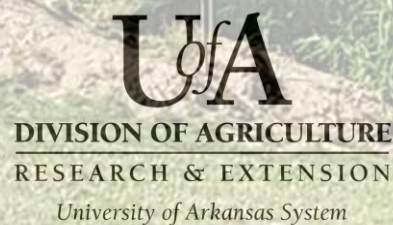


High Tunnel Design Considerations

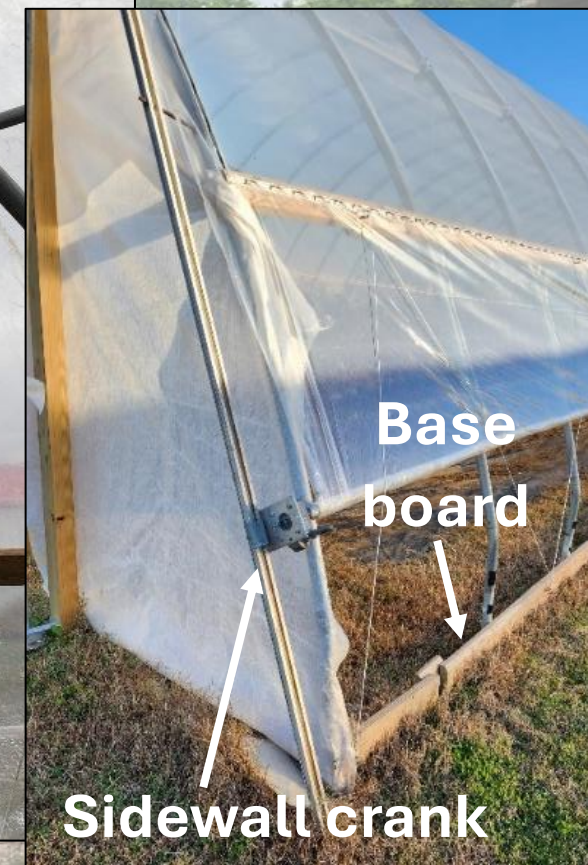
Taunya Ernst
High Tunnel and Urban Ag Instructor
501-671-2033
ternst@uada.edu



Tunnel Design

- Shape and size will affect light/shading, heat retention and growing space
 - Narrow tunnels cool more quickly
 - Taller, wider tunnels retain heat longer
- Ventilation capacity = better climate control and disease suppression

Major Components



Design Considerations

Shape:

Quonset

Gothic



- Cheaper – simpler design, less structural support
- Tall plants in the center
- Snow will need to be removed
- Opened sidewalls may expose crops to rain/weather



- More expensive – typically more structural support
- More usable space along the sides
- Sheds snow readily
- Diverts condensation away from the plants
- Generally better air exchange

Design Considerations

Sidewall: Height

- Crop selection
- Equipment
- Ventilation



Design Considerations

Sidewall: Height



Design Considerations

Sidewall: Roll-up or Drop down



Roll-up



Drop down

Design Considerations

Endwall Design:

- Structural Support
- Equipment
- Ventilation



Design Considerations



Design Considerations

Structural Support:

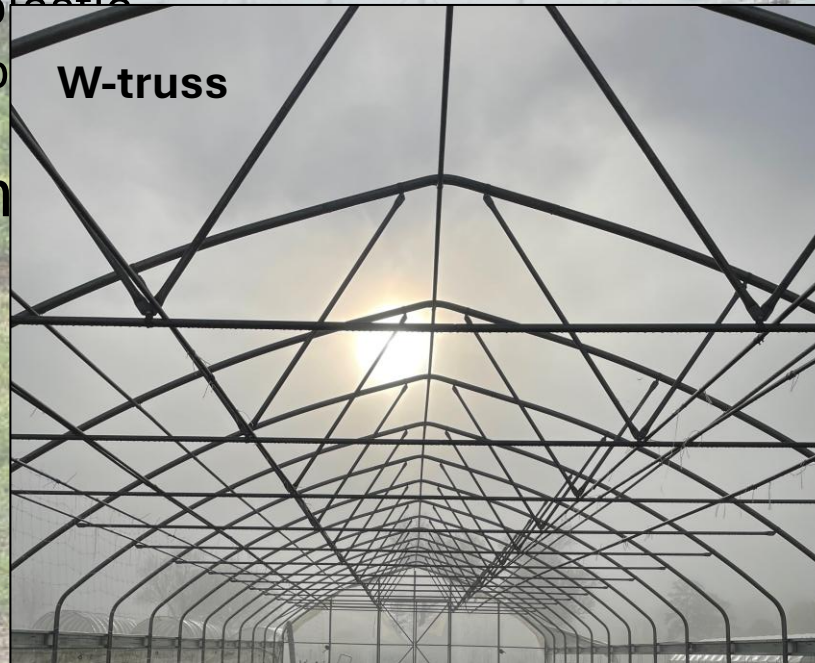
- Materials used
 - Structure:
 - Steel, PVC, wood
 - Covering:
 - Greenhouse plastic
 - Woven plastic
 - Polycarbonate sheeting
- Hoop spacing: 4' - 6'



Design Considerations

Structural Support:

- Materials used
 - Structure:
 - Steel, PVC, wood
 - Covering:
 - Greenhouse plastic
 - Woven plastic
 - Polycarbonate
- Hoop spacing
- Truss type



Design Considerations

Structural Support:

- Materials used
 - Structure:
 - Steel, PVC, wood
 - Covering:
 - Greenhouse plastic
 - Woven plastic
 - Polycarbonate sheeting
- Hoop spacing: 4' - 6'
- Truss type
- Angular (or corner) wind braces



Design Considerations

Structural Support:

- Materials used
 - Structure:
 - Steel, PVC, wood
 - Covering:
 - Greenhouse plastic
 - Woven plastic
 - Polycarbonate sheeting
- Hoop spacing: 4' - 6'
- Truss type
- Angular (or corner) wind braces
- Peak wind braces



Design Considerations

Extra Ventilation:

Roof Vents



Cable Vents



Fans



Shade Cloth



Extra Heating



Secondary Covers



Modified High Tunnel Designs:

Design Considerations

Movable Tunnels:

High tunnel production is rough on soils



Plot 1

Plot 2

Plot 3

Soil EC can increase to toxic levels



Movable High Tunnels:

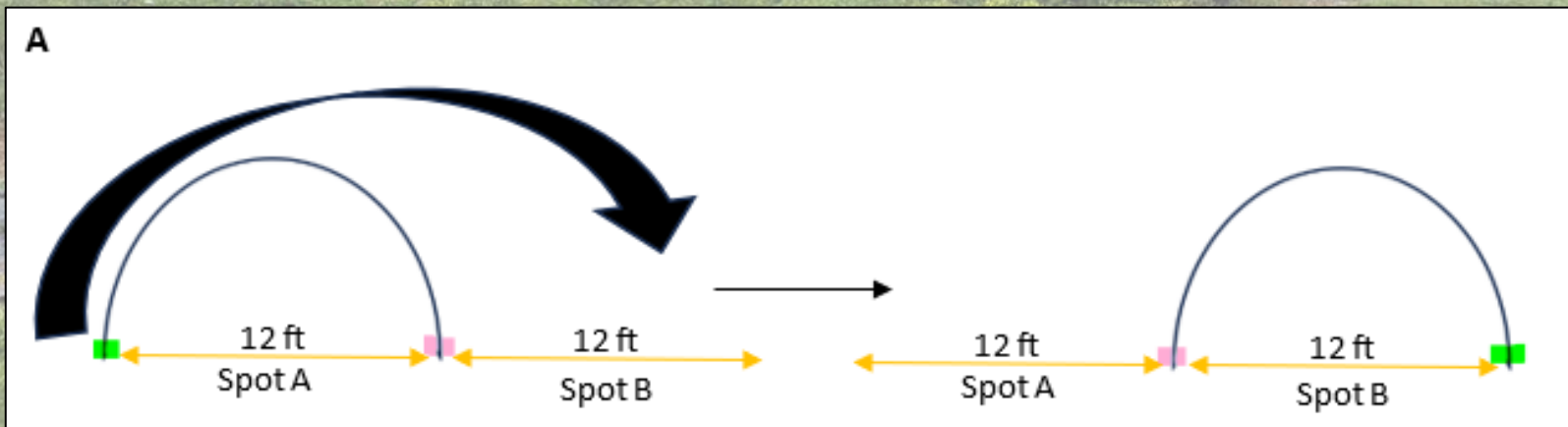


Caterpillar Tunnels



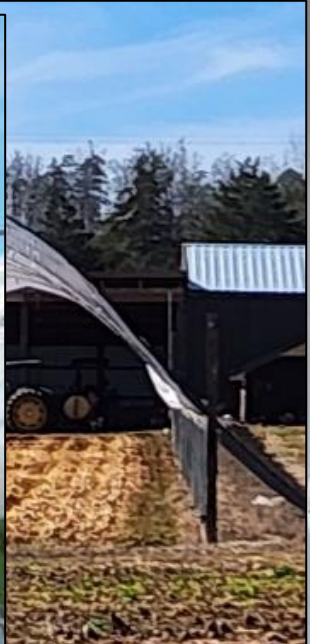
Key Differences:

- Simpler structural design
- Cheaper – PVC hoops
- Narrower, shorter
- Plastic secured by rope



Affordable moveable
tunnel system

Multibay High Tunnels



Multibay High Tunnels



High Tunnel Workshop

March 10th



Taunya Ernst
501-671-2033
ternst@uada.edu



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Scan the QR code to sign-up to receive email notifications about high tunnel field days, workshops and demonstrations

