

A2801

GROWING VEGETABLES AT HOME

A

questions
Answers

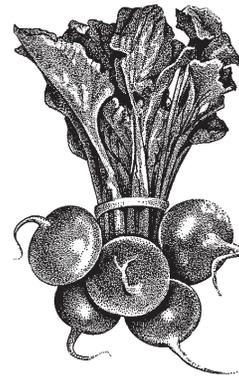
Helen C. Harrison



Q
A

GROWING VEGETABLES AT HOME

questions
Answers



Helen C. Harrison



PREFACE

In this publication, I could not cover all of the questions that gardeners usually ask about growing vegetables at home. Only those questions that come up most often are discussed.

This publication refers mainly to crops and growing conditions in Wisconsin. Several crops not commonly grown in this state are included because inexperienced gardeners or gardeners who have moved to Wisconsin from other parts of the nation frequently ask questions about these crops.

You can find additional information about crops and other gardening topics by checking the reference list included in the back of this publication. A copy of most of the references is available from county Extension offices in Wisconsin.

This publication was prepared originally following a special study conducted by the University of Wisconsin-Madison with the University of Minnesota and the Extension Service of the United States Department of Agriculture (USDA). The purpose of the study was to discover ways that the Cooperative Extension could effectively and efficiently serve people interested in growing vegetables at home. Funds for the study and for the original publication were provided by the Extension Service, USDA.

I'd like to acknowledge the contributions of O. B. Combs, UW-Madison professor emeritus of horticulture, for some earlier editions of this publication.

Helen Harrison



CONTENTS

Why grow vegetables at home?	2
Where to grow vegetables	2
Home gardens.	2
Growing vegetables in containers.	3
Growing vegetables indoors.	3
Community gardens	4
Planning your home vegetable garden	5
Grow crops adapted to Wisconsin	5
Practice intensive cropping	5
Cultivars (varieties) for the home vegetable garden	5
Seeds and plants	5
Caring for your vegetable garden	7
Tools and equipment	7
Fertilization	8
Compost	8
Mulches	8
Watering the vegetable garden	9
Weed control	9
Birds and mammals	9
Diseases	10
Insects	10
Nematodes.	11
Organic gardening	11
Organic matter.	12
Types of vegetables	12
Annual vegetables	12
Biennial vegetables.	12
Perennial vegetables	12
Fruit vegetables	12
Root, stem and bulb vegetables	12
Greens	13
Salad vegetables	13
Herbs	13
Vegetables for display and judging	13
Vegetables for freezing	13
Vegetables for storage	13
Individual vegetables in alphabetical order	14
Related publications	36

WHY GROW VEGETABLES AT HOME

You may want to grow vegetables at home for many reasons. Some people raise vegetables for the exercise and personal enjoyment they get from gardening. Other gardeners grow vegetables because they are especially particular about the freshness, flavor and texture of the vegetables they eat. Still others are concerned about the variety and amount of vegetables needed for balanced nutrition. Some people even have vegetable gardens because they want their family to have fresh vegetables and regular shopping is expensive or inconvenient.

Despite the many reasons people garden, we can not evaluate in monetary terms how much gardening contributes to our health and well-being. Surely, we reduce our overall cost of living by avoiding the expense and misery of poor health and sickness due to poor nutrition and inadequate exercise.

Thus, gardening can add to our lives in many ways—it's more than just fresh food on the table.

For more information about gardening, preparing vegetables, the nutritional value of vegetables, and freezing, canning and storing vegetables at home, check the reference list at the end of this booklet for publications available at your county Extension office.



WHERE TO GROW VEGETABLES

HOME GARDENS

Put your home vegetable garden in a place that has well-drained soil and is convenient to the house. The garden should not be shaded by buildings, trees or shrubs—vegetables need full sunlight throughout the day to grow well. Trees and shrubs close by also compete with garden plants for moisture and fertilizer.

If space is limited, select crops for your garden that use little space—such as bush and pole snap beans, beet, cabbage, carrot, chard, lettuce, onion, parsley, pepper, radish, spinach, and tomato. Avoid large or vining crops such as pumpkin, squash and sweet corn. These vegetables do not produce as much for the amount of space they occupy.

Ornamental vegetable gardens

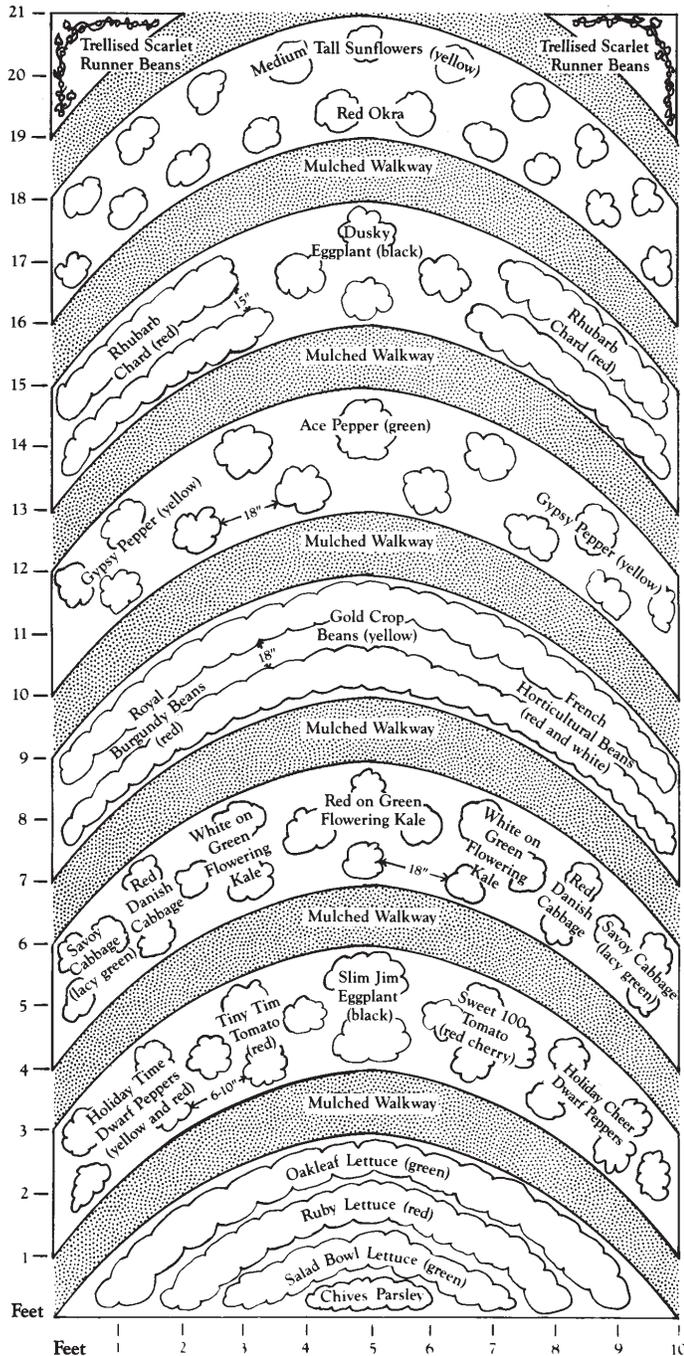
Certain vegetables and cultivars make attractive as well as edible displays. You can plant an ornamental vegetable garden in the front or side yard or even add vegetables to your flower garden.

For your ornamental garden, choose crops that have a variety of colors, textures and sizes. Crops such as beans, cabbage, chard, chives, eggplant, flowering kale, leaf lettuce, okra, parsley, peppers and sunflowers work well. You can also use cucumbers, herbs and tomatoes.

The ornamental vegetable garden on page 3 shows one of many ways you could plan such a garden. This garden would look particularly nice on a gently sloping hillside. Theme gardens—such as a salad bowl garden or a children's garden—are also easy.

Ornamental vegetable garden

Designed for a gently sloping yard



GROWING VEGETABLES IN CONTAINERS

You can grow certain vegetables in boxes, large pots or other containers. These crops include chives, cucumber (supported on a trellis), eggplant, lettuce, parsley, pepper and tomato (supported on stakes or a trellis).

Container soils are different from garden soils and thus require special care. If you grow a crop in a container, you have to add sand, perlite, vermiculite, calcined clay, bark, rotted sawdust or peat to your garden or potting soil. These soil amendments are important to container gardening since aeration and water are problems. Usually a mixture of $\frac{1}{3}$ soil, $\frac{1}{3}$ perlite and $\frac{1}{3}$ peat works well.

To keep from fertilizing throughout the season, add slow-release fertilizer pellets when making the soil mixture.

For container gardening, you should try to use plastic containers with drain holes to help prevent quick drying of the soil. Keeping your plants out of direct sunlight for long periods of time will also help.

GROWING VEGETABLES INDOORS

Few vegetables grow well indoors without special lighting, but you can get good results with chives, parsley, rhubarb (forced) and witloof chicory (French endive, forced).

Chives. Transplant small clumps of chive from the garden into containers and harvest leaves.

Parsley. Start a parsley plant from seeds sown outside in a pot or other container around August 1. Move the plant indoors before heavy frosts and harvest the leaves.

Rhubarb. To grow rhubarb indoors, move rhubarb clumps (crowns) into a warm, dark basement after they have been thoroughly chilled outside, usually about the middle of November. Keep the crowns under moist straw. Harvest rhubarb leaf stalks (petioles) when they are about 12 to 15 inches long.

Witloof chicory. After early fall frosts, when the soil has been thoroughly chilled, move witloof chicory roots into a warm, dark basement. Place the roots upright in soil or sand and keep moist. Harvest compact head of white leaf bases when 5 to 6 inches long.

Mushrooms. Mushrooms grow indoors but without light. See “Mushrooms” section on page 26.

Sprouts. In recent years, more and more people are growing sprouts for salads and sandwiches. Mung bean seeds and alfalfa seeds are generally the most popular types for sprouts, but other seeds like radish and cabbage may be used. Make sure the seeds have not been treated with a fungicide. Seed packets are usually marked for use as sprouts.

To grow sprouts, place a teaspoon to a tablespoon of seeds in a pint jar, then cover the seeds with tepid water. Use a canning jar rim with either a piece of cheese cloth over the top or a piece of fine wire mesh. Put the jar in a warm, dark place or wrap the jar with aluminum foil.

Twelve to 24 hours later, drain off the water, rinse the seeds, drain the water again, and return the jar to a warm, dark place. Repeat this process 3 to 4 times per day until the seeds have sprouted—usually in 3 to 4 days. Place sprouts in a sunny window for several hours and then store them in an airtight container in the refrigerator for up to a week.

COMMUNITY GARDENS

If you don't have space in your yard or it is unsuitable for gardening, you may be able to find a spot for your garden on a nearby lot or a farm that is not too far away.

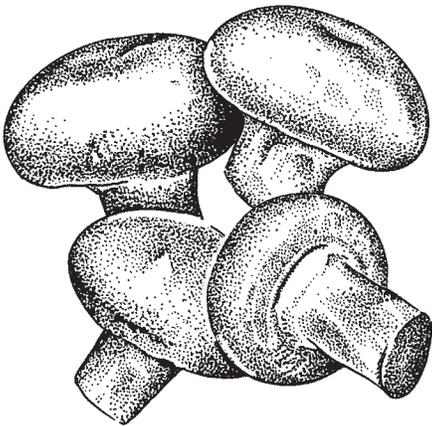
For many gardeners, the most practical alternative is a community garden. Community gardens may be located on public or private lands inside or outside city limits, and these gardens can be organized in several ways.

In a few cases, the landowner or public institution simply provides the space. Gardeners make their own arrangements for preparing and fertilizing the soil, and do their own planting, cultivating, pest control and harvesting.

More frequently, the owner or sponsoring institution prepares and fertilizes the soil. Occasionally, a private landowner also plants the crops in long rows and cultivates between the rows. Gardeners are assigned blocks across the rows of crops and are expected to control weeds in the rows, apply any pest control measures, and harvest the crops.

Community gardens can be organized and supervised by the gardeners themselves or by private or public employees. In any case, for community gardens to be successful, they must be organized and supervised by competent people.

Garden managers generally are responsible for making arrangements for: (1) the land—whether publicly or privately owned; (2) preparing and fertilizing the soil, including soil testing; (3) laying out, marking and assigning individual plots; and (4) supervising all operations and activities before, during, and after the growing season.



PLANNING YOUR VEGETABLE GARDEN

Your garden should be 50 feet or more from black walnut or butternut trees. The roots of these trees produce a toxic chemical (juglone) that severely stunts or wilts several vegetable crops, especially potato and tomato. Injury due to juglone can even occur several years after walnut trees have been removed. The potential for injury is present as long as any part of the tree, dead or alive, is in the soil.

In addition, do not use walnut hulls when making garden compost or work them into the soil since they can also cause walnut wilt.

GROW CROPS ADAPTED TO WISCONSIN

Consider family likes and dislikes as well as nutritional quality when you choose crops for your garden. Grow only crops and cultivars adapted to conditions in Wisconsin.

Determine the amount of each crop to plant on the basis of family likes and dislikes, family size, and nutritional qualities of the crop. Short rows are better than long rows, since 20 to 30 feet of each crop is generally enough for a family. Experience and yield records will also aid in more exact planning.

Wherever the garden is not level, run rows across the slope to reduce soil washing and erosion. Otherwise, direction of rows is usually not important.

PRACTICE INTENSIVE CROPPING

Make best use of space by carefully planning your garden. Careful spacing and arranging of crops allow you to have intensive and continuous cropping. Some examples of intensive cropping are: (1) growing two crops—one following the other in the same row (early radishes or spinach followed by late carrots); (2) growing two closely planted rows of an early crop like peas followed by tomatoes planted beside the rows before peas have finished producing; and (3) growing two crops in the same row (radishes planted between cabbage).

CULTIVARS (VARIETIES) FOR THE HOME VEGETABLE GARDEN

Using good cultivars is the first step toward successful gardening. Cultivars vary in such characteristics as adaptability, earliness, color, shape and size. They also vary in their resistance or tolerance to diseases, insects and nematodes. Good seeds of superior cultivars are inexpensive in the long run.

You can buy good seeds locally or from catalog seed companies. Whenever possible, use cultivars resistant or tolerant to diseases, insects or nematodes.

Many times you have a choice between hybrid vegetable cultivars and open-pollinated cultivars. Hybrids often have more vigorous growth, higher productivity, greater uniformity and increased disease resistance than open-pollinated cultivars.

However, hybrid seed is usually more expensive than open-pollinated seed and seeds taken from hybrids do not breed true. In addition, many open-pollinated cultivars often produce as well as hybrids. Therefore, it is a good idea to compare several cultivars to determine the best ones for your needs.

Hybrid cultivars are available of asparagus, beet, broccoli, brussels sprouts, cabbage, carrot, cauliflower, Chinese cabbage, cucumber, eggplant, muskmelon, onion, pepper, pumpkin, squash, summer squash, sweet corn, tomato and watermelon.

SEEDS AND PLANTS

Vegetable seeds vary in the length of time they remain viable (able to germinate). Onion, parsley, parsnip and sweet corn seeds generally do not last more than one year from the time they are harvested. Other vegetables will give good stands as many as three years later, if you sow them thicker than normal. Store vegetable seeds near freezing temperatures. If using a frost-free refrigerator, keep the seed packets in plastic bags to prevent excessive drying.

Saving seeds from most vegetables in the home garden can be challenging. Home-saved seeds sometimes carry disease, and cultivars of certain crops can become badly mixed from genetic crossing. Commercial seed companies, with their special knowledge, equipment and efficient methods, can supply superior seeds at very reasonable prices.

If you do decide to save vegetable seeds, it's easiest to take seeds from crops that are self-pollinated. These are less likely to be crossed with other cultivars and, therefore, less likely to carry seed-borne diseases. You can save seeds from asparagus, beans, broccoli, eggplant, pepper and tomato. Do not save seeds from hybrids of these crops, as they will not breed true.

Because cross-pollination among cultivars of the same crop is so common, home-saved seeds of some vine crops are likely to be mixed, although cucumbers, muskmelons, pumpkins, squashes, cushaws and watermelons do not cross with each other.

Start seeds indoors

For rapid germination, good seeds need warmth (70°–80°F), oxygen and plenty of moisture. Seedlings need plenty of space, light, moisture, a temperature of about 60° to 70°F, and balanced fertility—soil that is moderately low in nitrogen and high in phosphorus and potassium.

You can make a good mixture for starting seeds and growing seedlings by combining equal parts of peat (or compost), perlite and good garden soil with a light sprinkling of a complete fertilizer such as 5-20-20. As an alternative, you can buy disease-free growing mixtures at garden centers.

Plastic trays with separate compartments, each with a drainage hole, are good containers for growing seedlings.

Thin seedlings shortly after germination or lift and reset them farther apart in the same container or reset in another container.

Seedlings grown indoors become tall, spindly and weak if they are spaced too closely, get too little light, and are too warm. If you grow seedlings under lights, make sure the lights are not more than 6 to 8 inches above the plants. Use cool, white fluorescent or grow lights.

Season extenders

Many gardening products are available to help you extend your gardening season by allowing you to plant earlier in the spring and harvest later in the fall. These products include hot caps, tomato ripening sleeves, Wall O'Waters, covered tunnels, and floating row covers.

Hot caps are individual containers that fit over one plant and provide extra warmth and frost protection.

They can be made out of waxed paper or plastic. Some come with vent holes.

Tomato ripening sleeves are relatively new. They are perforated clear plastic sleeves that slip over the tomato cage. For extra protection tie them up at night.

Wall O'Waters are plastic "teepees" with individual pockets or tubes that can be filled with water. The water absorbs heat during the day, moderating the inside air temperature, and releases heat at night, protecting the plant down to 10°F.

Covered tunnels are made using wire support hoops (9 gauge wire) and covering them with a perforated or slitted clear plastic; a white, porous polyester cover; or a black shade netting. Support hoops are available in sizes ranging from 16 to 48 inches tall and 3 to 5 feet wide.

Floating row covers are porous polyester fabrics that are laid loosely over plants and secured at the edges. Be careful to leave enough slack so that the plants can push up the material as they grow. Floating row covers usually work best with low-growing plant types such as lettuce or melons.

The fabrics used for floating row covers and covered tunnels come in different weights for various uses. The heavier the weight, the more frost protection. There are now special, ultra light weight fabrics for use throughout the summer for insect protection. These fabrics work best either with a high tunnel system or with a crop that is harvested only once.

Remember, you must remove any protective coverings at pollination time for all cross-pollinated crops such as cucumbers, melons and squashes.

Select vigorous plants at the market

Instead of growing plants indoors, you may want to buy them. Choose plants that are the desired cultivar, free from disease, vigorous, stocky and dark green in color. Purchase plants only when you can set them in the garden right away and the danger of frosts or chilling temperatures is past.

You can separate vegetable crops into two groups—(1) crops that germinate and grow in cool soil during cool weather and are not seriously injured by moderate chilling or light frosts, and (2) crops that need warm soil to germinate and grow and can be seriously injured by exposure to cool weather or light frost.

Examples of cool-weather crops include beet, broccoli, brussels sprouts, cabbage, carrot, cauliflower, cel-

ery, chard, Chinese cabbage, kohlrabi, lettuce, onion, parsley, parsnip, pea, potato, radish, rutabaga, spinach and turnip. Seed these crops outdoors around April 20 in southern Wisconsin. Plants started indoors can be set outside around May 1.

Warm-weather crops include bean, cucumber, eggplant, melon, pepper, pumpkin, squash and sweet corn. Seed these crops outdoors around May 20 in southern Wisconsin—when the soil and weather are warm and danger of light frosts or chilling temperatures is past. Set plants started indoors around May 30.

Planting dates are about a week later for central Wisconsin and the lower lake shore, and two weeks later in the northern counties.

Late seeding for fall harvest

Several vegetables, if planted carefully and at the right time, are especially suitable for harvesting during the cool, moist days of late summer and fall. These crops include bush snap bean, beet, broccoli, brussels sprouts, cabbage, carrot, cauliflower, chard, Chinese cabbage, cucumber, lettuce, radish, spinach and turnip.

Seed broccoli, brussels sprouts, cabbage and cauliflower in hills in early June and thin soon after germination to a single plant in each hill. Seed bush snap bean, beet, carrot, cucumber and turnip in the garden in late June and thin plants soon after germination. You can plant seeds of short-season vegetables such as chard, leaf lettuce, radish and spinach as late as mid-July in southern Wisconsin.

CARING FOR YOUR VEGETABLE GARDEN

TOOLS AND EQUIPMENT

Starting plants

Start vegetable plants in pots, trays, boxes or flats that are 2 to 3 inches deep. Plastic trays with a separate location for each plant are ideal. For lifting and resetting seedlings, you can use a small, round wooden or metal peg to open holes.

Preparing the soil

Large tractors, plows, disks and drags are used to prepare soil in farm and large urban gardens. You can use smaller, rotary-type power tillers to prepare soil in a smaller garden. For very small gardens, use a spade or spading fork and a rake.

Prepare soil early when it is moderately moist. Loosen to a depth of 6 to 8 inches, then disc, drag or rake to a moderately fine texture. Level the soil, but do not pack.

Seeding

A strong garden line with a sharpened metal or wooden stake at each end helps you make straight rows. You'll also need a measuring tape or a yard stick to locate rows and space plants.

The corner of a hoe blade is ideal for opening trenches for larger seeds, onion sets and onion seedlings. Use the end of the hoe handle to open trenches for small seeds, and cover seeds snugly with a rake or hoe.

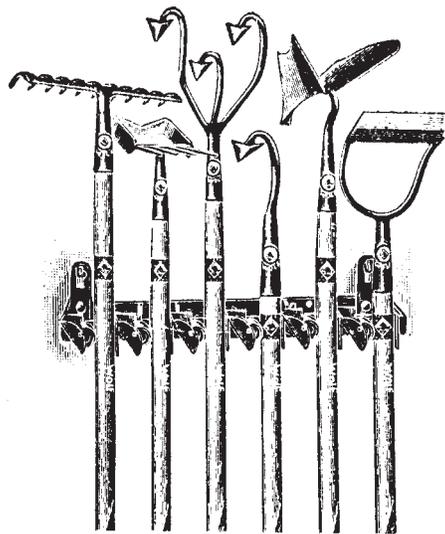
Setting plants

Use a trowel with a strong shank for opening holes.

Controlling weeds

The best time to control weeds is when the weed seeds are just germinating, before they establish a root system. A straight-tined rake controls weeds well if you use it immediately after seeding or transplanting and about once each week until vegetable plants cover the soil. Also cultivate when the soil dries out after it rains. A well-constructed wheel hoe can help keep weeds under control.

In well-prepared soils, you do not need to cultivate more than 1 to 2 inches deep to control weeds.



Controlling insects and diseases

Use a small duster or sprayer to apply insecticides and fungicides only if other pest control methods prove ineffective. Dusters may be easier to use, but sprayers are more effective—especially for disease control. Do not use sprayers used in applying pesticides for anything else. *Never* use an insecticide or fungicide sprayer for applying herbicides and vice versa.

Caring for tools

Keep hoes sharp, clean and free from rust. Rakes, trowels, spades and spading forks should also be kept clean, rust-free and smooth, but need not be sharp.

If garden tools are cleaned and dried thoroughly after each use, rust should not become a problem. A strong putty knife is ideal for scraping soil from garden tools, or you can wash them if you dry the tools right away. Remove any rust with a wire brush, emery cloth or oiled rag dipped in fine sand.

Keep all garden tools clean and in a dry place. Wipe metal parts clean with an oiled cloth when storing.

FERTILIZATION

Maintaining a high level of organic matter in the soil and a soil pH of around 6.5 (slightly acid) are essential to good plant growth and efficient use of fertilizers.

A reliable soil test is the best way to determine the kind and amount of fertilizer or other nutrients your soil needs. A soil testing program for lawns and gardens is available for a small fee from the Soil and Plant Analysis Laboratory in Madison. Results of the soil test include recommendations for lime and fertilizer.

As a general rule, you should apply 25 to 35 pounds per 1,000 square feet of a complete commercial fertilizer mixture to your garden each year. Use a mixture such as 5-20-20 or 10-10-10. On lighter soils the 10-10-10 mixture will give better results, especially when there is not enough organic matter.



COMPOST

Compost is partially decomposed plant materials. It can be an important source of organic matter, humus and plant nutrients in garden soil. The bacteria that decompose plant materials are generally present on the plant refuse itself, although you can buy an inoculant.

Enclose your compost pile with snow fence, fencing wire or other material. To hasten decomposition, shred or chop coarse plant materials, and add water to the pile, turning it occasionally. Shredding also makes compost easier to handle when you put it on the garden.

You can use leaves, hay, straw, lawn clippings (without weed control chemicals) and plants from the flower and vegetable garden to make compost. Do not compost kitchen refuse or refuse containing meat, bones, cheese, eggs or animal wastes.

City or village ordinances sometimes restrict composting because the piles can attract flies and rodents and develop undesirable odors if animal products are used.

You can compost plant materials inside plastic bags. Compost hay, straw and leaves and add ground limestone, fertilizer and water to hasten decay and keep materials moist. Punch holes in the plastic to provide air necessary for decomposition.

Compost needs to age several months before you use it. If kept moist, a good compost mixture started in early spring should be ready to use as mulch or turn into the soil in late fall, especially when you chop or shred coarse materials. You can also work the mixture into the soil before planting time the following spring.

MULCHES

Mulches help provide a uniform supply of moisture for plants, keep down weeds, regulate soil temperature, and keep vegetables from lying on the soil.

Organic mulches include peat, wood shavings, straw, hay, ground corn cobs, leaves, compost, sawdust and lawn clippings. Inorganic or synthetic mulches include plastic films and aluminum foil.

Apply synthetic mulches over the soil before or at planting time. Do not apply organic mulches until the soil has warmed up, usually about mid-June. In addition, be sure organic mulches are free of weed seeds and herbicides.

WATERING THE VEGETABLE GARDEN

It's best to water your garden early in the day—this helps reduce evaporation which usually occurs during the high midday temperatures, and your plants will have less disease problems because you “put them to bed dry.” This means their foliage should be dry at sunset.

Vegetable plants need about 1 inch of water each week. Add 1 inch per week unless rainfall makes this unnecessary. Watering all at one time is a better method than frequent, short waterings.

When possible, use a garden hose, a sprinkler or a soaker hose to water evenly. When water pressure is not available, pour water into trenches between rows or around plants. Avoid injuring plant roots when making the trenches, and pull dry soil into the trenches as soon as the water has soaked in.

WEED CONTROL

Controlling weeds successfully is largely a matter of proper timing and persistence. Weeds are easiest to control if you cultivate just as seeds are germinating, before young seedlings become established. At this stage, stirring the top 1 or 2 inches of soil so that it dries out rapidly generally gives good weed control. Repeat this shallow cultivation at least once each week before weeds get started and as soon as the soil is dry enough to work after each rain.

Do not let weeds go to seed in or near the garden. Put weeds in the compost pile while still green, before seeds have developed. Temperatures within a good compost pile should be high enough to kill most weed seeds.

Mulching

Mulching is especially helpful for controlling weeds in the garden. Organic mulches include peat, wood shavings, sawdust, straw, hay, ground corn cobs, leaves, compost and lawn clippings. Apply about 4 to 6 inches

of mulch to exclude light from weed seedlings. Make sure organic mulches are free of weed seeds and herbicide residues that can injure vegetables.

Inorganic mulches include plastic film and aluminum foil. Black plastic mulch is most effective for controlling weeds—weeds will not grow beneath it as they will under clear plastic. Cover the edges of plastic mulches with soil to keep in place, and remove inorganic mulches at the end of the season, because they do not decompose.

Using chemicals

Chemicals are not generally recommended for controlling weeds in the garden, because chemicals that control one or more weeds may damage vegetables. If you decide to use chemicals, check your local garden center for the herbicides available for home use.

For best results, read and follow instructions carefully for each chemical to determine how much to use, how to apply it, which weeds it controls, and on which crops it can be safely used.

Roundup (glyphosate) is a non-selective herbicide labeled and available for home use. Glyphosate helps clean up problem areas such as quackgrass. You apply Roundup when weeds are actively growing before the crops emerge. Check the product label for specific directions and crop limitations.

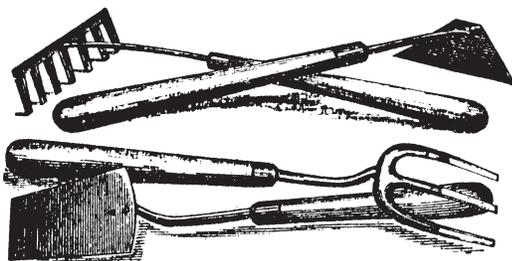
BIRDS AND MAMMALS

Birds and mammals can damage several vegetable crops—including bean, cabbage, lettuce, pea, sweet corn and tomato.

Red-winged blackbirds and **common grackles** damage corn by pulling sprouting seeds or eating kernels before they are ripe. Keep these birds away by using flashing aluminum discs or strips hung on strings or wires supported by tall stakes.

Robins and other fruit-eating birds damage berries and dwarf fruit. Use commercial plastic netting to exclude these birds from trees and berry patches.

Cottontail rabbits eat beans, cabbage and other vegetables. Keep these garden pests out with a low fence of 1-inch mesh chicken wire, about 18 to 24 inches high. Bury the bottom of the wire or place it in close contact with the ground to prevent animals from burrowing or forcing their way under. You can also capture rabbits easily in wire live-traps and remove them from the area, especially during winter.



Thirteen-lined ground squirrels or striped gophers may feed on tomatoes. Trap these animals with a wooden-base, snap-type, rat trap baited with peanut butter and placed near their burrow, or you can shoot them in areas where the use of firearms is permitted. You can also force them from their burrows with water and then kill them.

Woodchucks often feed on several vegetables in rural gardens, but they are protected in Wisconsin. Obtain permission to control woodchucks from your local DNR conservation warden. Control methods include trapping with steel traps or shooting.

Raccoons are a common garden problem. They are especially damaging to sweet corn and are difficult to control. Live trap in suitable box traps and move the raccoons to other areas, or exclude them with a double-wire electric fence. The first wire should be 5 inches above the ground and the second 10 inches above the ground.

Norway rats sometimes invade gardens, too. Eliminate their living quarters and use an anti-coagulant rat poison to control them.

Deer are a serious problem in a wide variety of crops, but it is difficult to control them. Electric fences, repellents and scare devices may help somewhat.

DISEASES

Damage from plant diseases varies with the crop, cultivar, season, weather conditions, location and air drainage of the garden, cultural practices, availability of disease inoculum, soil pH, and balance of nutrients.

The most practical way to control certain plant diseases is to use resistant or tolerant cultivars when available.



There are other steps you can take to avoid diseases in your vegetable garden. To begin, thoroughly clean up plant refuse in and around the garden in the fall and compost only disease-free refuse—burning, burying or bagging diseased refuse. Turning the soil in fall will also help. Finally, if you avoid bringing in diseased plants or using your own “saved seed,” you can help prevent disease.

Avoid damping-off of seedlings by seeding in pasteurized soil or other growing mixture.

If you choose to spray potato and tomato plants with a labeled fungicide, do so once each week after the plants are approximately 12 inches tall to reduce losses from leaf spots and late blight. This treatment will also control anthracnose fruit spot on tomato. You should also try to pick off and destroy the leaves as soon as spots occur. This involves diligence!

You can also control certain diseases of bean, beet, cabbage, carrot, celery, cucumber, lettuce, melon, onion, pea, pumpkin and squash by using fungicides on soil, seed or foliage, depending on the vegetable crop.

Non-stressed plants are less susceptible to disease. A soil pH of around 6.5, a high level of organic matter, and an adequate, balanced supply of nutrients will ensure vigorous, productive plants—plants that are better prepared to resist disease.

INSECTS

Certain insects can damage one or more crops in your vegetable garden. Damage often varies with season and weather.

Maggots can greatly harm broccoli, cabbage, cauliflower, onion, radish, rutabaga and turnip.

Beetles frequently damage asparagus (common and spotted asparagus beetles), vine crops (striped and spotted cucumber beetles), eggplant, potato and tomato (flea beetles).

Worms are present most seasons and can cause moderate to severe damage. They are found on cabbage and related crops (imported cabbage worm, diamond-back moth caterpillar and cabbage looper), in squash vines (squash vine borer), on tomato (fruit and horn worms), and on and in sweet corn (ear worm and corn borer). Cutworms also can damage several crops.

There are several other significant garden pests.

Aphids (plant lice) damage certain crops most seasons, and **thrips** frequently damage onion leaves.

Leafhoppers are especially damaging to potatoes.

Although not insects, **slugs** and **snails** can damage several crops—especially in wet seasons or when the garden is near a wet area.

Controlling insects

Carefully cleaning up garden refuse in the fall, as well as turning the soil will help control several insects that overwinter in plant debris or in the ground. These pests can include cucumber and asparagus beetles, squash bugs, tomato horn worms, cutworms, the eggs of stalk borers and spider mites, and the larvae of European corn borers. Timing planting or harvest, selecting resistant varieties, using physical barriers, rotation and washing plants with water are some ways to lessen insect problems. Applying insecticides should be considered as a last resort and only when other control methods have failed. Mixing rates, harvest restrictions, special precautions and other information is included on the product label. Read the label before you buy, use, store or dispose of any pesticide.

Alternative treatments such as insecticidal soaps, horticultural oils, and bacterial insecticides like *Bacillus thuringiensis* (Thuricide, Dipel, etc.) can be used for insect control. Proper pest identification, timing and an understanding of the damage potential an aid control decisions.

Slugs and snails feed at night on fruits and vegetables. Populations are highest during wet years and in shady, lush gardens. You can control slugs and snails by keeping plants staked, removing rocks and boards, which serve as slug hiding places, setting traps filled with beer, or using specially formulated pellets or sprays to poison slugs.

NEMATODES

Nematodes—very small, parasitic worms—live in or on plant roots or in the soil. They cause knot-like galls on roots or injure roots by feeding on root tissue.

Nematodes can damage several vegetable crops. For example, the root knot nematode attacks carrots, causing stunting and forking of the roots. Fortunately, the majority of the 15,000 described nematode species are nonparasitic and live in water or soil where they feed on microorganisms such as bacteria, fungi and algae—so they are actually beneficial.

Controlling nematodes

There are several ways to control parasitic nematodes. These include cultural practices—such as crop rotation, planting resistant varieties, fallowing and early planting—biological methods, mechanical or physical methods, and chemical control.

Growing corn for two or three years in a rotation where vegetable crops are grown will help control root knot nematodes. Also, the tomato cultivars Better Boy, Terrific and Beefmaster are tolerant to root knot nematodes.

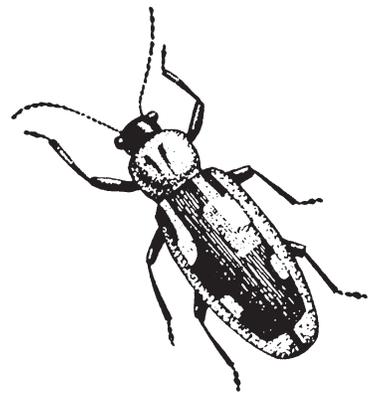
Chemical control generally involves treating the soil with a soil fumigant or nematicide. However, soil fumigants are not readily available to gardeners for home use.

ORGANIC GARDENING

To organic foods enthusiasts, organic gardening means producing food plants without synthetic fertilizers, supplementary mineral elements, pesticides or herbicides. You supply soils with high levels of organic matter from animal manures, crop residues, and compost or green manure crops. You do not use supplementary mineral elements except those from natural mineral fertilizers obtained from naturally occurring deposits.

To control diseases, insects and nematodes, you use resistant cultivars, cultural practices or naturally occurring plant pesticides. Weeds are controlled through cultural practices including mulching.

This method of gardening has its strengths and weaknesses. Research shows that mineral elements used by plants enter the plant through the roots in water solution. Thus, regardless of their origin—natural or syn-



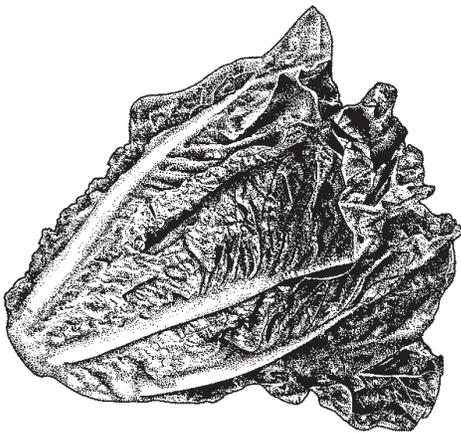
thetic, organic or inorganic—the minerals taken into the plant are identical; they are all in a reduced, inorganic, water-soluble form. Elements in synthetic fertilizers are more readily available to plants, while those in organic fertilizers are available more slowly over a longer period of time.

ORGANIC MATTER

Organic matter improves soil texture, makes soil easier to work, increases water-holding capacity of sandy soils, and supplies needed plant nutrients. It also improves the soil as a home for beneficial organisms such as earthworms, slows leaching by providing a holding system for plant nutrients, and speeds excess water movement through poorly drained soils.

Add organic matter to garden soils by working in leguminous green manure crops (such as clover and alfalfa), compost, plant residues, animal manures, peat, sawdust, hardwood shavings, and chopped hay and straw. If you use undecomposed materials such as sawdust, straw, hay, or wood shavings, add nitrogen to hasten decay.

Adequate, balanced fertility also helps increase soil organic matter by promoting increased root and top growth of vegetables.



TYPES OF VEGETABLES

ANNUAL VEGETABLES

Annual plants grow from planted seeds to seed production in one growing season. Annual vegetables include beans, broccoli, Chinese cabbage, cucumber, eggplant, lettuce, melons, mustard, okra, pea, pepper, pumpkin, radish, spinach, squash, sweet corn, tomato and watermelon.

BIENNIAL VEGETABLES

Biennial plants grow from planted seed to seed production in two growing seasons. Biennial vegetables include beet, brussels sprouts, cabbage, carrot, cauliflower, celery, chard, collard, endive, kale, kohlrabi, leek, onion, parsley, parsnip, rutabaga, salsify and turnip.

If young biennial plants are severely chilled, seed stalks can form and the plants produce seed during the first growing season.

PERENNIAL VEGETABLES

Perennial vegetables remain in the same spot for several years. Common Wisconsin perennials include asparagus, chive, horseradish, top multiplier onion and rhubarb.

FRUIT VEGETABLES

Several crops are commonly classed as vegetables, but we actually use their fruits for food. Fruit vegetables include snap bean, cucumber, eggplant, edible gourd, melons, okra, edible-podded pea, pepper, pumpkin, squash, sweet corn and tomato.

ROOT, STEM AND BULB VEGETABLES

Root vegetables are those with thickened roots that you can eat fresh or cooked. These include beet, carrot, celeriac, parsnip, radish, rutabaga, salsify, sweet potato and turnip.

It's often hard to distinguish stem and bulb vegetables. Potato is a thickened underground stem (tuber); asparagus shoots and kohlrabi "bulbs" are above-ground stems; while onion is a bulb that is made up of a small flattened stem with thickened bases of leaves.

GREENS

Greens are green, leafy vegetables commonly cooked before they are eaten. Vegetables used as greens include beet tops, cabbage, Chinese cabbage, chard, collard, kale, mustard, spinach, New Zealand spinach and turnip tops. You can also eat several of these vegetables fresh in salads.

Wild greens. Wild greens include dandelion, lambsquarters, plantain, curled dock, wild mustard, pigweed and purslane. Be sure that you can positively identify these plants, so you won't pick poisonous plants. Also, don't over-harvest wild greens. This may result in the decline of some wild species.

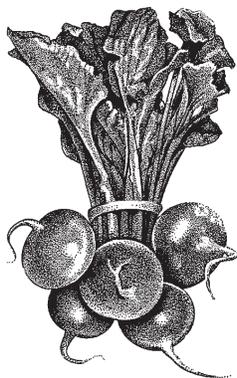
SALAD VEGETABLES

Salad vegetables are essentially vegetables with tender green leaves used fresh as salads by themselves or mixed with other vegetables or fruits.

Tossed salads frequently include many leaf vegetables—including cabbage, celery, Chinese cabbage, chive, endive, garden cress, several herbs, lettuce, green onion, parsley, spinach, New Zealand spinach, water cress and witloof chicory. Other vegetables frequently used fresh or cooked in salads include asparagus, broccoli, brussels sprouts, carrot, cauliflower, cucumber, garlic, leek, melon, mature onion, pepper, radish, tomato and turnip.

HERBS

Several herbs used as condiments or for seasoning are grown in Wisconsin. These include anise, borage, caraway, chive, dill, Egyptian or top multiplier onion, annual Florence fennel, oregano, rosemary, sage, sweet basil, parsley, annual summer savory, sweet marjoram, perennial tarragon and perennial thyme.



VEGETABLES FOR DISPLAY AND JUDGING

What determines quality vegetables? The characteristics you want to see in vegetables are the same whether you are selecting vegetables for display, judging vegetables or selecting vegetables at the market.

VEGETABLES FOR FREEZING

Commonly frozen vegetables include asparagus, bush and pole snap and lima beans, broccoli, carrot, cauliflower, peas, pepper, rhubarb, spinach and other greens, squash, and sweet corn. Vegetables less frequently frozen include brussels sprouts, beet, cabbage, celery, eggplant, kohlrabi, muskmelon, okra, onion, parsley and other herbs, pumpkin, rutabaga, tomato, and turnip.

VEGETABLES FOR STORAGE

Commonly stored fresh vegetables include beet, cabbage, carrot, onion, potato, pumpkin, rutabaga and squash.

Vegetables differ in their temperature and moisture needs for fresh storage. Root crops and cabbage need a cold temperature (32°–35°F), moist atmosphere and moderate ventilation.

Store carrots and other root vegetables in your refrigerator in perforated polyethylene bags. You can also store root vegetables in a box filled with slightly moist peat and sphagnum moss. Keep the box at about 32°F.

Potatoes need a moderately cool temperature (40°–45°F), a dry atmosphere and plenty of ventilation. Pumpkins and squashes need a cool temperature (50°–55°F) and 70–80% humidity.

The most practical place to store fresh vegetables is a moderately dry, moderately cold (38°–40°F), properly insulated and ventilated basement storeroom. You'll need to put root crops and cabbage in partially closed containers or ventilated plastic bags.

INDIVIDUAL VEGETABLES IN ALPHABETICAL ORDER

ASPARAGUS

How do you start asparagus plants?

Plant healthy, vigorous, one-year-old asparagus crowns or transplants in early spring. Either use transplants or purchase one-year-old crowns. Dig a 6- to 8-inch deep trench and place the crowns 18 to 24 inches apart in rows that are 3 feet apart. Cover with 2 inches of soil and gradually fill in the remainder of the trench throughout the growing season. Be sure to plant asparagus on well-drained soil.

Do you fertilize asparagus?

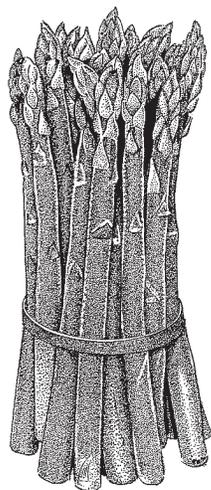
Work a generous amount of compost or other organic material into the soil and apply a complete fertilizer mixture such as 5-10-20 (1 pound per 10 feet of row) before planting asparagus. Also, apply nitrogen (ammonium nitrate) or a complete mixture with nitrate at the end of the cutting season (around July 15) each year. Asparagus is especially sensitive to low pH, so be sure to maintain pH at 6.5 to 7.0.

How are weeds controlled?

Control weeds in asparagus by early and regular shallow cultivation and mulching.

When do you harvest asparagus?

Harvest asparagus beginning the third growing season, when spears are well developed but the tips haven't begun to open. Pick spears that are about 6 to 8 inches tall and have a diameter approximately the size of your index finger. Cut or break the spear near the soil. Avoid harvesting skinny, woody spears.



Usually the asparagus harvest lasts for about two weeks the first year, and increases by about a week each year until the harvest lasts six weeks. Stop harvesting when most spears are skinny.

Why do fruits and seeds only occur on some plants?

Fruits and seeds occur only on female asparagus plants. Some gardeners remove fruits because they believe that the plant will then produce more stalk, but it's probably not worth the time and effort. Birds will eat the fruits and scatter the seeds.

Do you remove asparagus tops?

Remove asparagus tops in late fall after they are dead or yellow, or leave the tops over winter and remove them in early spring. Chop and place old plants in the compost pile, but burn plants if rust disease is present. For disease control, use rust-resistant varieties.

What causes crooked spears?

Asparagus spears grow quickly and are sensitive to mechanical injury from cultivation or cutting tools, insects, or wind-blown soil particles. Injured areas grow slowly so that the rapid growth on the opposite side causes spears to curve toward the injured side.

How do you grow white asparagus?

You can blanch asparagus by growing it under black plastic (4 mil) tunnels. Leave tunnels in place until harvest.

How do you renovate old plantings?

You can renovate neglected and weedy asparagus beds as long as the plants are free of rust, located on well-drained soil, and not more than 15 years old.

To begin, remove or break over and chop old asparagus tops with a disk, rotary tiller or hoe in early spring before spears appear. Next, apply a complete fertilizer such as 5-10-20. Broadcast it at the rate of 20 to 30 pounds per 1,000 square feet. Fertilize each year thereafter. Add 3 to 5 pounds of ammonium nitrate per 1,000 square feet at the end of the cutting season (around July 15).

What cultivars give the best yields?

All-male hybrids provide up to twice the yield of the traditional cultivars that have male and female plants. Jersey Gem, Jersey Giant and Jersey Knight are good all-male cultivars.

BEAN

Should you seed beans in double rows?

Like peas, you can plant beans in double rows to increase yields and get the best use of garden space. Seed bush cultivars in double rows 9 to 12 inches apart with 18 to 24 inches between paired rows. Leave 2 inches between plants in each row.

Seed pole beans in double rows 12 inches apart with 36 inches between paired rows and 3 to 4 inches between plants. Support plants with 5-foot chicken wire fastened to 6-foot stakes. Set the stakes 6 feet apart between double rows.

What is the best way to support pole beans?

There are a variety of ways to support pole beans. Fence wire or chicken wire and woven plastic or cotton netting are commonly used and can be saved for the following season. But you can also use poles, wooden or plastic trellises, and stakes, although these are more expensive and difficult to store.

When do you harvest snap beans?

Harvest snap beans—both green and wax cultivars—just as the seeds begin to show enlargement in the pods. Today, most cultivars are stringless, but the pods become increasingly fibrous with age.

What are some different bean cultivars?

Romano bean. The ‘Romano’ bean is a flat-podded snap bean cultivar introduced from southern Europe. The original ‘Romano’ pole bean grows well in Wisconsin as does the ‘Bush Romano.’ This cultivar is especially noted for its good quality when frozen.

Seed ‘Romano’ beans around May 10 in rows 24 to 30 inches apart with plants 2 to 3 inches apart in the row. Harvest when pods are well developed but still young and tender. Older pods are fibrous.

Broad or Windsor bean. This bean is sometimes called the horse bean. It can be grown in Wisconsin, but these hardy, stocky, upright plants are easily damaged by aphids and leafhoppers. Damage is generally severe, unless the insects are controlled.

Seed broad beans as soon as you can work the soil in early spring. Space plants 3 to 4 inches apart in rows 24 to 30 inches apart. Harvest when pods are fully developed but still green.

Shell and eat broad bean seeds cooked like peas or lima beans. The pods are tough, spongy and not very tasty.

Scarlet runner bean. The ‘Scarlet Runner’ is a pole bean usually grown more for its attractive flowers rather than its seeds. However, the large seeds are edible.

Seed ‘Scarlet Runner’ around May 10 in double rows 12 inches apart with 36 inches between paired rows and 3 to 4 inches between plants in each row. Harvest when pods are full-sized but still green. Shell and eat seeds cooked like peas or lima beans. The pods are fibrous even when young.

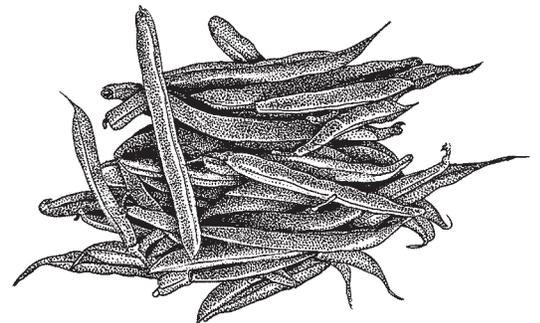
The dried seeds are striking in appearance and are useful in children’s art projects.

Mung bean. Seed around May 10 in rows 24 to 30 inches apart with plants 3 to 4 inches apart. Harvest individual pods when they are dark brown and fully mature. Pods continue to mature over a long period.

Mung bean seeds produce the bean sprouts used in Chinese dishes. For long, tender sprouts, remove seeds from the Mung bean pods and germinate under clean, moist conditions.

Purple bean. There are cultivars of bush and pole beans as well as ‘Romano’ that produce purple pods. The purple color is the result of water-soluble anthocyanin pigments. However, pods become bright green after heating and are attractive and tender.

Lima bean. These plants need a long, warm growing season, plenty of space, and balanced fertility. Seed around May 20 when the soil is warm and danger of frost is past. Space plants 3 to 4 inches apart in rows 24 to 30 inches apart.



Harvest when pods and seeds are fully developed but still bright green—then shell and cook like peas. Pods are tough, fibrous and unpalatable.

Lima beans do not always mature under the short Wisconsin growing season.

Green-shell bean. Any snap bean cultivar can grow to the green-shell stage. Harvest and use them as green-shell beans much like limas or peas.

Certain cultivars—such as Dwarf Horticultural and Pole Horticultural—are grown especially for green-shell beans. The pods of these cultivars at the green-shell stage are tough, fibrous and unpalatable.

Dry-shell bean (navy bean). Dry-shell beans are used for cooking and baking. They should be fully mature before harvest. Many times this does not occur during our short growing season.

Any cultivar of navy, kidney, snap, lima, broad, green-shell or scarlet runner bean can be left to mature for use as dry-shell beans. Commonly used cultivars include Sanilac (small, white navy), Great Northern (large white), Red Kidney and White Kidney.

Yard long bean. See “Cowpea.”

BEEF

What is a beet “seed ball”?

Table beet “seeds” consist of clusters of single-seed fruits forming a “seed ball” or multiple fruit. This results in several seedlings from each “seed.” Thus, you should thin to 1 inch between plants in the row, unless the soil is very loose and rich. Rows should be 15 to 18 inches apart.

Single-seed fruits of both table beet and sugar beet are available, although mainly used by sugar beet growers.

When do you harvest beets?

Harvest beets when roots are still round and tender—about 1 inch in diameter. Clean thoroughly and cook both roots and tops. Continue harvesting by pulling the larger plants; however, the older outer leaves will be tough and fibrous after early summer. Harvest all roots before they are more than 3 inches in diameter.

If you want a longer harvest season, plant additional seedlings up to July 15.

BROCCOFLOWER

Contrary to popular belief, broccoflower is not a genetic cross between white cauliflower and broccoli. Instead, it is a naturally occurring variety of cauliflower that contains no broccoli properties. It existed before color was bred out of cauliflower. Broccoflower heads do not need to be protected from sunlight. Several types of “Romanesque green” cauliflowers (pointed heads) are sold in various seed catalogs.

BROCCOLI

When do you harvest broccoli?

Harvest broccoli when buds are 4 to 6 inches across, compact and the first flowers have not yet opened.

What causes poor heading?

If young broccoli plants are chilled before or shortly after they are set in the garden, premature heading, small heads and early flowering often result. Crowding, injury from root maggots, or severe drought during early growth also can produce small heads and early flowering.

What is purple cauliflower?

Purple cauliflower is actually a winter broccoli. The attractive purple heads have exceptionally fine texture and flavor either fresh or cooked. However, the purple color disappears when cooked and the head becomes an attractive green color.

BRUSSELS SPROUTS

Brussels sprouts grow well in Wisconsin. Seeds of hybrid cultivars such as Jade Cross, Prince Marvel and Captain Marvel should be planted in late June. Space plants 12 to 18 inches apart in rows 30 to 36 inches apart.

Do you remove the plant leaves?

Do not remove leaves from brussels sprouts plants during the growing season. You can remove them at harvest for easier picking, but it’s not necessary.



When do you harvest brussels sprouts?

Harvest as soon as the first sprouts are firm and 1 to 2 inches in diameter. Start with the older sprouts at the base of the plant. Sprouts become firm in cooler weather, and harvesting can last for a month or more. Brussels sprouts tolerate temperatures down to about 23° to 25°F.

CABBAGE

Are there cultivars resistant to yellows disease?

Yes. Plant only those cabbage cultivars resistant to yellows disease. The cabbage yellows fungus is widespread in Wisconsin garden soils and, once present, can live there for many years.

Cultivars resistant to cabbage yellows include, but aren't limited to Jersey Wakefield (early, pointed), Red Danish (late, round), Sanibel (late, round, hybrid), Savoy Ace (medium, semi-globe, hybrid), Wisconsin All Seasons (late, round, hybrid) and Wisconsin Golden Acre (early, round).

Why do cabbage heads split?

Cabbage heads split because of pressure from too much water entering the head through the root system after the heads become solid. As the heads near full size and become moderately firm, pull each plant up enough to break a few of the roots—this reduces the inflow of water and, if done early enough, can prevent splitting. Mulching can also help prevent uneven water distribution to the plants.

Can you get a second crop from early cabbage plants?

You can harvest one or more small, lateral heads from each early cabbage plant if you leave the plants in the garden after removing the first terminal head.

To get a second crop, remove the solid head carefully—cut just beneath the head, leaving the loose, older leaves uninjured. Smaller lateral heads develop from buds in the axils of the older leaves. Harvest these small heads when firm—flavor, color and texture will be superb.

What are some different cabbage cultivars?

Chinese cabbage. Chinese cabbage is actually a heading mustard. It is well suited to Wisconsin if the proper cultivars are seeded outside at the appropriate time.

Seeds of some cultivars can be seeded in early spring, but seeds of Michihli should not be seeded until late June or early July. Early cultivars such as Blues and Springtide form heads during the lengthening days of late spring and early summer. 'Michihli' plants generally form seed stalks, flower and set seed if grown during the lengthening days of late spring and early summer. These plants form heads during the shortening days of late summer and early fall.

Seed Chinese cabbage in rows 24 to 30 inches apart and thin plants soon after germination to 10 to 12 inches apart. Plenty of space is essential for good heading.

Savoy cabbage. Savoy cabbage cultivars are characterized by their heavily crumpled leaves, softer heads and richer flavor than the common cabbage. Most cultivars grow quite large and are harvested late in the season. However, early cultivars with small heads are available from several seed companies.

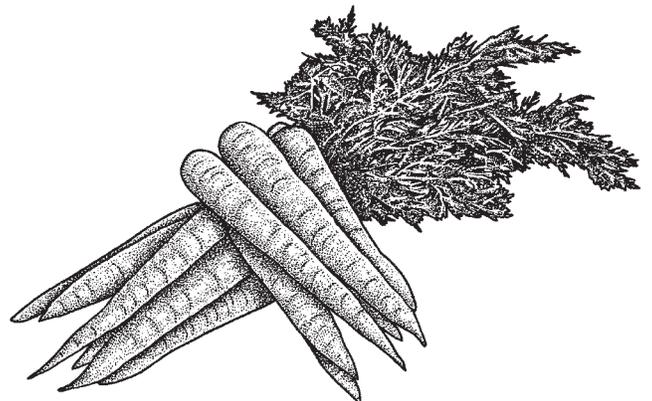
Red cabbage. Red cabbage cultivars produce small to medium sized, solid heads that are a deep purple color. They have a very characteristic "red cabbage" flavor and turn a blue-green color when cooked.

Start and space red cabbage like white cabbage.

CARROT

What cultivar should you plant?

Carrot cultivars vary greatly in shape, size and flavor. For heavier soils with poor drainage, choose a shorter cultivar such as Nantes or Red Cored Chantenay. For deeper, looser soils, you can use one of the short cultivars or a longer cultivar such as Emperor or Orlando Gold.



How should carrots be spaced?

Carrots are commonly planted too thickly for fast growth and smooth, well-shaped roots. Thin carrots soon after germination to one to two plants per inch. More space is needed in heavier, tight soils than in looser, lighter soils.

What are seed stalks?

The carrot is a biennial plant. It stores food in its roots the first season and produces a seed stalk, flowers and seeds during the second season if allowed to remain in the soil or taken inside over winter and replanted the following spring. Carrots can produce seed stalks the first season if young plants are severely chilled.

When should you harvest for home storage?

Leave carrots that you are going to store at home in the soil as late as possible to get maximum growth. This also ensures cooler temperatures in the storeroom. Do not store diseased roots, broken roots, or roots with cuts or bruises.

You can leave carrots in the soil over winter if protected by a covering of soil and hay. Carrots do not need this extra covering if you live in an area where heavy snow cover occurs early and remains until spring.

If you do leave your carrots in soil over winter, be sure to harvest in spring before new growth begins.

CAULIFLOWER

Should cauliflower be protected from sunlight?

Protect cauliflower curds (aborted flower heads) from direct sunlight to keep them white and tender. Exposure to sunlight gives curds a yellowish-cream color and a “ricey” texture. To prevent this, you can tie the plant’s leaves together loosely near their tips or remove a large older cabbage leaf and place it upside-down over the developing curd. You may need to replace this protective leaf once or twice before the curd is ready to harvest.

Protect curds from the time they are 2 to 3 inches in diameter. Curds developing late in the fall may not need protection.

What causes poor heading?

Chilling of young plants before or shortly after they are set in the garden often results in premature heading and small, poor quality curds. Crowding plants in the row, injury from root maggots, or severe drought during early growth also can cause early heading and produce small curds.

What is purple cauliflower?

Purple cauliflower is a winter broccoli. See “Broccoli.”

CELERIAC

Celeriac, or root celery, is a relative of leaf celery. It produces a mass of thickened roots and stem base which you cook and eat. The leaves are tough and fibrous.

Seed celeriac indoors around March 15 and set plants outdoors after danger of late frosts or severe chilling is past. Space plants 6 to 8 inches apart with 30 to 36 inches between rows. Celeriac needs a constant source of moisture to maintain even, constant growth. Harvest before fall frosts and store in a moist location at 32° to 35°F.

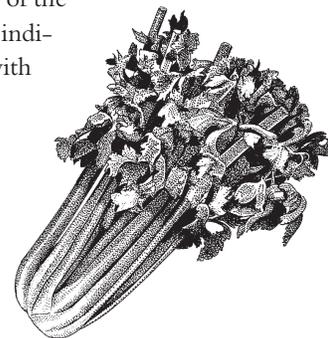
CELERY

Why do celery plants go to seed?

Celery is a biennial which stores food the first season and produces a seed stalk, flowers and seeds the second season if conditions are favorable. As with carrots and other biennial vegetables, severely chilled young plants may seed the first season. So, do not set plants in the garden until danger of frost is past.

How do you blanch celery?

Blanched celery—tender, crisp celery that is essentially colorless—is not as popular today as it used to be. Green celery is preferred. But green cultivars can be blanched by placing strong paper or boards on each side of the plants or by wrapping individual plants loosely with paper 2 to 3 weeks before harvest time to keep out light.



CHARD

Chard is very nutritious. Like beets, it produces several seedlings at each location. The “seeds” are really several single-seed fruits that grow into a multiple fruit. Thin seedlings to 4 to 6 inches apart when plants are 4 to 6 inches tall. For continuous harvest and highest yields, harvest older, outer leaves from each plant when 8 to 10 inches long.

CHICK PEA

Chick pea (garbanzo pea, chestnut bean) is grown almost exclusively in the southern and southwestern United States. You can grow chick peas in Wisconsin, but plants generally are late and not very productive.

Seed around May 10 in rows 24 to 30 inches apart, with plants 3 to 4 inches apart. Harvest chick peas when pods are fully mature and shell for dry seeds.

CHIVE

Chive is a mild-flavored, perennial member of the onion family. You can start it from seeds sown in pots or in hills at the edge of the garden, or from a clump of transplanted plants. A single clump is usually enough for family use.

Harvest leaves without flowers for chopping into fresh salads, soups and other dishes whenever mild, onion flavor is desired. Leaves with flowers are tougher and have a stronger flavor.

CITRON

Citron is a close relative of watermelon. The rind is used for preserves and candied peel. The flesh is unpalatable. Citron crosses readily with watermelon, but crossing is not apparent unless seeds are saved and planted another year.

Sow seeds outdoors in hills around May 20. Space seeds 6 to 8 inches apart in rows 4 to 6 feet apart. Harvest when fruits are 6 to 8 inches in diameter—cut, remove flesh and dice or slice rind.

COLLARD

Collard plants look like non-heading cabbage. Seed in late June in rows 24 to 30 inches apart, and thin seedlings soon after germination to 10 to 12 inches apart in the row. Harvest by breaking off the lower leaves while still young and tender.

Late seeding—around June 20—and careful spacing will give tender, mild-flavored collards for late summer and fall harvest. Flavor usually improves with the cooler temperatures of fall.

COWPEA

Cowpea (crowder pea, southern pea, black-eyed pea) is widely grown in many southern states. It also grows well in southern Wisconsin, especially if you plant earlier cultivars.

Seed cowpea around May 10 in rows 30 to 36 inches apart. Place seeds 3 to 4 inches apart in the row. Harvest when pods are full size but still green. Shell and cook as green-shell seeds. Or, harvest when pods are fully ripe and brown—shell and use mature seeds for baking.

Yard long bean (asparagus bean). The yard long bean, a close relative of the cowpea, produces pods up to 3 feet long. Plants are vining and need support. Pods are flabby, tender when young, and frequently used as snap beans.

Harvest for snap beans when pods are partially developed and before appreciable seed enlargement. When seeds are full size but still immature, harvest and use as green-shell beans without the pods or use as fully matured dry-shell beans.

CUCUMBER

Should you plant cucumbers in hills or rows?

Cucumbers grow best when seeded in rows rather than hills. Space single plants 4 to 6 inches apart in rows 3 to 4 feet apart.

Can you grow cucumbers on a trellis?

You can grow cucumbers on a trellis and do not need to tie them since the plants have tendrils for attachment. Plants on a trellis produce straight fruits—especially important when growing long, milder-flavored, burpless, oriental cultivars.

What causes poor fruit set?

Poor fruit set on cucumber plants generally results from planting seeds too thickly, resulting in a tight canopy of leaves which discourages bee activity. Excessive cool weather or rainy weather also slows bee activity.

First flowers on cucumber plants are male flowers. After this, the plant produces male and female flowers in

cycles. Gynoecious cultivars produce only female flowers, so plantings of these cultivars need a few plants of a standard cultivar to produce male flowers for pollination.

Do cucumber cultivars cross with each other?

Cucumber cultivars readily cross with each other, but crossing is only apparent if seeds are saved and planted another year. Male and female flowers are separate on the same plant and insects (mainly honeybees) transfer the pollen.

Cucumbers do not cross with melons, pumpkins, squashes or gourds.

Is it necessary to pick all cucumbers on a plant?

When fruits are left to ripen on a cucumber plant, that plant produces fewer female flowers. Therefore, regular and clean picking is essential. Remove any fruits missed, even though they may be unusable when found.

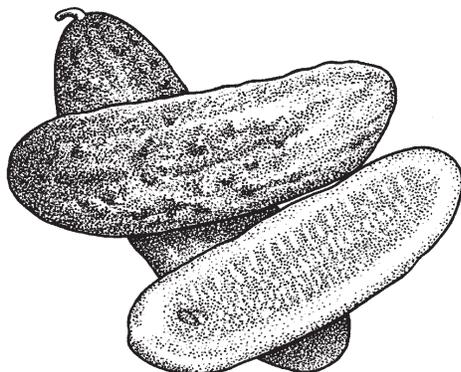
Why are some cucumbers bitter?

Most cucumbers can become bitter if plants grow under severe stress. This includes such conditions as insufficient water, low fertility and unusually hot weather. ‘County Fair’ carries genetic resistance to bitterness.

What are some different cucumber cultivars?

Burpless cucumber. The burpless cucumbers are cultivars or hybrids of mild-flavored, long-fruited, oriental cucumbers that are used for slicing and bread-and-butter pickles.

Seed around May 10 in rows 3 to 4 feet apart with plants 4 to 6 inches apart in the row. Harvest when 8 to 12 inches long.



Produce straighter fruits by supporting plants on a trellis or other support so the fruits hang free.

Yellow cucumber. Lemon cucumbers produce yellow, lemon-shaped fruit. There are also white cucumbers.

Gherkin (West Indian or Burr) cucumber. Gherkin produces small, exceptionally spiny fruits used exclusively for pickles. You can raise gherkin much like common pickling cucumbers except the plants need less space.

Serpent cucumber. Several cucumber cultivars produce large, long fruits that frequently become crooked as they develop, especially when plants spread over the soil. One cultivar, commonly called Serpent, may produce fruits up to 2½ feet long that weigh 3 pounds or more. But when fruits are small or medium in size, the flavor and crispness of Serpent cucumbers are excellent.

EGGPLANT

Eggplant needs a long, warm growing season and balanced fertility (high in phosphorus and potassium). Start seeds indoors around March 20, and set plants in the garden only after danger of frost and chilling weather are past. Space plants 2 feet apart in rows 3 feet apart.

When do you harvest eggplant?

Harvest eggplant when fruits reach good size for the cultivar, develop a rich purple color (whitish cream for certain cultivars), and the fruits are firm. Overripe fruits are dull in color, soft, spongy and seedy.

ENDIVE

Endive (curled, broad-leafed, Batavian or escarole) is a cool-season vegetable, especially adapted to late summer and fall in Wisconsin. Sow seeds outdoors in late June in rows 18 to 24 inches apart. Thin plants soon after germination to 8 to 10 inches apart.

How is endive blanched?

Keep sunlight from the central leaves of endive plants to reduce green color and bitterness, and improve texture and flavor. Cover plants with strong paper, wide boards, 4 mil black plastic tunnels, or gather leaves of each plant loosely together and tie just below the tips with soft string or cloth. Rot can develop if leaves are tied too tightly.

Harvest whole plants and use crisp, white inner leaves in fresh salads. Discard tough, bitter outer leaves.

GARDEN CRESS

Garden cress (upland cress) is a green, leafy, pungent-flavored vegetable used fresh in salads. Seed outdoors at two-week intervals starting around April 20. Space seedlings 3 to 4 inches apart in rows 12 to 15 inches apart. Harvest when larger leaves are 3 to 5 inches long.

GARDEN HUCKLEBERRY

Garden huckleberry (wonderberry) is a member of the nightshade family which includes pepper, potato and tomato. Strong, upright plants produce a profusion of berries which are harvested only when fully ripe (black) and mixed with other fruits and juices for pies and preserves. Do not eat fresh, as taste is objectionable.

Seed garden huckleberry indoors around April 1 and set in the garden around May 20. Space plants 12 inches apart in the row and 24 to 30 inches between rows.

GARLIC

Can garlic be grown in Wisconsin?

Garlic needs short days during early growth and a long growing season. It is grown commercially during the mild winter and early spring months, largely in the South, West and Northwest. In Wisconsin, garlic bulbs will generally be small and not fully mature at harvest time due to our long days in early spring.

To grow garlic, separate the bulb into cloves (small bulblets) and plant these small cloves around April 15. Space plants 3 to 4 inches apart in rows 15 to 18 inches apart. Harvest bulbs in late fall before freezing temperatures.

Dry garlic thoroughly in a protected, well-ventilated spot and store in a dry, cold (35°–40°F) place.

In southern Wisconsin, garlic cloves can be planted in the fall, mulched after a hard freeze and harvested the following summer. Garlic grows wild in parts of northern Wisconsin and can be used in soups and cooking.

GLOBE ARTICHOKE

Globe artichoke is a tender, nonhardy, thistle-like perennial. It is not grown in Wisconsin because the plant does not produce flower buds—the part you eat—until the second year and the plants do not overwinter here.

GOURD

Fruits of gourd cultivars have many shapes, sizes and colors. Most people use gourds for ornaments or containers. However, the 'Italian Edible' gourd is eaten while immature—much like summer squash.

Start 'Italian Edible' gourd plants indoors around May 1 and set in the garden around May 20, or sow seeds outside around May 20. Space plants 8 to 10 inches apart in rows 3 to 4 feet apart.

Other gourd cultivars will need more or less space, since gourd cultivars vary considerably in size and, therefore, space needed. Support all gourd plants on trellises or fences so that fruits hang freely for proper shapes.

When do you harvest gourds?

Harvest ornamental gourd cultivars when fruits are fully mature. Harvest edible fruit varieties while young (8 to 10 inches long) and tender.

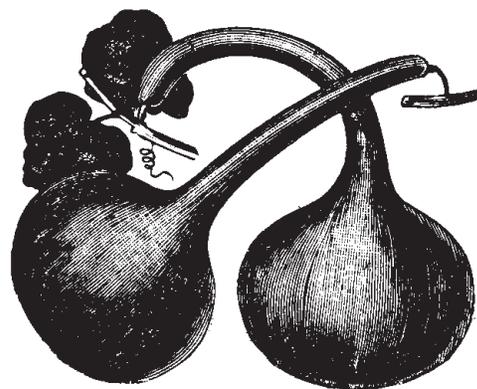
How can you make gourds last?

Ornamental gourds require thorough curing (80°F for two weeks) and should be kept in a dry, well-ventilated spot if you want them to last. You can also polish fruits with floor wax to improve their appearance and prolong storage. Do not apply varnish or shellac.

HORSERADISH

Horseradish is a perennial, condiment plant started from root cuttings or sets. Plant root cuttings—large end up—in early spring in a deep, loose, fertile soil. The top of the root cutting should be about 3 inches below ground level. Rows should be 3 feet apart with plants 1 foot apart in the row.

Harvest roots in late fall or early spring—wash, peel and grind. Horseradish plants are hardy, very persistent, and can become troublesome weeds.



JERUSALEM ARTICHOKE

Jerusalem artichoke is a hardy, tuber-bearing sunflower that grows well in Wisconsin. Plant whole or cut tubers much like potatoes and place in rows 3 feet apart with plants 12 to 15 inches apart in the row.

When do you begin harvesting Jerusalem artichoke?

Harvest tubers after heavy frosts in late fall or before new growth starts in early spring. Tubers are crisper and sweeter after fall frosts and especially in early spring.

Tubers left in the soil over winter and left unharvested in spring can grow new plants which can become undesirable weeds.

Are the tubers a source of inulin?

Jerusalem artichoke tubers store the carbohydrate inulin. Inulin hydrolyzes to fruit sugar (fructose) which is thought to be valuable in diabetics' diets.

KALE

Kale is a nutritious, green leafy vegetable. Seed in late June in rows 24 to 30 inches apart and thin soon after germination to 8 to 10 inches between plants.

Harvest by picking older, outer leaves while still young and tender. Kale is hardy and will withstand light frosts—its flavor actually becomes milder after a frost.

Flowering kale. Some cultivars of kale form compact plants. These plants are referred to as “flowering” kale because of their compact, flower-like rosette of ruffled leaves which change from dark bluish-green to rich red, purple, cream and white colors late in the season.

Flowering kale plants are often used as edging or low, colorful accent plants in flower borders. Leaves are edible but may be tough and have a strong flavor. Flowering kale plants are susceptible to the same insects and diseases as other members of the cabbage family.

Seed flowering kale around July 1 and thin plants to 12 inches apart around August 1. Plants started too early become tall and unsightly before colors develop during the cool, moist weather of late summer and fall.

KOHLRABI

Kohlrabi plants produce a thickened, leafy stem called a “bulb.” Early seeding, proper spacing and continuous, uninterrupted growth are essential for large, well-formed, tender bulbs.

Plant kohlrabi in rows 18 to 24 inches apart and thin early to 4 to 6 inches between plants. Harvest when bulbs are 2 to 4 inches in diameter, depending on the cultivar planted. An heirloom variety, Gigante, is harvested at about 10 inches in diameter.

LEEK

Leek is a non-bulbing, mild-flavored member of the onion family. Only the white leaf base is eaten—the flattened leaves are tough and fibrous.

Sow seeds outdoors in early spring or seed indoors around February 15 and set plants outdoors around May 1. Thin plants to 4 to 6 inches apart in trenches 3 inches deep and 18 to 24 inches apart. Mounding soil about the plants gives longer, more tender, white leaf bases.

Harvest, starting with the largest plants, in early fall and continue until after heavy frosts.

LENTILS

Lentils are rarely grown in home gardens in the United States, but they are grown commercially in eastern Washington and northern Idaho.

If you decide to grow lentils, seed in early spring. Space plants 1 to 2 inches apart in rows 24 to 30 inches apart. Harvest when pods reach full size and turn yellow. Mature seeds are used largely in soups.

LETTUCE

Seed loose-leaf lettuce or head lettuce outdoors in early spring. You can also start head lettuce indoors and set in the garden when danger of frost or severe chilling is past. Space head lettuce cultivars 8 to 10 inches apart with rows 18 to 24 inches apart. Space leaf lettuces 4 to 6 inches apart.

For fall harvest, seed lettuce in late July.

What are some different lettuce cultivars?

Butterhead lettuce. Butterhead lettuces have softer heads of crumpled, fine-textured, tender leaves. ‘Buttercrunch’ and ‘Pirat’ are typical butterhead lettuces.

Cos (Romaine) lettuce. Cos lettuce is a loose-heading lettuce with long, dark green, smooth, upright leaves. There are also red cultivars available. Seed early outdoors, or start plants indoors and transplant for early summer harvest. Seedlings in July also result in high quality lettuce for fall harvest. Space plants 6 to 8 inches apart in rows 18 to 24 inches apart. Usually this does better as a fall crop.

Crisphead lettuce. Crisphead lettuce cultivars have firm heads of crisp but moderately coarse-textured, crumpled leaves. ‘Montello’ does reasonably well in Wisconsin.

Leaf lettuce. Leaf lettuces come in a variety of leaf shapes and colors. You can harvest them leaf by leaf or wait and harvest the whole plant for use as a soft-headed or butterhead type lettuce.

MUSHROOMS

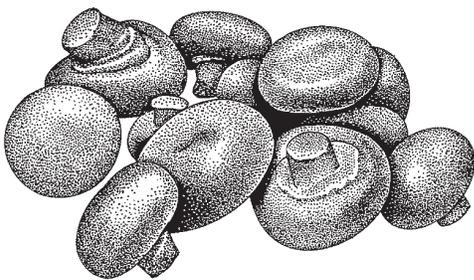
The cultivated mushroom only grows under controlled conditions in a special growing medium. This includes pasteurized, synthetic compost consisting of a mixture of corn cobs and hay with a complete fertilizer (composted horse manure was formerly used by commercial growers); high humidity (70%); darkness; and a uniform temperature of 50° to 60°F.

Although you can purchase spawn—the fungus mycelia used to start mushrooms (mushrooms are the fruiting bodies of this particular fungus)—and buy the growing medium, it is not very practical to produce mushrooms at home.

Wild mushrooms. Several wild mushrooms are edible, but many others are poisonous. Be sure that you only pick nonpoisonous mushrooms for food. Wild mushroom gathering is *not* recommended unless you are an expert at identification.

Shiitake (Japanese forest mushroom). Shiitake can be successfully grown in Wisconsin using special techniques.

A nonpathogenic fungus, Shiitake can be grown on a variety of small-diameter hardwood logs, especially oaks. After an incubation period of 1½ to 2 years, mushrooms are produced for 4 to 6 years during spring and autumn.



MUSKMELON

Do muskmelons grow better in hills or rows?

Plant muskmelon in rows so that each plant gets plenty of water, fertilizer and sunlight. Space plants 6 to 8 inches apart in rows 4 to 6 feet apart.

Can you start muskmelon plants indoors?

Start muskmelon plants in peat pots or in pots or trays of a high organic soil mixture about 3 to 4 weeks before you can set them in the garden. Set plants outdoors only after danger of frost is past.

Young muskmelon plants have meager root systems and brittle stems and leaves, so handle them gently when you transplant.

Can muskmelons be grown on trellises?

You can grow muskmelon plants on a trellis because they have tendrils for climbing. Support fruits soon after they begin to enlarge in expandable mesh bags tied firmly to the trellis.

How can you tell when fruits are ripe?

As muskmelons begin to ripen, the base of the fruit stem begins to separate from the fruit. The fruit is ready to pick when a crack appears halfway around the widened base of the stem (“half-slip” stage). A “full-slip” fruit has a crack around the entire base of the fruit stem and is fully vine-ripened.

What causes poor fruit set?

Poor fruit set on muskmelon plants can result from inadequate pollination by bees. Planting muskmelons too thickly prevents good pollination, because it results in a canopy of leaves. Cool, wet weather also slows bee activity.

Low quality muskmelon fruits (especially low sugar content) can result from improper fertilization (not enough potassium); too much cool, wet weather during the growing season; or planting a poor quality cultivar.

Do muskmelons cross with other vine crops?

Muskmelon (cantaloupe) cultivars cross readily with each other, but crossing is not apparent unless you save seeds and plant another year. Muskmelons do not cross with cucumbers or other vine crops.

What is a vine peach?

The vine peach, also called a lemon or mango melon, produces small, lemon-shaped, white-fleshed, yellow or greenish-yellow, faintly striped fruits on small vines. These grow like regular muskmelon but need less space. Vine peaches are used for preserves and pickles.

MUSTARD

Leaf mustard grows well in Wisconsin. This is not to be confused with black mustard, the seeds of which are used for making condiment mustard. The texture and flavor of leaf mustard are usually too tough and strong for most people.

Sow seeds in early spring for spring and early summer harvest, or in mid-July for late summer and fall harvest. Seed in rows 18 to 24 inches apart and thin soon after germination to 2 or 3 inches between plants.

OKRA

Okra (gumbo) can be grown in southern Wisconsin. Seed outdoors around May 10. Seed indoors in pots or other suitable containers around April 20 and transplant in the garden around May 20. Okra needs plenty of space and a long, warm season for good production. Space plants 10 to 12 inches apart in rows 3 feet apart.

When do you harvest okra?

Begin harvesting okra fruits (pods) when the first fruits are ready and then every 2 to 3 days throughout the season. Harvest fruits while young and tender—for most cultivars this is when the fruits are 3 to 3½ inches long.

Can you save okra seeds?

If you wish to save okra seeds from your garden, leave a few early fruits to ripen. Remove seeds, dry and store in a cool, dry place.

ONION

Can you grow your own seedlings?

Gardeners can grow their own onion seedlings for transplanting by sowing seeds indoors around February 15 in a disease-free growing mixture. Seedlings can stand as close as 4 to 5 per inch. Clip the tops when seedlings reach 4 inches to keep plants from falling over and becoming crooked.

Set plants outdoors around May 1 after danger of heavy frosts is past. Place plants 3 to 4 inches apart and leave 18 to 24 inches between rows.

To produce onion seeds, plant large bulbs in early spring. These bulbs send up one or more seed stalks which produce flowers and seeds. Cut and dry the ripe seed heads, remove the seeds, and store in a cold, dry place.

Which onions should you grow?

There are short-day and long-day onions. Always choose long-day varieties for growing in Wisconsin. Most storage onions are both pungent and long-day, while most sweet, slicing onions are short-day. If you wish to grow sweet onions, choose sweet Spanish types or ‘Walla Walla.’ Bermuda types and ‘Vidalia’ onions are poor choices for our climate.

Does breaking over green tops increase bulb growth?

Some gardeners break over the green tops of growing onions because they believe it increases bulb growth. Instead, this practice slows the rate of food manufacturing in the tops and the plants try to straighten up again—slowing bulb enlargement. Final bulb size is actually smaller than where tops are unbroken. Breaking over green tops also encourages neck rot.

However, you can hasten bulb maturity by cutting roots late in the season.

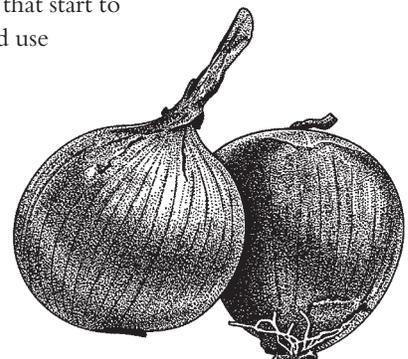
Should onion bulbs be kept covered?

You do not need to keep onion bulbs covered as they grow. Onion roots are very shallow and digging around the plants to cover the bulbs can damage roots and result in smaller bulbs.

When do onion plants form seed stalks?

Onion plants grown from seeds rarely form seed stalks unless they are severely chilled by heavy frosts or freezing temperatures. Onions from sets generally form seed stalks only when individual sets are larger than ¾ inch in diameter when planted.

Harvest plants that start to form seed stalks and use for green onions or break off seed stalks immediately and use full size onion fresh—do not store it.



What is an onion set?

Onion sets are small onion bulbs that are harvested and cured before they reach full size. Sets are produced by sowing seeds of the desired cultivar (generally yellow or white Ebenezer) very thickly in early spring—about 12 to 15 seeds per inch of row, in rows 12 to 15 inches apart.

The small plants are lifted in mid-August when bulbs are $\frac{1}{2}$ to $\frac{1}{3}$ inch in diameter. They are then dried, cleaned and stored in a cold, dry location. Sets are planted in early spring mainly for green onions but can be used for dry onions. Use as small a set as you can find.

What are some different types of onions?

Winter onions. There are two types of winter onions—*top onions* (Egyptian or top multipliers) and *potato onions* (bottom multipliers). Only top multipliers grow in Wisconsin. Bottom multipliers are grown during winter and early spring further south.

Plant sets produced at the top of the flower stalk of top multiplier onions in the fall, then harvest green onions in early spring. Top multiplier onions are perennial and continue to grow in the same spot year after year.

Pickling onions. You can use any onion cultivar for pickling. ‘Silver Queen’ and ‘White Portugal’ are most commonly used.

Seed thickly—10 to 12 seeds per inch—in early spring in rows 15 to 18 inches apart. Harvest when bulbs reach $\frac{1}{2}$ to $\frac{3}{4}$ inch in diameter.

Bunching onions. You can use several types of onion as green, bunching onions. Set onions are commonly used, but you can also use top multiplier onions (Egyptian onions) and bottom multiplier onions (potato onions).

Evergreen White Bunching, Beltsville Bunching and Japanese Bunching are frequently planted cultivars of bunching onion. The shallot—a small member of the onion family—is sometimes seeded to produce bunching onions. Cultivars of the common onion—especially white Spanish Bunching and Southport White Globe—are sometimes seeded thickly (8 to 10 pounds per acre) and harvested as small green onions.

Racambole. Racambole is a perennial onion (*Allium scorodoprasum*). It can be grown in Wisconsin primarily as an annual. The Racambole bulbs are used in the same way as garlic.

Start new plants by separating the “cloves” (bulblets) formed within the underground bulb, or plant the bulblets at the top of the stem. Plant in early spring about 1 inch deep and 6 inches apart. Harvest when the tops die back, dry the bulbs thoroughly and store like other onions.

PARSLEY

Parsley is commonly grown indoors to use during the winter. You can lift old plants in late fall and transplant them into a pot or other container, but young plants from a late summer seeding in the garden or seeding in a container give better results. Parsley needs a cool location and plenty of light to grow well.

Can you replant old plants in spring?

In the spring, throw out parsley plants grown indoors during the winter. If set outside, they grow seed stalks and the leaves become tough and much stronger in flavor. Parsley is a biennial and normally goes to seed the second season.

PARSNIP

Do parsnip seeds germinate poorly?

Parsnip seeds germinate very slowly even under the best conditions. The seeds also lose their ability to germinate after the first year, so discard unused seeds.

Sowing a few radish seeds with parsnip seeds provides early plants to mark the parsnip row so you can cultivate before the slow-germinating parsnip plants appear.

When do you harvest parsnip?

Harvest parsnips after cool weather and light frosts in late fall. You can leave them in the soil over winter and harvest in early spring.

If you leave parsnips in the soil over winter, throw a few inches of soil over the crowns after the first fall frosts. Stored starches are changed to sugar in early spring as the old plants prepare for new growth, thus roots harvested in early spring are especially tender and sweet. The roots lose flavor and become fibrous if you do not harvest them before new tops and seed stalks begin to grow.

Are parsnips poisonous?

Parsnips (*Pasternica sativa*) are not poisonous at any time, neither during the first growing season nor after the roots have been left in the soil over winter.

PEA

Do peas grow better in single or double rows?

Dwarf garden pea plants grow better in double rows than single rows. They produce higher yields per unit area, and cling to each other and tend to grow more upright when planted in double rows. Leave 6 inches between single rows of dwarf peas and 18 to 24 inches between double rows.

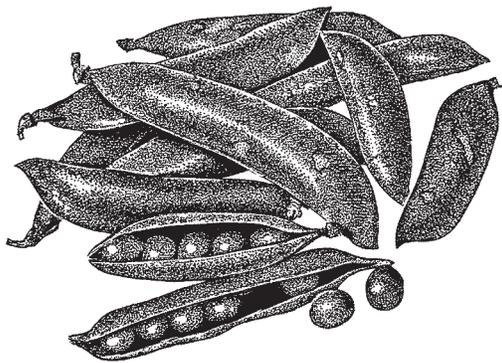
Should tall peas be supported?

Support tall peas with chicken wire, regular fence wire, special woven cloth or plastic netting. You can also grow tall peas in double rows with the support placed between rows.

What are edible-podded peas?

Seeds of edible-podded peas, also called snow or Chinese peas, are exceptionally sweet and tender. The pods are more tender than those of other peas, but become fibrous unless picked when young. Both dwarf and tall cultivars of edible-podded peas are available.

Some of the edible-podded pea cultivars have high sugar content and fairly thick-walled pods. Unlike the Chinese peas, these are best harvested when the seeds are more mature—when the pods are filled out. Sugar Snap (tall) and Sugar Ann (dwarf) are two popular cultivars.



PEANUT

Can you grow peanuts in Wisconsin?

The peanut, a legume, grows reasonably well in southern and central Wisconsin, especially on lighter, well-drained, fertile soils. However, the state's growing season is generally too cool and too short for the fruits to reach full maturity—thus, they probably won't store well.

Seed peanuts around May 10 in rows 24 to 30 inches apart. Thin plants to 12 to 15 inches apart in the row. Harvest by lifting plants with fruits attached, then cure thoroughly in a dry, well-ventilated place. Remove fruits, wash and roast in the shell, or remove seed and roast separately.

PEPPER

Pepper plants need uniformly warm growing conditions, balanced fertility, ample water and light, and uniform growth both before plants are set in the garden and during the growing season. They need only moderate amounts of nitrogen and large amounts of phosphorus and potassium fertilizer, especially during early growth. Apply additional nitrogen as a side dressing after the plants have set their first fruits, especially on light soils.

Should you top plants?

Pepper plants should not be topped at transplanting time. Topping removes the part of the plant where first flower buds occur—delaying first fruit set, first harvest and total harvest. However, you should remove flower blossoms that are present at transplanting time.

What are pungent cultivars?

Pepper cultivars may be pungent (hot) or sweet (mild). The commonly eaten green peppers are sweet cultivars. Pungent cultivars are usually canned or used in chili and similar hot dishes. Pungent cultivars include Hot Portugal, Hungarian Yellow Wax, Gold Spike and Super Cayenne.

Can you save pepper seeds?

You can save pepper seeds by removing the seeds from ripe fruits, drying them, placing them in a closed container and storing in a cool, dry place.

Peppers are largely self-pollinated, but limited crossing can occur between sweet and pungent cultivars. Do not save seeds from hybrid cultivars, since they do not breed true.

What causes poor fruit set?

Pepper plants frequently fail to set early fruits. The plants may be too old, were too cold or too dry sometime before planting, or were severely chilled following planting. Too much nitrogen in proportion to phosphorus and potassium in the soil also can cause poor fruit set. Usually, however, poor fruit set is due to our cool night temperatures (less than 60°F) which cause blossom abortion.

What is blossom-end rot?

Small areas at or near the tip of pepper fruits—especially the first fruits—sometimes become light brown and sunken as the fruits reach full size. This disorder is known as blossom-end rot and results from an irregular or insufficient supply of moisture and/or inadequate calcium in the soil. A similar disorder occurs on tomato.

Mulching at the time you set plants or shortly thereafter, adequate calcium (add lime if a soil test indicates acidity below 6.5 pH) and a steady water supply help avoid this disorder.

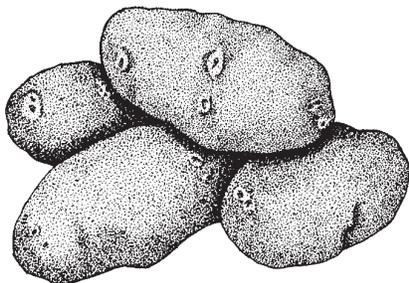
POTATO

What are the potato fruits?

Potato plants sometimes produce small seed balls—these are the true fruit (berries). When ripe, they normally contain many small seeds, although they can be seedless. If you plant the seeds, they grow into new potato plants that produce small tubers the first season. When the small tubers are planted the next season, new plants produce full-sized tubers.

Can you grow potatoes from seed?

It is impractical for any gardener except a potato breeder to grow potatoes from true seeds, since it takes two growing seasons to get full-sized tubers. In addition, tubers produced from true seeds will not be true to the parent cultivar.



Are the green areas on potato skins poisonous?

Potato tubers exposed to light have green areas on the potato skins. These spots contain chlorophyll and a poisonous alkaloid complex that can cause severe illness if eaten. Leaves and stems contain the same alkaloid.

What is potato scab?

The potato scab organism is found in the soil and causes one of the most serious diseases of potato. To control scab in your garden, plant resistant or tolerant cultivars such as Goldrush (russet), Katahdin, Kennebec, Norland (red), Red Pontiac (red), Russet Norkotah or Superior (white).

What are some different potato cultivars?

Yukon Gold is a yellow cultivar you may wish to try. There are also blue cultivars now available.

PUMPKIN

Can you start pumpkins indoors?

Pumpkins, like other vine crops, have meager root systems and brittle plants. Thus, you must handle them carefully if started indoors and transplanted.

Start seeds around May 1 in peat pots or other containers and do not disturb roots at planting time. Gently peel off the peat pot before planting for best results. Set plants in the garden around May 20. This method increases earliness and greater yields.

Do pumpkins grow better in hills or rows?

Pumpkin plants grow and produce better when planted in rows where each plant gets plenty of water, fertilizer and light. Allow 24 to 36 inches between plants in the row and 4 to 5 feet between rows.

What causes poor fruit set?

Poor fruit set on pumpkin plants usually results from too thick planting—which discourages pollinating insects—too few insects for pollination, or cool, wet weather which slows insect activity. Male and female flowers are separate on each plant. Pollen is transferred from male to female flowers by insects—mainly honey bees.

Should you remove tips of vines late in the season?

You can remove the tips of vining pumpkins in mid-August to stop plants from spreading further. Any fruits that set after that time will not ripen before early fall frosts.

Do pumpkins cross with squashes?

Cultivars of true pumpkin (*Cucurbita pepo*) cross readily with each other, but crossing is not apparent unless you save the seeds and plant them another year. Pumpkins do not cross with cultivars of true squash (*Cucurbita maxima*). Summer “squash” cultivars are really true pumpkins, and they cross readily with each other and other pumpkins.

What are some different pumpkin cultivars?

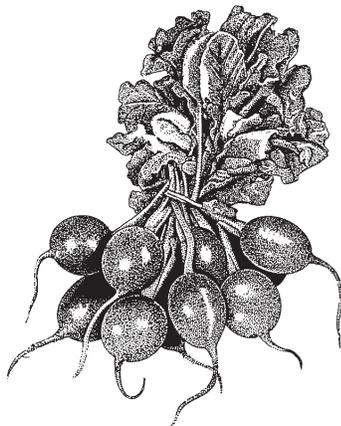
Bush cultivars. All of the summer squashes are true pumpkins and all have bush-type plants. ‘Table King’ is a non-vining form of ‘Table Queen’ (acorn)—a vining pumpkin or fall “squash.” Space bush-type plants 2 to 3 feet apart in rows 4 feet apart.

Naked-seed cultivars. Triple Treat is a cultivar that produces seeds without seed coats—the seeds are used for roasting. It grows like regular vining pumpkins. Flesh is deep orange, medium- to fine-grained and good for baking. The fruits are 7 to 9 inches in diameter, weigh 6 to 8 pounds and make fine jack-o-lanterns.

Miniature cultivars. ‘Jack Be Little’ and ‘Baby Boo’(white) produce numerous miniature fruit on a regular size vine.

Jack-o-lantern types. ‘Atlantic Giant’ (75–80 lb), ‘Autumn Gold,’ ‘Howden,’ ‘Prizewinner’ (75–80 lb) and ‘Trick or Treat’ are good choices.

Pie selections. ‘Small Sugar’ and ‘Spookie’ are good garden choices.



RADISH

When do you thin radishes?

Radishes, like other root crops, should be thinned soon after germination. Thin to 1 inch between plants on most soils. Plants can be thicker on loose soils.

What causes poor root growth?

Large radish tops and poor root growth are commonly caused by too much shade, seeding too thickly followed by too little thinning too late, or planting in soils that do not have enough potassium or have too much nitrogen. Radish plants need adequate space and balanced fertility with plenty of potassium and comparatively low nitrogen.

What is a winter radish?

Winter radish cultivars produce large roots that can be round or elongated, and white, red or black. These radishes need a long season for full growth. You can eat the roots raw with vinegar or cooked like turnips. Winter radishes have a pungent flavor and are more fibrous and less crisp than common radishes.

RHUBARB

How do you start rhubarb?

To start a new rhubarb planting, you can buy plants or lift and separate healthy, established plants before new growth starts in early spring.

Cut the old plants into strong, healthy pieces of root with one or more large, vigorous buds. Replant these upright in well-drained soil in a new location. The buds should be planted 4 to 6 inches deep and spaced 2 feet apart in rows 3 feet apart.

Before you set in new plants, work compost, manure or other organic matter into the soil, and apply at least 1 pound per 10 feet of row of a complete fertilizer such as 5-10-20. Add extra nitrogen each year in early spring or after harvest.

When do you begin harvesting rhubarb?

Begin harvesting rhubarb the second season after planting. Pull leaf stalks upward and to one side or cut them. Harvest may extend through spring and into early summer.

Harvest for freezing or canning in early spring when the leaf stalks have maximum color, flavor and tender-

ness. Rhubarb quality deteriorates during the hot dry weather of mid-summer and early fall.

What part of the rhubarb plant is poisonous?

Eat only the leaf stalks (petioles). They contain harmless malic acid, while the broad, green leaf blades contain large amounts of soluble oxalates and are poisonous.

What causes small leaf stalks?

Rhubarb leaves and stalks usually become smaller each year if plants grow in the same location. Generally, you should start a new planting in a different spot every 6 to 8 years.

What do you do when plants produce seed stalks?

Once established, rhubarb plants produce seed stalks, flowers and seeds each season. Cut seed stalks as soon as the large buds appear at the base of the plant to preserve manufactured food for new leaves.

Can rhubarb be grown indoors?

You can grow rhubarb indoors. First, lift whole plants (crowns) in late fall and let them become thoroughly chilled outdoors. Then take them into a warm, dark place and cover the plants with peat, soil, sand, sawdust or other water-holding material and keep them moist. The leaf stalks produced will be long, very tender and uniformly colored. Leaf blades will be small and colorless—be sure to remove and discard them.

RUTABAGA

Seed rutabagas around May 1 in rows 2½ to 3 feet apart. Thin soon after germination to 6 to 8 inches between plants.

What causes rutabagas to develop a strong flavor?

Rutabaga roots develop a strong flavor and become tougher during the hot, dry days of midsummer. This is especially true when rutabagas grow on soils that do not hold water well and are low in nitrogen and potassium. Rutabagas need cool, moist conditions, ample space, and high, balanced soil fertility for continuous uniform growth and high quality.

SALSIFY

Salsify (vegetable oyster plant) needs a long growing season. Seed in early spring in rows 18 to 24 inches apart. Thin seedlings soon after germination to 2 inches apart in the row.

Harvest salsify roots in late fall, preferably after early frosts, or cover with a few inches of soil and leave in the garden over winter. Roots are more tender and sweeter when harvested in early spring before new growth starts.

SPINACH

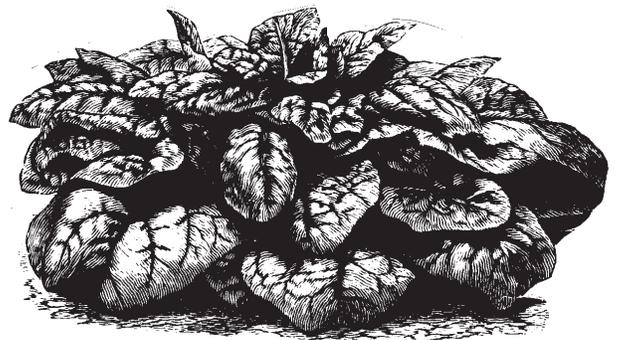
When does spinach go to seed?

Spinach normally produces seed stalks and flowers during the long days of early summer. When seeded in early spring, most cultivars go to seed shortly after the plants reach full growth. “Long-standing” cultivars produce seed stalks more slowly. Spinach usually does not produce seed stalks when planted in late July for fall harvest since the days are becoming shorter.

What is New Zealand spinach?

New Zealand spinach or “summer spinach” belongs to a different plant family than regular spinach. Seed indoors around April 1 for transplanting around May 20, or seed outdoors around June 1 when the soil is warm. Space plants 10 to 12 inches apart.

Harvest New Zealand spinach as soon as a few leaves are full size and the plants begin to spread. Pick the larger leaves or pinch off the stem tips with 3 to 4 leaves. The leaf axils produce flowers and seeds in back of the stem tips throughout the season. You can save mature seeds for planting the following season.



SQUASH

Should you plant squash in hills or rows?

Squash plants, properly spaced and fertilized, produce better when planted in rows rather than hills. This gives each plant plenty of room and ample fertility, water and light.

Plant vining squash cultivars 24 to 36 inches apart and bush cultivars 18 to 24 inches apart. Rows should be 4 to 6 feet apart.

What causes poor fruit set?

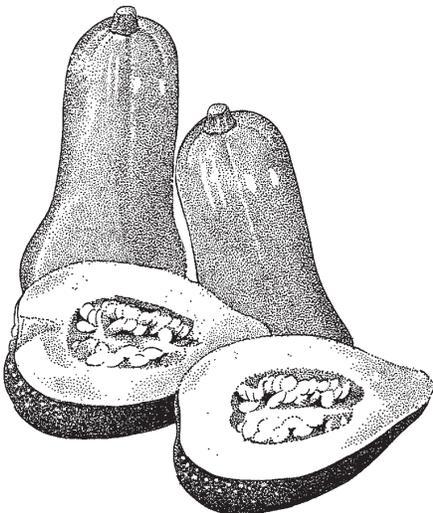
Poor fruit set often results if you plant too thickly (the tight canopy of leaves discourages bee activity), there are too few bees for pollination, or cool, wet, cloudy weather slows bee activity.

When are winter squashes ripe?

Winter squashes need a long, warm growing season to fully mature and develop good texture, sweetness and flavor. At maturity, the ripe color of a particular cultivar is richest and most intense. With most cultivars, the area where the fruit rests on the soil changes from a cream-green to a rich orange color. In addition, many squashes have a hard, flinty rind when fully ripe.

Should you remove tips of vines late in the season?

You can remove tips of squash vines (especially vining cultivars) in late August to stop plants from spreading. Any fruits that set after that time will not ripen before early fall frosts.



Do squashes cross with pumpkins?

Cultivars of true squash, *Cucurbita maxima* (Buttercup, Mooregold), cross readily with each other. Crossing is only apparent if you save the seeds and plant them another year. However, squash cultivars do not cross with cultivars of true pumpkin, *C. pepo* (Small Sugar, Table Queen, Table King, and the summer “squashes”), but they may rarely cross with cultivars of *C. moschata* (Butternut) and cultivars of *C. mixta* (Green Striped Cushaw, Japanese Pie Cushaw and White Cushaw).

What are some different squash cultivars?

Summer “squash.” Harvest summer squash fruits before they mature. Fruits of most cultivars are harvested within 2 weeks from fruit set. ‘Patty Pan’ is harvested when 3 to 6 inches in diameter. Long types—such as zucchini—are harvested when 6 to 10 inches long.

Spaghetti squash. The spaghetti squash is really a pumpkin with a coarse, cream-colored, fibrous flesh. When cooked or baked, this flesh looks like spaghetti.

Bush cultivars. A non-vining squash cultivar is Emerald Bush Buttercup. ‘Emerald’ fruits are similar to those of regular ‘Burgess Buttercup’ squash. Cultivars of this type produce well and need little space.

Plant bush cultivars 1½ to 2 feet apart in the row and leave 4 feet between rows.

Delicata-types. These fall squashes produce numerous small fruits on regular size vines. Some cultivars are Delicata, Sugar Loaf and Sweet Dumpling.

Decorative cultivars. Several squash cultivars are grown for decoration because of their interesting colors and/or shapes. The turban cultivars (Aladdin, Banquet and Turk’s Turban) are especially attractive and grow like regular squashes. These produce fruits with a colorful turban-like protrusion at the blossom end.

SWEET CORN

How can you ensure good pollination?

Well-balanced soil fertility, plenty of moisture and full pollination are essential for well-filled ears of high quality corn. Plant corn in blocks of several short rows rather than a single long row to help ensure good pollination. Space plants 10 to 12 inches apart in rows 3 feet apart.

Is corn sweeter in late fall?

The sweetest, tenderest sweet corn is harvested in the late summer and early fall from healthy, properly fertilized plants that get plenty of moisture and sunlight. These conditions ensure maximum sugar manufacture during the day and minimum use of sugar by the plant at night.

Does sweet corn cross with field corn and popcorn?

Sweet corn crosses readily with both field (dent) corn and popcorn if plants are grown near each other and shed pollen at the same time. However, field corn and popcorn cultivars usually shed their pollen later than sweet corn cultivars so crossing is uncommon.

When crossing does occur with field corn or popcorn, sweet corn kernels contain slightly more starch and less sugar—they are less sweet and less tender than normal. Mixed white and yellow kernels appear on sweet corn ears if white or yellow cultivars are crossed with the opposite color of field corn or popcorn.

Even when pollen is shed at the same time, little crossing occurs if field corn and popcorn are growing at least 50 feet away from sweet corn. Virtually no crossing will occur if they are grown more than 100 feet away.

Popcorn crossed with field corn or sweet corn pollen will dry more slowly because they have more sugar and soft starch. However, popping quality is not seriously affected.

How do you get rid of stalks?

The best way to get rid of corn stalks is to pull each stalk with roots attached as soon as the last ear is picked. Place stalks in a compost pile—chopping or shredding the green stalks hastens decay.

What are some different sweet corn cultivars?

Bicolor cultivars. Several hybrid sweet corn cultivars produce ears with intermixed white and yellow kernels. These hybrids are produced by crossing white and yellow inbreds. Ears are attractive and of good quality. Early, second-early and main crop cultivars are available.

Decorative cultivars. Several corn cultivars are frequently used for decorative purposes. Some of these—'Indian or Squaw' and 'Fiesta' are flint corns. Others are popcorns—such as 'Strawberry' and 'Carousel.' 'Mandan Bride' is a multi-colored flour corn.

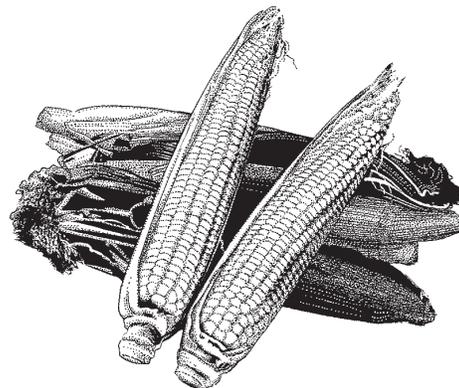
Plant decorative cultivars like regular sweet corn and allow ears to become fully mature before harvesting. Leave husks on while the corn dries before using it in displays.

Super sweet cultivars. Certain super sweet cultivars—such as Supersweet Jubilee and Zenith—contain significantly more sugar than standard cultivars. Some of these cultivars lose their super sweet characteristic if pollinated by ordinary sweet corn or field corn. Other super sweet cultivars do not lose their sweetness when pollinated with regular sweet corn. Check package directions for instructions.

What are the differences between the various types of sweet corn?

Normal sugary (su). Kernels contain moderate but varying degrees of sugar, depending on the variety. Sugars convert to starch rapidly after harvest. Sugar content is usually about 19% on a dry weight basis.

Sugary enhanced (se). This gene, when present, modifies the normal sugary (su) gene. The result is increased tenderness and, to a varying degree, sweetness. The conversion of sugar to starch after harvest is slowed.



Varieties are described as “SE” and “EH.” Sugar content is about 25% on a dry weight basis. These cultivars are generally creamy and suitable for canning.

Shrunken (sh₂). This gene’s name is descriptive of its effect on the appearance of the dry kernel. Its presence creates greatly heightened sweetness and slow conversion to starch after harvest. Common names for this type are “Super Sweet” and “Xtra Sweet.” Sugar content for this type ranges from 40 to 50% on a dry weight basis. These cultivars are excellent when frozen.

SWEET POTATO

Where do sweet potatoes come from?

Sweet potatoes are produced in the southern United States from plants (slips) that grow from mother roots placed in special growing beds under warm, moist conditions. They can be grown in loose, well-drained soils in southern Wisconsin and the central sands area, but the seasons are too short for this vegetable to fully mature.

Do you plant sweet potatoes in ridges?

Plant sweet potatoes in raised ridges except in light, deep, loose soils. Ridges permit fast growth of smooth, properly shaped roots and make digging easier.

Set plants in raised ridges around May 20. Leave 6 to 8 inches between plants and 3 feet between rows. Harvest before frost—handle roots carefully to prevent cuts, bruises and broken roots.

Use sweet potatoes soon after harvest. Either cook the potatoes and freeze them, or cure the roots thoroughly at 75° to 80°F and store in a well-ventilated location at 50° to 60°F. Even under the best conditions, fresh roots grown in Wisconsin’s short season do not store well since they do not reach full maturity.

What are yams?

Moist-fleshed cultivars of sweet potato are often called “yams” in stores, but sweet potatoes are not yams—they belong to the morning glory family (Convolvulaceae). The true yams belong to the Dioscoreaceae family. These vary greatly in size, and need a long, warm growing season. In addition, they grow only in the tropics and are seldom, if ever, available for purchase in this country.

TOMATO

Can you sow tomato seeds outdoors?

Tomatoes need a long, warm growing season. In Wisconsin, seeding directly in the garden generally is feasible only with early, short-season cultivars and then only in southern counties. Plant tomato seeds outdoors around May 1, and put “hotkaps” or other protectors over the hills to hasten germination and avoid chilling or frost injury to seedlings.

How do you set tall plants?

You can remove the tip of tall tomato plants at planting time, but this delays harvest and reduces early yields. Instead, leave the tip on and trench the plant in by covering the roots and much of the stem with moist soil. New roots will grow along the covered stem. Don’t plant too deeply, though, because the soil is considerably colder below 4 to 5 inches and tomato roots grow more slowly in cold soil.

Which is best—staking, caging or no support?

There are several factors to consider before you decide to support tomatoes on stakes, cage them or let them sprawl on the ground. Usually determinate cultivars (the terminal bud is a flower bud) are caged or left to sprawl; whereas indeterminate cultivars (the terminal bud is vegetative) are staked or caged.

Generally, plants that are staked, pruned and tied need less space and yield larger and earlier fruits. But they also yield fewer fruits, with greater chance of sunscald and cracking.

Caged plants do not need pruning, and they yield high quality, late fruits. These fruits are smaller and more numerous than those which staked plants produce. They also have less cracking and sunscald. Cages should be at least 18 inches in diameter and 36 inches tall.

Unsupported, unpruned plants produce similarly to caged plants, except they occupy more space. Mulch unsupported plants to protect the fruit from contact with the soil.

When do you set the stakes?

If you stake tomatoes, drive the stakes before you set the plants. This way you avoid injuring expanding plant roots if you drive the stakes at a later time.

Do you prune and tie staked tomatoes?

Staked or trellised tomatoes are commonly pruned and tied. Break off side branches (suckers) soon after they start to grow. Pass a soft string or strip of cloth beneath a leaf or fruit cluster, and then wrap it around the stake or trellis at least twice, about 3 to 4 inches higher up.

Do you prune unstaked tomatoes?

Unstaked tomatoes generally are left unpruned. Modest pruning will increase early fruiting and fruit size but reduce total yields.

Does mulching help?

A thick covering of weed-free hay, straw or other organic material, or plastic film will help hold moisture in the soil, keep the soil cooler and keep fruits off the ground. Apply mulch around the middle of June after the soil warms up. If you use lawn clippings, make certain they do not contain herbicides.

What causes poor fruit set?

Tomato plants sometimes fail to set fruit on the first cluster; the plants may be stunted from being too old, too cold or too dry sometime before planting. The plants may also have been severely chilled following planting, or there may have been too much nitrogen in proportion to phosphorus and potassium in the soil. Tomatoes set fruit best if night temperatures are above 55°F—pollen becomes nonviable when exposed to lower temperatures.

Tomato plants need uniformly warm growing conditions, balanced fertility, ample water and uniform growth both before plants are set in the garden and during the growing season. They also need moderate amounts of nitrogen but relatively larger quantities of phosphorus and potassium fertilizer, especially during early growth in the garden.

Apply additional nitrogen as a side dressing, especially on lighter soils, after the plants have set fruits on their first two or three fruit clusters. Flowers dropping off the plants and the smaller size of new leaves and stems later in the season generally indicate that plants are running out of nitrogen fertilizer. Excessively hot, dry weather and inadequate nitrogen can also cause flowers to drop during midseason.

Should you top plants late in the season?

You can remove the tips of tomato plants in late August since fruits that set after that time are not likely to ripen before frost.

How do you save tomato seeds?

To save seeds, squeeze seeds and juice from fully ripe fruits into a container (do not add water) and let it ferment in a warm place for 2 to 3 days. Then rinse, dry, separate the seeds and store them in a tight container in a cold, dry place. Do not save seeds of hybrid cultivars since they do not breed true.

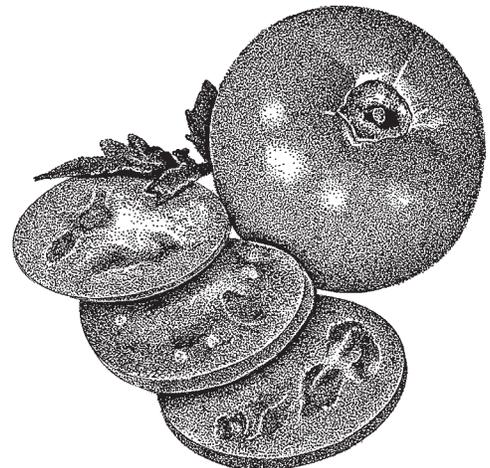
What causes leaf roll?

Tomato leaf roll is commonly found on all tomato cultivars, but it is especially prevalent on plants pruned severely during cool, moist seasons. Pressure from water moving in through the roots causes the older leaves to roll upward and inward, although they remain green and healthy. This condition apparently does not damage plants or fruit production.

What causes blossom-end rot?

Blossom-end rot results from an irregular or insufficient supply of moisture and/or not enough calcium in the soil. The tips of tomato fruits, especially the first fruits to ripen, become soaked with water, turn light brown, and become sunken as the fruits enlarge and start to ripen.

To avoid this condition, make sure your plants have adequate moisture. If you water your tomatoes, water heavily about once each week. Avoid frequent, light



waterings which can bring on blossom-end rot. Mulching may also help.

Fungicides do not help control this disorder because disease organisms are not responsible for blossom-end rot. Fruit is still edible, just cut out the affected portion.

What are determinate and indeterminate plants?

Several of the newer tomato cultivars are determinate (stop elongating early) because the main stem ends in a flower cluster after about four to five clusters. Fruit of determinate cultivars tend to ripen all at one time. They are good to grow when you need large quantities at one time—such as for processing.

Plants of other cultivars are indeterminate (continue to elongate), with the flower clusters giving way to continued extension of the stems. Their fruits ripen throughout the summer. These cultivars are good to grow for fresh use.

Determinate cultivars include Campbell 1327, Celebrity, Floramerica, Heinz 1350, Small Fry and Springset. Indeterminate cultivars include Beefmaster, Better Boy, Big Boy, Early Girl and Jet Star.

What are some different tomato cultivars?

Low-acid tomatoes. Tomato cultivars differ little in acid content. Acid content increases to the green-ripe stage—while sugar increases until the fruit is fully ripe. However, pink, yellow and white cultivars do tend to have a slightly greater proportion of sugar to acid compared with red cultivars.

All tomatoes contain less sugar during cool, wet seasons. Sugar content is also lower in late fall when the weather is cooler and plants have lost some of their leaves because of leaf diseases.

Cultivars for containers. You can grow some tomato cultivars in containers—such as Chello, Gold Nugget, Patio, Pixie, Small Fry, Springset and



Tiny Tim. 'Small Fry,' 'Spring Giant' and 'Springset' need support up to about 2 feet.

Cultivars for tomato paste. Tomato fruits with high solids and mild flavor—such as those from 'Roma' and 'Viva Italia'—are often used for making paste, ketchup and sauce.

Tree tomato. The plant currently sold as a tree tomato (*Cyphomandra crassifolia*) is a member of the nightshade family. The regular tomato also belongs to this group. However, the tree tomato is a different species, although, like the tomato, it is native to Peru and grown in home and market gardens in the semi-tropical areas of Peru, Brazil, New Zealand and other countries.

The tree tomato is woody, upright and grows 8 to 10 feet tall. It does not begin to bear fruits until 2 years after seeding and may continue to bear for 5 or 6 years. Tree tomatoes cannot survive Wisconsin winters and have to be taken inside.

Fruits of the most common tree tomato are oval, about 2 inches long and change from greenish purple to reddish purple when fully ripe. Some cultivars produce orange or bright red fruits. Fruits are not very acidic and the flavor is good.

Use tree tomato fruits in stews or preserves after you remove the tough skin and the hard seeds. The plant is propagated from the seeds or woody cuttings.

Husk tomato. The husk tomato (ground cherry) is another member of the nightshade family. Sow seeds indoors around April 1 and transplant seedlings outside around May 20, or sow seeds in the garden around May 10. Space plants 12 to 15 inches apart in rows 24 to 30 inches apart.

Harvest the husk-covered fruits (berries) when husks turn light cream in color and berries inside become yellow. Remove the husk and eat the fruit fresh or combine it with other fruits in pies or preserves. 'Goldie' does well in Wisconsin.

Climbing tomato. Tomato plants do not twine around supports, nor do they have tendrils or other structures for clinging to supports. So-called climbing tomatoes just have unusually long spaces between leaves and flower clusters. Like other cultivars, you must support them by tying or wire cages to help them grow upright.

Pink tomato. Pink-fruit tomatoes were once quite popular in home gardens. Now they are seldom grown except in greenhouses.

TURNIP

Turnips need cool, moist weather and plenty of high-potassium fertilizer for best growth. Seed in July for fall harvest. Thin soon after germination to 3 to 4 inches between plants.

Can you use turnips for greens?

Turnip tops are nutritious and often eaten as cooked greens. Certain cultivars—such as Shogoin—are grown exclusively for greens. Other cultivars provide both greens and roots—such as Purple Top White Globe and Tokyo Market.

VEGETABLE SOYBEAN

Soybeans are nutritious and produce exceptionally well in southern and central Wisconsin. Vegetable soybean cultivars generally are milder in flavor than the field cultivars.

Seed vegetable soybeans around May 10 in rows 30 to 36 inches apart with plants 2 to 3 inches apart in the row.

Usually vegetable soybeans are eaten in the green-shell stage, so pick pods when they are fully developed but still green. Heat pods thoroughly for easy shelling. You can use fully mature seeds for soybean sprouts, baking or soybean meal, or eating roasted like nuts.

WATER CRESS

Water cress is a perennial member of the mustard family. This leafy salad vegetable grows naturally in Wisconsin in fresh, moving water beside springs and along streams, ditches and lakes.

In the home garden, plant water cress where the soil can be kept constantly moist. It will tolerate considerable shade but must have flowing water. Start new plantings from seeds or cuttings. Sow seeds or set cuttings in early spring and space plants 1 foot apart. Harvest by cutting or pinching 4 to 6 inches off the tip of the vine-like stems.

WATERMELON

Can you start watermelon indoors?

Watermelon plants, like plants of other vine crops, have a meager root system, and brittle leaves and stems. You can start them in pots or other suitable containers, if you transplant them carefully. Sow seeds indoors around May 1 for transplanting around May 20.

Should you plant in hills or rows?

Watermelon plants grow best when each plant has plenty of space, moisture, light and fertility. Properly spaced, they produce better when planted in rows rather than hills. Transplant plants started indoors or seed in rows 4 to 6 feet apart and space plants 36 inches apart.

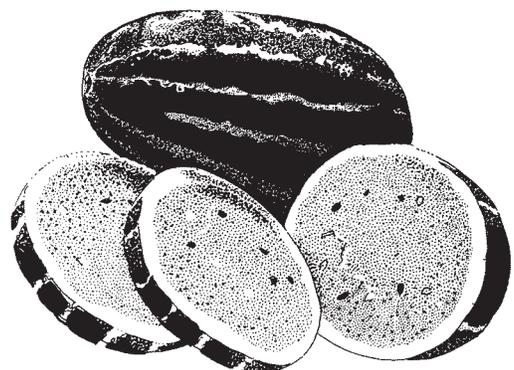
What causes poor fruit set?

Poor fruit set can occur from planting too thickly, too few bees for pollinating the female flowers, or cool, wet weather which slows bee activity.

How can you tell if a watermelon is ripe?

It is hard to determine whether or not a watermelon is ripe. Although the part of the watermelon touching the soil turns from a light grass-green to a darker, cream green as the fruit ripens, many people thump watermelons—the solid sound produced indicating ripeness, while a sharper sound indicates a greener fruit. Results of this technique vary, depending on how the fruit is lying on the soil.

A good indicator of ripeness is the condition of the tendrils nearest the melon. They curl and dry up when the melon is ripe.



Do watermelons cross with other vine crops?

Watermelon cultivars cross readily with each other and with citron, but crossing will not be apparent unless seeds are saved and planted another year. Watermelons do not cross with muskmelon, cucumber, squash or cushaw.

Are there any good seedless watermelon cultivars?

Several hybrid cultivars of watermelon produce seedless or nearly seedless fruits. A few plants of a standard cultivar must be included to provide pollen.

These triploid hybrids are gaining in popularity. A few good cultivars to try are Honey Heart (yellow) and King of Hearts.

Start the plants indoors in pots or other containers about May 1 and transplant to the garden around June 1. This ensures early and good stands. However, the short, comparatively cool season in Wisconsin frequently results in melons low in sugar and lacking in flavor.

WITLOOF CHICORY

Witloof chicory (French endive) grows well in Wisconsin. Sow seeds in early spring and thin soon after germination to 2 to 3 inches between plants and 24 to 30 inches between rows.

Harvest witloof chicory after early fall frosts. Cut tops back to 2 inches, and place plants upright in soil or similar material in a dark location. Next, cover the top of the roots with 6 inches of soil and keep the soil moist. When heads of white, compact leaves appear at the soil surface, harvest them and use in fresh salads.

RELATED PUBLICATIONS

BEEF

Beet Disorder: Cercospora Leaf Spot (A3806)

CARROT

Carrot Diseases: Alternaria and Cercospora Leaf Blights (A3807)

COLE CROPS

Cole Crops Disorder: Black Rot (A3181)

Cole Crops Disorder: Blackleg (A3802)

Cole Crops Disorder: Clubroot (A1128)

CORN

Corn Disorders: Smut and Rust (A3800)

ONION

Onion Disorder: Fusarium Basal Rot (A3114)

Onion Disorder: Purple Blotch (A3804)

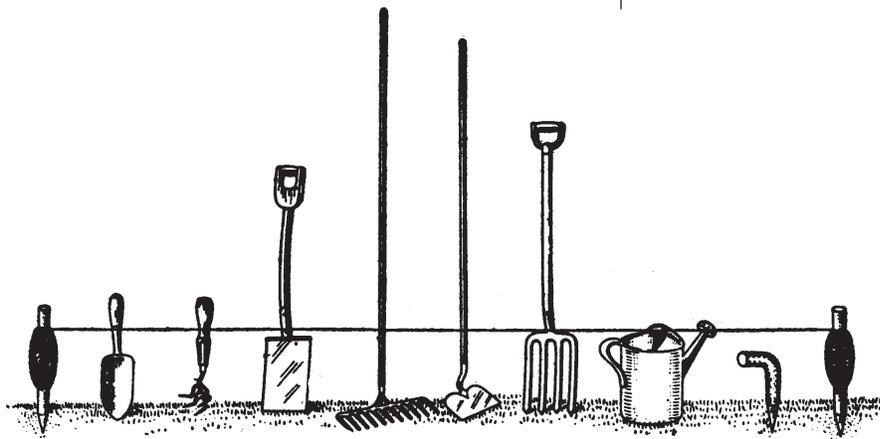
Onion Disorder: Smut (A3796)

Onion Disorder: Soft Rot (A3797)

Onion Disorders: Botrytis Leaf Blight, Leaf Fleck, and Neck Rot (A3803)

PEPPER

Tomato and Pepper Disorders: Bacterial Spot and Speck (A2604)



TOMATO

- Home-Grown Tomatoes for Wisconsin (A1691)
- Tomato and Pepper Disorders: Bacterial Spot and Speck (A2604)
- Tomato Disorder: Early Blight and Septoria Leaf Spot (A2606)
- Tomato Disorder: Physiological Fruit Problems (A3798)
- Tomato Disorder: Post-Harvest Fruit Diseases (A3799)
- Tomato Disorder: Verticillium and Fusarium Wilts (A2617)

VINE CROPS

- Vine Crops Disorder: Angular Leaf Spot (A3801)
- Vine Crops Disorder: Anthracnose (A3279)
- Vine Crops Disorder: Bacterial Wilt (A3272)
- Vine Crops Disorder: Powdery Mildew (A3805)
- Vine Crops Disorder: Scab (A3282)

HARVESTING AND PRESERVING VEGETABLES

- Canning Salsa Safely (B3570)
- Canning Vegetables Safely (B1159)
- Freezing Fruits and Vegetables (B3278)
- Harvesting Vegetables from the Home Garden (A2727)
- Make Your Own Sauerkraut (B2087)
- Storing Vegetables at Home (A1135)
- Tomatoes Tart and Tasty (B2605)

GARDENING TECHNIQUES

- Container Gardening (A3382)
- Home Propagation Techniques (NCR274)
- Specialized Gardening Techniques: Wide-Row Planting, Square-Foot Gardening, and Raised Beds (A3384)
- The Vegetable Garden (A1989)
- Vegetable Cultivars and Planting Guide for Wisconsin Gardens (A1653)

GENERAL PLANT DISORDERS

- General Disease Problem Disorder: Sooty Mold (A2637)
- General Plant Disorder: Slugs (A3186)
- Managing Insects in the Home Vegetable Garden (A2088)
- Vegetable Insects (A2093)
- Walnut and Butternut Toxicity (A3182)

ANIMAL PESTS

- Controlling Deer Damage in Wisconsin (G3083)
- Ground Squirrels: Their Ecology and Control (G3238)
- Meadow Mouse Control (A2148)
- Mole Control (G3200)
- Protecting Gardens and Landscape Plantings from Rabbits (G1654)
- The Raccoon (G3304)

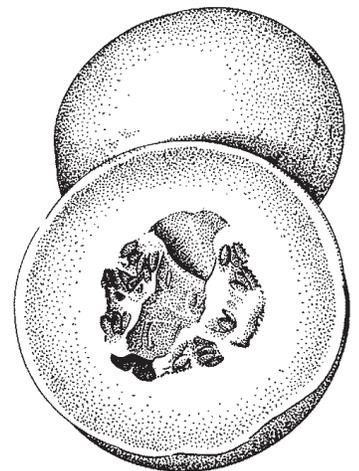
SOIL FERTILITY

- Garden Fertilization (A2304)
- Mulches for Home Gardens and Plantings (A3383)
- Organic Soil Conditioners (A2305)
- Sampling Lawn and Garden Soils (A2166)

WEED IDENTIFICATION

- Common Weed Seedlings of the North Central States (NCR607)

References to pesticide products in this publication are for your convenience and are not an endorsement of one product over other similar products. You are responsible for using pesticides according to the manufacturer's current label directions. Follow directions exactly to protect the environment and people from pesticide exposure. Failure to do so violates the law.





Copyright © 1994 University of Wisconsin-System Board of Regents and University of Wisconsin-Extension, Cooperative Extension

Author: Helen C. Harrison is professor of horticulture, College of Agricultural and Life Sciences, University of Wisconsin-Madison and University of Wisconsin-Extension, Cooperative Extension. Produced by Cooperative Extension Publications.

University of Wisconsin-Extension, Cooperative Extension, in cooperation with the U.S. Department of Agriculture and Wisconsin counties, publishes this information to further the purpose of the May 8 and June 30, 1914 Acts of Congress; and provides equal opportunities and affirmative action in employment and programming. If you need this material in an alternative format, contact Cooperative Extension Publications at 608-262-8076 or the UWEX Affirmative Action office.

This publication is available from your Wisconsin county Extension office or from Cooperative Extension Publications. To order, call toll-free 877-WIS-PUBS (947-7827) or visit cecommerce.uwex.edu.

A2801 Growing Vegetables at Home: Questions and Answers

SR-08-02-.9M-500