

# Winter Vegetable Production Methods: From the Field to the Hoophouse

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Author of *Sustainable Market Farming* and *The Year-Round Hoophouse*,  
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We are located on Monacan land, in zone 7a, with an average annual minimum temperature of 0-5°F (-18°C to -15°C).

## Winter Kill Temperatures of Cold-Hardy Vegetables 2019 revision

Here are some starting numbers of outdoor killing temperatures of unprotected crops (except where stated). Your own experience with your soils, microclimates and rain levels may lead you to use different temperatures. Note that repeated cold temperatures can kill off crops that can survive a single dip to a low temperature, and that cold winds, or cold wet weather can destroy plants quicker than simple cold.

All greens do better with protection against cold drying winds. Note that repeated cold temperatures can kill crops that can survive a single dip to a low temperature, and that cold winds, or cold wet weather can destroy plants quicker than simple cold. Your own experience with your soils, microclimates and rain levels may lead you to use different temperatures in your crop planning.

### Outdoor killing temperatures of crops (unprotected unless stated)

**35°F (2°C):** Basil.

**32°F (0°C):** Bush beans, cauliflower curds, corn, cowpeas, cucumbers, eggplant, limas, melons, okra, some pak choy, peanuts, peppers, potato vines, squash vines, sweet potato vines, tomatoes.

**27°F (-3°C):** Many cabbage varieties, *Sugarloaf* chicory (takes only light frosts).

**25°F (-4°C):** Some cabbage, chervil, chicory roots for chicons, and hearts, Chinese Napa cabbage (*Blues*), dill (*Fernleaf*), endive (*Escarole* more frost-hardy than *Frisée*), some fava beans (*Windsor*), annual fennel, some mustards (*Red Giant*, *Southern Curled*) and Asian greens (*Maruba Santoh*, *mizuna*, most *pak choy*, *Tokyo Bekana*), onion scallions (some are much more hardy), radicchio.

**22°F (-6°C):** Some arugula (some varieties are hardier), *Bright Lights* chard, large leaves of lettuce (protected hearts and small plants will survive colder temperatures), rhubarb stems and leaves.

**20°F (-7°C):** Some beets (*Bulls Blood*, *Chioggia*), broccoli heads (maybe OK to 15°F (-9.5°C)), Brussels sprouts, some cabbages (the insides may still be good even if the outer leaves are damaged), celeriac, celtuce (stem lettuce), some collards (*Georgia Cabbage Collards*, variegated collards), some head lettuce, some mustards/Asian greens (*Tendergreen*, *Tyfon Holland* greens), flat leaf parsley, radicchio, radishes (*Cherry Belle*), most turnips (*Noir d'Hiver* is the most cold-tolerant variety).

**15°F (-9.5°C):** Some beets (*Albina Verduna*, *Lutz Winterkeeper*), beet leaves, some broccoli, some cabbage (*Kaitlin*, *Tribute*), covered celery (*Ventura*), red chard, cilantro, endive, some fava beans (*Aquadulce Claudia*), Red Russian and White Russian kales, kohlrabi, some lettuce, especially medium-sized plants with 4-10 leaves (*Marvel of Four Seasons*, *Olga*, *Rouge d'hiver*, *Tango*, *Winter Density*), curly leaf parsley, rutabagas (*American Purple Top Yellow*, *Laurentian*) if not covered, broad leaf sorrel, most covered turnips, winter cress.

**12°F (-11°C):** Some beets (*Cylindra*), some broccoli, Brussels sprouts, some cabbage (*January King*, Savoy types), carrots (*Danvers*, *Oxheart*), most collards, some fava beans (mostly cover crop varieties), garlic tops if fairly large, most fall or summer varieties of leeks (*Lincoln*, *King Richard*), large tops of potato onions, covered rutabagas, Senposai leaves - the core of the plant may survive 10°F (-12°C), some turnips (*Purple Top*).

**10°F (-12°C):** Covered beets, *Purple Sprouting* broccoli for spring harvest, a few cabbages (*Deadon*), chard (green chard is hardier than multi-colored types), some collards (*Morris Heading* can survive at least one night at 10F), *Belle Isle* upland cress, some endive (*Perfect*, *President*), young *Bronze fennel*, probably *Komatsuna*, some leeks (*American Flag*, *Jaune du Poiteau*), some covered lettuce (*Pirat*, *Red Salad Bowl*, *Salad Bowl*, *Sylvesta*, *Winter Marvel*), covered winter radish (*Daikon*, *China Rose*, *Shunkyo Semi-Long* survive 10°F/-12°C), large leaves of savoy spinach (more hardy than smooth-leafed varieties), *Tatsoi*, *Yukina Savoy*.

**5°F (-15°C):** Garlic tops even if small, some kale (*Winterbor*, *Westland Winter*), some leeks (*Bulgarian Giant*, *Laura*), some bulb onions, potato onions and other multiplier onions, smaller leaves of savoy spinach and broad leaf sorrel. Many of the Even' Star Ice Bred greens varieties are hardy down to 6°F (-14°C), a few unprotected lettuces if small (*Winter Marvel*, *Tango*, *North Pole*, *Green Forest*).

**0°F (-18°C):** Chives, some collards (*Blue Max*, *McCormack's Green Glaze*, *Winner*), corn salad (*mâche*), garlic, horseradish, Jerusalem artichokes, Even' Star *Ice-Bred Smooth Leaf* kale, a few leeks (*Alaska*, *Durabel*, *Tadorna*); some bulb onions, yellow potato onions, some onion scallions, (*Evergreen Winter Hardy White*, *White Lisbon*), parsnips (probably even colder), salad burnet, salsify (?), some spinach (*Bloomsdale Savoy*, *Olympia*). *Walla Walla* onions sown in late summer are said to be hardy down to -10°F (-23°C), but I don't trust below 0°F (-18°C)

**-5°F (-19°C):** Leaves of overwintering cauliflowers, *Vates* kale survives although some leaves may be too damaged to use.

**-10°F (-23°C):** Reputedly, *Walla Walla* onions sown in late summer

**-30°F to -40°F (-34°C to -40°C):** Narrow leaf sorrel, Claytonia and some cabbage (January King?) are said to be hardy in zone 3

### Hoophouse Notes

**In a double-layer hoophouse** (8F/5C warmer than outside) **plants can survive 14F/8C colder** than they can outside, without inner rowcover; **with thick rowcover** (1.25ozTytar/Xavan) at least **21F/12C colder** than outside.

Salad greens in a hoophouse in zone 7 can survive nights with outdoor lows of 14°F (-10°C). A test year: Lettuce, Mizuna, Turnips, Russian kales, Senposai, Tye spinach, Tatsoi, Yukina Savoy survived a *hoophouse* temperature of 10.4°F (-12°C) without rowcover, -2.2°F (-19°C) with; *Bright Lights* chard got frozen leaf stems.

### Four Ranges of Cold-Hardy Crops

- Crops to keep alive in the ground into winter to 22° -15°F (-6°C to -9°C), then harvest.**
  - Use: Asian greens, broccoli, cabbage, chard, lettuce, radishes **Cold-hardy Lettuce for outdoors:** Brune d'Hiver, **Buckley**, Ezrilla, **Green Forest, Hampton**, Lollo Rossa, Merlot, North Pole, **Red Tinged Winter, Revolution**, Rouge d'Hiver, **Tango, Winter Marvel**
  - Store: Beets, cabbage, carrots, celeriac, kohlrabi, winter radish (including daikon), rutabagas, turnips,
- Hardy crops to store in the ground and harvest during the winter.** In zone 7, they need to be hardy to 0°-10°F (-17.8°C to -12.3°C): Deadon cabbage, carrots, collards, kale, leeks, parsnips, scallions, spinach. Small greens such as arugula, parsley, Belle Isle upland cress, winter purslane, salad burnet and mâche (corn salad) are very winter-hardy too. More unusual crops like horseradish, Jerusalem artichokes, salsify, some endive are hardy. Green Swiss chard is hardy to **10°F (-12°C)** without rowcover.
- Overwinter crops for spring harvests before the main season:** Carrots, chard, chives, collards, garlic and garlic scallions, kale, lettuce, multiplier onions (potato onions), scallions, spinach. Some Asian greens - Green in Snow mustard (Shi-Li-Hon) is the hardiest Asian green. Garlic and potato onions are routinely grown over the winter for late spring/early summer harvest. In zone 7b or warmer, peas can be fall sown for a spring crop.
- Hoophouse winter crops:**
  - **Leaf Lettuce** may survive an occasional dip to 10°F (-12°C) with inner rowcover Avoid depending on new sowings at the slow-growing time of year.
  - **Baby lettuce mix** (more cold-hardy than large lettuce); **Small-leaf lettuces:** Johnny's Salanovas, Osborne's and High Mowing's Eazyleaf; Tango, Oscarde, Panisse.
  - **Brassica (Mustard) Salad Mixes**
  - Many **cooking greens** can be used as salad crops while plants are small.
  - Several **small greens** are very winter-hardy: mizuna, other frilly mustards, Arugula, parsley, Belle Isle upland cress, winter purslane, salad burnet and mâche (corn salad)
  - **Leafy cooking greens:** Spinach (*Renegade, Acadia, Escalade, Reflect*), Russian kales, Swiss chard and beet greens, endives and chicories, Asian greens: senposai, komatsuna, tatsoi, Yukina Savoy, Napa and Michihili Wong Bok cabbage, Tokyo Bekana, Muruba Santoh, pak choy, Mizuna, frilly mustards *Ruby Streaks, Golden Frills, Scarlet Frills, Red Rain*.
  - **Roots:** Beets *Bulls Blood, Cylindra*; carrots *Napoli, Mokum*, bulb fennel, radishes large & small, turnips: *Hakurei. Red Round*
  - **Onions:** scallions, bulbing onions
  - **Peas and beans;** dwarf snap peas *Sugar Ann* (2/1-7/15), fava beans
  - **Bare-root transplants:** In October we sow "filler" greens and lettuce to use in the hoophouse during the winter. In November we sow bulbing onions to plant outdoors 3/1. Jan 24 we sow kale, collards, spinach to plant outdoors in March

### Fall Hoophouse Planting

- ❖ **Early September:** We sow sprouted spinach seed, radishes, scallions, Bulls Blood beet greens and tatsoi.
- ❖ **Sept 15 and Sept 24:** We make **outdoor sowings** of crops to later transplant into the hoophouse at 2-4 weeks old.
  - **Sept 15:** about 10 varieties of hardy **leaf lettuce and romaines, pak choy, Chinese cabbage, Yukina Savoy, Tokyo Bekana, Maruba Santoh, chard.**
  - **Sept 24:** another 10 varieties of **lettuce, Red and White Russian kales, Senposai**, more **Yukina Savoy, mizuna, arugula.**
- ❖ **Late September** we transplant **Tokyo Bekana** and **Maruba Santoh** at 2 weeks old, **Chinese cabbage, pak choy** and **Yukina Savoy** at 3 weeks.
- ❖ **Early October**, we sow more **radishes** and some **filler greens, (spinach, lettuce and Asian greens)** to fill gaps later. We try hard to keep all the space occupied, mostly using lettuce and spinach.
- ❖ By **mid-October** we clear and prepare another bed and transplant **lettuce** at 10" (25 cm) apart, and **chard.**
- ❖ **Oct 15** we sow our first **turnips.**
- ❖ **Late October** we sow more **filler greens, baby lettuce mix, our second spinach, turnips and chard**, and more **radishes.**
- ❖ **Late October**, we transplant **Senposai, mizuna, kale, arugula, Yukina Savoy** and more **lettuce**, at 4 weeks old.

- ❖ **Nov 10** we sow more **turnips, mizuna** and **arugula**, more filler **lettuce** and **spinach**, and our first **bulb onions** for field transplanting as early as possible in the new year.
- ❖ **Nov 11-20** we sow **scallions, tatsoi, radishes**, more **bulb onion** starts.
- ❖ From **Nov 10** on we keep a fully planted hoophouse. As each crop harvest winds down, we replace that crop with another.
- ❖ During **December** we use the filler greens plants to replace casualties and heads of **Chinese cabbage, Pak choy, Yukina Savoy** each day as soon as we've harvested them.

### Fall Sowings to Transplant Inside

**Sept 15 and Sept 24:** We make outdoor sowings of crops to later transplant into the hoophouse at 2–4 weeks old. We use hoops and ProtekNet, and water frequently. See below, under Fall Hoophouse Planting

### Filler Greens

- Short rows of lettuce, spinach, Senposai, Yukina Savoy, Maruba Santoh, Tokyo Bekana to transplant in gaps when they occur. **Until Dec 25** fill gaps with Asian greens, spinach or lettuces as appropriate, then stop filling gaps in the Asian greens that will be harvested in December and January: Tokyo bekana, Maruba Santoh, tatsoi, Chinese cabbage, pak choy. **Until Jan 25** fill other gaps with Asian greens, spinach or lettuces as appropriate. **From Jan 25 to Feb 20** fill all gaps everywhere with **spinach** transplants. **From Feb 20**, only fill gaps on the outer thirds of the beds, leaving centers free for tomatoes, etc.
- Brassica salad mixes use small areas and short time gaps. Peashoots can be grown as a gap-filling crop in late winter.

### Winter Hoophouse Harvest Dates

- October: beet greens, radishes, spinach, tatsoi.
- From November onwards: As October plus arugula, brassica salad mix, chard, lettuce leaves, mizuna, frilly mustards, scallions.
- From December: As November plus kale, senposai, turnips, and Yukina Savoy.
- From January: As December
- During December: whole plants of Tokyo Bekana, Maruba Santoh.
- During January: heads of Chinese cabbage, pak choy.
- Having the heading crops in December and January gets us through the slow-growth period.
- Most loose-leaf crops last until mid-March or later.

### Follow-on Winter Hoophouse Crops

A sequence of different crops occupying the same space over time. Sometimes confusingly called "Succession Planting".

- **11/17:** We follow our 1<sup>st</sup> **radishes** with 2<sup>nd</sup> **scallions**
- **12/23:** 1<sup>st</sup> **baby brassica salad mix** with 5<sup>th</sup> **radishes**
- **12/31:** Some of our 1<sup>st</sup> **spinach** with our 2<sup>nd</sup> **baby lettuce mix**
- **1/15:** Our 1<sup>st</sup> **tatsoi** with our 4<sup>th</sup> **spinach**
- **1/16:** Our **Tokyo Bekana** with **spinach** for planting outdoors
- **1/24:** Our **pak choy** and **Chinese cabbage** with **kale** for outdoors
- **2/1:** Our 2<sup>nd</sup> **radishes** with our 2<sup>nd</sup> **baby brassica salad mix**
- **2/1:** Our 1<sup>st</sup> **Yukina Savoy** with our 3<sup>rd</sup> **mizuna**
- **2/1:** Some of our 1<sup>st</sup> **turnips** with our 3<sup>rd</sup> **baby lettuce mix**
- **2/1:** More of our 1<sup>st</sup> **spinach** with **dwarf snap peas**

### Succession Planting for Continuous Harvests

- As temperatures and day-length **decrease** in the fall, the time to maturity lengthens
- As temperatures and day-length **increase** after the Winter Solstice, the time to maturity shortens – later sowings can almost catch up with earlier ones.
- To get **harvests** starting an equal number of days apart, vary the interval between one **sowing** date and the next accordingly

<b>Hoophouse Succession Planting</b>			
<b>Crop</b>	<b>Planting Date</b>	<b>Harvest Dates</b>	<b>Notes</b>
Brassica Salad Mix #1	sown 10/2	10/29 – 12/22	
#2	sown 12/18	? – 4/20	11 days to germinate.
#3	sown 1/27	4/15 – 5/15?	Only 2 cuts
#4	sown 2/1		2/12 is last sow date
Chard #1	transplanted 10/16	12/11 - 4/9	
#2	sown 10/26	2/6 - 5/1	
Lettuce Mix #1	sown 10/24	12/14 - 3/15	Up to 8 cuts
#1.5!	sown 11/16	?	New this year
#2	sown 12/31	2/21 - 3/31 (4/15?)	3 cuts if we're lucky
#3	sown 2/1	3/18 - 4/30	3 cuts if we're lucky
#4	sown 2/15	3/25? - 5/15	Only sow if spring outdoor lettuce is late
Lettuce heads	until October	11/16 - 2/20	Harvest leaves from the mature plants
		2/21 - 3/31	Cut the heads
Mizuna #1	transplanted 10/20	11/25 - 1/25	Includes other frilly mustards
#2	sown 11/9	2/26 - 3/24	
#3	sown 2/1	3/24 – 5/23	Scarlet Frill, Golden Frills outlive mizuna and Ruby Streaks
Onions (bulbing) #1	sown 11/10		Transplanted outdoors as early as possible in March
#2	sown 11/22		
#3 back-up	sown 12/6		
Radish #1	sown 9/6	10/3 - 11/16	
#2	sown 10/1	11/10 - 12/25	
#3	sown 10/30	12/15 - 1/31	
#4	sown 11/29	?	Records lacking
#5	sown 12/23	2/13 - 3/30?	
Scallions #1	sown 9/6	12/8 - 2/1	
#2	sown 11/18	3/19 - 5/15	Following radish #1
Spinach #1	sown 9/6	10/30 - 2/15 or later	Sprouted seeds sown
#2	sown 10/24	11/25 - 5/7	
#3	sown 11/9	These later sowings are harvested until 5/7	We keep planting to fill gaps and pulling up finished plants
#4	sown 1/16		
#5	sown 1/17	Until mid-May	To transplant outdoors in February
Tatsoi #1	sown 9/7	10/30 - 12/31	9 weeks of harvest
#2	sown 11/15	2/12 - 3/12	4 weeks of harvest
Turnips #1	sown 10/14	12/5 - 2/20	Thinnings 11/29
#2	sown 10/25	2/1 - 3/13	Thinnings 1/11
#3	sown 12/10	3/5 - 3/20	Only worthwhile if thinned promptly and eaten small
Yukina Savoy #1	transplanted 10/6	12/5 - 1/25	
#2	transplanted 10/24	1/8 - 2/1 or so	Only one week extra

### **Minimizing Nitrate Accumulation in Winter**

- Grow varieties best suited for winter;
- Avoid animal fertilizers; use organic compost.
- Ensure soil has sufficient P, K, Mg and Mo
- Water enough but not excessively;
- Provide fresh air as soon as temperatures reach 68°F (20°C) indoors, so that carbon dioxide levels are high enough;
- Harvest after at least four (preferably six) hours of bright sunlight in winter;
- Avoid harvesting on very overcast days;
- Avoid over-mature crops and discard the outer leaves. Harvest crops a little under-mature, rather than over-mature;
- Refrigerate immediately after harvest, store harvested greens at temperatures close to freezing;
- Use crops soon after harvest;
- Mix your salads; don't just eat spinach.

### **Resources – General (Updated May 2021)**

- ❑ ATTRA [attra.ncat.org/](http://attra.ncat.org/) *Season Extension Techniques for Market Farmers*, etc.
- ❑ SARE [www.sare.org/](http://www.sare.org/) A searchable database of research findings. See *Season Extension Topic Room*
- ❑ [articles.extension.org/organic\\_production](http://articles.extension.org/organic_production) and [eorganic.info](http://eorganic.info) Publications, webinars, videos, trainings and support. Reliable information.
- ❑ *Growing Small Farms*: [growingsmallfarms.ces.ncsu.edu/](http://growingsmallfarms.ces.ncsu.edu/) Farmer Resources.
- ❑ Jean-Paul Courtens, Roxbury Farm <https://www.roxburyfarm.com/roxbury-agriculture-institute-at-philia-farm> *Whole farm Approach; Biodynamic Practices; Harvest Manual; Crop Manual; More Info for Farmers: Soil Fertility Practices; 100 Member CSA plans: CSA Share List, Greenhouse Plan, Field Plan.*
- ❑ [Johnnyseeds.com](http://Johnnyseeds.com). Growers' Library, Winter Growing Guide <https://www.johnnyseeds.com/growers-library/vegetables/winter-growing-guide-high-tunnel-scheduling.html>. The first two of 9 sections in the guide.
- ❑ <https://weatherspark.com/> Weather records for your area. Fun!
- ❑ Soil temperatures [www.greencastonline.com/tools/soil-temperature](http://www.greencastonline.com/tools/soil-temperature)
- ❑

### **Resources – Books**

- ❑ *The Market Gardener*, Jean-Martin Fortier, New Society Publishers
- ❑ *The Complete Know and Grow Vegetables*, J K A Bleasdale, P J Salter et al.
- ❑ *Knott's Handbook for Vegetable Growers*, Maynard and Hochmuth [extension.missouri.edu/sare/documents/KnottsHandbook2012.pdf](http://extension.missouri.edu/sare/documents/KnottsHandbook2012.pdf)
- ❑ *The New Seed Starter's Handbook*, Nancy Bubel, Rodale Books
- ❑ *The Organic Farmer's Business Handbook*, Richard Wiswall, Chelsea Green
- ❑ *Sustainable Vegetable Production from Start-up to Market*, Vern Grubinger, [host31.spidergraphics.com/nra/doc/fair%20use%20web%20pdfs/nraes-104\\_web.pdf](http://host31.spidergraphics.com/nra/doc/fair%20use%20web%20pdfs/nraes-104_web.pdf) NRAES
- ❑ *The New Organic Grower and The Winter Harvest Manual*, Eliot Coleman,
- ❑ *The Bio-Integrated Farm*, Shawn Jadrnicek.
- ❑ *The Chinese Greenhouse: Design and Build a Low-Cost, Passive Solar Greenhouse*, Dan Chiras, New Society Publishers. Solar-heated, earth-sheltered, well-insulated, plastic-glazed structures, making it possible to grow warm weather crops in winter.
- ❑ *Growing Great Garlic*, Ron Engeland, 1991, Filaree
- ❑ *The Urban Farmer*, Curtis Stone, New Society Publishers
- ❑ *High-Yield Vegetable Gardening*, Colin McCrate and Brad Halm, Storey
- ❑ John Jeavons *How to Grow More Vegetables 8th edition 2012*, Ten Speed Press has charts: Pounds Consumed per Year by the Average Person in the US & Average US Yield in Pounds per 100 Square Feet
- ❑ *Gardening When it Counts*, Steve Solomon, New Society Publishers
- ❑ *Crop Planning for Organic Vegetable Growers*, Daniel Brisebois and Frédéric Thériault (Canadian Organic Growers [www.cog.ca](http://www.cog.ca))
- ❑ *Wholesale Success*, Atina Duffley, Jim Slama [static1.squarespace.com/static/59370f34a5790a9ef264ae76/t/59a71ff7e3df28f2da21badc/1504124924473/Farmer%E2%80%99s+Guide+to+Food+Safety%2C+Selling%2C+Postharvest+Handling%2C+Packing+Produce.pdf/](http://static1.squarespace.com/static/59370f34a5790a9ef264ae76/t/59a71ff7e3df28f2da21badc/1504124924473/Farmer%E2%80%99s+Guide+to+Food+Safety%2C+Selling%2C+Postharvest+Handling%2C+Packing+Produce.pdf/)
- ❑ *The Lean Farm, How to Minimize Waste, Increase Efficiency, and Maximize Value and Profits with Less Work and The Lean Farm Guide*, Ben Hartman
- ❑ *Grow a Sustainable Diet: Planning and Growing to Feed Ourselves and the Earth*, Cindy Conner, New Society Publishers
- ❑ *Nature and Properties of Soils*, fourteenth edition, Nyle Brady and Ray Weil
- ❑ *Garden Insects of North America*, Whitney Cranshaw

### **Resources – Season Extension**

- ❑ *Extending the Season: Six Strategies for Improving Cash Flow Year-Round on the Market Farm* a free e-book for online subscribers to *Growing for Market* magazine
- ❑ *Fall and Winter Gardening Quick Reference*, Southern Exposure Seed Exchange, [www.southernexposure.com/growing-guides/fall-winter-quick-guide.pdf](http://www.southernexposure.com/growing-guides/fall-winter-quick-guide.pdf)
- ❑ *Solar Gardening: Growing Vegetables Year-Round the American Intensive Way*, Leandre Poisson, Gretchen Poisson and Robin Wimbiscus, 1994, Chelsea Green – good book on making small structures.
- ❑ *Greenhouse and Hoophouse Grower's Handbook – Organic Vegetable Production Using Protected Culture*, Andrew Mefferd, New Society
- ❑ *Washington State University Extension, Storing Vegetables and Fruits at Home* [pubs.extension.wsu.edu/storing-vegetables-and-fruits-at-home](http://pubs.extension.wsu.edu/storing-vegetables-and-fruits-at-home)
- ❑ *USDA Agriculture Handbook 66 (1986)* hard to find old version.
- ❑ *Growers' Library, Winter Growing Guide* <https://www.johnnyseeds.com/growers-library/vegetables/winter-growing-guide-high-tunnel-scheduling.html>. The first two of 9 sections in the guide.

### Resources – Hoophouses

- ❑ University of Minnesota *Deep Winter Greenhouse* [extension.umn.edu/growing-systems/deep-winter-greenhouses](http://extension.umn.edu/growing-systems/deep-winter-greenhouses)
- ❑ U of MN *High Tunnel Production Manual* [www.extension.umn.edu/garden/fruit-vegetable/#high-tunnel](http://www.extension.umn.edu/garden/fruit-vegetable/#high-tunnel)
- ❑ U of MN *Cold-Climate Greenhouse Resource* [cura.umn.edu/publications/catalog/cap-186](http://cura.umn.edu/publications/catalog/cap-186)
- ❑ *The Northlands Winter Greenhouse Manual*, Carol Ford & Chuck Waibe [mosesorganic.net/product/northlands-winter-greenhouse-manual-the/](http://mosesorganic.net/product/northlands-winter-greenhouse-manual-the/)
- ❑ HighTunnels.org: [hightunnels.org/category/for-growers/growing-in-high-tunnels/](http://hightunnels.org/category/for-growers/growing-in-high-tunnels/) or [hightunnels.org/for-growers/](http://hightunnels.org/for-growers/)
- ❑ Penn State *High Tunnel Production Manual*, William Lamont, \$25 [extension.psu.edu/high-tunnel-manual](http://extension.psu.edu/high-tunnel-manual)
- ❑ *High Tunnels: Using Low Cost Technology to Increase Yields, Improve Quality, and Extend the Growing Season* by Ted Blomgren, Tracy Frisch and Steve Moore. University of Vermont Center for Sustainable Agriculture. <https://www.sare.org/resources/high-tunnels/>
- ❑ *High Tunnel Winter Cropping Systems*, Lewis Jett, SARE. Slideshow and audio. <https://northeast.sare.org/resources/high-tunnel-winter-cropping-systems/>

### Resources – Asian Greens

- ❑ *Grow Your Own Chinese Vegetables*, Geri Harrington, 1984, Garden Way Publishing. Includes the names for these crops in different cultures.
- ❑ *Growing Unusual Vegetables*, Simon Hickmott, 2006, Eco-Logic books, UK.
- ❑ *Oriental Vegetables: The Complete Guide for the Garden and Kitchen*, Joy Larkham, revised edition 2008, Kodansha, USA
- ❑ *Asian Vegetables*, Sally Cunningham, Chelsea Green
- ❑ *The Chinese Kitchen Garden*, Wendy Kiang-Spray, 2017, Workman Publishing
- ❑ Kitazawa Seeds [kitazawaseed.com/](http://kitazawaseed.com/) & Evergreen Seeds have the most choices.
- ❑ Evergreen's helpful clickable list. [evergreenseeds.com/asveglis.html](http://evergreenseeds.com/asveglis.html)
- ❑ Fedco Seeds [fedcoseeds.com/](http://fedcoseeds.com/) and Johnny's [johnnyseeds.com/](http://johnnyseeds.com/) have a good range.
- ❑ Wild Garden Seed has many interesting home-bred varieties. Search under Mustard. [wildgardenseed.com](http://wildgardenseed.com)
- ❑ ATTRA *Cole Crops and Other Brassicas: Organic Production* [attra.ncat.org/attra-pub/summaries/summary.php?pub=27](http://attra.ncat.org/attra-pub/summaries/summary.php?pub=27)

### Resources – My Slideshows. [www.slideshare.net/](http://www.slideshare.net/) Search for Pam Dawling. You'll find:

- |   |   |
|---|---|
| ❑ <i>Cold-hardy Winter Vegetables</i>                                   | ❑ <i>Producing Asian Greens</i>   |
| ❑ <i>Cover Crops for Vegetable Growers</i>                              | ❑ <i>Production of Late Fall, Winter and Early Spring Vegetable Crops</i> |
| ❑ <i>Crop Planning for Sustainable Vegetable Production</i>             | ❑ <i>Season Extension</i>   |
| ❑ <i>Crop Rotations for Vegetables and Cover Crops</i>                  | ❑ <i>Sequential Planting of Cool Season Crops in a High Tunnel</i>        |
| ❑ <i>Diversify your Vegetable Crops</i>                                 | ❑ <i>Spring and Summer Hoophouses</i>                                     |
| ❑ <i>Fall and Winter Hoophouse</i>                                      | ❑ <i>Storage Vegetables</i>   |
| ❑ <i>Fall Vegetable Production</i>                                      | ❑ <i>Succession Planting for Continuous Vegetable Harvests</i>            |
| ❑ <i>Feeding the Soil</i>   | ❑ <i>Sustainable Farming Practices.</i>                                   |
| ❑ <i>Growing Great Garlic</i>   | ❑ <i>The Seed Garden</i>  |
| ❑ <i>Growing Sweet Potatoes from Start to Finish</i>                    | ❑ <i>Year Round Vegetable Production</i>                                  |
| ❑ <i>Hoophouse Production of Cool Season Crops</i>                      | ❑ <i>Year Round Hoophouse Vegetables</i>                                  |
| ❑ <i>Lettuce Year Round</i>   |   |
| ❑ <i>Many Crops, Many Plantings, to Maximize High Tunnel Efficiency</i> |   |