Seasonal High Tunnel System for Crops

Job Sheet and Specifications

NH-798





Definition

A seasonal high tunnel is a gothic-style, polyethylene covered structure at least 6 feet in height, which modifies the climate to create more favorable growing conditions for vegetable and other specialty crops grown in the natural soil.

Purpose

The purpose of the seasonal high tunnel is to extend the crop growing season, improve plant quality, improve soil quality, and improve water quality from reduced nutrient and pesticide transport. Season extension can help save energy by producing local food in the colder months.

Client		Date		
Planner		Field/Tract		
Purpose: (check all that apply)				
Extend the growing season		☐ Improve plant quality		
☐ Improve water quality		☐ Improve soil quality		
Other:		·		

Selection

Choose models based on the selection criteria listed on the following page. A check must be placed in every checkbox. A high tunnel is a versatile structure that can be modified in different ways and often there is no standard "kit".

Producers are responsible for ensuring that the model is ordered with all required components **specific to NH**. Vendor claims that models are "NRCS approved" may not always be accurate, because minimum criteria/specifications vary from state to state.



Hig	ph Tunnel Selection Criteria:
	Frame is gothic style (peaked versus round)
	Tunnel width does not exceed 30 ft
	Frame is covered with at least 6-mil, 4-year UV resistant polyethylene film (the tunnel must be covered in order to be certified for payment)
	Bows and ground posts are at least: (i) 1.90" round 14 gauge galvanized steel or stronger for tunnels ≥ 26 ft. wide (ii) 1.66" round 14 gauge galvanized steel or stronger for tunnels < 26 ft. wide (iii) 2.00" square 16 gauge galvanized for all tunnel widths (iv) 1.625" x 2.750" oval 16 gauge for all tunnel widths
	Bows are spaced 4 ft. apart. Bows may be spaced 6 ft. apart only for tunnels constructed with galvanized steel bows and ground posts that are at least (i) 2.375" round 14 gauge or (ii) 2.0" x 3.56" oval 16 gauge
	Number of purlins (including ridge): 5 for tunnels ≥ 26 ft. wide, 3 for tunnels < 26 ft. wide, 1 for tunnels ≤14 ft. wide.
	Trusses with braces/cross-ties every other bow for tunnels ≥ 26 ft. wide
	Wind bracing between last and next to last bow on each end, or as recommended by manufacturer.
	Roll-up or drop-down sides are installed on both sides and rope (or equivalent material) is attached from hip-board to baseboard to protect sides from billowing
	End walls are framed with wood lumber or metal and covered with UV resistant polyethylene film (at least 6-mil, 4-year), polycarbonate, or plywood
	At least one end wall contains a door for access
	Bows/posts shall consist of no more than 5 individual segments, including ground posts. Typically this includes 2 ground posts, 2 half bows, and a bow connector. (Splices/sleeves may be used to join posts/bows and are not considered segments.)
	All bows and ground posts must through bolted (bolt and nut) at the connection point. It is not acceptable to connect bows and ground posts using self-tapping sheet metal screws. (Self-tapping screws may be used in other areas of the tunnel)

High Tunnel Selection Considerations

- Construct a minimum 6 ft. x 6 ft. opening on <u>each</u> endwall for increased ventilation and access (e.g. 2- 36 inch wide doors on each end or larger roll-up, sliding, or hinged doors).
- Evaluate the size of the equipment to be used in the tunnel when constructing the endwalls and the height of the sidewall as it relates to the height of the target crops
- For tunnels ≥ 26 ft. wide consider using trusses with braces/cross-ties on every bow.
- Add more purlins and/or wind bracing kits in windier areas.
- Avoid plywood on southern sides of the tunnel. Paint white to increase light reflectance.



Vendors (Suppliers)

Source	Model	
Griffin Greenhouse & Nursery Supplies Tewksbury, MA (978-851-4346) www.griffins.com	New England Windjammer Series 5000	
Ledgewood Farms Moultonborough, NH (603-476-8829) www.ledgewoodfarm.com	Ledgewood Farm Gothic	
Rimol Greenhouse Systems, Inc. Hooksett, NH (603-494-9426) www.rimol.com	Nor'Easter Northpoint Eastpoint Rolling Thunder	
Harnois Industries St. Thomas, Quebec (888-427-6647) www.harnois.com	Ovaltech I Ovaltech III	
Four Season Tools Kansas City, MO (816-444-7330) www.SmallFarmTools.com	Four Season Moveable Gothic	

Other vendors and/or models may be used providing they meet all of the selection criteria. Consider using local sources.

Contractors (Installation)

Adam's Greenhouse Construction Loudon, NH (603-545-4856) greenhouses@comcast.net	Deerfield Greenhouse Builders & Repairs Deerfield, MA 413-773-5295	
Ledgewood Farms Moultonborough, NH (603-476-8829) www.ledgewoodfarm.com	Griffin Greenhouse & Nursery Supplies Tewksbury, MA (978-851-4346) www.griffins.com	

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High Tunnel System Construction

- Prepare site according to manufacturer's instructions. Sites should be level, well-drained, and clear of large stones and other debris. Consider using a site level/transit.
- Consider elevating the soil 2-3 inches (to make a pad) to improve drainage
- Avoid shade from other structures by locating the tunnel a minimum of 12 feet away from other tunnels (on any side) or structures on the north side. The distance from the tunnel to a shading structure on the south, east, or west side should generally be twice the height of the shading structure (e.g. locate the tunnel approximately 40 ft. away from a 20 ft. high barn on the south side).
- The long axis of the tunnel can be oriented East-West if late and early season production is the primary goal. If improving plant quality during the main season is the goal, consider a North-South orientation. Also consider orienting the long axis of the tunnel perpendicular to the direction of the prevailing winds to increase ventilation through the sidewalls.
- Assemble high tunnel structure according to manufacturer's instructions. <u>Do not</u> pound ground posts directly with a sledge hammer. Use a large bolt or other material to protect the post from damage.
- Seed down the disturbed area with around the exterior of the tunnel with perennial sod. Use straw or hay mulch to stabilize the soil and improve seed germination. (CPS 342 and 484)

Operation and Maintenance

Other:

- Follow manufacturer's instructions for operation and maintenance of the high tunnel structure.
- Periodically inspect structure and cover for damage. Reinstall or repair plastic promptly. Most vendors sell repair tape specifically for patching rips and holes. Clean existing plastic with soap and warm prior before applying repair tape. Use tape by itself for small holes or tears. For larger holes or rips, cut square sections of polyethylene at least 3" larger than the hole. Tape plastic patch to the existing plastic on both the interior and exterior of the tunnel.
- Completely close up high tunnel during high wind events
- Inspect runoff control measures after every significant rainfall event. Repair promptly.
- Remove snow on and around the structure.

Seasonal High Tunnel Structure – as-built measurements				
Length (ft)	Model			
Width (ft)	Manufacturer			

Recommendation: Attach digital images on another sheet to document practice installation and illustrate practice before and after effects. Include invoice/receipt from manufacturer.

CHECK OUT: Amount Completed:		square feet	
This practice meets NH 798 Approved Prod	luct List and Selection Criteria	☐ Yes	□ No
Check out by:	Date:		