



United States
Department of
Agriculture

High Tunnel Crops

Alaska specific Curricula- November 2020



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*This is designed to be a self guided presentation and should include a review of the material provided in the [Blue Underlined Links](#) throughout the document.

Introduction:

- In 2010, NRCS began providing financial assistance for installing high tunnels in Alaska.
- Building and operating a high tunnel requires a significant investment of money, time and energy.
- Many of the growers that NRCS and their partners work with will be growing in a high tunnel for the first time. A basic knowledge of high tunnel crops will help you serve your clients and set them up for success.

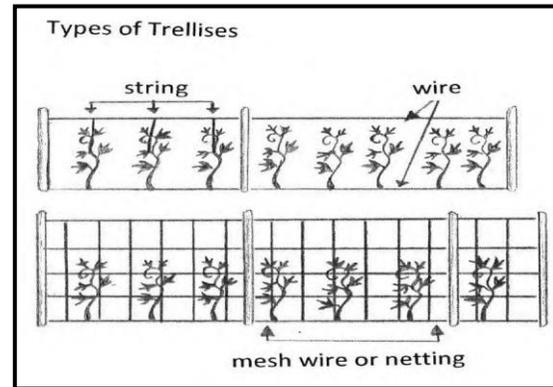
Planting in a High Tunnel (Techniques)

- Grown in the ground: NRCS policy requires that crops grown in a high tunnel be planted in the natural soil profile, and not in pots or on benches.



Planting in a High Tunnel (Techniques)

- The Alaska NRCS [Planting in a High Tunnel](#) document covers different planting techniques including:
 - Trellises for vines, trained fruit trees, berries and other shrubs.
 - Mulch Materials (plastic, fabric and other materials) to suppress weeds and manage moisture.
 - Raised beds
 - Mounded with or without mulch.
 - Constructed beds made with wood or other materials.



Planting in a High Tunnel (Crop Rotation)

- Crop Rotation: A planned sequence of crops grown on the same ground over a period of time.
- The need for crop rotation should be considered even in small high tunnels. A rotation can be established in different parts of a single high tunnel or across multiple high tunnels if applicable.
 - Benefits:
 - Reduced pest pressure by breaking pest life cycles
 - Improved nutrient balance
 - Improved soil health

There are two main strategies for using a high tunnel:

- Grow “heat loving” crops that require conditions warmer than typical Alaska growing conditions.
- Grow crops that are adapted to a cooler conditions, but in unique ways.



As a conservation planner, you should have a conversation with growers about crop selection that will help them be successful.

“Heat Loving Crops”

- High tunnels help with crops that don't grow well in cool conditions and crops that don't reach maturity by the end of the Alaska growing season.
- Review the [“Planting in a High Tunnel”](#) publication for four common examples of “heat loving” crops.



Corn grown North of the Arctic Circle in Fort Yukon, Alaska.

- Other “heat loving” crops grown in Alaska include: Eggplant, Tomatillos, Grapes, Fruit Trees, Melons (various), Winter and Summer Squash, Herbs, Cut Flowers and more...

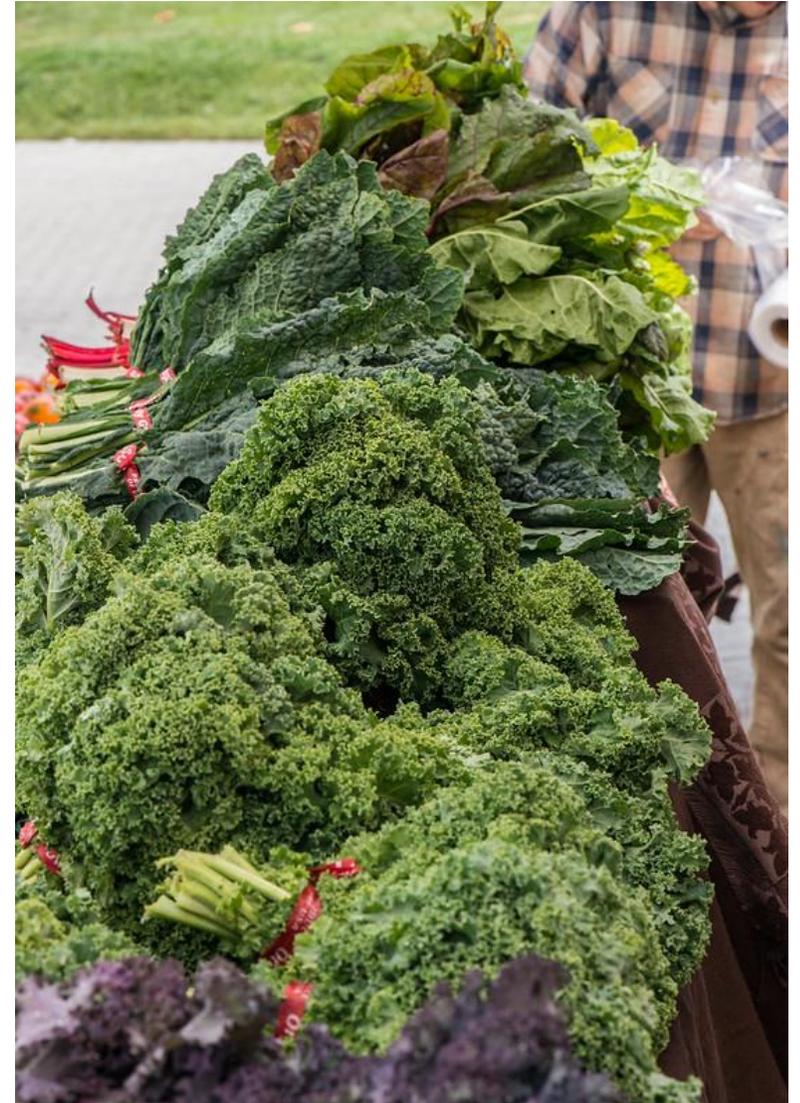
Growing Crops Adapted to Cooler Conditions in Unique Ways

- Some crops do just fine outdoors in Alaska, but a high tunnel provides more options for farmers. Filling a high tunnel with potatoes might not be the best use of such prime growing space (unless targeting an early market) but some strategies listed on the next 4 slides are quite valuable.



Early and Late Marketing

- Early Marketing- A high tunnel can help farmers get produce to the market earlier in the season.
- Late Marketing- Often growers in Alaska can be hit with an early frost followed by weeks of suitable growing conditions. High tunnels can protect crops from early frost, and warmer temperatures in the high tunnel help crops remain productive longer.



Succession Planting

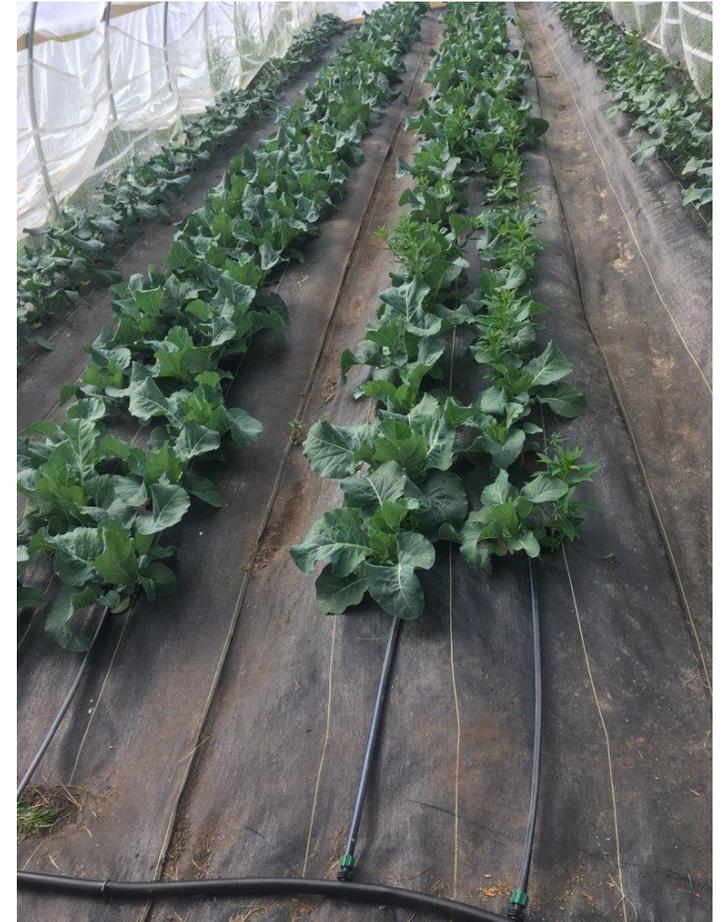
- Some fast-growing crops can be produced in the same spot multiple times in one season. This is called succession planting.
- Follow the link to view a UAF-Cooperative Extension Service video about high tunnels and pay special attention to the discussion about succession planting in the final two minutes: [UAF-CES High Tunnels](#)

Moisture Management

- High tunnels may increase the need for irrigation in some cases, but also protect crops in zones where high precipitation provides excessive water.
- Generally, a high tunnel will block precipitation and increase the water needed for irrigation.
 - Clients should be informed about the possibility of needing water rights for their irrigation water under state law. More information about water rights in Alaska can be found here: [Alaska Water Rights](#)
 - Documenting consultation with the Alaska Department of Natural Resources about the need for water rights may be required for some NRCS programs.

Moisture Management (continued)

- Managing the temperature and humidity in a high tunnel with ventilation is critical. Excessively warm and moist conditions can encourage the growth of mold and other diseases.
- Irrigation in a high tunnel can be done by hand watering, drip irrigation or sprinkler.
 - Avoiding irrigation that frequently wets leaves can help reduce mold and other diseases.



Other Considerations:

- Consider your client's objectives and resource concerns for their operation. A good conservation plan adequately addresses both.
- None of these strategies will work if a high tunnel has collapsed under a heavy snow load! During the planning process, discuss the need to remove the plastic cover over winter or strategies to remove snow before it accumulates.
- Conservation practices such as Nutrient Management, Pest Management, Conservation Crop Rotation and Irrigation Water Management can be used in high tunnels to help clients treat resource concerns while successfully producing a crop.

Additional Resources:

- The UAF Cooperative Extension Service has a broad range of Alaska-specific information about crop varieties and growing strategies. [UAF CES Publications](#)
- Soil and Water Conservation Districts (SWCD) and Tribal Conservation Districts (TCD) work along with NRCS to give information to growers at the local level.
- There are multiple social media groups focused on gardening and growing in Alaska. Some of these groups are even specifically geared toward high tunnels.



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