

Seasonal High Tunnel System for Crops

Interim Conservation Practice Job Sheet ME-798



Photo Source: <http://www.hightunnels.org>

Definition

A seasonal high tunnel is a polyethylene covered structure with no electrical, ventilation, or heating system, 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 within the covered space.

Purpose

The purpose of the seasonal high tunnel is to extend the crop growing season. There is anecdotal evidence which suggests there are conservation benefits associated with high tunnels, though scientific research is very scarce. Maine NRCS is using this interim conservation practice standard to field test this new technology and the validity of potential conservation benefits. Maine NRCS will analyze data provided by clients that install high tunnels and will prepare annual reports to discuss the strengths and weaknesses, and provide recommendations about whether to develop high tunnels into a national conservation practice standard or to discontinue the use of high tunnels as a conservation practice standard. Additional purposes of high tunnels

include improved plant quality, improved soil quality, and improved water quality from reduced nutrient and pesticide transport.

Where used

A seasonal high tunnel may be used where existing specialty commodity crops are grown in open field conditions, and extension of the growing season is needed due to climate conditions.

Commercially available high tunnel structures are made in numerous widths and lengths. The high tunnels are constructed of metal or plastic bow frames that are covered with a single layer of polyethylene. Ventilation is achieved by means of a combination of roll-up side vents, end vents, and occasionally, roof vents. Generally, the end walls are framed-in to create door and ventilation areas. 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.

Conservation management system

Water runoff from the high tunnels or from other nearby sources can cause soil erosion and may require the application of other practices such as critical area planting. These additional practices must be planned and installed as a condition for the installation of a high tunnel

Seasonal High Tunnel System – Job Sheet

Producer _____ Location _____

Field Office _____ Conservation Contract _____

Materials List

- High Tunnel Structure with 6-mil (or thicker) greenhouse grade, UV resistant polyethylene cover; and a frame at least 6-feet high inside the tunnel.

Manufacturer and Model _____

NRCS recommends you purchase a product carrying a 3-year manufacturer's warranty on the plastic cover because NRCS expects your structure to be operated and maintained for 4-years after it is installed.

Your high tunnel structure's outside dimensions will be: _____

Supporting Practices Required:

- Manufactured Gutter System
- Critical Area Planting
- Other _____

High Tunnel System Location and Construction

- Prepare site according to manufacturer's specifications/instructions.
- Lay out building location according to site plan.
- Assemble high tunnel structure according to manufacturer's instructions.
- Install supporting practices as required, according to construction plans provided.
- Locate your high tunnel structure on existing cultivated cropland that provides best available growing conditions for your desired crops.
- Select a high tunnel site after consideration of your land's slope, sun exposure, soil quality, soil fertility, water drainage, air drainage, risk of herbicide carry-over, and risk of soil pests.
 - The site must be relatively level and well drained, so the tunnel can be installed without grading or water ponding between the rows.
 - Orient your tunnel in a direction that provides acceptable sunlight exposure for the crops to be grown; and good ventilation by the prevailing wind.
 - The site location must have access to enough clean irrigation water to meet your crop needs and allow you to carry out normal farming operations without damaging the structure.
 - The location of all utilities shall be determined and flagged prior to start of construction. It is the client's responsibility to contact Dig-Safe (1-888-344-7233) and to protect the utilities during construction.
 - Client is responsible for obtaining any necessary permits.

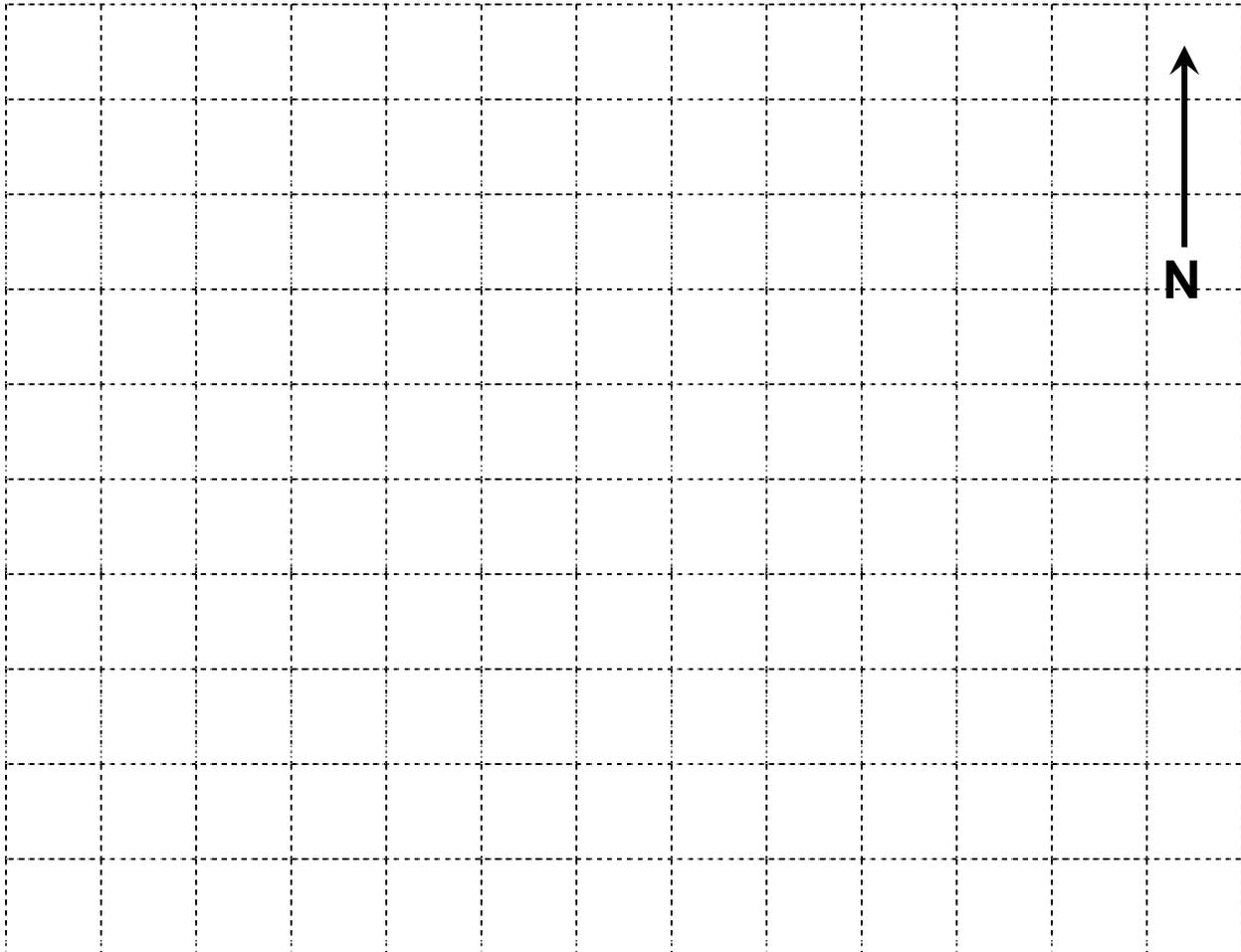
Operation and Maintenance

- 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 loads immediately to ensure integrity of structure for the lifespan of the conservation practice OR
- Remove and store high tunnel cover at the end of each growing season to prevent damage from snow loads. Replace cover prior to use in the spring.
- Crops in high tunnel must be grown in natural soil profile. DO NOT use high tunnel for crops grown in benches or pots.
- Excluding paths, no more than 10% of the square footage of the high tunnel may be used for non-crop growing space (washing and crop prep area, storage, pumps, heaters, etc).
- Operate the high tunnel to manage temperature and moisture according to the tolerances of crops grown.
- Do not use the high tunnel for storage of material or equipment during the extended growing season.
- If the high tunnel is relocated, re-install runoff control practices as needed to prevent soil erosion and water ponding.

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:
Define direction of high tunnel orientation (usually east-west).

Seasonal High Tunnel System – Construction Checkout

Seasonal High Tunnel Structure – as-built measurements	
Length (ft)	Height in Center (ft)
Width (ft)	Structure Manufacturer

Supporting Practices Installed (check all that apply)

Manufactured Gutter System
 Critical Area Planting
 Other _____

CLIENT CERTIFICATION:

I have installed this high tunnel in accordance with the manufacturer’s recommendations that were submitted to NRCS for review (attach evidence of NRCS review).

Client signature: _____ Date: _____

NRCS CHECK OUT:

Amount completed: _____ square feet Mark as-built location on plan map.

Remarks _____

This practice meets NRCS standards and specifications Yes No

Check out completed by: _____ Date: _____

Certified by: _____ Date: _____

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