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Resources

- “Vegetable Gardening in the Midwest” by C.E. Voigt and J.S. Vandemark, University of IL Extension
- <http://urbanext.illinois.edu/veggies/directory.cfm>
- <http://learningstore.extension.wisc.edu/Vegetables-C81.aspx>
- Cultivar selection:
 - <http://learningstore.extension.wisc.edu/Vegetable-Cultivars-and-Planting-Guide-for-Wisconsin-Gardens-P1373.aspx>
 - <http://vegetablemdonline.ppath.cornell.edu/Tables/TableList.htm>
- go.wisc.edu/planthealthadvising

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Planning the Garden – Think Big! Start Small

- Plant vegetables that you and your family like the most.
- Choose vegetables adapted to the Wisconsin growing season (110 frost free days in Southeast Wisconsin).
- Use garden resources to find info and a list of common varieties to plant.
- How much to plant? Know the approximate yield of the plant and family consumption.



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Heavy Yields (per 30 feet of row)

- Cabbage – 60 lbs. (15 plants, 2' spacing)
- Carrots – 30 lbs. (180 plants, 2" spacing)
- Cucumbers – 30/50 lbs (6 plants, 5' spacing)
- Tomatoes – 200 lbs (8 plants, 4' spacing)
- Eggplant – 80 lbs (10 plants, 3' spacing)

Medium Yields (per 30 feet of row)

- Beets – 30 lbs (120 plants, 3" spacing).
- Onions – 50 lbs (90 plants, 4" spacing).
- Radishes – 30 bunches (180 plants, 2" spacing)
- Sweet potatoes – 50 lbs (8 plants, 4' spacing).
- Turnips – 50 lbs (120 plants, 3" spacing).

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Light Yields (per 30 feet of row)



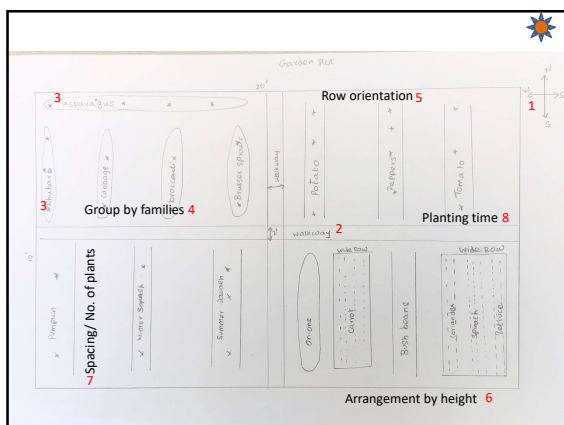
- Asparagus – 20 lbs (15 plants, 2' spacing).
- Broccoli – 25 lbs (15 plants, 2' spacing)
- Beans – 10-30 lbs (90 plants, 4" spacing).
- Corn – 30 ears (30 plants, 1' spacing)
- Peas – 25-15 lbs (180 plants, 2" spacing)
- Potatoes – 30-45 lbs (24 plants, 15" spacing).
- Spinach – 25 lbs (180 plants, 2" spacing).
- Squash – 75-125 lbs (8 plants, 4' spacing)

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Sketch the Garden Plot

- Have a garden plot sketch
- Perennial vegetables
 - Asparagus, rhubarb, berries
 - Plant at a side of the garden – North, North west
- Group by vegetable families—legume, cabbage, cucurbits
 - Plant taller crops to the north
 - Crop rotation for future years – pest and fertility management
- Row Orientation – North to South is best
- Determine when to plant

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Vegetable Families

- Tomato Family (Solanaceae) – Tomato, potato, egg plant, peppers, tomatillo
- Bean & Pea Family (Leguminosae) – Peas, beans (green, lima, pole, dry kidney), soybeans
- Cabbage Family (Brassicaceae) – cauliflower, broccoli, cabbage, Brussels sprouts, kale, bok choy, radish, collards, turnip
- Pumpkin Family (Cucurbitaceae) – cucumbers, pumpkin, squash (summer & winter), melons
- Onion Family (Alliaceae) – Onion, garlic, leek, chive
- Carrot Family (Apiaceae) – Carrot, parsley, coriander, fennel, celery
- Beet Family (Chenopodiaceae) – Beet, chard, spinach
- Lettuce Family (Asteraceae) – Lettuce, artichoke

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Choosing Site Location

- Full sun (6-8 hours) – for maximum yield and better taste
- Clearance from trees – Away from the tree dripline (minimum distance), 50' away from black walnut
- Clearance from lawn – keep it away from spray drift
- Avoid low lying spots for conventional garden, consider raised beds, beware of frost pocket and high humidity
- Proximity to your house – irrigation, wildlife damage

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Sod to Garden

- Begin a year before planting
- Remove turf grass with a sod cutter – large areas
- Garden spade and garden fork – small areas
- Cover with cardboard +compost, black plastic or old carpet for 6 weeks
- Raised bed garden
- Use herbicide like Glyphosate, Glufosiate, takes 2 weeks
- Till at least 3 times about 2-3 weeks interval to kill lawn grass and prep your soil



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Outdoor Seeding or Transplants?

- Spring & Summer Transplant crops – broccoli, Brussels sprouts, cauliflower, cabbage, kohlrabi, tomato, pepper, egg plant, head lettuce, okra, parsley, celery
- Spring & Summer Direct seeding in ground – cucumbers, squash, pumpkins, melons, sweet corn, carrot, spinach, lettuce, onion sets, beans, peas, beet, collards, potato seed tuber, radish, turnip,

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Fall Planting (Avg. first frost date – mid Oct.)

- Use short maturing varieties
- August 1st week:
Transplant crops – Broccoli, cabbage, cauliflower, Chinese cabbage, collards, kale
Direct seeding – beets, carrot, peas, turnips
- September 1st Week:
Transplants – Kohlrabi
Seeds: - Chard, leaf lettuce, mustard greens, spinach
- September 15 – radish seeds

Reference: Sharon Morrissey,
former UWEX Hort Agent

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Spring & Summer Outdoor Planting – When?

- Harden the transplants
- Cool season vegetable crops – Late April-May 1st week, soil temperature 50°F, can tolerate light frost
- Warm/tender vegetable crops – Last week May-June 1st week, soil temperature (60-70°F), night temperature above 55°F
- Black plastic mulch can warm up the soil
- Raised beds and container gardens provides early head start in gardening

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Source: Vegetable Gardening in the Midwest, University of IL Extension

SOIL TEMPERATURES FOR COMMERCIAL AND HOME GARDEN SEEDS

Vegetable	Soil temperature range for seedling development	Days to germination
Bean, lima	75-80°F	7-8
Bean, snap	65-80°F	7-10
Bean	50-80°F	7-14
Cabbage	50-80°F	6-12
Carrot	50-80°F	6-10
Chard	50-80°F	7-14
Cucumber	60-85°F	4-8
Lettuces	45-70°F	3-8
Marionberry	65-85°F	4-8
Okra	75-85°F	7-12
Chickpea	45-70°F	5-15
Peas	45-70°F	10-15
Pumpkin	60-75°F	10-15
Pea, pod or English	50-80°F	6-8
Pea, southern	65-85°F	6-8
Pumpkin	70-85°F	4-5
Radish	50-70°F	4-7
Spinach	45-65°F	7-15
Squash	70-85°F	4-5
Sweet corn	55-80°F	5-10
Turnip	70-85°F	3-3
Watermelon	45-85°F	5-8

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Shade Tolerant Crops

- Heavy shade (3 hours or less) – Arugula, herbs, lettuce, parsley, salad greens, spinach, scallion
 - Anise hyssop, chervil, chives, cilantro, parsley and lemon balm, and even basil tolerate some shade. Sweet woodruff grows in full shade.
 - Green salad - Bok choy, tatsoi, endive, and sorrel
- Part shade (4-6 hours) – Beets, carrots, chard, kale, radish, turnips

Reference: Home Garden Seed Association

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Know Your Soil

- Soil test – once in 5 years, soil pH, phosphorous, potassium and organic matter, cost \$18.00, fall is the best
- Soil labs – go.wisc.edu/planthealthadvising
- Vegetable crops – need well drained soil, 4-6 inches of organic matter loosens the soil in conventional bed, 2-3 inches on raised beds
- Examples of organic matter – compost, fall leaves, rotten cow manure, worm casting, peat, green manure (peas, beans, soybeans, alfalfa, clover), coir

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When to Prep Your New Garden Bed

- Spring – not too wet and not too dry
- Soil ball test
- Add organic matter
- Till the soil 6-8 inches deep for conventional garden and 4-6 inches deep for raised bed
- Add fertilizer and rake it 2 inches deep



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Starting Raised Beds?

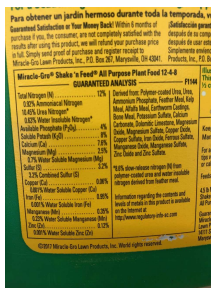
- <https://www.youtube.com/watch?v=8IRvTuZyE4s>
- 2x10" untreated lumber (Cedar), stones, bricks, synthetic lumber
- Weed barrier underneath
- Soil mix options
 - Compost, peat, perlite (1:1:1)
 - Top soil, peat/compost, perlite (1:1:1)
- Add organic matter annually



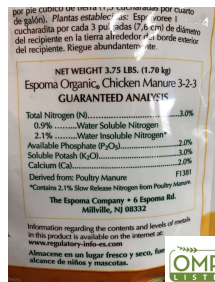
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Fertilizer

- Synthetic



- Organic



Fertilizer

– Synthetic fertilizer, use water soluble nitrogen type of fertilizer, sprinkle synthetic a week before planting

– Organic fertilizer, sprinkle two weeks before planting

- 4 cups for 6x4 raised beds or 15 cups for 100 sq. ft.

– Halfway during plant's growth, side dress with fertilizer

Granular about 6-12" from row
Leafy vegetables, sweet corn, and root vegetables are half grown

Tomatoes, peppers, beans, cucumbers, and vine crops have begun to set fruit



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Reference: UW Soil Test Lab Report

Recommendation	Fertilizer(s) recommended	Fertilizing Your Home Veg	
		A week or two weeks before planting	Side dressing
		Cups per 100 sq. ft.	Cups per 10 feet of row
Nitrogen only	Ammonium sulfate	4	¼
21-0-0	Ammonium nitrate	2 1/4	1/8
33-0-0	Urea	1 2/3	1/8
45-0-0	n fertilizer ³	2 1/4	1/8
Law 28-4-4,	26-0-6, etc.		
Nitrogen and Phosphorus	10-20-10, 7-22-8	8	½
	Organic fertilizer ⁴	15	1
Nitrogen and Potassium	20-0-10, 18-0-15	6	½
Nitrogen, Phosphorus, and potassium	10-10-10	7	½
	14-14-14	5	¼
	18-18-18	4 ½	¼
	20-20-20	3 ½	¼
Organic	fertilizer ⁴	15	1

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Light Watering After Fertilizing



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Planting Beds

- Straight row furrow

- Stretch a twine/rope between two stakes
- Hoe blade to create furrow, 1.5-2" for large seeds (beans, corn), ¼" for small seeds (lettuce, carrots)



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- Wide row planting

- Width of the row 3-4' and desired length
- Scatter seeds of carrot, beets, radish, leaf lettuce
- Can be planted in rows
- Onion sets
- Requires thinning



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Square Foot Gardening/Raised Bed



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Planting

- Use garden stake
- Refer to planting chart for spacing
- Plant in late evening or during cloudy days
- Water immediately
- Frost protection – floating row covers



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Garden Mulch

- Mulching – warming and cooling effect
- Black plastic mulch – warming effect, 5-10°F
 - Early spring planting
 - Warm loving vegetable crops
- Organic mulches – clean straw, clean hay, untreated grass clippings, crushed corncobs, peat, rice hull, compost



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Watering

- Soak the soil, at least 1" of water
- Water on the base of the plant, avoid overhead irrigation
- Drip irrigation, soaker hose

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Trellising & Cages



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Garden Pests & Growing Tips

- go.wisc.edu/planthealthadvising
- **Call: 608-298-6945**
- **Email: planthealth.advisors@extension.wisc.edu**
- **Walk-in Diagnosis PHA Locations** (Hours vary by location, call or email prior to visit):
 - **Kenosha County:** Extension Kenosha County, Kenosha County Center, 19600-75th Street, Suite 2, Bristol, WI 53104
 - **Milwaukee County:** Boerner Botanical Garden, 9400 Boerner Drive, Hales Corners, WI 53130
 - **Racine County:** Racine County Ives Grove Offices 14200 Washington Avenue Sturtevant, WI 53177