

Hoop Houses and Tunnels

Wednesday morning 9:00 am

Where: Gallery Overlook (upper level) Room A & B

MI Recertification credits: 1 (COMM CORE, PRIV CORE)

CCA Credits: CM(2.0)

Moderator: Erin Caudell, Flint Ingredient Company and The Local Grocer, Flint, MI

- 9:00 am Season Extension Techniques in Michigan's Upper Peninsula
- Collin Thompson, MSU Upper Peninsula Exp Station, Chatham, MI
- 9:55 am Farming Year-Round with Moveable High Tunnels
- Mike Bollinger, River Root Farm, Decorah, IA
- 10:50 am Session Ends

Season Extension Techniques in Michigan's Upper Peninsula

Collin Thompson

The North Farm – Upper Peninsula Research and Extension Center

Michigan State University Extension

(906) 439-5059

thom1264@msu.edu

www.msunorthfarm.org

The North Farm

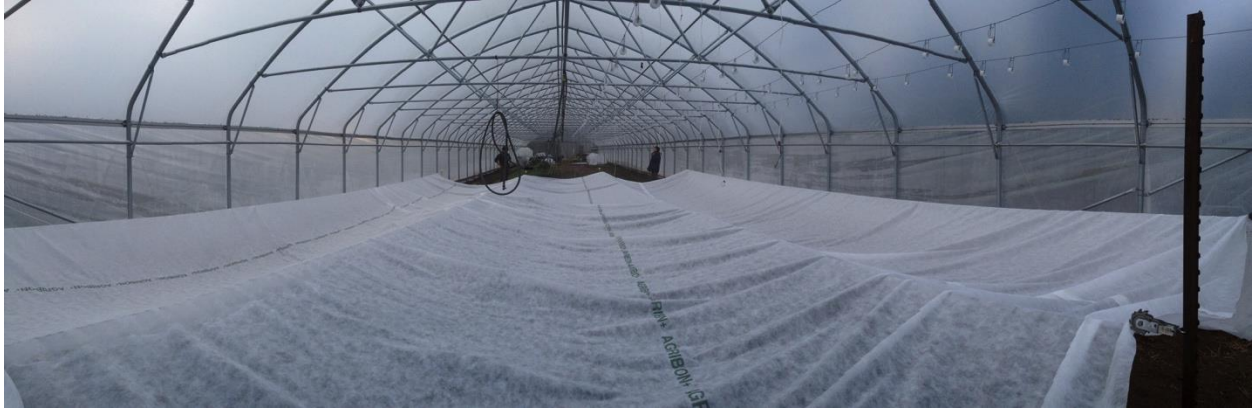
Part of the Michigan State University Upper Peninsula Research and Extension Center, The North Farm is a research and production farm and education center. Located in the central Upper Peninsula (UP), The North Farm faces extreme weather conditions, including an average 82-day frost-free season and 190 inches of annual snowfall. Despite these challenges, farmers and food advocates are developing a robust food system centered on local production, sale, and consumption. Because of this, growers are utilizing season extension techniques and technologies to lengthen the productive season. The goal of The North Farm is to provide demonstration

Season Extension Structures

The North Farm utilizes multiple types of season extension structures:

- *30'W x 192'L Four Season Tools High Tunnel*
 - Double layer, air-inflated film
 - Inner layer – anti-condensate, infrared treated film
 - Outer layer – standard UV treated film
 - Fully metal construction with polycarbonate endwall construction
 - Advancing Alternatives automated roll-up sidewall ventilation
 - Automated hinged peak ventilation
 - Full bracing kit including W-truss, shoulder braces, roof and sidewall corner bracing, and six purlins
- *Transplant Production Room*
 - 22'W x 36'L
 - Located inside the high tunnel, framed using galvanized steel fencing materials
 - Heated using Modine Effinity 93 – 135,000 BTU, propane
 - Vented into high tunnel space manually
- *Nifty Hoops 14'W x 92'L Side Step Field Tunnels*
 - Light-duty, movable structure for 3-4 season production
 - Side-to-side movement – breaks into 12' sections and lifted to new set of groundposts
 - Allows for covering multiple crops with a single structure
 - Single layer film – light diffusing, UV treated
 - Light-duty bracing kit – collar tie, tension ropes
 - Used for 3-season production at The North Farm due to snow load





- *Low Tunnels and Floating Row Cover*
 - Used in the field and tunnels for frost, pest, and wind protection
 - Two weights primarily used:
 - Mid weight (AG-30) – 0.9 oz/yd²
 - High tunnel frost protection (2-3 layers) - winter
 - Light weight (AG-19) – 0.55 oz/yd²
 - Field frost protection – spring/fall
 - Tunnel frost protection – spring/fall
 - Field tunnel frost protection (3 layers) – late fall/winter

Low Tunnel Overwintering Onions

- Field plantings under 4' low tunnels made of ½" EMT conduit
 - Purlin created with straight conduit, cable tied to hoops
- Seeded mid-August, transplanted late September
- 48" beds, 3 rows, bare soil
- Single layer AG-19, single layer 4 mil plastic sheeting
- Varieties – Bridger, Top Keeper, Keepsake



University of New Hampshire Overwintering Onion Research Trials:

https://extension.unh.edu/resources/files/Resource003239_Rep4688.pdf

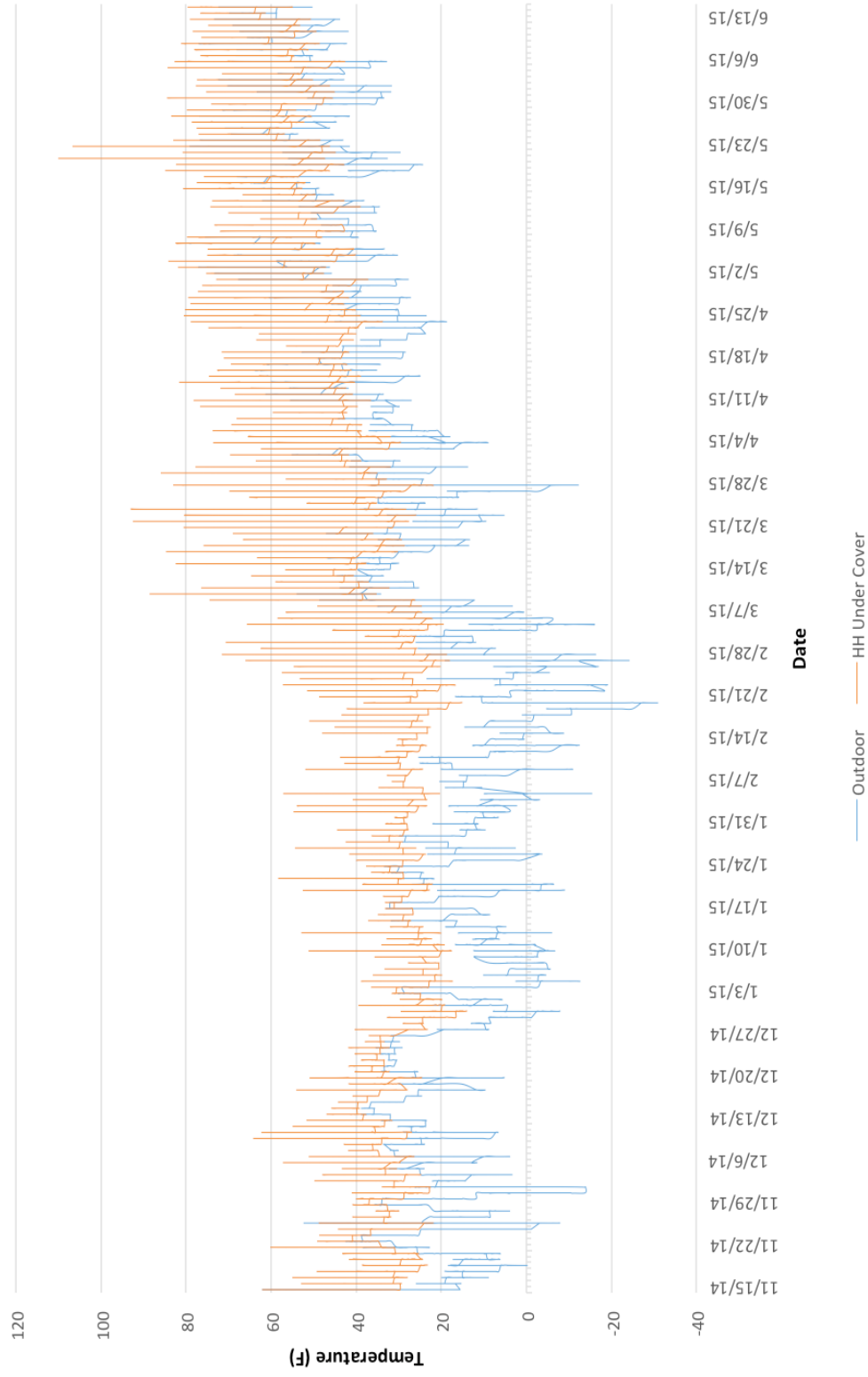
2014/15 Winter Greens Trials

Trials conducted in:

- 14'W x 92'L Nifty Hoops field tunnels with three layers of AG-19 supported by 4'W x 3'T conduit hoops – final harvest date – 12/21/14
- 30'W x 192'L Four Season Tools high tunnel with two layers of AG-30 supported approximately 24" above ground using suspended cables

<i>Leaf Lettuce</i>					
<u>Variety</u>	<u>Cold Tolerance</u>	<u>Color</u>	<u>Weight</u>	<u>Regrowth</u>	<u>Notes</u>
Lettony	Great	Bright Green	Heavy	Great	Favorite of the trialed varieties
Refugio	Great	Dark Red	Mid	Fair	
Rouge D'Hiver	Good	Mid Red	Mid	Great	Color darkens with cold, some cold damage
Dark Red Lollo Rossa	Great	Mid Red	Heavy	Great	Slower spring growth post-winter
Flashy Trout Back	Fair	Speckled	Mid	Great	Attractive colors, but less cold tolerant
Ruby Sky	Good	Mid Red	Mid	Good	Germination problems
<i>Salanova</i>					
<u>Variety</u>	<u>Cold Tolerance</u>	<u>Color</u>	<u>Weight</u>	<u>Regrowth</u>	<u>Notes</u>
Green Incised	Good	Bright Green	Mid	-	Slightly less cold tolerant than the other Salanova varieties
Red Incised	Great	Mid Red	Mid	-	
Green Sweet Crisp	Great	Green	Heavy	-	
Red Sweet Crisp	Great	Dark Red	Heavy	-	
<i>Spinach</i>					
<u>Variety</u>	<u>Cold Tolerance</u>	<u>Color</u>	<u>Weight</u>	<u>Regrowth</u>	<u>Notes</u>
Corvair	Great	Dark Green	Heavy	Good	Upright plants for faster leaf harvest
Gazelle	Great	Dark Green	Heavy	Good	Upright plants for faster leaf harvest, Downy mildew issues
Tyee	Great	Dark Green	Mid	Good	Savoyed Leaf, slower harvest
Space	Great	Dark Green	Heavy	Great	Strong regrowth
<i>Choi</i>					
<u>Variety</u>	<u>Cold Tolerance</u>	<u>Color</u>	<u>Weight</u>	<u>Regrowth</u>	<u>Notes</u>
Red Choi	Good	Red leaves, green stems	Mid	-	Smaller, slower growth
Win Win Choi	Good	Green leaves, white stems	Mid	-	
Joi Choi	Good	Green leaves, white stems	Mid	-	

Temp (F) Outdoor and HH Under Cover



Outdoor temperatures measured at The North Farm (Chatham, MI) compared to temperatures under two layers of AG-30 floating row cover in a 30'W x 192'L high tunnel with two layers of film