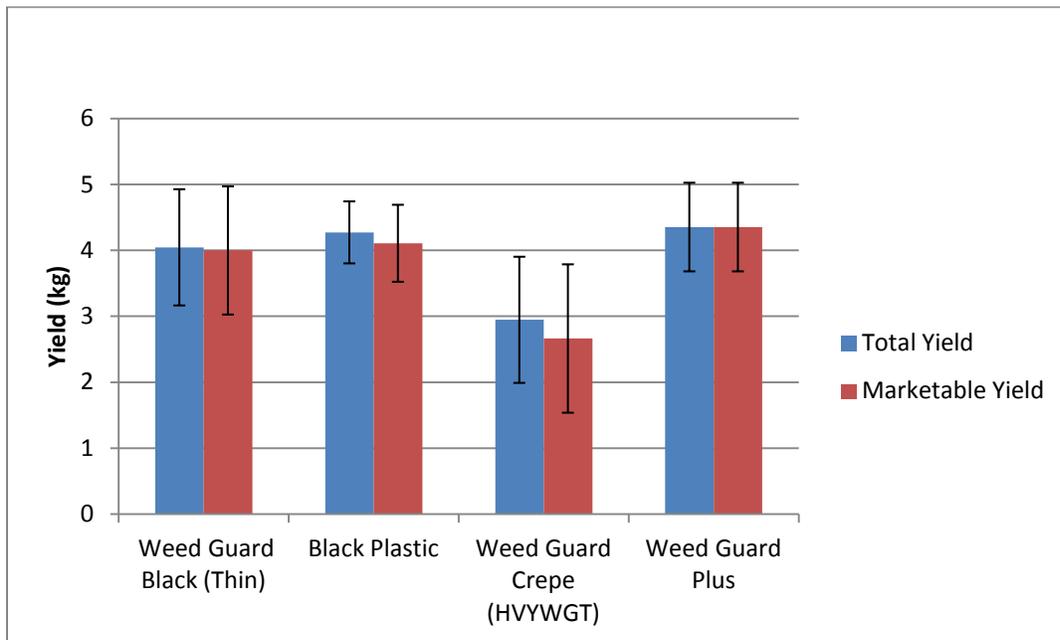
Broccoli heads were harvested within each plot when heads reached 8 inches in diameter (fresh marketable size), and days to maturity was recorded. Heads were trimmed to 3-inches of stem, and total yield and marketable yield were measured.

**Results:**

There were no significant differences in mulch intactness throughout this study. By the end of this study, mulch treatments were 99% intact, except for WeedGuard Plus which was 98% intact (Figure 1). No weeds were present in any of the mulch treatments therefore no data related to weed number or weight was measured. Broccoli was harvested on 27 September and 4 October. There were no significant differences in broccoli total yield due to mulch treatment, however, total yield with WeedGuard Crepe was 70% as compared to other mulches, and marketable yield was 66%.



**Figure 1.** Mulch degradation from 25 July (1DAT) through 17 September (56 DAT) with a broccoli crop at WSU Mount Vernon NWREC in 2013.



**Figure 1.** Broccoli yield (kg) with four mulch treatments at WSU Mount Vernon NWREC in 2013.