Pest Management Conservation System

Disease Management--Automatic Roll-up Sidewalls for High Tunnels and Greenhouses

Conservation Practice - Implementation Requirements ***VT-595***

Producer: _____ **Planner:** _____
Address: _____ **County:**
Farm Name: _____ **Date:** _____

Target Pest: _____

Target Crops(s): _____

Current Control Methods:
(e.g., scouting, pruning, pesticides)
_____

Definition and Background: Maintaining low humidity levels inside high tunnels and greenhouses helps reduce the risk of bacterial and fungal diseases. This is accomplished by providing enough airflow across the surface of the plant leaf and within the structure itself to exhaust humid air. It is a challenge with manually operated roll-up sidewalls to provide consistent and timely ventilation during peaks in temperature and humidity. Automatic roll-up systems utilize motors to raise and lower the sidewalls incrementally as temperature and humidity increase. The system is operated by an environmental controller that can optionally operate exhaust fans and heaters to reduce energy consumption.

Motor and roll-up sidewall in operation to provide ventilation on a warm winter day.

Typical environmental controller that raises and lowers the sidewalls based on temperature.

Practice Purpose:

- ☐ Reduce plant pest pressure.
- ☐ Reduce injury to beneficial organisms.
- ☐ Reduce transport of pesticides to surface and ground water.

Conditions where the practice applies: Greenhouse or high tunnel operations that experience economically damaging diseases and would like to adopt automatic roll-up sidewalls to better control the growing environment.

COMMON CROPS	TYPICAL GREENHOUSE DISEASES
Lettuce, Salad Greens, Spinach	Botrytis (Gray mold), Sclerotinia (White mold), Powdery mildew
Tomatoes, Cucumbers, Peppers	Anthracnose, Botrytis (Gray mold), Leaf molds, Septoria leaf spot, Powdery mildew
Bedding Plants, Horticultural Plants	Botrytis (Gray mold), Leaf molds, Septoria leaf spot, Powdery mildew

Planning Criteria:

☐ Roll-up sidewalls are installed according to the High Tunnel System (325) implementation requirements or manufacturer guidelines.

☐ Motor units are installed on both sides of the structure and are matched to the length of the sidewall.

☐ An environmental controller is installed that can operate the motor units.

→ Controllers that also operate heating and ventilation systems are recommended when applicable. See practice Energy Efficient Agricultural Operation (374) for more details.

☐ The temperature sensor is installed in the center of the greenhouse/high tunnel and inside an aspirated box or protected from direct sunlight by a shroud.

☐ The following temperature or humidity set-points are used for controlling the sidewalls.

Open: _____ Close: _____ Opens in Stages? ◯ YES ◯ NO

☐ When sidewalls are opened, horizontal airflow fans and exhaust fans are turned off.

Construction Criteria:

- All work must comply with local building codes and the National Electric Code (NEC) for Agricultural Buildings (Article 547). **All electrical work should be completed or inspected by a licensed electrician**.
- All permits are the responsibility of the landowner.

Considerations:

- When the high tunnel or greenhouse has a heater or ventilation vans, it is **highly recommended** that automated roll-up sides are used with an environmental controller that can operate all of these systems together to avoid inefficient overlaps in functionality. See practice Energy Efficient Agricultural Operation (374) for more details.

  → Exhaust fans and horizontal airflow fans will automatically stop when the sidewalls are open.

- Humidity sensors can be added to some controllers that can be used to operate the sidewalls and avoid conditions favorable to disease.
- Insect exclusion netting can be used in conjunction with automatic roll-up sidewalls.
- Space plants and/or prune vegetation to avoid leaves touching and increase airflow.
- Select disease resistant cultivars whenever possible to reduce the risk of infections.

Certification Documents:

☐ Map indicating the greenhouse or high tunnel where the system was installed. (*Conservation Plan Map may be used*)

☐ Plans and/or specifications for the motors and controller. (*required*)

☐ Photos of the motors, controller, and sensor(s) installed and functional. (*required*)

☐ Operation and maintenance plan. (*See manufacturer's documentation for product specifics*)

Plans Meet NRCS Standards and Specifications

Planner Signature:

_____

Date: _____

***Certification Statement**: I certify that implementation of this conservation practice is complete, meets criteria for the stated purpose(s), and meets the NRCS conservation practice standard and specifications.*

Participant Agrees to the outlined plan: ◯ Yes ◯ No

Participant Signature:

_____

Date: _____

Planner Signature:

_____

Date: _____

Automatic Roll-up Sides Certification Documentation

Greenhouse or High Tunnel	Existing Ventilation System	Motor Manufacturer and Model Number	Controller Manufacturer and Model Number	Sensors	Optional Controls	Date Installed
	☐ Roll-up Sides ☐ Exhaust Fan			☐ Temp. ☐ Humidity	☐ Heating ☐ Ventilation	☐ Applied as planned
	☐ Roll-up Sides ☐ Exhaust Fan			☐ Temp. ☐ Humidity	☐ Heating ☐ Ventilation	☐ Applied as planned
	☐ Roll-up Sides ☐ Exhaust Fan			☐ Temp. ☐ Humidity	☐ Heating ☐ Ventilation	☐ Applied as planned
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NOTES: