GEORGESON BOTANICAL GARDEN

UNIVERSITY OF ALASKA FAIRBANKS

University of Alaska Fairbanks
School of Natural Resources and Extension

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Warming Soils--A Comparison of Old and New Methods

by
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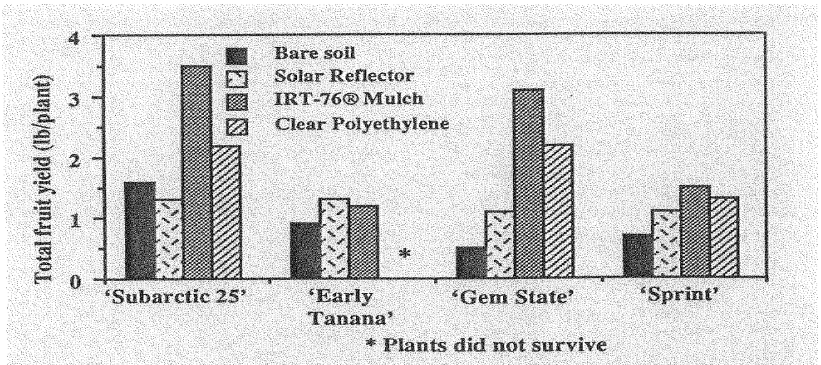
As part of the UAF 75th Anniversary Celebration, the Georgeson Botanical Garden had a small demonstration on methods used through the years to warm interior Alaska's cold soils. We grew four cultivars of tomatoes using four growing techniques: unmulched bare soil, clear polyethylene mulch, IRT-76® infrared transmitting mulch, and a solar reflector. The solar reflector, a 3 x 12-foot piece of aluminum roofing supported vertically and lengthwise on the north side of the row, was a popular method used in the 1940s prior to the advent of plastics. By reflecting light onto the plants and soil, the aluminum supposedly would increase soil temperatures and improve photosynthesis.

The infra-red transmitting mulches are a relatively recent addition to soil-warming products. They selectively allow the soil-warming radiation to pass through the mulch, but the photosynthetic radiation necessary for weed growth is inhibited.

This demonstration was not a complete research experiment. Plots were not repeated, and most varieties consisted of only two or three plants. Nevertheless, we did count and weigh all ripe fruit throughout the season to see if any differences in yield would occur among soil-warming treatments.

All plot and every cultivar were harvested first on Aug. 3, 1992. The figure below shows that three of the four cultivars growing through the infra-red transmitting mulch had the highest yield. The one exception was 'Early Tanana' whose yield was similar across soil treatments. The average yield for all cultivars on bare soil, solar reflector, IRT-76® and clear polyethylene treatments was 0.9 lb, l.2 1b, 2.3 lb and l.9 1b per plant respectively. The aluminum solar reflector did improve yields just a bit, but the winner was definitely the new infra-red transmitting mulch, IRT-76®.



Total seasonal yield (pounds) per plant of ripe tomatoes harvested from four cultivars grown on four different soil-warming treatments.

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