

T-BRO-FAB

HOOP-N-COVER



*Shown with optional shade cloth attachment

***Lays 6' vented plastic row cover over pre-set wire hoops on flat or raised beds**

***Operating speed 3-1/2 mph +**

***Hoop-N-Cover is fully adjustable for:**
***bed width**
***bed height**
***hoop height**
***soil condition**

Covering young vegetable plants with a clear plastic tunnel enhances production in several ways. The tunnel creates a micro climate around the plants similar to a greenhouse, increasing the temperature around the plant. It also protects the plant from damaging winds, rains, and nighttime temperature drops.

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*Shown with optional shade cloth attachment

LOW TUNNELS FOR ON-FARM FROST PROTECTION, GROWTH ENHANCEMENT, AND EARLINESS

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Low tunnels are special row covers used for many reasons including, season extension, frost protection, insect exclusion, heavy rain, and hail protection. Vegetable growers in regions with a temperate climate like Michigan do not have a lot of flexibility because climatic conditions restrict the growing season to a very narrow window. Because of this narrow window of production, most crops reach maturity at the same time, harvest is synchronized, and all growers hit the market at the same time. The direct consequence of the peak in production is a drop in the price paid to growers and that regardless of their actual input costs. Experienced growers indicate that their “home runs” are made either early or late in the season. Therefore, they have developed strategies to extend those “profit windows”. The use of low tunnels is one of the strategies used by experienced growers. When the main objective of low tunnels is to increase temperature, it is important to understand several factors including: the type of material used, the level of temperature increase, and frost protection ability.

Materials used for low tunnels: Most low tunnels are made with polyethylene plastic or spunbonded fabrics (polyester or polypropylene). Polyethylene covers are used for most low tunnels. They are lightweight and come in either solid or perforated sheets. Holes on perforated covers are important for gas, temperature, and water exchange with the outside environment. Spunbonded fabrics allow for ventilation and water to pass between the fibers. Polyethylene materials are available in various thicknesses while the spunbonded fabrics are available in various weights.

Temperature increase and frost protection: When using low tunnels always keep in mind that they are more efficient at increasing temperature especially during a sunny day than at protecting against frost. Even in the absence of a frost risk, some growers may consider using low tunnels because most warm season vegetables stop growing at temperatures below 40-50°F. Low tunnels may increase the temperature enough to promote the growth of these warm season vegetables. In general:

- Polyethylene plastic materials build more heat than woven fabric (spunbonded).
- Clear plastics increase temperatures more efficiently than white or colored plastics.

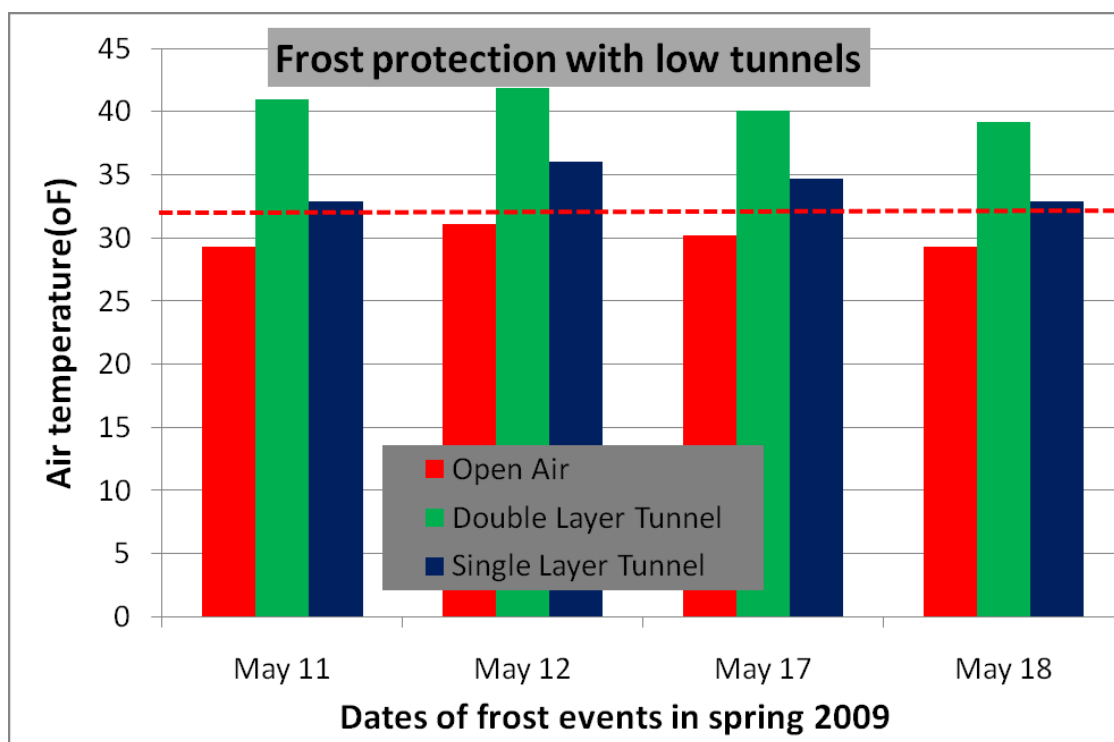
Increase in temperature under the cover during daytime may vary greatly depending on the material used. However, when it comes to frost protection, the material used is critical. Most woven fabrics and polyethylene materials used in agriculture can only protect the crop down to 28 °F but some heavy materials have shown acceptable protection down to 20 °F. It is therefore extremely important to select the right material.

Some growers have combined low tunnels with raised beds covered with plastic mulch; others have added cover crop wind breaks between beds. Finally, some growers have attempted to improve the level of frost protection by installing double or multiple layers of the row covers.

When the outside temperature is high enough, it is recommended to remove row covers. Temperature can get extremely high inside the covers and injure the crop, especially when polyethylene row covers without holes are used. It is also important to remove the covers at flowering stage for pollination. This is particularly critical for crops like cucumber that rely on insects for pollination.

In an on-farm study conducted by our team in 2009 we measured a temperature increase from 86 °F open air to 96 °F (single layer) and 113 °F (double layer) tunnels. Interestingly the change in temperature occurred within 5-10 minutes following tunnels installation.

Both the single and the double layer low tunnels were able to protect cucumber during the growing season when outside temperature was as low as 29 °F. This allowed harvesting cucumbers as early as mid June when the rest of the industry was still planting.



The double layer low tunnel was designed by George McManus.



Spunbonded low tunnels



Perforated plastic low tunnels

**Check Out Our
Hoop-N-Cover !**

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