

Seasonal High Tunnel System for Crops (798)

Tennessee

Definition: A seasonal polyethylene covered structure with no electrical, heating, and/or mechanical ventilation systems that is used to cover crops to extend the growing season in an environmentally safe manner.

Eligible Lands: Cropland where the growing season extension is needed because of climate conditions and where crops can be grown in the natural soil profile. Permanently raised beds may be installed to improve soil condition, fertility, and agri-ability access, but does not apply to crops not grown in the natural soil profile (i.e. tables/benches, portable pots, etc.). Applicants must have valid farm and tract eligibility with Farm Service Agency (FSA).

The practice does not include greenhouses or low tunnel systems that may cover single crop rows.

Financial Assistance for Tunnel Systems:

1. Environmental Quality Incentives Program (EQIP)

Resource Benefits (one or more of the following):

1. Improve plant quality
2. Improve soil quality
3. Reduce nutrient and pesticide transport
4. Improve air quality through reduced transportation inputs
5. Reduce energy use through local consumption

Specifications & Requirements:

1. Maximum size for cost share per producer operation is 2,178 square feet. Minimum height is 6 feet. The tunnel structure must be planned, designed, and constructed in accordance with the manufacturer's recommendation. Cost share is based on the producer installing the structure, using lumber to construct the end walls, and supplying lumber for the baseboards, side wall boards, etc.
2. Must consider a system wide approach in dealing with issues relating to tunnel systems such as access roads, underground outlets, grassed waterways, structures, plantings, runoff, rock pads, positive drainage away from the structure, etc.
3. Tunnel structure shall be selected and applied over the crop area.
4. The minimum design capacity for runoff structures shall be a 10-year storm frequency, 5-minute rainfall precipitation event.
5. The area inside the seasonal structure shall have soil loss within the soil tolerance level (T).
6. The tunnel must provide proper ventilation by means of a combination of roll-up side vents, end vents, etc.
7. Ends of the tunnel house must be enclosed.
8. As minimum, a 6-mil greenhouse-grade, UV resistant polyethylene cover will be used with maximum tunnel bow spacing of 6 feet.
9. The tunnel frame, to include the bows, purlins, etc., shall be made of rust resistant steel. The gauge and shape of the steel components will vary per manufacturer. This practice applies to "Cold Frame" style structures and is typically non-coded for wind and snow loads.
10. Plans and specifications shall be prepared in accordance with the standards and requirements for this practice and shall be approved by NRCS prior to installation. As a minimum, the plans and specifications shall provide the following:

- a. Layout and location of the tunnel cover; erosion control, runoff, and vegetative cover practices.
- b. Materials list and structural details of the cover, including all necessary appurtenances as appropriate for the complete system.
- c. Procedure and timing for installing the tunnel cover (construction sequence); erosion control, runoff, and vegetative practices.
- d. Procedure and timing to remove or roll up the tunnel cover prior to inclement weather conditions.
- e. Site preparation.

Considerations:

1. Locate the tunnel cover convenient for ingress/egress of plant materials.
2. Remove or manipulate side covers to control internal temperatures.
3. Rotate the location of the tunnel to allow rain, wind, sun, and cold temperatures to cleanse the soil from diseases build up. Rotation should include growing cover crops and use of mulch on the site during the uncovered period.
4. Plan the appropriate measures to address:
 - a. Crop rotation
 - b. Irrigation water management
 - c. Nutrient management
 - d. Pest management
 - e. Runoff from the structure
5. Have a reliable source of good quality water near or in the tunnel.
6. Pollination can be reduced in a high tunnel so pollinator habitat in and adjacent to the tunnel is encouraged.

Operation and Maintenance:

1. An operation and maintenance (O&M) plan must be prepared by NRCS and reviewed with the landowner or operator responsible for the application of the practice. The O&M plan shall provide specific instruction for proper operation and management of each component of this practice, and detail the level of repairs needed to maintain the effectiveness and useful life of the practice.
2. Where snow loads may damage the structure, the tunnel cover shall be removed or rolled up at the end of the growing season.
3. Irrigation water applied under the covered area shall not exceed the available water holding capacity of the soil to avoid runoff and leaching below the root zone.
4. Covered areas will be periodically inspected, and shall be reinstalled or repaired as needed to accomplish the intended purpose.
5. Removal of cover materials shall be consistent with the intended purpose and site conditions.
6. Operation of equipment near and on the site shall not compromise the intended purpose of the cover.

Producer Requirements for Payment:

1. Install the practice or practices in accordance with NRCS standards.
2. Install the practice in accordance with the manufacturer's plan, design, and construction recommendation.
3. Account for costs associated with the tunnel lifespan, including replacement covers, etc.
4. Complete the following requirement sheets:
 - a. Seasonal High Tunnel System Records – Pre-Installation
 - b. Seasonal High Tunnel System Records – Installation Cost
 - c. Seasonal High Tunnel System Records – Production
5. Meet all the requirements of this document and any additional site specific requirements.



Seasonal High Tunnel System Records

Pre-Installation

TENNESSEE

Producer/Owner: _____ Farm #: _____ Tract #: _____
 County: _____, TN Service Center: _____
 Assisted By: _____ Program Year: _____ Date: _____
 Field #: _____ Acres: _____ Operation Type: _____

Resource Concerns Addressed by Practice:

Previous Cropping Information

Rotation Duration: _____ Plan Soil Loss: _____ *(Attach RUSLE 2 Calculation Sheet)*

Crop Grown:	Growing Season:	Yield (units):

Previous Nutrient Application Information

Predominant Soil Type: _____

Date of Last Soil Test: _____

(Attach Soil Test Results if Available)

Date Applied	Soil Test Recommendation <i>(lbs/ac of N, P2O5, K2O)</i>	Nutrient Source	Application Rate <i>(lbs/ac)</i>	Application Method

Previous Pesticide/Herbicide Application Information

Date Applied	Product Brand Name	Application Rate	Application Method	Purpose <i>(Target Pest)</i>

Additional Pest Management Activity Description *(Scouting, Cultural, Mechanical, and/or Biological Controls)*:

Planned Rotation With High Tunnel System

Rotation Duration: _____ Plan Soil Loss: _____ *(Attach RUSLE 2 Calculation Sheet)*

Additional Drainage or Erosion Practices Planned to Address the Structure

Practice Code	Practice	Purpose	Amount <i>(Units)</i>	Cost Shared

TENNESSEE

Seasonal High Tunnel System Records Installation Cost

Producer/Owner: _____ Farm #: _____ Tract #: _____
 County: _____, TN Service Center: _____
 Assisted By: _____ Program Year: _____ Date: _____
 Field #: _____ Total Sq. Ft. _____
 Tunnel Dimensions: _____ Length X _____ Width X _____ Center Height
 Manufacturer Name: _____ Model ID: _____
 Address: _____
 Frame Material: _____
 Polyethylene Cover: _____
 (Greenhouse-grade, UV resistant required; 6-mil minimum)
(Attach plan and specifications for high tunnel design)

Installation Cost

Materials:	Cost:
TOTAL COST:	\$

Labor:	Equipment:	Hours:
TOTAL CONSTRUCTION HOURS:		

Drainage and Erosion Considerations

Roof Run-off Water from the Structure was addressed in the following way:

Expenses Incurred to Address Roof Run-off:

Materials:	Cost:
Total Cost:	\$

Labor:	Equipment:	Hours:
TOTAL CONSTRUCTION HOURS:		

Drainage or Erosion Practices Installed to Address the Structure:

Practice Code	Practice	Purpose	Amount <i>(Units)</i>	Cost Shared

Additional Considerations or Observations During Construction



TENNESSEE

Seasonal High Tunnel System Records

Production

Producer/Owner: _____ Farm #: _____ Tract #: _____
 County: _____, TN Service Center: _____
 Assisted By: _____ Program Year: _____ Date: _____
 Year Constructed: _____

Maintenance Cost of Structure

Materials:	Cost:
TOTAL COST:	\$

Labor:	Equipment:	Hours:
TOTAL CONSTRUCTION HOURS:		

Current Year Cropping Information

High Tunnel was utilized _____ days prior to planting other fields on the farm.
 High Tunnel was utilized _____ days after harvesting other fields on the farm.

Crop Grown:	Plant/Harvest Dates:	Yield (units):

Nutrient Application Information

Date of Last Soil Test: _____ (Attach Soil Test Results)

Date Applied	Soil Test Recommendation <i>(lbs/ac of N, P2O5, K2O)</i>	Nutrient Source	Application Rate <i>(lbs/ac)</i>	Application Method

Pesticide/Herbicide Application Information *(Attach Scouting Reports)*

Date Applied	Product Brand Name	Application Rate	Application Method	Purpose <i>(Target Pest)</i>

Additional Pest Management Activity Description *(Cultural, Mechanical, and/or Biological Controls)*:

Drainage & Erosion Considerations

Evaluation of Previously Installed Drainage & Erosion Practices & Their Effectiveness:

Observations, Evaluations & Recommendations:
