



## IRT-76<sup>®</sup> POLYETHYLENE MULCH FILM AND GROWTH OF SWEET CORN IN FAIRBANKS, ALASKA

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Cold soils during the short growing season in interior Alaska often limit growth and prevent the maturing of many field-grown warm season crops such as tomatoes, peppers, cucumbers, pumpkins and sweet corn. Clear plastic mulch has been recommended for many years as a method of warming soil to promote crop maturity and improve marketable yields. One problem with clear plastic mulch is enhanced weed growth beneath the mulch. Black plastic mulch suppresses weed growth but does not have the soil-warming and yield-improvement capabilities of clear plastic. A wavelength selective product called IRT-76<sup>®\*</sup> plastic film mulch was recently developed by researchers at the University of New Hampshire cooperating with AEP Industries. In New Hampshire, this green-colored film provided soil warming properties intermediate between black and clear mulch, and it suppressed weed growth by the dual effect of lowered light intensities and higher temperatures beneath the film. We were interested in determining if this product would work as well in Fairbanks where soil warming is limited by low solar angles.

In trials with sweet corn conducted in 1990, IRT-76<sup>®</sup> mulch performed nearly as well as clear mulch and was very effective in controlling weeds. There was no statistically significant difference in yield between corn grown with clear and the IRT-76<sup>®</sup> mulch (Figure 1). However, corn grown through the clear mulch matured earlier. The IRT-76<sup>®</sup> mulch raised soil temperatures at the 2-in (5 cm) depth nearly as much as the clear plastic mulch (Figure 2). Corn yields and soil temperatures were significantly lower using black plastic or unmulched soil (Figures 1 & 2).

Although this study has been conducted for only one growing season, the results indicate that the IRT-76<sup>®</sup> mulch provides the benefits of

soil warming and controls weeds under subarctic conditions. Growth and yield characteristics of corn grown through IRT-76<sup>®</sup> mulch were similar to plants grown with clear plastic mulch.

During most seasons, 'Polar Vee' sweet corn grown on unmulched bottomland soils at the Agricultural and Forestry Experiment Station does not produce mature ears. The 1990 growing season was favorable for corn production, and even the unmulched plots yielded mature sweet corn. The IRT-76<sup>®</sup> mulch may not perform as well as clear plastic during less favorable growing seasons, therefore this study will be repeated for at least two more years. We encourage commercial growers and home gardeners to test wavelength selective mulches like IRT 76<sup>®</sup> and share their experiences with us. With grower and gardener assistance, we can determine the worth of wavelength selective mulch under a wide variety of conditions at many locations in Alaska.

\* AEP Industries, Moonachie, New Jersey donated the ITR- 76<sup>®</sup> mulch film used in this project.

### Relevant Literature

Bennett, M.A. and L. Waters, Jr. 1987. Germination and Emergence of high-sugar sweet corn is improved by pre-sowing hydration of seed. *HortScience*. 22(2):236-238.

Dinkel, D.H., 1966 Polyethylene mulches for sweet corn in northern latitudes. In: *Proc. Amer. Soc. Hort. Sci.* 89:497- 504.

Matheke, G.E.M., P. Wagner and P. Holloway. 1989. Effect of different mulches on everbearing strawberry production. In: *Proc. 8th Annual Alaska Greenhouse and Nursery Conference*. p 100-103.



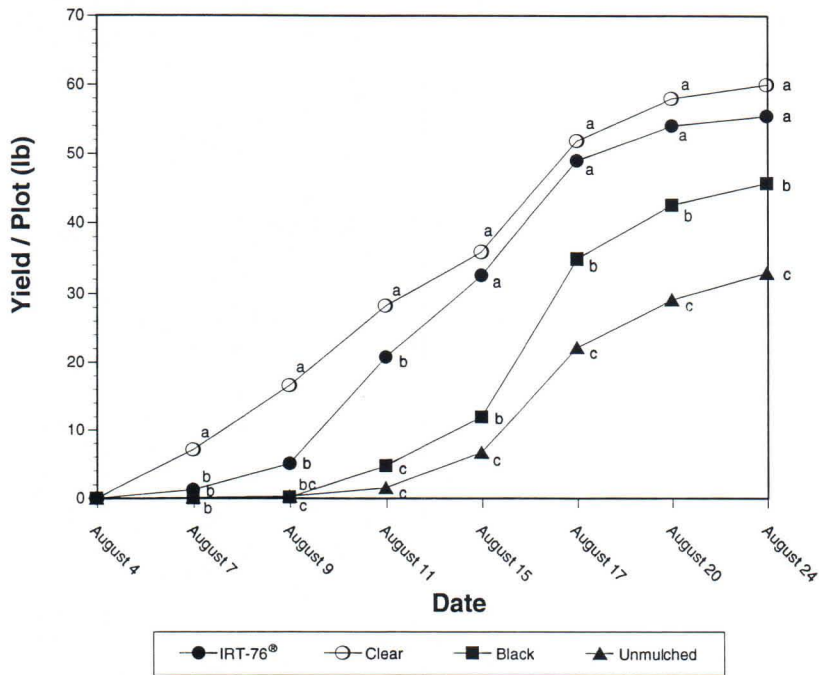


Figure 1. Cumulative sweet corn yeild using various mulches.

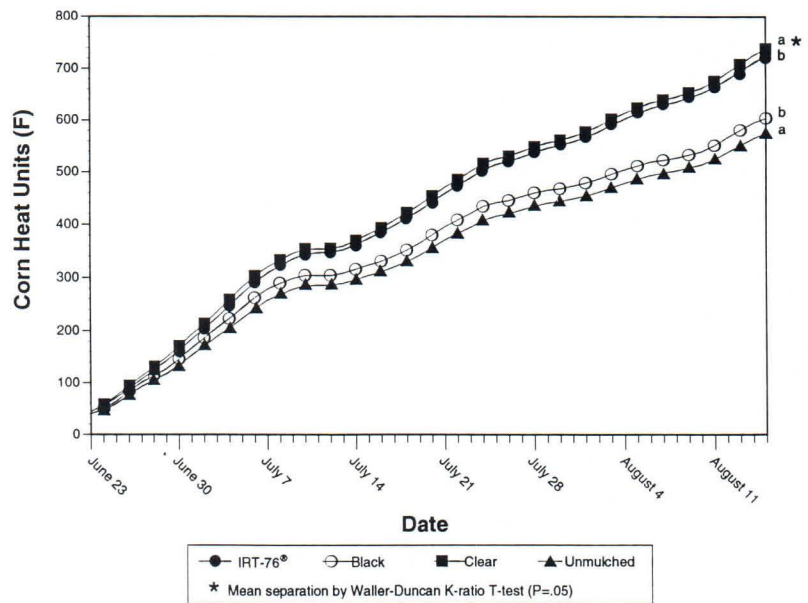


Figure 2. Cumulative heat units at a 2" soil depth beneath four mulch treatments.

Note on figures: Points identified by different letters are significantly different (Waller-Duncan K-ratio t-test,  $P = 0.5$ )

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