

High Tunnel Fruit and Vegetable Production



LESSON TWO: HIGH TUNNEL SITE SELECTION

Objectives



- Determine the best location on your property for a high tunnel after evaluating the soil, drainage, wind, and light exposure of the site.
- Identify the deficiencies in specific sites and how they can be corrected.

Site Selection



- You now know:
 - What a high tunnel is
 - The advantages of growing in high tunnels
- What is the best place on a property for building a high tunnel that will allow for optimal plant growth?

Property Characteristics



- Orientation
- Accessibility
- Terrain
- Light
- Wind
- Soil



Orientation



- Good production has been obtained with either east-west or north-south orientation.
- If crops will be grown during the low light period of winter, an east-west orientation will maximize sunlight and capture solar radiation.
- A north-south orientation will warm up more quickly on a sunny morning, but high tunnels typically have to be opened by 9:00 a.m. because they very quickly become too hot.

Accessibility



- High tunnel location should be accessible by well-maintained roads and convenient to the grower because daily maintenance is often necessary.
- To facilitate labor efficiency, high tunnel structure should be convenient to:
 - water source
 - tool storage
 - cooler
 - packing shed
 - electrical and/or fuel source

Terrain



- Problems with terrain should be corrected before construction begins.
- The location should be slightly higher than the surrounding area so water will not drain into the high tunnel or flow through it if heavy rains occur.
- Runoff from uphill should be diverted before it reaches the high tunnel.
- Excessive ground water or wet soils often lead to soil-borne disease problems, secondary insect infestations, nutritional problems and heat loss.

Terrain



- A good site is:
 - Level
 - Well-drained
 - Fertile
 - Plowed
 - Has a windbreak to the north



Light



- Trees and structures on all sides of the high tunnel should ideally be set back 2.5 times their height.
- As a rule of thumb, multiple single bay high tunnels in an east-west orientation should be 20' apart.
- As a rule of thumb, multiple single bay high tunnels in a north-south orientation can be as close as 4' apart.
- Locating high tunnels north of major structures is considered undesirable.

Light



- Good sunlight is needed, especially early in the season.
- A north-south orientation is best for optimum sun exposure and less crop shading, particularly with close row spacing and the use of a trellis system that results in tall plants.
- High tunnels typically have to be opened by 9:00 a.m. to avoid becoming too hot.

Wind



- An ideal high tunnel site allows the free flow of air in summer and provides protection from cold winds in winter and from strong winds in summer.
- A windbreak on the windward side of the tunnel may help to reduce the effect of strong winds.
- When strong winds do occur, the vents and doors on high tunnels should be closed, especially on the windward side.

Wind



- Most strong winds come from the southwest or northwest
 - A windbreak on the north or west side of the high tunnel will provide protection.
- A deciduous windbreak on the west side will provide wind protection and slight shade from hot afternoon sun during the summer.
- In the fall, the deciduous windbreak will lose its leaves, creating less shade when the sun angle is lower and more heat is needed in the tunnel.
- Some light air movement is desirable in the high tunnel to assist with pollination.
 - A deciduous windbreak allows more wind through than an evergreen windbreak and is considered preferable.

Wind



- A windbreak can prevent serious damage caused by strong winds.



Soil



- Good internal soil water drainage is very important. All of the water will have to be provided by irrigation.
- Lighter textured soils like sandy loams or loamy sands are most desirable:
 - they warm up more quickly in the spring
 - are easily worked
 - provide a good media for root development
 - respond more readily to irrigation and fertilizer applications

Soil



- Clay soils:
 - do not drain well
 - remain colder longer
 - are more prone to the buildup of salts
 - increase the chance of soil-borne disease problems
- When the soil in a location is repeatedly used over a number of years, organic matter must be returned to the soil.
- Amend soil with compost, peat, or other organic materials to improve drainage and quality.



Summary



- In order to increase the chances of a successful high tunnel operation and business, proper site selection is crucial.
- Proper site selection can decrease incidences of damage due to high wind velocities, flooding, and other preventable occurrences.