

Seasonal High Tunnel System for Crops

Interim Conservation Practice Job Sheet

798



Photo Source: www.hightunnels.org

Introduction.

A seasonal high tunnel is a polyethylene-covered structure at least 6 feet in height that uses passive solar heating to create more favorable growing conditions for vegetables, fruits, and other specialty crops. Electrical, heating, and/or mechanical ventilation systems may also be used to assist with climate control.

The high tunnel structure covers several crop rows, is wide enough to allow crop growth to full maturity under the tunnel, and is tall enough to allow spraying, cultivation and harvest to occur with the tunnel intact.

To be eligible for Farm Bill financial assistance, high tunnels must be commercially manufactured, meet NRCS minimum materials and lifespan requirements, and be installed, maintained, and monitored as described in this job sheet.

Where and How Can This Practice Be Used?

A seasonal high tunnel can be installed only on land designated as **cropland**; where crops are currently grown or are capable of being grown in the ground. Crops in high tunnels must be grown in natural soil or permanent raised beds, but not on benches, tables, or in containers/pots.

The structure has an expected practice life of 4 years and needs to be maintained at least for that period of time.

Features of High Tunnels.

Seasonal High Tunnel System – Job Sheet

High tunnels are constructed of metal or plastic arch frames, anchored to the ground. End walls are usually framed-in to provide doors and ventilation areas. Ventilation is achieved by manipulating a combination of roll-up side vents and end vents. At a minimum, a 6-mil greenhouse-grade, UV-resistant polyethylene cover will be used. For optimum ventilation, it is recommended that the high tunnel be no more than 26 feet wide and have vertical roll-up sidewalls.

High tunnel systems are commercially available in a variety of widths, lengths, shapes, and frame spacing. Selection of the high tunnel type depends on climatic conditions, crops to be grown, and budget. In the mid-Atlantic region, snow and ice storms can overload covered structures, resulting in collapse. High tunnels with a “Gothic arch” (peaked roof) configuration tend to shed snow more effectively than “Quonset hut” (rounded) style structures.

High tunnels are typically available with 4 to 6-foot bow spacing. Gothic-style high tunnels with a bow spacing of 4 feet are recommended for Maryland because experience has shown that they are less likely to collapse under a heavy snow/ice load. Also, with their vertical side walls and peaked roofs, Gothic tunnels usually provide more interior space and better ventilation.

Conservation Management Systems.

Water runoff from the high tunnels can cause problems that require the implementation of other practices such as critical area plantings, heavy use area protection, roof runoff structures (infiltration trenches), and underground outlets. Additional practices must be planned and installed where needed along with the high tunnel. Other practices that should also be considered as a part of a conservation system include crop rotation, nutrient and pest management, micro-irrigation, and irrigation water management.

Producers who want to use a seasonal high tunnel will also need a reliable source of water and a method for watering the crops. Farm Bill financial assistance may also be available for installation of micro irrigation and other supporting practices such as the ones mentioned above.

Producer _____ Location _____
 Field Office _____ Conservation Contract No. _____

Materials List

High Tunnel Structure, Size _____ Style (Gothic or Quonset) _____

Supporting Practices Required Outside Houses:

- Critical Area Planting (job sheet attached)
- Heavy Use Area Protection (construction plan attached)
- Roof Runoff Structure (Infiltration Trench) along each side (construction plan attached)
- Underground Outlet (construction plan attached)
- Other _____

High Tunnel System Construction

- It is the responsibility of the landowner or operator to **contact Miss Utility at 1-800-257-7777** (or dial 811) at least 2 business days in advance of construction to locate and mark underground utilities.
- Prepare site according to manufacturer’s instructions.
- Lay out building location according to site plan.
- Assemble high tunnel according to manufacturer’s instructions.
- Install supporting practices as required, according to construction plans provided.

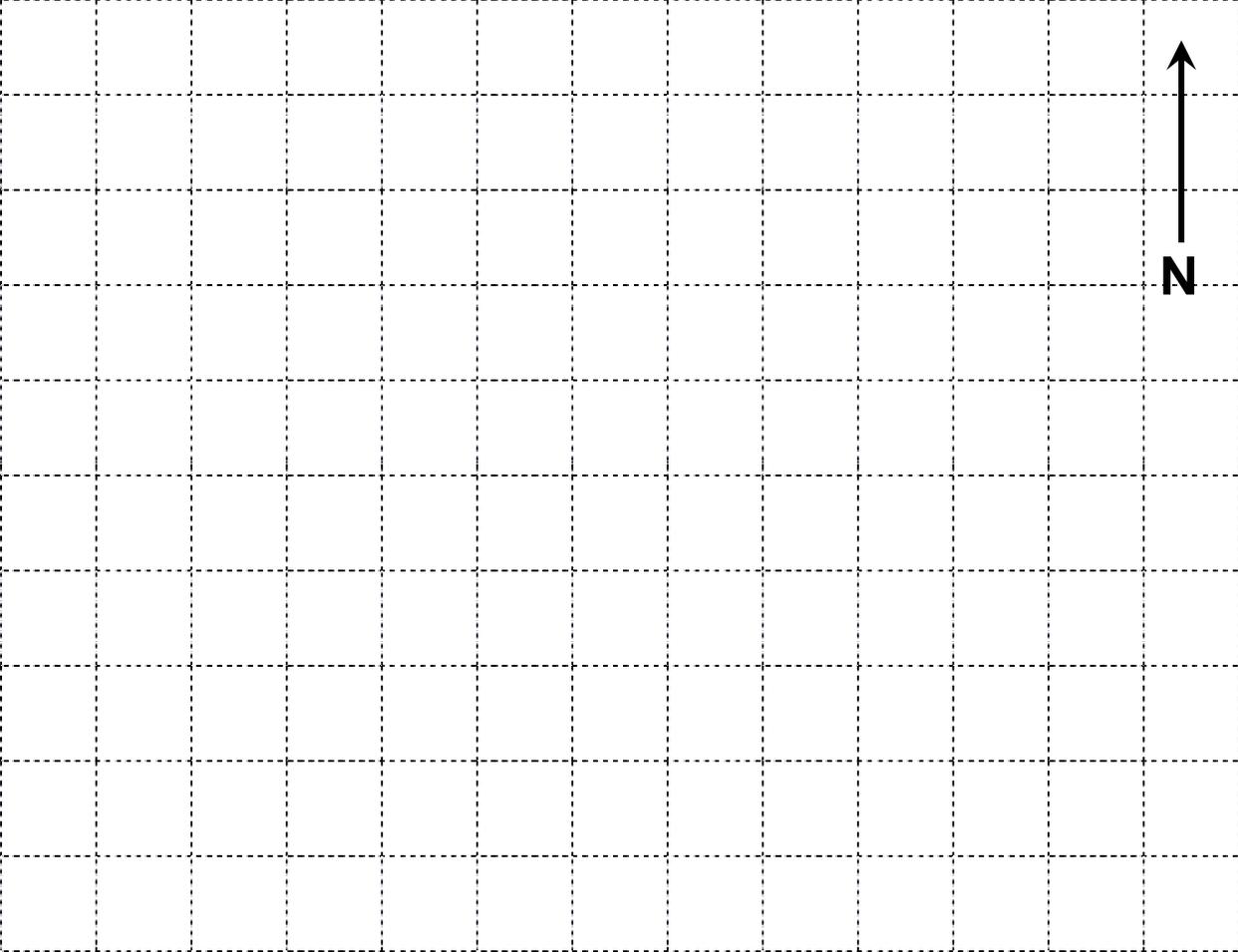
Operation and Maintenance

- Periodically inspect structure and cover for damage. Reinstall or repair promptly.
- Follow manufacturer’s instructions for operation and maintenance of the high tunnel structure.
- Avoid damage to structure from equipment operated in and around the seasonal high tunnel.
- Inspect runoff control measures after every significant rainfall event. Repair promptly.
- Remove or manage snow/ice loads immediately to ensure integrity of the structure for the lifespan of the conservation practice OR
- Remove and store the plastic cover after the growing season and before heavy snow/ice to avoid damage to the structure. Re-install the cover prior to use in the spring.
- **Owners will be responsible for repairing any damage to the high tunnel caused by operating equipment, failure to manage snow/ice loads, or failure to remove the cover in a timely manner before heavy snow/ice accumulation.**

Seasonal High Tunnel System – Layout and Location

Plan view of seasonal high tunnel system site shown below.

Scale 1"=_____ ft. (NA indicates sketch not to scale: grid size=1/2" by 1/2")



Additional Specifications and Notes:

Seasonal High Tunnel System – Construction Checkout

Seasonal High Tunnel Structure – <i>as-built measurements</i>		
Length (ft)	Structure Manufacturer	
Width (ft)	Height in Center (ft)	Style (gothic or quonset)

Supporting Practices Installed Outside Houses
<input type="checkbox"/> Critical Area Planting (job sheet attached) <input type="checkbox"/> Heavy Use Area Protection (construction plan attached) <input type="checkbox"/> Roof Runoff Structure (Infiltration Trench) along each side (construction plan attached) <input type="checkbox"/> Underground Outlet (construction plan attached) <input type="checkbox"/> Other _____

<p>CHECK OUT:</p> <p>Amount Completed: _____ square feet. Mark As-Built location on plan map.</p> <p>Remarks _____</p> <p>This practice meets NRCS standards and specifications <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Check out by: _____ Date: _____</p>
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Seasonal High Tunnel System – First Year Annual Report **page 1 of 2**

Producer _____ Location _____
 Field Office _____ Conservation Contract _____
 Report Date _____

Report Due On or Before December 31, _____

- Actual cost of Seasonal High Tunnel Structure \$ _____ (attach copies of bills)
- First year maintenance costs: (add more sheets if necessary)

Activity or Item (list)	Cost
	\$

- Cropping history two years before installation of Seasonal High Tunnel:
(add more sheets if necessary)

Crop (type)	Crop Year	Yield	Nutrients (Fertilizer)			Pesticide(s)		
			Type	Rate	Date Applied	Name	Rate	Date Applied

- First year's crop in Seasonal High Tunnel:

Crop (type)	Crop Year	Yield	Nutrients (Fertilizer)			Pesticide(s)		
			Type	Rate	Date Applied	Name	Rate	Date Applied

Seasonal High Tunnel System – First Year Annual Report **page 2 of 2**

Growing season (past 2 years, plus the first year in the Seasonal High Tunnel):

Crop (type)	Crop Year	Season Dates	Length of Growing Season (Days)

Benefits for plant quality: _____

Benefits for soil quality: _____

Benefits for water quality: _____

Producer’s recommendations and observations:

Seasonal High Tunnel System – Subsequent Year Annual Report

Producer _____ Location _____
 Field Office _____ Conservation Contract _____
 Report Date _____

Report Due On or Before December 31, _____

This year's maintenance costs: *(add more sheets if necessary)*

Activity or Item <i>(list)</i>	Cost
	\$

This year's crop in Seasonal High Tunnel:

Crop (type)	Crop Year	Yield	Nutrients (Fertilizer)			Pesticide(s)		
			Type	Rate	Date Applied	Name	Rate	Date Applied

This year's growing season:

Crop (type)	Crop Year	Season Dates	Length of Growing Season (Days)

Benefits for plant quality: _____

Benefits for soil quality: _____

Benefits for water quality: _____

Producer's recommendations and observations:

