



Family operation cultivates best vegetable growing techniques for short growing seasons

By Jenny Thompson

A Gillette-area couple is finding ways to counter short growing seasons in their area and produce a bounty of garden crops.

Bob and Rita Jordan meticulously plan, execute, and evaluate a variety of vegetable season extension techniques on their acreage. Their goals are producing as much high-quality produce as economically as possible in a confined space and building a grower network to create and sustain a market for that produce.

Their operation, High Plains Grower, produces broccoli, spinach, kale, lettuce, radishes, carrots, peppers, cherry tomatoes, several types of slicing and canning tomatoes, cucumbers, green beans, peas, pumpkins, and potatoes.

The Jordans can and freeze much of their produce. They also have about 120 direct sales customers and sell through farmers markets and to local restaurants at times.

Horticulture Hub

While Bob's outside vegetable growing plots overflow, the heart of his season-extension experimentation occurs inside his two high tunnels.

The ground takes quite awhile to warm up and for warmth-loving vegetables to take off with the average 120-day growing season near Gillette. The Jordans developed a variety of techniques over the years to beat the elements, beginning with a small greenhouse. They then turned to other season extension methods and decided to try low tunnels. Their success then led to Bob building a high tunnel.

Grow more

Bob Jordan said he found Hannah Johnson, University of Wyoming Extension horticulturalist for Campbell County, a great resource for information and very supportive of the Jordans' endeavors.

Each county's extension office contact information is available at www.uwyo.edu/uwe. Click on the Find an Office link.

Gardening and other horticultural Information is also available at the Barnyards & Backyards website. Go to www.uwyo.edu/barnbackyard/ to find your subject and resources.

They decided to put in a second after several years and looked to the USDA Natural Resources Conservation Service's (NRCS) Environmental Quality Incentives Program (EQIP) for financial assistance to help make this second high tunnel a reality.

Bob and Rita did a lot of high tunnel research to determine what type of structure they wanted. They looked at various structures across the country for wind loading (a big factor at their location), ones with a lot of flexibility, features such as doors that would accommodate a tractor, and plastic covers – as they wanted to keep the covering simple because of the perennial threat of hail (and cover replacement).

In 2013, the Jordans were the first in the county to build an NRCS-EQIP high tunnel. The NRCS-EQIP program provided a 50-percent cost share to build the high tunnel. Bob says he found the application process pretty simple. Due to their earlier research and experience with high tunnels, Bob already had a detailed plan for the 30-foot x 50-foot high tunnel. He believes this size helps temperature control and also gives enough

landowners



High tunnel in February



Rows covered and prepped

WINTER GROWING



Doors have to be opened to work inside on warm sunny days.



Lettuce plugs in plots with spinach growing in totes at left

room for production.

Their local NRCS district conservationist reviewed their plan, came out to look at their location, and their application was reviewed against local priorities and approved for funding.

Under the Roofs

The high tunnel cover is 6-ply plastic, milled in two different directions so if the cover gets a hole, the hole won't continue to tear the length of the structure. These covers last about four to five years and then are

removed and used for low tunnels (including inside the high tunnels in colder months).

Crops are grown in the high tunnels 11 months of the year. Bob uses the 12th month to clean out the houses, replenish the soil, and maintain irrigation equipment. Such an intensive

FEBRUARY



Low tunnels warm ground for April planting.



First crop of broccoli ready for transplanting in high tunnels



Broccoli transplants in plots



Carrots in high tunnels

growing schedule means soil organic matter management is critical. Bob relies on quality compost.

Compost

The Jordans produce their own compost in bins near the high tunnels made of heavy-gauge hog panels. They use the 6-inch spacing between the hog panel wires to help measure the amount of ingredients put into the pile: 6 inches of soil from the high tunnels, 6 inches of manure, 6 inches of clean grass clippings, and 6 inches of peat moss and coffee grounds or anything else that will work. They add water then let the compost go through the heating cycle once, then blend it and cycle it once again. A sample is taken after every second cycle and water added to see if and how many weed seeds germinate. They cycle again if too many weeds.

Finished compost is used for base in compost piles, top dressing in high tunnels, or mixed with high

tunnel dirt to replace dirt in tunnels (this is part of their “dirt transfer” program they implement every two to three years, depending on soil conditions, to counteract fertility and compaction issues in their high tunnels).

Bob considers the property a quarantine area and carefully controls introduction of any new materials into the tunnels. He constantly scouts plants for insects and diseases and rotates crops to help control these and other issues.

Water

Water control is fundamental to their growing plan. The Jordans use water sparingly through precision irrigating.

They have three to four irrigation designs (for high tunnels and for outside growing plots) optimized for their crops. These include drip irrigation and small-scale controlled flooding in small berms. Water meters show how much water needs

added to each crop. Bob has learned weeds don’t grow in areas that aren’t watered so he carefully controls how much area is watered. This, combined with propane torches and other burning methods and mulching with grass clippings, controls weeds.

Temperature

Summer and winter temperature control is very important. In winter, readings are taken of the outside ambient temperature, temperature at the peak of the high tunnel, at head level, inside the low tunnel, and at ground level under the low tunnel. When there’s a 10-degree temperature difference between the ground sensor and a top sensor, it’s time to warm the tunnels and maybe throw another 6-ply cover on the low tunnels. With this method of temperature control, they harvested 225 pounds of broccoli May 1 out of their raised planter in the NRCS high tunnel.

The high tunnels heat quickly



Compost bins ready to fill



Tomatoes are started indoors under lights.



Lettuce ready to harvest



Spinach ready for harvest



during sunny winter days and stay warm for a long time. At night when 0 F outside, temperatures will be 10 F inside the tunnels and 45-55 F under the low tunnels. One year, temperatures hit -20 F. All crops survived under double covers (two pieces of plastic over the low tunnels). The Jordans employ other heat sink techniques on specific crops, such as walls-of-water on tomatoes and peppers.

Too much heat during warmer months is also an issue. They are able to cool the high tunnel using fans and opening the large doors. Bob also has "wind doors" to keep direct wind off plants and angled higher through the structure. He also ties tomato plants into a "hedge" rather than training them on strings, as he thinks they are more protected from wind coming through the door. They took

out around 1,500 pounds of tomatoes off of 115 plants last year. They also produced 900 pounds of warmth-loving cucumbers.

Market

Producing vegetables for market can be difficult.

"There is a big difference between planting for market and planting for yourself," says Bob. Having a realistic planting plan is key to being a successful producer.

The Jordans are in the midst of a five-year, self-study of their growing methods, which they intend to share with others through a technical manual he is writing. They believe strong planning is essential for anyone in this business – in addition to a planting plan and water management plan, they have a marketing plan and a tax plan in place for their operation.

Future

Bob plans to build another high tunnel in another two years or so and wants to build a grower's organization called NEWGO (North East Wyoming Growers Organization). He wants to partner with 10 more growers – each willing to grow some crops using 25 percent of their high tunnel space so they can extend produce availability regionally and even-out supply. His goal is to produce 10,000 pounds of produce a year and to always maximize the amount of money they are earning per square foot of space.

For more information visit the Jordan's High Plains Grower FaceBook page and view our interview with Bob at http://bit.ly/gillette_hightunnel

Jenny Thompson helps grow the *Barnyards & Backyards* program at University of Wyoming Extension. She is the Small Acreage Issue Team coordinator and can be reached at (307) 223-3275 or jsjones@uwyo.edu.