

## **Extending the Season and Enhancing Produce Quality at Garden Meadow Farm**

Brent Kaylor; Garden Meadow Farm

Over the past five years Garden Meadow Farm (GMF) has diversified its operations and begun to do more direct marketing of its products. Our goal is to increase revenue per acre from at least parts of the farm while also increasing profitability. About five years ago, we shifted the livestock operation from raising replacement dairy heifers to raising grass-fed beef. Then three years ago we began to grow vegetable produce on several acres, and high tunnels (HT) became a key component of this strategy for us. This year we grew a large diversity of vegetables on three acres that include three high tunnels. Our direct marketing strategy is built predominantly on providing high-quality produce continuously from April through December to local restaurants. The high tunnels are key part of our strategy because they allow us to begin providing cold-hardy crops very early in the Spring and then late into the Fall. Throughout the summer the tunnels allow us to grow exceptional quality tomatoes, peppers, and other high-value crops. In the middle of winter our season begins anew as we start indoor seedlings of cold-hardy vegetables for transplant into the high tunnels in mid-to-late February. These seedlings will grow slowly at first, limited by still short daylight hours. We also cover the transplants with light-weight row covers to help to moderate the cold night-time temperatures. While night-time temperatures can fall into the teens, temperatures under the row covers can remain as much as 15 degrees warmer than the outside temperatures. Protected from these lowest morning temperatures, shielded from all outside winds, and warmed considerably during the day by the sun, these plants thrive. By early April we are harvesting beautiful greens.

Later in the early Fall, around the middle of September, we can reverse this process. Cold-hardy crop transplants initially grow rapidly in the protection of the tunnel, but their growth rate wanes considerably by the middle of October as nights get colder and day length shorter. So just as harvest of our outdoor crops are ending, harvest of these tunnel crops can now begin. The plants stay fresh in this state of suspended growth, allowing us to harvest these food crops well past Thanksgiving and almost to Christmas.

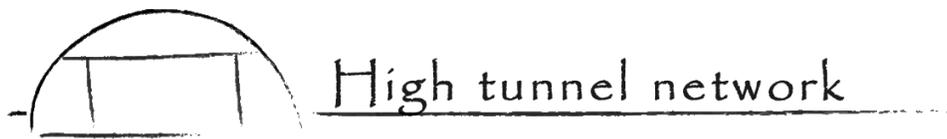
In late spring as the early cold-hardy vegetable production transitions to the outdoors, and their harvest in the high tunnels comes to an end, we can transition the tunnels to grow predominantly tomato and pepper crops. We find that yields of these vegetables can be higher than plants grown outdoors, and the quality of their fruit is noticeably improved, also. By using solely drip irrigation and by keeping dew and rain water off of the plant leaves, the plants are less susceptible to detrimental fungi and disease that often plague field-grown plants.

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Growing in a high tunnel is not difficult, but it does require the grower to make some adjustments to the typical growing protocols. A high tunnel creates a different micro-environment than is found in the field-grown crops. As a result, we need to be more vigilant in scouting the tunnels, looking for early signs of problems different from those we find in the same field-grown crops. For example, we have found more prevalence of aphid infestation in early-grown high tunnel greens. Also, temperatures inside the high tunnel can fluctuate widely throughout the day. Monitoring and adjusting these temperatures is critical to maintaining healthy crops. Even on cold days in late winter and early spring, temperatures inside the tunnel can quickly rise to near 100 degrees if the high tunnel is not opened to ventilation.

While a high tunnel is considered a temporary structure, your investment should be maximized by care in site selection and construction. The HT should be placed on a level or nearly level surface. There should be adequate water drainage around all sides of the tunnel to ensure that excessive water does not enter into it during extreme rain events. I like a gable type structure that is stronger under snow loads than a simple round structure. Its straight sides are less prone to shedding water into the sides of the tunnel when the sides are rolled up for ventilation. Cross braces not only strengthen the structure but also provide some overhead structure for creating trellis supports for certain crops. I also believe that end-wall construction is critical to the strength of the finished structure. End walls is not the area to “go cheap”. A strong end-wall will help the structure withstand both snow and wind loads. And finally, add gable vents to the end walls. You will use them both in the winter and in the summer to moderate the temperatures inside the HT.



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