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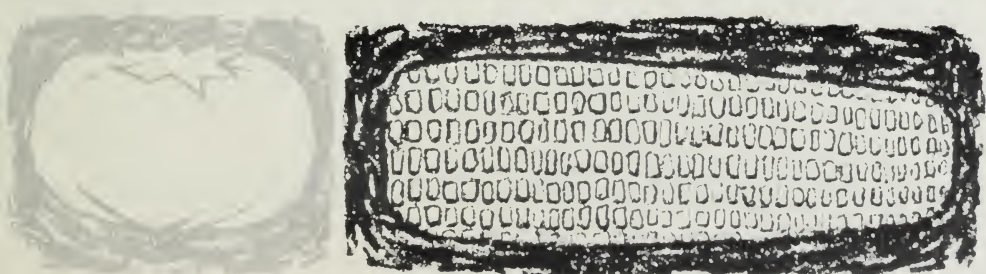
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# ILLINOIS VEGETABLE GARDEN GUIDE



## CONTENTS

<b>PART I — TEN STEPS TO A SUCCESSFUL GARDEN</b> .....	3
Step 1 — Make Good Use of Your Location.....	3
Step 2 — Plan Your Garden Layout.....	4
Step 3 — Grow Recommended Varieties.....	8
Step 4 — Obtain Good Seed, Plants, Equipment, and Supplies..	8
Step 5 — Prepare and Care for the Soil Properly.....	15
Step 6 — Plant Your Vegetables Right.....	18
Step 7 — Keep Down Weeds.....	22
Step 8 — Control Pests.....	23
Step 9 — Water Properly.....	24
Step 10 — Harvest at Peak Quality.....	24
<b>PART II — GARDEN PROBLEMS AND THEIR CONTROL</b> .....	25
Insect Control.....	25
Disease Prevention and Control.....	25
Root-Knot Nematodes.....	28
Blossom Drop.....	30
Injury From 2,4-D.....	30
<b>PART III — TIPS ON GROWING SPECIFIC VEGETABLES</b> (Vegetables are listed in alphabetical order).....	30

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# Illinois Vegetable Garden Guide

By J. S. VANDEMARK, B. J. JACOBSEN, and ROSCOE RANDELL<sup>1</sup>

Vegetables from the home garden are fresher, may have better nutrient values, and are often less costly than those sold in stores. In addition to providing wholesome, low-cost food, vegetable gardening is an interesting hobby, one in which the whole family can take part. Other advantages of gardening are that it provides healthful outdoor exercise, offers productive activity for retired, handicapped, or disabled persons, and is an excellent teaching tool for children.

To get the most out of your garden you should make plans early in the year and follow proper steps during the gardening season. The purpose of this guide is to help you plan and maintain a garden under Illinois growing conditions so that you will have an abundant supply of high-quality vegetables at harvest and (if you freeze, can, or store your vegetables) throughout the year.

## PART I — TEN STEPS TO A SUCCESSFUL GARDEN

### Step 1 — Make Good Use of Your Location

The success of the garden depends greatly on location. Even though you are probably limited in choice of location, you should consider the following:

**Good soil.** A loose, fertile, level, well-drained soil is best. If possible, avoid heavy clays and very sandy soils, unless adequate organic material is added.

**Sunlight.** Sunlight is **absolutely necessary** to produce healthy high-quality vegetables.

**No nearby trees or shrubs.** Trees and shrubs compete with garden crops for sunlight, plant food, and moisture. Especially avoid walnut trees, because they produce a toxin that is injurious to many vegetables.

**Water supply.** When possible, have a water supply near your garden site. Water is particularly needed during the period of starting seeds or transplanting crops, but is of importance later also.

**Nearness to your home.** If possible, your garden should be near your house for convenience and harvest.

**Part of landscape plan.** When planning your garden, consider its relation to the trees, shrubs, and flowers around your home. The garden should fit in well with the overall design of your landscape.

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## Step 2 — Plan Your Garden Layout

After choosing a garden site, the next step is to plan the arrangement of crops in the garden. First consider each of the points listed below. Then sketch a map of your garden area showing the location of each vegetable, the spacing between rows, and the approximate dates for each planting. Two sample garden plans are shown on the following pages.

**Size of garden.** The size of your garden depends on the space available, the quantity of vegetables you will need, and the amount of work and time you desire to spend. Make the garden just large enough so that it will be interesting and fun for the whole family. Don't make it become a burden.

**Kinds of vegetables.** Choose vegetables that you and your family enjoy. Make sure, though, that they can be grown successfully in your area.

Some crops utilize space better than others. These vegetables can be produced efficiently in a small garden:

Beans	Leaf lettuce	Spinach
Beets	Onions	Swiss chard
Broccoli	Peas (followed by	Tomatoes
Cabbage	other crops)	Turnips
Carrots	Radishes	

Another consideration in selecting crops is whether they taste noticeably better when they are fresh from the garden. Sweet corn is an outstanding example of this. Although it requires more space than the vegetables listed above, it is often chosen because of its high quality when fresh from the garden. Other highly perishable crops that taste best immediately after harvest are peas and asparagus.

**Growing seasons and growth characteristics.** Group the various vegetables according to their growing seasons and growth characteristics. Perennial crops, such as asparagus, rhubarb, and berries, which will be in one location for more than one season, should be planted along one side of your garden. Arrange early plantings on one side, probably near the perennials. Group early- or quick-maturing vegetables together so that after harvesting the space may be used for later plantings. To avoid shading, plant tall crops to the north or west of shorter crops.

**Spacing between rows.** Proper spacing between rows is important to allow for growth of plants, ease of cultivation, and efficient use of space. Recommended spacings are given in Table 5. If you have farm equipment and plenty of space, make your rows long and wide enough apart so that you can use your farm tractor and cultivator, thus avoiding much hand-weeding.

**Successive plantings** are desirable if you wish to have a continuous fresh supply of certain vegetables. Don't plant too much of a crop at any one time. Two or three small plantings of leaf lettuce and radishes



## SMALL GARDEN — INTENSIVE CULTURE: 30 BY 25 FEET

	Row No., and width		
		← 30 feet →	
1 <sup>st</sup>	1-12"	Early peas (Snap beans late)	25 feet
	2-12"	Second early peas (Lettuce and kohlrabi late)	
	3-12"	Spinach (Spinach late)	
	4-12"	Leaf lettuce (Spinach late)      Turnips (Spinach late)      Kohlrabi (Spinach late)	
	5-12"	Onion sets (Radishes late)	
	6-12"	Onion seed planted with radishes (Turnips late)	
	7-24"	Early cabbage plants	
	8-24"	Carrots planted with radishes	
	9-18"	New Zealand spinach      Beets planted with radishes	
	10-30"	Tomato seed	
2 <sup>d</sup>	11-24"	Snap beans	
	12-24"	Tomato plants	
	13-24"	Snap beans	
	14-18"	Lima beans	
3 <sup>d</sup>	15-24"	Summer squash or peppers      Cucumbers or eggplant	
	18"	(Border strip)	
4 <sup>th</sup>			

Crops in parentheses can be planted in the indicated rows after the early crops are harvested.

## LARGE GARDEN — INTENSIVE CULTURE: 120 BY 100 FEET

Providing a reasonably complete and continuous assortment of vegetables for fresh use throughout the season, for canning, and for storage. For additional plantings in late summer and fall, see page 5. Distance between rows may be adjusted to equipment used.

Plant- ing	Row No. and width	Cultures
	1-4'	Asparagus
	2-4'	Onion seed planted with radishes
	3-1½'	Onion sets
	4-3'	Early potatoes
	5-3'	Early potatoes
	6-3'	Early potatoes
	7-3'	Early potatoes
	8-3'	Leaf lettuce
	9-1½'	Peas
	10-1½'	Peas
	11-2'	Early cabbage seed
	12-2'	Early cabbage plants
	13-2'	Beets
	14-1½'	Paranips planted with radishes
	15-3'	Tomato seed
	16-3'	Early sweet corn
	17-3'	Early sweet corn
	18-3'	Early sweet corn
	19-3'	Snap beans
	20-1½'	Snap beans
	21-1½'	Carrots
	22-2'	Peppers
	23-3'	Tomato plants
	24-5'	Muskmelons
	25-5'	Squash
	26-8'	Watermelons
	27-8'	Winter squash
	28-8'	Sweet potatoes
	29-4'	Late cabbage seed
Special*	4'	(Border strip)

\* The special planting of late cabbage is for fresh use in late fall, sauerkraut, or winter storage. Sow June 1 in northern Illinois, June 15 in central Illinois, and July 1 in southern Illinois.

may be made a week to 10 days apart in early spring, with an additional one made in the fall. Onion sets for green onions may be planted every two weeks until you have used up all your sets. At least two plantings of carrots, beets, and cabbage should be made—one early in the spring for summer use, another later on for fall storage. Several plantings of sweet corn and beans should be made throughout the season.

Certain later crops can be planted in the same spot in the garden from which earlier ones have been harvested. Any of the early-harvested crops, such as leaf lettuce, spinach, radishes, green onions, and peas, can be followed by beans, beets, carrots, cabbage, sweet corn, late spinach, late leaf lettuce, and turnips.

**Intercropping.** To intensify production in a small garden, early-maturing crops can be planted between rows of later or long-season

**Table 1. — Yields of Home-Grown Vegetables**

Vegetable	Approximate yield per 100 ft. of row	Approximate amount of fresh vegetable needed for 1 quart	
		Canned	Frozen
	<i>lb.</i>		<i>lb.</i>
Asparagus.....	60	4	2-3
Beans, lima (pods).....	20	4-5	4-5
Beans, snap.....	100	1½-2	1½-2
Beets.....	100	2½-3	2½-3
Broccoli.....	80	...	2
Cabbage.....	200	...	...
Carrots.....	100	2½-3	2½-3
Chard.....	150	...	3
Cucumbers.....	100	...	...
Eggplant.....	60	...	...
Lettuce, leaf.....	100	...	...
Muskmelons.....	150	...	...
Onions.....	100	...	...
Parsnips.....	100	...	...
Peas (pods).....	40	4-5	4-5
Peppers.....	60	...	1½
Potatoes, early.....	60	...	...
Potatoes, late.....	75	...	...
Pumpkins.....	300	...	...
Radishes.....	100 bunches	...	...
Rhubarb.....	100	1	1½
Spinach.....	60	2-3	2-3
Squash, summer.....	200	2½-3	2-3
Squash, winter.....	400	2	3
Sweet corn, early.....	100 ears	4-5	4-5
Sweet corn, main-crop.....	100 ears	4-5	4-5
Sweet potatoes.....	80	2½-3	2-3
Tomatoes.....	500	3	...
Turnips.....	80	...	...
Watermelons.....	20 fruit	...	...

crops. Peas, radishes, green onions, spinach, or lettuce may be planted between rows where tomatoes, peppers, cabbage, or corn is to be grown.

**Rotating crops** from year to year is necessary to prevent diseases that overwinter in the soil. Do not grow the same vegetable or related vegetables in or near the same location more often than once in three years. Rotate crops from one side of the garden to the other.

**Erosion.** If your garden is on a hill, plant the rows across the slope rather than up and down.

### **Step 3 — Grow Recommended Varieties**

Selecting proper varieties for your garden is important. By careful selection you can grow vegetables that are disease-resistant and good yielders of high-quality, nutritious produce. Use the varieties recommended in Table 2 and that are known to do well in your area. It is a good idea to try one or two new varieties each year. Plant them next to your old favorites to see which ones are best.

The varieties recommended in Table 2 are all of high quality and are generally good for freezing or canning.

### **Step 4 — Obtain Good Seed, Plants, Equipment, and Supplies**

Take inventory early of your needs for plant materials, supplies, and equipment and order the items you need or buy them locally.

**Seed.** Buy clean, viable, disease-free seed. Most seed from reliable seed companies will meet these specifications. Seed should be treated to control disease organisms on the surface of the seed and to prevent seed decay and damping-off. You can treat seed yourself (write for Report 915, "Vegetable Seed Treatment," 218 Mumford Hall, Urbana, Illinois 61801), but you'll save time and effort if you buy seed that is already treated. Information on the kind of treatment the seed has received will appear on the seed package.

It is best not to use seed more than one year old. If you do, sow the seed thicker than usual to insure a good stand of plants. It usually does not pay to save your own seed unless you have a variety not available from any other source.

**Plants.** Some vegetables do best when they are started indoors and then transplanted into a garden. The plants should be healthy, stocky, medium-sized, disease-free, and insect-free, with good roots. Avoid using plants that are tender, yellow, spindly, or too large. Do not use plants with spots on the leaves, brown lesions on the stems, or knots on the roots.

Growing your own plants has these advantages: (1) You can use varieties not normally available; (2) you can have plants available when you want them; and (3) you can derive satisfaction from starting plants yourself. The main disadvantage is that the plants must be grown under carefully controlled lighting and temperature conditions. Because starting plants indoors involves some specialized techniques, it is not

discussed here. Information on starting and growing good plants may be obtained from Illinois Extension Circular 884, *Growing Vegetable Transplants*.

**Equipment.** Have all your equipment and tools ready before you begin to work the soil. A hoe, spade, garden rake, trowel, measuring stick, and planting line are essential for all gardens. A wheel hoe or hand cultivator is practically a necessity for larger gardens that are intensely cultivated. A seed drill is also desirable for larger gardens.

Keep all tools clean and well sharpened. Each time you use them, clean them thoroughly and rub them with an oily rag before putting them away.

Every gardener needs a good duster or sprayer to control garden pests. The type of applicator you use is a matter of your own choice; either kind is effective if used properly.

Plunger-type dusters are the most practical applicators for the small garden. They are usually equipped with attachments for dusting the underside of leaves. Crank-type dusters can be used satisfactorily in both small and large gardens.

Compressed-air sprayers, which are usually made of galvanized steel and range in capacity from 1 to 5 gallons, are the most satisfactory sprayers for use in the garden. Empty and rinse the sprayer with clean water after each use and hang it up to drain and dry. Do not use the same sprayer for applying both pesticides and weedkillers.

If you have a large garden, you may wish to buy or rent a small garden tractor. Garden tractors save labor in preparing the soil and cultivating crops.

**Supplies.** Obtain fertilizers, insecticides, and fungicides early so that you will have them when you need them. Other supplies you may need include mulching material, stakes, plant protectors, and pots. As you read this guide, make a list of the miscellaneous supplies that are required for the vegetables you are going to plant and have them ready before you begin gardening.

After completing Step 5 you will know how much fertilizer, lime, and starter fertilizer you will need.

Insecticides and fungicides are available as dusts, granules, and sprays.

Some of the common pesticides you will use in your control programs are maneb, zineb, Sevin, and malathion.

Further information on these pesticides is given in Part II.

All insecticides and fungicides should be treated as poison. Follow all directions and heed all precautions on the labels. Store them out of the reach of children and animals, in a locked place, preferably outside the house.

Table 2. — Seed and Plant Buying Chart

Crop	Amt. for 100 ft. of row	Variety recommended for use in Illinois	Days to harvest	Resistant to
Asparagus (plants)	75-100	Mary Washington	..	Rust
		Waltham Washington	..	Rust
		Tetra	..	.....
Snap beans (seed)	¾ pound	<b>Bush, green</b>		
		Contender	53	Mosaic, powdery mildew
		Tendergreen, some types	53	Mosaic, rust, bacterial blight and wilt
		Harvester	54	Mosaic, rust
		Blue Lake	56	Mosaic
		<b>Bush, yellow</b>		
		Cherokee Wax	52	Rust, mosaic
Kinghorn Wax	54	.....		
Lima beans (seed)	½ pound	Henderson Bush	65	.....
		Thorogreen	65	.....
		Fordhook 242	75	.....
		Thaxter	75	Downy mildew
Beets (seed)	1 ounce	Ruby Queen (main crop)	53	.....
		Detroit Dark Red (main crop)	58	Boron deficiency
Broccoli	50-75 plants or 1 packet seed	Green Comet <sup>a</sup>	60	.....
		Early Spartan	60	.....
		Waltham 29 (fall only)	70	Yellows
		Royal Purple Head	90	.....
Brussels sprouts Cabbage	1 packet 75-100 plants or 1 packet seed	Jade Cross	83	.....
		Market Dawn <sup>a</sup>	63	Yellows
		Emerald Cross	63	.....
		Resistant Golden Acre	64	Yellows
		Market Topper <sup>a</sup>	73	Yellows
		Market Prize <sup>a</sup>	76	Yellows
		Greenback	78	Yellows
		King Cole <sup>a</sup>	78	Yellows
		Resistant Danish	105	Yellows
		Vanguard II (Savoy)	72	Yellows
		Savoy King <sup>a</sup>	85	Yellows
		Red Danish (Red)	95	Yellows
Red Ball <sup>a</sup>	70	Yellows		
Red Head <sup>a</sup>	75	Yellows		
Carrots (seed)	¼ ounce	Nantes	70	.....
		Gold Pak	75	.....
		Waltham Hicolor	75	.....
		Spartan Sweet <sup>a</sup>	75	.....
Cauliflower (N. Ill. only)	50-75 plants or 1 packet seed	Early Snowball	54	Yellows
Swiss chard (seed)	1 ounce	Fordhook Giant	57	.....
		Ruby	60	.....
Chinese cabbage	1 packet	Michihili	70	.....
Collards	1 packet	Green Glaze	75	.....
Cucumbers (seed)	½ ounce	<b>Pickling</b>		
		Spartan Dawn <sup>b</sup>	51	Mosaic, scab
		SMR	53	Mosaic, scab

<sup>a</sup> F<sub>1</sub> hybrids. <sup>b</sup> All female hybrid; 10 percent regular seed must be added for pollination.

**Table 2. — continued**

Crop	Amt. for 100 ft. of row	Variety recommended for use in Illinois	Days to harvest	Resistant to	
Cucumbers (continued)		<b>Slicing</b>			
		Burpee Hybrid <sup>a</sup>	60	Mosaic, downy mildew	
		M & M Hybrid <sup>a</sup>	60	Mosaic, downy mildew	
		Challenger <sup>a</sup>	65	Mosaic	
		Saticoy <sup>a</sup>	65	Mosaic, downy mildew	
	Poinsett	65	Downy mildew, leaf spot, anthracnose		
Eggplant (plants)	50-75	Black Magic	72	.....	
		Black Beauty	80	.....	
		Burpee Hybrid <sup>a</sup>	80	.....	
		Long Tom <sup>a</sup> and Short Tom <sup>a</sup>	75	.....	
Kohlrabi (seed)	¼ ounce	Early White Vienna	55	.....	
Leaf lettuce (seed)	1 packet	Grand Rapids	45	Multiple resistance	
		Prize Head	45	.....	
		Simpson	45	.....	
		Salad Bowl	45	Multiple resistance	
		Slobolt	45	Tipburn	
		Summer Bibb (slow bolting)	62	Tipburn	
		Ruby	47	Tipburn	
		Buttercrunch	70	.....	
		Cos or Romaine	75	.....	
Muskmelons (seed)	½ ounce	Burpee Hybrid <sup>a</sup>	85	.....	
		Gold Star <sup>a</sup>	87	Fusarium wilt	
		Harper Hybrid <sup>a</sup>	86	Alternaria blight, Fusarium wilt, mosaic	
		Harvest Queen	90	Fusarium wilt	
		Pride of Wisconsin	90	.....	
		Samson (hybrid)	75	Powdery mildew, Fusarium wilt	
	Supermarket <sup>a</sup>	88	Fusarium wilt, powdery mildew		
Mustard (seed)	1 packet	Green Wave	45	.....	
Okra	1 packet	Emerald	55	.....	
Onions	2-3 lb.	<b>Sets</b>			
		Ebenezer	90	.....	
	Golden Globe	90	.....		
	¼ ounce	<b>Seed</b>			
		*Early Harvest (hybrid)	90	.....	
		Early Yellow Globe	95	Fusarium rot, smudge	
		*Empire	100	.....	
		Downings Yellow Globe	110	Smudge	
		Southport Red Globe	110	Fusarium rot, smudge	
		Brown Beauty (hybrid sweet Spanish)	110	Pink root	
		*Sweet Spanish	115	.....	
	300	<b>Seedlings</b> (transplants)			
		*Starred items for seedlings			
¼ ounce	<b>Bunching</b>				
	Evergreen	60	Smut, pink root		
Parsley (seed)	1 packet	Moss Curled	70	.....	
		Paramount	80	Septoria blight	
		Plain or Italian	80	.....	

<sup>a</sup> F<sub>1</sub> hybrids.

**Table 2. — continued**

Crop	Amt. for 100 ft. of row	Variety recommended for use in Illinois	Days to harvest	Resistant to
Parsnips (seed)	1 packet	Hollow Crown	125	.....
		All American	125	.....
		Model	125	Root canker
Peas	1 pound	<b>Early</b>		
		Wisconsin Early Sweet	60	Fusarium wilt, mosaic
		Little Marvel (W.R.)	62	Fusarium wilt, mosaic
		Thomas Laxton	63	Fusarium wilt
		<b>Medium to late (for northern Ill. only)</b>		
		Frosty	64	Fusarium wilt
		Pride	64	Fusarium wilt
		Early Perfection (W.R.)	67	Fusarium wilt, mosaic
		Sparkle	70	Fusarium wilt, mosaic
		Wando	71	Fusarium wilt, root rot
Green Arrow	68	Downy mildew, Fusarium wilt		
Peppers	50-75 plants or 1 packet seed	<b>Sweet Stuffing</b>		
		Tasty	70	.....
		Bellringer	75	Mosaic
		Calwonder	72	.....
		Keystone Resistant Giant	76	Mosaic
		Yolo Wonder	76	Mosaic
		Sweet Banana	70	.....
		<b>Sweet Salad</b>		
		Sunnybrook	73	Bacterial spot
		<b>Hot</b>		
Hungarian Wax	70	.....		
Long Red Cayenne	70	Bacterial spot		
Red Chili	84	Bacterial spot		
Cherry	75	.....		
Popcorn	1 ounce	Illinois Hulless (white)	90	.....
		Purdue 20 (yellow)	100	.....
		Purdue 202 (yellow)	100	.....
		Iopop 9 (yellow)	100	.....
Potatoes (seed)	10-12 lb.	<b>Early</b>		
		Irish Cobbler	100	.....
		<b>Medium to late (for northern Ill. only)</b>		
		Norland	105	Scab
		Red Pontiac	110	.....
		Katahdin	120	Verticillium wilt
		Kennebec	120	Late blight
		Ontario	120	Late blight, scab, Verticillium wilt
Sebago	120	Late blight		
Pumpkins (seed)	1 ounce	Cinderella	100	.....
		Small Sugar	110	.....
		Spookie	110	.....
		Jack-o-Lantern	112	.....
		Connecticut Field (Cheese)	115	.....
Radishes (seed)	1 ounce	Early Scarlet Globe	22	.....
		Burpee White	23	.....
		Champion	23	.....
		Comet	23	.....
		Red Prince	23	Fusarium wilt
Icicle	25	.....		



**Table 2. — continued**

Crop	Amt. for 100 ft. of row	Variety recommended for use in Illinois	Days to harvest	Resistant to
Rhubarb (plants)	30-50	Mac Donald	..	.....
		Valentine	..	.....
		Victoria	..	.....
Spinach (seed)	1 ounce	<b>Spring</b>		
		Giant Nobel	43	.....
		Bloomsdale Long Standing	44	.....
		America	45	.....
		<b>Summer</b>		
		New Zealand	65	.....
		<b>Fall</b>		
Early Hybrid 7	37	Blight, downy mildew		
Old Dominion	41	Blight		
Squash (seed)	1 ounce	<b>Summer</b>		
		Butterbar	50	.....
		Early Prolific Straightneck	50	.....
		Zucchini	60	.....
		<b>Fall</b>		
		Table Queen (Acorn)	90	Bacterial wilt
		Butternut	95	Bacterial wilt
		Buttercup	100	Bacterial wilt
		<b>Winter</b>		
		Kinred	100	.....
Delicious	100	Bacterial wilt		
Banana	105	.....		
Hubbard	110	.....		
Sweet corn (seed)	1-2 ounces	<b>Early</b>		
		Early Sun Glow	68	.....
		Golden Beauty	68	Bacterial wilt
		Spring Gold	68	.....
		Earlibelle	68	.....
		<b>Main crop</b>		
		Sprite	78	.....
		F-M Cross (Bicolor)	78	Bacterial wilt
		Gold Cup	80	Helminthosporium
		Gold Winner	80	.....
		Honey and Cream (Bicolor)	80	.....
		Seneca Chief	80	Bacterial wilt
		N.K. 199	82	Bacterial wilt
		Golden Cross Bantam	82	Bacterial wilt, smut
		Jubilee	83	.....
		<b>White varieties</b>		
		Silver Queen	85	Helminthosporium, bacterial wilt
Country Gent., Ill. 13	90	Bacterial wilt, smut, rust		
Sweet potatoes (plants)	100	Allgold	..	Wilt, internal cork, black rot, soil rot
		Centennial	..	Internal cork, wilt
		Goldrush	..	Wilt, white rust
		Nemagold	..	Root-knot, internal cork, wilt
		Porto Rico (Unit 1 strain)	..	.....

Table 2. — continued

Crop	Amt. for 100 ft. of row	Variety recommended for use in Illinois	Days to harvest	Resistant to	
Tomatoes	35-75 plants or 1 packet seed	<b>Medium early</b>			
		Heinz 1350	75	Fusarium wilt, Verticillium wilt	
		Cardinal	75	.....	
		Fantastic	76	Cracking	
		Campbell 1327	75	Fusarium wilt, Verticillium wilt	
		Jet Star <sup>a</sup>	72	Fusarium wilt, Verticillium wilt	
		<b>Main crop</b>			
		Better Boy <sup>a</sup>	78	Fusarium wilt, Verticillium wilt, root knot	
		Ramapo <sup>a</sup>	85	.....	
		Supersonic <sup>a</sup>	79	Fusarium wilt, Verticillium wilt	
		Manapal	82	Multiple resistance	
		Manalucie	83	Multiple resistance	
		Burpee VF	80	Fusarium wilt, Verticillium wilt	
		<b>Special purpose</b>			
		Roma VF (paste)	76	Fusarium wilt, Verticillium wilt	
		Red Cherry (large and small)	75	.....	
		Gardener's Delight (small fruit)	75	.....	
		Sugar Lump (small fruit)	75	.....	
		Jubilee (yellow)	80	.....	
		Golden Boy (yellow)	80	.....	
Tiny Tim (dwarf)	68	.....			
Patio <sup>a</sup> , Pixie <sup>a</sup> (compact, medium fruit)	75	.....			
Small Fry <sup>a</sup> (compact, small fruit)	72	Verticillium wilt, Fusarium wilt			
Delicious (extra large)	90	.....			
Beefeater <sup>a</sup> (extra large)	90	.....			
Turnips (seed)	¼ ounce	Seven Top (for greens)	42	.....	
		Purple Top White Globe (main crop) (fall)	55	.....	
Watermelons (seed)	½ ounce	Sugar Baby	85	.....	
		Summer Festival <sup>a</sup>	85	.....	
		Charleston Gray	90	Fusarium wilt, anthracnose	
		Crimson Sweet	90	Fusarium wilt, anthracnose	
		Sweet Princess	96	Fusarium wilt, anthracnose	
Watermelons (seedless)		Tri-X 313	90	Anthracnose	
		Triple Sweet <sup>a</sup>	90	Anthracnose	

<sup>a</sup> F<sub>1</sub> hybrids.

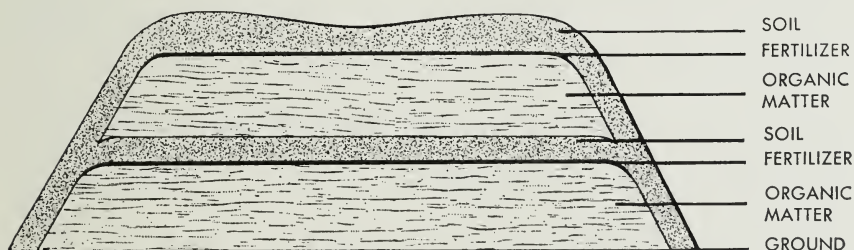
## Step 5 — Prepare and Care for the Soil Properly

The soil provides food and water to plants. If these materials are not available or if the soil is in poor physical condition (hard and crusty when dry and sticky when wet) the plants will not grow and develop properly. To promote good growth and development of your plants, prepare the soil before planting by adding organic matter, applying fertilizers, correcting acidity, and plowing the seedbed properly. Take care of the soil during the growing season by applying starter fertilizer and by sidedressing with fertilizer.

**Improve soil tilth.** A soil that is in good tilth, or physical condition, is loose and easy to work, and has proper water-holding capacity, drainage, and aeration. You can improve your soil tilth by adding organic matter, either by spreading manure, compost, or similar matter on the soil and working it in before planting or by turning under a green-manure crop.

*Stable manure* is a common form of organic matter used in gardens. It can also fulfill part of the fertilizer requirements of the soil. Because stable manure is low in phosphorus add 1 to 1½ pounds of superphosphate to each bushel of manure. Use 500 to 1,000 pounds of horse or cattle manure per 1,000 square feet. Poultry, sheep, and goat manure should be used at half this rate.

*Compost* can be made from leaves, straw, grass clippings, manure, and any other disease-free waste vegetable matter. To make compost, pile these materials in layers as they accumulate during the season. Add about 1 pound of a lime-fertilizer mixture to each 10 pounds of dry refuse; add about ¼ pound to each 10 pounds of green material. The mixture can be made from 5 pounds of 10-10-10 fertilizer plus 2 pounds



The number of layers in a compost pile will depend on the amount of material that accumulates. Turn and mix the pile occasionally. (Fig. 1)

of fine limestone. This fertilizer treatment will hasten decay and improve the fertility of the compost. Spread soil over the material to hold it in place (Fig. 1). Water the pile to keep it damp and occasionally turn and mix the soil and decaying material. The pile will be ready to spread over garden soil in 6 to 12 months.

*Green-manure crop.* By growing a green-manure or cover crop, such as rye or oats, during the fall and spring and plowing it under, you can

improve your soil tilth. The seed can be broadcast over worked-up unplanted areas and between rows of late vegetables. Stir the seed into the soil with a rake, hand cultivator, or harrow.

**Fertilize the soil.** Fertilizer applications should be made before planting. Later in the season additional applications may be necessary.

*Have your soil tested*, especially if it is your first year in your present location. A soil test will indicate the amount and availability of nutrients in your soil. Gather small amounts of soil from about eight well-scattered spots in your garden, mix them together, dry at room temperature, wrap in a sturdy 1/2-pint container, mark the container "For Vegetable Garden" with your name and address, and send to the nearest county soil testing laboratory or contact your county extension office. In a few weeks you will receive the results of the test along with fertilizer and lime recommendations for your garden.

If you do not have your soil tested, you can follow the general fertilizer recommendations in Table 3.

*The main elements* applied through fertilizers are nitrogen, phosphorus, and potassium. When considered as fertilizer, they are usually referred to as nitrogen (N), phosphoric acid (P<sub>2</sub>O<sub>5</sub>), and potash (K<sub>2</sub>O), respectively. A fertilizer marked 3-12-12 contains 3 percent nitrogen, 12 percent phosphoric acid, and 12 percent potash.

Trace or minor elements are very rarely needed in Illinois soils.

Some of the materials used for fertilizers are listed in Table 4. One or more of these materials can be used to supply part or all of the nutrients needed in your garden, but generally it is easier and cheaper to use commercial chemical fertilizers. Although organic matter benefits the soil in many ways, it is inadvisable to try to use it as a substitute for fertilizer; organic matter is generally expensive, available in only limited amounts, and an unbalanced source of plant nutrients. If you wish to use organic materials for fertilizing, you may have to supplement them with other fertilizers.

*Work fertilizer into the soil.* Spread the fertilizer over the garden area and disk or rake it into the top 4 inches of soil before planting each crop. Or you can apply the fertilizer to the soil just before spading or plowing in the spring or fall.

**Table 3. — Fertilizer Recommendations for Vegetables**

Previous fertilizer treatment	Fertilizer to apply		Approximate amount of nutrients <sup>a</sup>			
	Analysis	Rate	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	
		<i>lb. per 1,000 sq. ft.</i>		<i>lb. per 1,000 sq. ft.</i>		
Little or none.....	3-12-12	40	1,750	1.2	4.8	4.8
Some.....	5-10-10	25	1,100	1.2	2.5	2.5
Heavy.....	10-10-10	12	520	1.2	1.2	1.2

<sup>a</sup> N = nitrogen. P<sub>2</sub>O<sub>5</sub> = Phosphoric acid. K<sub>2</sub>O = Potash.

Use starter fertilizer when transplanting to give your plants a faster start. Starter fertilizer is an all-soluble fertilizer high in phosphorus, for example 10-52-17 or 10-50-10. Mix the fertilizer with water (about 1 tablespoon per gallon of water). When you transplant, place about 1 cup of the solution around the roots of each plant. If a regular starter solution is not available, mix 1 cup of 0-45-0 or similar fertilizer in 12 quarts of water and use 1 cup of solution for each plant.

**Table 4. — Approximate Composition of Fertilizer Materials**

Material	Nitrogen (N)	Phosphoric acid (P <sub>2</sub> O <sub>5</sub> )	Potash (K <sub>2</sub> O)
		<i>percent</i>	
<b>Chemical</b>			
Ureaform.....	30.0-40.0	...	...
Ammonium nitrate.....	33.5	...	...
Ammonium sulfate.....	20.5	...	...
Nitrate of soda.....	16.0	...	...
Urea.....	42.0-46.0	...	...
Superphosphate.....	...	16.0-20.0	...
Muriate of potash.....	...	...	48.0-62.0
Triple superphosphate.....	...	46.0	...
<b>Organic</b>			
Bonemeal, steamed.....	2.0	22.0	...
Garbage tankage.....	1.5	2.0	.7
Sewerage sludge.....	2.0	1.4	.8
Sewerage sludge, activated.....	6.0	3.0	.1
Tankage, animal.....	9.0	6.0	...
Tankage, processed.....	7.0	1.0	.1
Horse manure, fresh.....	.6	.3	.5
Cow manure, fresh.....	.5	.2	.5
Cow manure, dried.....	1.3	.9	.8
Hen manure, fresh.....	1.1	0.9	.5
Hen manure, dried, with litter.....	2.8	2.8	1.5
Wood ashes.....	...	.8	5.0
Cottonseed meal.....	6.0	3.0	1.0

*Sidedress fertilizer later in the season.* Often the soil needs more fertilizer, especially nitrogen, later in the season. Sidedressing — applying fertilizer in a band along one side of the row about 4 inches from the crops — should be made for leafy crops, greens, and root crops when the plants are half-grown and for tomatoes, peppers, beans, sweet corn, cucumbers, etc., when they begin to set fruit. Use 2½ pounds of ammonium nitrate, 2 pounds of urea, or 5 pounds of nitrate of soda per 1,000 square feet. Avoid getting dry fertilizer on plant leaves as it will injure them. Hoe the fertilizer into the soil surface. In dry weather, water the soil to make the fertilizer more quickly available to plant roots.

**Correct soil acidity.** A slightly acid soil is best for growing most vegetables. If the soil test indicates that your soil is more acid than it should be, apply the recommended amount of lime. Add lime only if it is needed and avoid overliming.

Some soils are too alkaline. This can be corrected by adding sulfur to the soil. A soil test will indicate whether your soil is too alkaline. Work the lime or sulfur into the soil at the same time that you apply fertilizer.

**Plow and prepare the seedbed properly.** Plowing or spading can be done in either the spring or the fall. With fall plowing the soil can be worked and planted earlier in the spring, but not as much cover crop can be grown as with spring plowing.

Do not plow or spade the soil when it is too wet. A good test is to squeeze a handful of soil in your hand. It should crumble and not feel sticky.

You may apply fertilizer just before plowing or spading. Turn the ground over to a depth of about 8 inches. If fertilizer is added to the soil after plowing, rake or harrow the plowed area to work the fertilizer into the soil.

Just before planting prepare the seedbed for planting by working the soil with a rake or harrow. A freshly prepared seedbed will prevent weeds from coming up before the vegetables.

For small-seeded crops a smooth and finely pulverized surface insures easier planting, better germination, and a more even stand. Heavy soils low in organic matter should not be worked to too fine a consistency because they tend to get hard and crusty, preventing emergence of seedlings. Many Illinois soils should not be overworked.

## Step 6 — Plant Your Vegetables Right

Much of the success of your garden depends on when and how your vegetables are planted.

**When to plant.** How early you can plant depends on the hardiness of the vegetables and the climate in your area. Certain vegetables can withstand frost while others cannot. In Table 5 vegetables are classified as hardy, half-hardy, tender, or very tender. This information along with the date of the average last 32° freeze in your area (see Fig. 2) will help you to determine safe planting dates.

Planting by the moon is a favorite topic for discussion among many gardeners. There is no scientific evidence to support planting by the moon; planting studies have shown no relation between the different phases of the moon and good production of crops.

**How to plant.** There are no magic tricks or difficult techniques in starting seeds or in setting plants. But there are some simple steps you should follow to insure success.

*Seeds.* In starting seeds in the garden, follow these directions:

1. Use disease-free seed. See page 25.
2. Mark out straight rows to make your garden attractive and to make cultivation, insect control, and harvesting easier. To mark a row, drive two stakes into the ground at either edge of the garden and draw a string taut between them. Shallow furrows, suitable for small seed, can be made by drawing a hoe handle along the line indicated by the



**Table 5. — Planting Chart**

Vegetable	Hardiness <sup>a</sup>	Recommended planting period for central Illinois <sup>b</sup>		Time required to grow plants from seed before setting in field <sup>c</sup>	Spacing in row		Distance between rows	Planting depth
		For overall use	For storage		Seed to sow per foot	Distance between plants when thinned or transplanted		
Asparagus.....	Hardy	Mar. 15—Apr. 15	.....	weeks	.....	inches	inches	inches
Beans, bush, lima.....	Very tender	May 10—June 15	.....	.....	.....	12-18	36-60	6-8
Beans, bush, snap.....	Tender	Apr. 25—July 15	.....	.....	3-4	Do not thin	18-30	1-2
Beets.....	Half-hardy	Apr. 10—July 15	.....	.....	6	Do not thin	18-24	1-2
Broccoli.....	Half-hardy	Apr. 10—May 1	.....	4-6	10	2-4	12-18	1/2-1
		July 1-15	.....	.....	.....	18-24	30-36	( <sup>d</sup> )
Cabbage.....	Half-hardy	Apr. 10—July 15	.....	4-6	.....	9-18	18-30	( <sup>d</sup> )
Carrots.....	Half-hardy	Apr. 10—July 15	.....	.....	15-20	1-3	18-30	1/2
Cauliflower.....	Half-hardy	July 10-20	.....	4-6	.....	18-24	24-36	( <sup>d</sup> )
Celery.....	Half-hardy	Apr. 20—June 15	.....	10-12	.....	6-8	24-36	( <sup>d</sup> )
Chard.....	Half-hardy	Apr. 10—June 1	.....	.....	8-10	4-8	18-24	1/2-1
Chinese cabbage.....	Half-hardy	July 10-30	.....	.....	4-6	12-15	24	1/2
Cucumbers.....	Very tender	May 10—June 15	.....	4	3 in row	12, single plants	48-72	1
		.....	.....	.....	4-5 per hill	36, hills (3 plants per hill)	.....	.....
Eggplant.....	Very tender	May 10—June 15	.....	8-10	.....	18-24	30-36	( <sup>d</sup> )
Endive.....	Half-hardy	Apr. 1—May 1	.....	.....	4-6	9-12	18-24	1/2
		July 1—Aug. 15	.....	.....	.....	3	12-18	1 1/2
Garlic, from cloves.....	Hardy	Mar. 25—Apr. 15	.....	.....	.....	24	30-36	2
Horseradish, from sets.....	Hardy	Mar. 25—May 1	.....	.....	4-6	8-12	18-24	1/2
Kale.....	Hardy	Apr. 1-30	.....	.....	.....	3-6	18-24	1/2
		July 1—Aug. 1	.....	.....	.....	.....	.....	.....
Kohlrabi.....	Hardy	Mar. 25—Apr. 5	.....	.....	6-8	.....	18-24	1/2
		Aug. 1-10	.....	.....	.....	.....	.....	.....
Leeks.....	Hardy	Mar. 25—Apr. 15	.....	.....	10-15	2-4	12-18	1/2
Lettuce, head.....	Half-hardy	Mar. 25—Apr. 10	.....	4-6	4-8	12-15	18-24	1/2
		Aug. -15	.....	.....	.....	.....	.....	.....
Lettuce, leaf.....	Half-hardy	Mar. 25—May 15	.....	.....	10	2-4	12-18	1/2
		Aug. 15—Sept. 15	.....	.....	.....	.....	.....	.....
Muskmelons.....	Very tender	May 10—June 15	.....	4	3 in row	12, single plants	48-72	1
		.....	.....	.....	4-5 per hill	36, hills (3 plants per hill)	.....	.....
Mustard.....	Half-hardy	Apr. 1—May 10	.....	.....	20	1-2	12-18	1/2
		Aug. 15—Sept. 15	.....	.....	.....	.....	.....	.....
New Zealand spinach.....	Tender	Apr. 25—June 15	.....	.....	4-6	12	24-30	1
Okra.....	Very tender	May 10—June 15	.....	.....	3	12-15	36	1
Onions, from seed.....	Hardy	Mar. 25—Apr. 15	.....	.....	10-15	2-4	12-18	1/2-1
Onions, from plants or sets.....	Hardy	Mar. 25—May 1	.....	.....	.....	1-4	12-18	1-4



Vegetable	Hardiness <sup>a</sup>	Recommended planting period for central Illinois <sup>b</sup>		Time required to grow plants from seed before setting in field <sup>c</sup>	Spacing in row		Distance between rows	Planting depth
		For overall use	For storage		Seed to sow per foot	Distance between plants when thinned or transplanted		
				weeks	inches	inches	inches	inches
Parsley	Half-hardy	Apr. 10-May 1	.....	...	10-15	4-6	12-18	½
Parsnips	Half-hardy	Apr. 10-May 1	Apr. 15	...	15-20	3-4	18-24	½-1
Peas	Half-hardy	Apr. 10-May 1	.....	...	10-12	Do not thin	18-24	2
Peppers	Very tender	May 10-June 1	May 10	8-10	.....	18-24	18-24	(d)
Potatoes	Half-hardy	Apr. 1-15	June 1	...	1	10-12	24-36	4
Pumpkins	Very tender	June 1-10	.....	...	1-2 in row	24-36, single plants	84-120	1
		May 20-June 10	June 10	...	4-5 per hill	72, hills (3 plants per hill)		
Radishes, spring	Half-hardy	Apr. 5-June 1	.....	...	10-15	1	12-18	½
		Aug. 20-30	.....	...				
Radishes, winter	Half-hardy	Aug. 1-15	Aug. 10	...	10-15	2-4	12-18	½
Rhubarb	Hardy	Mar. 25-May 15	.....	...	.....	24-36	36-48	(d)
Rutabaga	Half-hardy	May 1-July 1	June 15	...	4-6	6-8	18-24	½
Salsify	Half-hardy	Apr. 10-May 1	April 15	...	10-12	2-4	18-24	½
Soybeans, edible	Tender	May 15-June 15	.....	...	8-10	Do not thin	18-24	½
Spinach	Hardy	Mar. 25-Apr. 15	.....	...	12-15	2-4	24-30	1½
		Aug. 15-30	.....	...			12-18	½
Squash, summer	Very tender	May 10-June 15	.....	...	2-3 in row	18-24, single plants	36-48	1
					4-5 per hill	48, hills (3 plants per hill)		
Squash, winter	Very tender	May 20-June 1	June 1	...	1-2 in row	24-36, single plants	84-120	1
					4-5 per hill	72, hills (3 plants per hill)		
Sweet corn	Tender	May 1-July 9	.....	...	1-2 in row	9-12, single plants	24-48	1-2
					4-6 per hill	36, hills (3 plants per hill)		
Sweet potatoes	Very tender	May 10-June 1	May 15	6	.....	12-18	36-48	(d)
Tomatoes	Very tender	May 10-June 1	May 15	5-7	.....	18-36	36-60	(d)
Turnips	Hardy	Mar. 25-Apr. 15	Aug. 1	...	6-8	2-4	12-18	½
		Aug. 1-15	.....	...	15-20 (greens)			
Watermelons	Very tender	May 10-June 1	.....	4	1-2 in row	24-36, single plants	84-120	1
					4-5 per hill	72, hills (3 plants per hill)		

<sup>a</sup> This classification is used to determine earliest safe date to plant vegetables. Hardy vegetables can be planted as soon as the ground can be prepared. Half-hardy vegetables can be planted as early as 2 to 3 weeks before the average date of the last 32° freeze in the spring. Tender vegetables should be planted from the time of the last average 32° freeze to one week later. Very tender crops should be planted 2 to 3 weeks after the last average 32° freeze. See Fig. 2 for average dates of last 32° freeze in Illinois.

<sup>b</sup> For southern Illinois March-June plantings can be made approximately 2 weeks earlier and July-September plantings 2 weeks later than for central Illinois. For northern Illinois March-June plantings should be about 2 weeks later and July-September plantings about 2 weeks earlier than for central Illinois.

<sup>c</sup> This period will vary depending on temperature and other conditions under which plants are grown.

<sup>d</sup> Use plants. See page 22 for discussion on planting depths for plantings.

7. Thin to a desirable number of plants (see Table 5) when they are young. Remove the weakest plants. Do not wait too long before thinning or injury will result from crowding.

*Transplants.* Some vegetables, such as broccoli, cabbage, eggplant, pepper, sweet potato, and tomato, are usually started in the garden by means of transplants. You can buy these plants or grow them yourself indoors. Follow these directions when setting plants into the garden:

1. Transplant if possible on a cloudy day or in the evening.

2. Handle plants with care. About an hour before transplanting, thoroughly water plants and soil in the containers (pots, bands, flats, etc.). Roots of plants in flats should be blocked out with a knife to get as much soil as possible with each root. Carefully remove plants without disturbing the roots. Keep a ball of soil around the roots. Keep the roots moist at all times when they are out of the soil.

3. Dig a hole large enough so that the transplanted plant sets slightly deeper than it grew in the container or seedbed. If you must use tall, spindly plants, set them on an angle in the trench.

4. Use starter solution to get plants off to a fast start (page 17).

5. Cover the roots with soil and firm the soil tightly around the plant.

6. Protect plants from heat, wind, or cold if necessary. Plant protectors (sometimes called hot caps) made of paper or plastic are available to lessen trouble from frost in the spring. Homemade devices can be made from baskets, boxes, or jars. Do not leave the protector over the plants longer than necessary. If it gets warm during the daytime, remove the protector or open it so that the plants receive ventilation.

## Step 7 — Keep Down Weeds

It is important to control weeds in your garden, for they compete with your vegetables for water and nutrients. Also weeds often harbor insects and diseases. The best time to attack weeds is just as they appear on the soil surface. If allowed to grow too large, weeds will shade your vegetables, causing your crop to grow poorly.

**Cultivation** by hoe or cultivator is the method most commonly used in gardens. The main purpose of cultivation is weed control, although on some Illinois soils cultivation may be needed early in the season to loosen the soil and aerate the roots better.

Begin cultivation as soon as weeds begin to sprout. Repeat cultivations as weeds appear. Do not work the soil if it is too wet. Roots of many vegetables are near the soil surface and can be damaged easily by a hoe or cultivator if you are not careful when cultivating (Fig. 3). Shallow cultivation is desirable near plants and later in the season.

**Mulching** is covering the soil around your vegetables with protective material. Most vegetables benefit from mulching. Tomatoes, cucumbers, melons, beans, and potatoes are some of the crops which it is most practical to mulch. Besides controlling weeds, the mulch will save moisture, keep the soil temperature more even, and keep the fruits clean.



The correct way to cultivate (left) is to just scrape the surface of the soil. Deep cultivation (right) may damage the roots of the vegetables. (Fig. 3)

Leaves, grass cuttings, peat moss, sawdust, ground corncobs, straw, hay, shavings, aluminum foil, paper, and black plastic can all be used for mulches.

Organic mulches, such as sawdust, leaves, straw, or corncobs, should be placed on the soil after the plant is well established; usually this is just after the first cultivation. Spread the material evenly over the soil between the rows and around the plants. Mulches like leaves or straw are usually applied 3 or 4 inches deep.

If you do not apply nitrogen with mulch, be on the alert for a nitrogen deficiency, shown by light green or yellowish leaves.

**Chemical weed control** is used commercially but is usually not recommended for the home garden. Since your garden will have many different types of vegetables in many different stages of growth, it is rather dangerous to use weedkillers. Drift from weedkillers used near the garden may also damage your crop. Directions for weed control in commercial gardens are available from the Department of Horticulture, University of Illinois at Urbana-Champaign. The home gardener will find further details in Illinois Extension Circular 1051, "Controlling Weeds in the Home Garden."

## Step 8 — Control Pests

Insects and diseases can cause much damage to your crops if precautions are not taken before these pests arrive in your garden.

1. Select disease-resistant varieties (see Table 2).
2. Use only disease-free plants and seed.
3. If possible, buy treated seed.
4. Sow thinly and plant at proper distances (see Table 5).
5. Keep down weeds in and around the garden (see Step 7).
6. Provide good drainage.
7. Stay out of the garden when plants are wet.
8. Follow spray or dust schedule for certain crops, such as sweet corn and tomatoes (see Tables 6 and 7). On most crops you may use an all-purpose garden pesticide.
9. Rotate crops.

## Step 9 — Water Properly

Water is very important for producing high-quality crops. Although rainfall is a good source of water, there are usually some dry periods during the growing season when you will have to water your garden. It is important to do it properly.

**When to water.** Water plants once a week during dry periods (when less than an inch of rain falls during a week). Water early enough in the day so that moisture on the plants will dry off before dew appears; this will help prevent disease.

**How to water.** Soak the soil thoroughly to a depth of at least 6 inches rather than sprinkling the garden lightly at frequent intervals. The water should get down into the root zone of the plant. About 1 inch of water a week, including rainfall, is desirable for vegetables. To measure the amount you are applying, place 4 or 5 cans in the area being irrigated. They will collect approximately the same amount of water as the soil.

## Step 10 — Harvest at Peak Quality

The quality of your vegetables cannot be improved after harvest. It is therefore important to harvest your crops at the proper maturity. See Part III for information on harvesting specific crops.

To maintain quality after harvest, handle vegetables carefully. Avoid bruising or damaging them, for injury will encourage decay. Cool vegetables such as sweet corn, peas, asparagus, and leafy crops to below 40° F. as soon as possible unless they are eaten immediately.

When storing vegetables for later use, follow the directions below. Avoid contact with water that may condense and drop from ceilings. Avoid freezing.

### STORAGE RECOMMENDATIONS

Item	Temp.	Humid.	Item	Temp.	Humid.
Asparagus.....	32-35° F.	85-90%	Parsnips.....	32-35° F.	90-95%
Beans, dry.....	32-50° F.	Approx. 40%	Peas.....	32-35° F.	85-90%
Beans, snap.....	45-50° F.	85-90%	Peppers.....	40-50° F.	85-90%
Broccoli.....	32-35° F.	90-95%	Potatoes.....	35-40° F.	85-90%
Brussels Sprouts.....	32-35° F.	90-95%	Pumpkins.....	55-65° F.	40-70%
Cabbage.....	32-35° F.	90-95%	Radishes.....	32-35° F.	90-95%
Carrots.....	32-35° F.	90-95%	Rhubarb.....	32-35° F.	90-95%
Cauliflower.....	32-35° F.	85-90%	Spinach.....	32-35° F.	90-95%
Celery.....	32-35° F.	90-95%	Squash, summer.....	40-50° F.	90-95%
Corn.....	32-35° F.	85-90%	Squash, hard shell.....	55-65° F.	40-70%
Cucumbers.....	40-50° F.	85-90%	Sweet Potatoes..	55-60° F.	70-90%
Eggplant.....	40-50° F.	85-90%	Tomatoes, unripe.....	60-70° F.	85-90%
Lettuce (leafy veg.)...	32-35° F.	90-95%	Tomatoes, ripe..	40-50° F.	85-90%
Melons, ripe....	40-50° F.	85-90%	Turnips, Rutabagas....	32-35° F.	90-95%
Onions, dry.....	35-50° F.	40-70%			
Onions, green...	32-35° F.	90-95%			

## PART II — GARDEN PROBLEMS AND THEIR CONTROL

Many problems in vegetable gardens can be controlled if preventive steps are taken.

### Insect Control

Very few gardens escape attack from some of the insects listed in Table 6. Most insects can be controlled by the use of insecticides and cultural practices. Destroy insect breeding places, such as weeds, crop wastes, and neglected fence rows. Rotate crops.

Table 6 lists insecticides that can be used if necessary. They are especially suitable for use by the home gardener. The listed materials will give good control of insects and they are the least toxic to humans.

For some pests, products other than those listed are also acceptable. A general-purpose dust containing several insecticides, such as Sevin or malathion, is ideal for the home garden. Prepared mixtures containing both insecticide and fungicide are available at local pesticide or hardware stores. These products are effective and easy to use.

For detailed information on insect control, send for Circular 671, "How to Know the Common Vegetable Insects," and Circular 900, "Insect Control in the Home, Yard, and Garden."

If you wish to have an insect identified, you may send a specimen to 169 Natural Resources Building, Urbana, Illinois 61801.

### Disease Prevention and Control








Diseases often cause serious vegetable losses. Some cause the seed to decay or seedlings to die before emergence. Others attack roots, stems, and fruits, causing leaf spots, wilts, cankers, or fruit rots. Vegetable diseases may be carried on the seed or in the soil or be spread by insects. See Reports on Plant Diseases Nos. 915 and 916 for the control of seed-borne diseases, seed decay, and seedling blights (damping off). These may be had by writing to 244 Davenport Hall, University of Illinois, Urbana, Illinois 61801.

**Resistant varieties.** Disease-resistant varieties have been developed for a number of vegetables. Such varieties are moderately to highly resistant to one or more specific diseases (see Table 2). Any gardener who has had vegetable losses due to a disease should, if possible, use a variety resistant to that disease.

**Sanitation.** Diseases can be controlled by using only disease-free seed and plants, by controlling weeds which serve as sources of infection for plant diseases, and by removing and destroying old plants as soon as the crop has been harvested. Do not cultivate when plants are wet as this spreads plant diseases.

**Rotation.** Disease organisms in the garden soil can be reduced by not growing a given vegetable or its relatives for more than one year in the same location. Rotate related crops from one side of the garden to the other.









**Table 6. — Common Vegetable Insects and Their Control**

Insect	Crop	Dust Formula	Spray Formula	Remarks
 Aphid	Cabbage Cucumbers Melons Peas Potatoes Tomatoes	5-percent malathion	2 Tsp. 50-57-percent emulsifiable malathion	Apply on foliage when aphids appear. Repeat weekly as needed.
 Blister beetle	Potatoes Corn Tomatoes Beans	5-percent Sevin	2 Tb. wettable Sevin in 1 gal. water	
 Cabbage worms	Broccoli Cabbage Cauliflower Greens		<i>Bacillus thuringiensis</i> ; follow label directions	Thorough treatment is necessary. Repeat weekly as needed. Begin treatment when worms are small.
 Corn earworm (2/3 nat. size)	Sweet corn Tomatoes	5-percent Sevin; <i>Bacillus thuringiensis</i> (Thuricide, Dipel, Biotrol) on tomatoes	Inject 1/2 medicine dropperful of mineral oil into silk channel as silks start to dry or 2 Tb. wettable Sevin in 1 gal. water	Dust or spray silks with Sevin every other day for 10 days. Dust or spray tomatoes with Sevin 3 to 4 times at 10-day intervals; begin when first fruits are small.
 European corn borer	Sweet corn	5-percent Sevin or 5-percent Sevin granules	2 Tb. wettable Sevin in 1 gal. water or 2 Tb. 25-percent diazinon in 1 gal. water	Apply insecticide four times at 5-day intervals beginning with egg hatching near mid-June. Avoid early spring plantings. On late corn dust as for corn earworm.
 Striped cucumber beetle	Cucumbers Melons Squash	5-percent Sevin	2 Tb. wettable Sevin in 1 gal. water	Treat as soon as beetles appear. Repeat when necessary.
 Cutworm	Most garden crops		2 Tb. 25-percent diazinon in 1 gal. water	At transplanting, wrap stems of seedling cabbage, pepper, and tomato plants with newspaper or foil to prevent damage by cutworms.

Insects are about natural size except where otherwise indicated. Where two drawings are shown, the smaller one is natural size. One pound of dust or 3 gallons of spray should be sufficient to treat 350 feet of row. Tb. = tablespoon. Tsp. = teaspoon.

(Table is concluded on next page)

**Table 6. — concluded**

Insect	Crop	Dust Formula	Spray Formula	Remarks
 Flea beetle	Most garden crops	5-percent Sevin	2 Tb. wettable Sevin in 1 gal. water	Apply as soon as injury is first noticed. Thorough application is necessary.
 Grasshopper	Most garden crops	5-percent Sevin	2 Tb. wettable Sevin in 1 gal. water	Treat infested areas while grasshoppers are still small.
 Hornworm ( $\frac{1}{2}$ nat. size)	Tomatoes	5-percent Sevin or <i>Bacillus thuringiensis</i> (Thuricide, Dipel, Biotrol)	2 Tb. wettable Sevin in 1 gal. water	Ordinarily hand-picking is more practical in the home garden.
 Leafhopper	Beans Carrots Potatoes Cucumbers Muskmelons	Use Sevin dust or 5-percent methoxy-chlor dust	2 Tb. wettable Sevin in 1 gal. water	Spray or dust once a week for 3 to 4 weeks, beginning when plants are small. Apply to underside of foliage.
 Mexican bean beetle	Beans	5-percent Sevin	2 Tb. wettable Sevin in 1 gal. water	Apply insecticide to underside of foliage. Also effective against leafhoppers on beans.
 Potato beetle	Potatoes Eggplant Tomatoes	5-percent Sevin	2 Tb. wettable Sevin in 1 gal. water	Apply when beetles or grubs first appear and repeat as necessary.
 Squash bug	Squash	5-percent Sevin	2 Tb. wettable Sevin in 1 gal. water	Adults and brown egg masses can be hand-picked. Trap adults under shingles beneath plants. Kill young bugs soon after they hatch.
 Squash vine borer	Squash	5-percent Sevin	2 Tb. wettable Sevin in 1 gal. water	Dust or spray once a week for 3 to 4 weeks beginning in late June when first eggs hatch. Treat crowns of plants and runners thoroughly.

**Insect control.** Insects may carry disease organisms over winter. They also spread these organisms from wild to cultivated plants and from diseased to healthy plants in the garden. Diligent insect control will reduce such damage.

**Fungicide sprays or dusts.** Many leaf and fruit diseases can be prevented by applying the right fungicide at the right time. To obtain effective control (1) *all* aboveground plant surfaces must be covered with the fungicide, (2) applications should start before the disease appears, and (3) applications at 5- to 10-day intervals must be repeated during humid or wet weather when conditions are favorable for disease development. The fungicides recommended in Table 7 are available alone or in combination with other pesticides.

The name of the fungicide can be found on the package label under "active ingredients." Follow the dosage recommendations and all safety precautions given on the label.

### Root-Knot Nematodes

All vegetables are attacked by small wormlike animals called nematodes. Root-knot nematodes burrow into the roots of plants and cause small, knotlike or rounded swellings, or galls, in older, larger roots. Plants with severe root galling grow slowly, look unthrifty, tend to wilt

**Table 7. — Common Vegetable Diseases and Their Control<sup>a</sup>**

Crop	Disease	Control measure
Asparagus	Rust	Apply fungicide containing zineb <sup>b</sup> after harvest. Make 5 applications at 10-day intervals.
Beans	Mosaic	Plant resistant varieties (see Table 2).
	Leaf and pod diseases	No fungicide recommended. Do not cultivate, weed, or harvest beans when plants are wet. Plant certified, western-grown seed.
Beets, Swiss chard, Spinach	Leaf diseases	Apply fungicide containing maneb <sup>c</sup> or zineb <sup>b</sup> at 10-day intervals. Start when plants are 6 to 8 inches high.
Cabbage, Broccoli, Brussels sprouts, Cauliflower, Chinese cabbage, Kale, Collards, Kohlrabi, Mustards, Rutabaga, Radish, Turnip	Yellows	Plant resistant cabbage varieties (see Table 2).
	Blackleg	Buy only hot-water-treated seed.
	Black rot	Buy only hot-water-treated seed.
	Clubroot	Apply one cup of transplanting solution containing pentachloronitrobenzene (Terraclor, PCNB) around the roots of each plant. The solution is made by mixing 3 level tablespoonsful of 50-percent wetttable Terraclor in 1 gallon of water.
Carrots and Parsnips	Leaf diseases	Apply fungicide containing maneb <sup>c</sup> or zineb <sup>b</sup> when spots first appear.
	Yellows	Control leafhoppers, which transmit the mycoplasma (see Table 6). Destroy infected plants.
Cucumbers, Pumpkins,	Bacterial wilt	Control cucumber beetles, which spread the bacteria from plant to plant (see Table 6).

(Table is concluded on next page)



**Table 7. — concluded**

Crop	Disease	Control measure
Squash, Gourds		Remove infected plants.
	Scab	Plant resistant cucumber varieties (see Table 2). Buy hot-water-treated seed.
	Mosaic	Plant resistant varieties (see Table 2).
	Leaf and fruit diseases	Apply fungicide containing zineb <sup>b</sup> , or maneb <sup>e</sup> at 7- to 10-day intervals. Begin after vines start to spread. If control is needed before vines start to spread, use ziram <sup>d</sup> or captan <sup>e</sup> .
Eggplants	Fruit rot	Apply fungicide containing maneb <sup>e</sup> , zineb <sup>b</sup> , or ziram <sup>d</sup> at 7- to 10-day intervals. Begin when the first fruits are 2 inches in diameter.
	Verticillium	Plant resistant varieties
Muskmelons (Cantaloupes), Honeydew melons, and Watermelons	Fusarium wilt	Plant resistant varieties (see Table 2).
	Bacterial wilt	See Cucumbers.
	Leaf and fruit diseases	See Cucumbers.
Onions, Garlic, and Chives	Leaf diseases	Apply fungicide containing maneb <sup>e</sup> or zineb <sup>b</sup> at weekly intervals. Begin when leaf spots are first noticed. Add 1 tablespoonful of powdered household detergent or 1 teaspoonful of liquid detergent to each gallon of spray solution.
	Smut	Plant disease-free onion sets. Smut only attacks onions grown from seed. Treat seed with thiram before planting.
Peas	Fusarium wilt	Plant resistant varieties (see Table 2).
	Root rots	Plant early and use a seed treatment.
Potatoes	Tuber diseases	Buy certified seed potatoes. Plant uncut tubers. Grow varieties resistant to scab and late blight (see Table 2).
	Leaf diseases	Apply fungicide containing maneb <sup>e</sup> or zineb <sup>b</sup> at 5- to 10-day intervals. Start when plants are 10 inches high.
Sweet potatoes	Black rot, Scurf, Foot rot	Buy certified plants. Use 3- or 4-year rotation.
	Wilt, Root-knot, Soil rot	Plant resistant varieties.
Tomatoes, Peppers	Fusarium wilt, Verticillium wilt	Plant immune or resistant varieties (see Table 2).
	Leaf and fruit diseases	Apply fungicide containing maneb <sup>e</sup> or zineb <sup>b</sup> at 5- to 10-day intervals. Begin when the first fruits are 1 inch in diameter.

<sup>a</sup> If you wish to have a disease identified, send diseased plants to 244 Davenport Hall, University of Illinois, Urbana, Illinois 61801.

<sup>b</sup> Zineb fungicides such as Dithane Z-78, Stauffer Zineb, Ortho Zineb 75 wettable, Chipman Zineb, Niagara Zineb, Penwalt Zineb, Black Leaf Zineb, etc., contain zinc ethylenebis (dithiocarbamate).

<sup>c</sup> Maneb fungicides such as Manzate D, Dithane M22, Dithane M-22 Special, Kilgore's Maneb, Black Leaf Maneb, and Penwalt Maneb contain manganese ethylenebis (dithiocarbamate).

<sup>d</sup> Ziram fungicides such as Zerlate Ziram Fungicide, Karbam White, Corozate, Orchard Brand Ziram, Ortho Ziram, Stauffer Ziram, etc., contain zinc dimethyldithiocarbamate.

<sup>e</sup> Captan fungicides such as Orthocide 50W, Captan Garden Spray, Captan 80 Spray-Dip, Orthocide Garden Fungicide, and Captan 50W contain N-(trichloromethylthio)-4-cyclohexene-1, 2-dicarboximide.

in dry, hot weather, and may die prematurely. Galls are swellings within the root in contrast to beneficial bacterial nodules, which are attached loosely on the roots of peas and beans.

If you suspect that nematodes are damaging your crops, send diseased plants to Nematode Laboratory, 106 Horticulture Field Laboratory, University of Illinois, Urbana, Illinois 61801. If nematodes are present, control recommendations will be sent. Write for Report on Plant Diseases No. 1100 which gives full instructions on how to collect and mail specimens for nematode analysis.

**Blossom Drop**

Extreme weather conditions sometimes cause fruits to fail to set on tomatoes, beans, and peppers, resulting in a dropping of the affected flowers. Night temperatures below 55° F. in the spring and hot, drying winds in the summer are the chief causes of blossom drop in Illinois, although insects, diseases, and weedkillers may sometimes be a factor.

**Injury from 2,4-D**

In recent years much damage has been caused in some home gardens and yards by the careless use of 2,4-D and related weed-control chemicals. Often 2,4-D drifts in from nearby lawns and fields. Tomatoes, melons, sweet potatoes, and beans are some of the vegetables susceptible to 2,4-D. If you must use 2,4-D or similar weedkillers, follow these precautions:

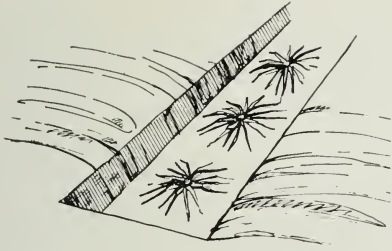
- 1. Use the granular or amine form of 2,4-D.
- 2. Spray only when wind is quiet.
- 3. Keep pressure very low and nozzle directed downward.
- 4. Do not apply insecticides or fungicides with a sprayer that has been used for weedkillers. It is exceedingly difficult to remove all of the residue from a sprayer contaminated with 2,4-D.

For more information on 2,4-D injury, send for Illinois Extension Circular 808, "Prevent 2,4-D Injury to Crops and Ornamental Plants."

**PART III — TIPS ON GROWING SPECIFIC VEGETABLES**

Specific suggestions and practices for producing good yields of high-quality vegetables are given on the following pages. Material that is covered elsewhere in this guide is not duplicated in this section, unless additional comments are necessary. For information on the following subjects, see the indicated pages:

- Resistant varieties .....page 10
- Planting dates .....page 20
- Spacings between plants and rows.....page 20
- Fertilizer treatments .....page 16
- Disease control .....page 28
- Insect control .....page 26
- Storage recommendations .....page 24



Asparagus crowns set in a furrow. Spread the roots so that the crowns lie flat. Cover them with 2 inches of soil and gradually fill in the furrow with soil during the season. (Fig. 4)

## Asparagus

Since asparagus plants will occupy the same place for twenty years or more, the soil should be properly prepared and well fertilized before planting. Plants should be located where they will not be disturbed.

The roots or crowns used for planting are started from seed in the nursery the preceding spring. The larger crowns (8 to 15 per pound) are more productive and should be used if available.

Plant the crowns as soon as the soil can be worked in the spring. Set the crowns 12 inches apart in a wide furrow, about 6 to 8 inches deep. Cover them with about 2 inches of soil and gradually cover with the rest of the soil during the remainder of the season (Fig. 4). Asparagus roots may spread out laterally for 5 feet or more. Unless adequate space is allowed between rows, asparagus roots will compete with those of other crops for food and water.

The main insect enemy is the asparagus beetle, which can be controlled with Sevin.

Do not harvest asparagus until the third year it is in your garden and then harvest only during the first four weeks of the season. During the following years harvest up to the first eight weeks of the season and let the tops grow the rest of the year. Asparagus spears are ready for harvest when they are 6 to 8 inches long. Cut off the spear at the base with a knife or snap it off by grasping the spear near the tip. All of the snapped spear is edible, but the butt of the cut spear has to be trimmed off before cooking.

The asparagus tops can be removed or worked into the soil in early spring. The soil where asparagus is grown should be fertilized the same as the rest of the garden each year.

## Beans (Snap and Lima)

Beans are warm-season vegetables, but during excessively hot weather they may drop their blossoms and pods. Since beans are sensitive to frost, they should be planted when all danger of frost is past and when the soil is warm. Seeds of many bean varieties tend to crack and germinate poorly when exposed to very moist conditions. Therefore do not soak bean seed or irrigate immediately after planting.

For a continuous supply of snap beans, make plantings every 10 days until the first part of August.

The bush types of beans, which are most commonly grown, should be planted in rows. Pole varieties, which must be supported by poles or trellises, should be planted in hills 3 feet apart each way.

Navy beans, red kidney beans, and edible soybeans are grown much like limas and snap beans.

To control bean diseases, do not handle or work among bean plants when the foliage is wet from dew or rain.

The Mexican bean beetle, the bean leaf beetle, and the potato leafhopper should be controlled.

Harvest snap beans when the pods are young and succulent and before the seeds are mature. Lima beans harvested for green limas should be picked when the seeds are nearly full size but before they turn white. For dry beans, let the pods mature on the plants, but harvest them before the pods get so dry that they shatter.

## **Beets**

The beet is a fairly hardy plant and can be planted early. For a continuous supply of young, tender beets make several successive sowings at 3-week intervals. Both roots and tops can be used for food.

The beet "seed" is actually a fruit which will produce more than one plant. To grow satisfactory beets, thin the plants to 3 inches apart. Thinning sometimes can be delayed until the plant tops are large enough to use as greens.

For good quality, harvest beets when they are 1½ inches or less in diameter. Beets will keep for several months if packed in moist sand and placed in a basement or garage. Do not allow them to freeze. Before storing, trim off all but ¼ inch of the tops.

## **Cabbage**

Cabbage, a fairly hardy crop, is easy to raise and can be grown from spring to fall. Early plantings should be started from plants but cabbage for later harvests may be started by sowing the seed directly in the garden. The plants can be thinned to 9 to 18 inches depending on the size of head desired. The closer the spacing the smaller the heads. Water may be needed during dry periods to produce satisfactory heads.

Shallow cultivation of this crop is important since many of the cabbage roots are near the soil surface. A sidedressing of nitrogen fertilizer when plants are half-grown is advisable.

Cabbage is available in many varieties and hybrids. The varieties differ mainly in head size and days to maturity, ranging from 50 to over 100 days. Plant several varieties of different maturities to lengthen your harvest. Always select varieties resistant to yellows disease.

Important diseases of cabbage and related crops are yellows, clubroot, blackleg, and black rot. Rotation of crops in the cabbage family is an important disease-control measure. Insects that are common on these crops are imported cabbage worms, cabbage loopers, aphids, and cutworms.

Harvest cabbage heads when they are firm and before they split. Certain varieties, such as Bonanza, will hold longer than others. The Baldhead or Danish types make good heads for storage. Store cabbage in a pit, trench, or outdoor cellar.

## **Carrots**

For good root development carrots should be grown in deep, loose soil. In heavy, compact soil the roots are likely to be poorly shaped and forked. Because carrot seed is slow to germinate, give special care to the seedbed to speed up germination and to improve the stand. Work the seedbed finely before seeding, and in dry weather before the plants are up, sprinkle the seedbed with water each evening.

When the carrot tops are 2 to 3 inches high thin out the plants so that they stand 2 inches apart.

Carrots can be used before they attain full size. For fresh use harvest them before they exceed 1 inch in diameter. The larger roots are used for canning and storing. Carrots for storage should be handled like beets.

## **Chard**

Swiss chard is planted in the spring about the same time as beets. A single planting will produce greens throughout the season. Sow the seed in rows and thin to 4 to 8 inches.

If you harvest only the outer leaves, the plant will continue to produce greens throughout the season. A few plants will supply an average family.

## **Corn (see Sweet Corn)**

## **Cucumbers**

Cucumbers and other vine crops are usually started by planting seed directly in the field, but for an earlier crop you may start them in peat pots, bands, or berry boxes about 3 to 4 weeks before setting in the field. Plant 2 to 3 seeds in each container and when the plants come up, thin them to one per container. Because cucumber roots can be easily injured during transplanting, place the whole container, with the bottom removed, in the soil. Plants should not be set in the field until danger of frost is past.

Cucumbers respond well to mulching. Yields can be increased and quality improved by using mulches now on the market or any of the other mulching materials suggested on page 23.

Many diseases can cause considerable damage in cucumbers and other vine crops if not properly controlled. Varieties that are resistant to scab and mosaic are recommended. See Table 7 for disease-control methods. Insects that should be controlled are cucumber beetles and aphids.

Cucumbers may be harvested at almost any stage of development but before they turn yellow. Do not leave overmature cucumbers on the vine as they will reduce later yields.

## **Eggplant**

Eggplants are grown much like tomatoes, but they are spaced closer together and are not staked.

Fruit rot is sometimes a problem but it can be controlled by growing resistant varieties. Wilt-resistant varieties are also available. Flea beetles are usually very abundant on eggplant.

Harvest the fruits while they are still glossy.

## **Lettuce**

Leaf lettuce is the easiest kind of lettuce to grow in the garden. It can be grown during most of the season and does not require exacting cultural practices, while head lettuce is very sensitive to heat and requires more care. Select varieties of lettuce that are tolerant to heat and tipburn and that do not go to seed easily.

Bibb lettuce has become popular in recent years. It can be grown successfully during the cooler parts of the growing season. Other types of lettuce that are grown in Illinois are butterhead and cos, or romaine. Head lettuce will not do well in Illinois.

Harvest leaf lettuce when the leaves are large enough to use. Sometimes only a few of the lower leaves are harvested, allowing the center leaves to continue growing for later use.

## **Muskmelons (Cantaloupes)**

Most of the cultural practices for muskmelons are the same as for cucumbers. Muskmelons do exceptionally well on sandy-type soils.

Fusarium wilt is a disease problem in parts of Illinois; for control, grow resistant varieties. The insects that attack cucumbers also attack muskmelons.

Harvest muskmelons when they are easily separated from the stem.

## **Onions**

The easiest and surest way to grow good onions, either green or dry, is to use sets. Sets are small onions, less than an inch in diameter, that were grown from seed the previous year. Onion plants are sometimes used, especially for growing the mild Sweet Spanish type. Texas varieties of onions, which are normally grown in the south, do not produce satisfactory yields in Illinois.

For green onions, place the sets upright about 1 inch apart in a furrow about 3 to 4 inches deep. For dry onions, place the sets upright about 3 to 4 inches apart in a furrow 1 to 2 inches deep. Cover the sets with soil. The larger sets are preferable for green onions while medium-sized sets are best for dry onions.

For good yields of mature dry onions, plant sets, plants, or seed as early in the spring as the soil can be prepared.

Smut, downy mildew, purple blotch, neck rot, and pink root are some of the diseases found in onions. All white onions are susceptible to smudge. Insects that cause the most trouble are thrips and cutworms.

You can harvest green bunching onions 4 to 6 weeks after planting sets. Dry onions will be ready in 3 to 4 months, about late August or early September.

Dry onions are ready to harvest when the necks are thoroughly dry or about 95 percent of the tops have bent over. Pull the onions and place them under cover to dry. Drying will take from 2 to 4 weeks. Then cut off the tops about an inch above the bulb, place the onions in a well-ventilated container, such as a slatted crate or mesh bag, and store in a cool, dry place. The best conditions for storage are a temperature of about 32° F. and a relative humidity of 70 to 75 percent.

## **Parsnips**

Parsnips are grown like other root crops, such as carrots and beets, except that parsnips require a longer growing season, and ridging to keep soil over their shoulders.

You can dig up the roots late in the fall or leave them in the ground, since winter freezing will not hurt them. The roots are 10 to 12 inches long, so be careful when digging them up.

## **Peas**

The pea is a cool-season vegetable which should be planted early in the spring. Several varieties of different maturities can be planted at the same time to provide a supply of peas over a longer period.

Several diseases appear in peas but they should not give you trouble if you treat seed, rotate your pea crop, and use resistant varieties. The pea aphid is the most troublesome insect.

Since peas are at peak quality a relatively short time, check frequently for their maturity. Pick the pods when they are green and nearly fully developed and before the peas start to harden. The peas should be used or refrigerated as soon as possible after harvest.

## **Peppers**

Many of the cultural practices for peppers are the same as for tomatoes. Hot, dry weather often causes young buds, blossoms, and immature fruits to drop. Mosaic is often a problem and can be controlled by growing resistant varieties.

Harvest the pepper fruits when they are firm.

## **Potatoes**

Potatoes grow best in a long, cool season, which is rarely found in Illinois, but if recommended practices are followed, satisfactory yields can be obtained. The crop must be planted as early as the soil can be worked in the spring.

Always use certified seed potatoes, which are free of disease. Cut these potatoes into blocks weighing about 1½ ounces each. Make sure that each seed piece has at least one eye. Plant immediately.

Close spacing (30 inches between rows and 12 inches between plants) is recommended for early potatoes so that the plants will shade the soil and prevent excessively high soil temperature during the time the tubers develop. Mulching the potatoes with about 8 inches of loose straw when the plants are 6 inches high will also lower the soil temperature as well as control weeds, conserve moisture, and improve the keeping quality of the potatoes.

Many diseases and several insects cause trouble in potatoes. By using certified seed potatoes and resistant varieties and by spraying or dusting at 10- to 14-day intervals with zineb or maneb and Sevin, most insects and diseases can be controlled. Do not save your own seed.

Harvest the potatoes after the vines have died. Before storing, hold potatoes for a week or two at 65° to 70° F. in a place where the air is not too dry, to heal cuts and bruises. Then store them where the temperature will be 35° to 40° F. At lower temperatures potatoes will become sweet and at higher temperatures they will sprout. To prevent sprouting, treat potatoes after cuts are healed with one of the sprout inhibitors now on the market.

## **Pumpkins**

Pumpkins require a great deal of space and are recommended only for larger gardens. However, to conserve space they can be planted where early corn is growing; the early corn will mature before the pumpkins need much room.

Diseases and cultural practices are much the same as for cucumbers and muskmelons except that pumpkin plants are spaced farther apart. The main insect enemies of pumpkins are the same as those of squash.

Allow fruits to mature on the vine but harvest them with the stems attached before the first severe freeze. Pumpkins for storage should be handled with great care to avoid cuts and bruises that permit the entrance of decay organisms. Store in a dry room where temperatures are about 55° to 65° F.

## **Radishes**

Radishes are generally a spring crop in Illinois because they do best in cool weather; however, some varieties can be planted for summer use and winter storage. Pull radishes when they become of usable size, before they become pithy and too hot.

## **Rhubarb**

Rhubarb is started by planting a division of a root from an older, healthy plant. Each root division should have a strong bud. Plant early in the spring in a well-drained area and place the root so that the bud is just below the soil surface.

Rhubarb should not be harvested the first year and should be harvested for only a few weeks the second year, but after that it can be harvested for 8 to 10 weeks. If seed stalks appear, cut them off.



When the rhubarb stalks become small and spindly start a new planting by dividing and planting roots from the old plants. If crown rot is a problem, use roots from disease-free plants and plant them in well-drained soil where rhubarb has not been grown.

## **Spinach**

Spinach should be grown in the early spring or late fall because the long, hot days of summer cause it to bolt to seed, making it unusable. Select recommended varieties for each of these plantings. New Zealand spinach, which is not a true spinach, can be grown during the summer.

The plants may be harvested any time the leaves are large enough to use. Some plants may be thinned out for early use and the rest allowed to attain full size.

## **Squash**

Squash has about the same cultural requirements and problems as pumpkins, cucumbers, and muskmelons.

Squash varieties are divided into three classes — summer, fall, and winter. The summer squashes are used while they are young and tender, when the rind can be easily penetrated by a thumbnail. The fall and winter varieties have a hard rind, are harvested when mature, and are good for storage. Store winter squash the same as pumpkins.

Common insects on this crop and pumpkins are cucumber beetles, squash bugs, and squash vine borers, which can be controlled with Sevin.

## **Sweet Corn**

If you want a constant supply of sweet corn throughout the summer until frost occurs, include an early (67 to 72 days to maturity) and a main-crop (78 to 83 days to maturity) variety in the first planting and then follow with a succession of plantings of a main-crop variety. The second planting is made when 3 leaves are present on the seedlings in the previous planting.

Plant two or more rows of sweet corn side by side to insure good pollination and development of ears. Plantings can be made until the first week of July. Keep weeds under control by shallow cultivation. Removal of “suckers” or side shoots is not recommended.

The main diseases of sweet corn are smut and Stewart’s disease (bacterial wilt). Damage from Stewart’s disease can be reduced by using varieties partially resistant to this disease and by controlling flea beetles (which carry the bacteria that cause the disease) when the plants first come through the soil.

Corn borers, corn earworms, and flea beetles are the chief insects to be controlled in sweet corn. Follow the spray or dust schedules outlined in Table 6. Proper timing in applying insecticides is important if you want worm-free corn.

For sweet, plump kernels harvest sweet corn when it is in the milk stage; that is, when the juice in the kernel appears milky when you

puncture the kernel with your thumbnail. Sweet corn remains in the milk stage for a relatively short period. As harvest approaches, check the corn frequently to make sure that the kernels do not become over-mature and doughy. Other signs that indicate that the corn is almost ready for harvest are drying of the silks, fullness of the tip kernels, and firmness of the unhusked ear.

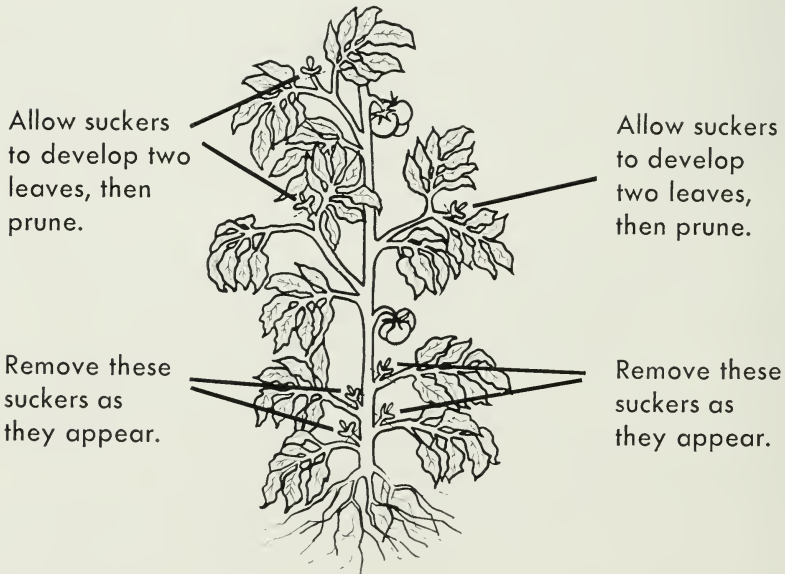
Eat, can, or freeze the corn immediately after picking or refrigerate it until used. At high temperatures the sugar in sweet corn quickly decreases and the starch increases.

## Tomatoes

Although tomatoes can be direct-seeded into the garden, most gardeners use plants either grown by themselves or purchased from a reliable plant dealer. Many varieties are available, but the ones recommended in Table 2 have been found to do well in most parts of Illinois. To have tomatoes throughout the season, grow both early and main-crop varieties.

When setting the plants into the garden be sure to use a starter solution (see page 17). See page 22 for proper transplanting procedure. Space plants so that you have about 9 to 12 square feet of space per plant. Sometimes staked plants may be spaced more closely.

Tomatoes can be grown successfully either on the ground or staked, but plants grown on the ground require less work, produce more per plant, and are less susceptible to blossom-end rot. The advantages of



Remove all tomato suckers that develop below the first cluster of fruit. Above the first cluster, let the suckers grow two leaves before pruning. (Fig. 5)

To stake a tomato plant, tie the string tightly around the stake and loosely around the plant. Tie the knot just below a branch so that the plant cannot slide down. (Fig. 6)



staking are cleaner fruits, no loss from soil rot or anthracnose and, sometimes, easier picking. If you grow tomatoes on the ground, mulching will reduce anthracnose and fruit rots, and help to keep the fruits clean. Also, the mulch will conserve moisture and control weeds.

There are several methods of staking and pruning tomatoes. A modified system which has been found to do well in Illinois is suggested here: Shortly after transplanting, drive a stake about 6 feet long and 1½ inches in diameter into the soil 8 to 10 inches deep and 3 inches away from each plant. When the plants are 12 to 15 inches high, remove all but one main stem and tie it loosely to the stake, using soft twine or cloth. As the plant grows remove the shoots or "suckers," which develop between the main stem and the leaves, up to the first fruit cluster. Above the first fruit cluster, let the shoots develop two leaves and then pinch off the tips. Tie the plant loosely to the stake every 10 to 12 inches (Fig. 6).

Diseases in tomatoes can be greatly reduced by carrying out a fungicide dust or spray program. Apply maneb or zineb as directed in Table 7.

Harvest the fruits when they are pink except during periods when the daily mean temperature is above 70° F. At such high temperatures pick the fruits just as they are turning color and keep them at 68° for further coloring. These fruits will be firmer and have better flavor than those ripened on the vine when temperatures are high. Fruits exposed to direct sunlight will reach a temperature 20 degrees higher than that of shaded fruits.

In the fall just before the first frost, pick the large green fruits as well as the riper fruits. Ripen these fruits at about 60° to 70° F. in the dark. By sorting them out every 2 or 3 days you will have a gradual supply for about a month.

## Turnips

Turnips are grown both for greens and for the fleshy roots. Because this vegetable is a cool-season crop it should be planted early in the spring or in August for fall harvest. Most of the insects and diseases affecting cabbage are also injurious to turnips.

Turnips are harvested the same way as beets. The greens may be pulled or cut at the soil surface.

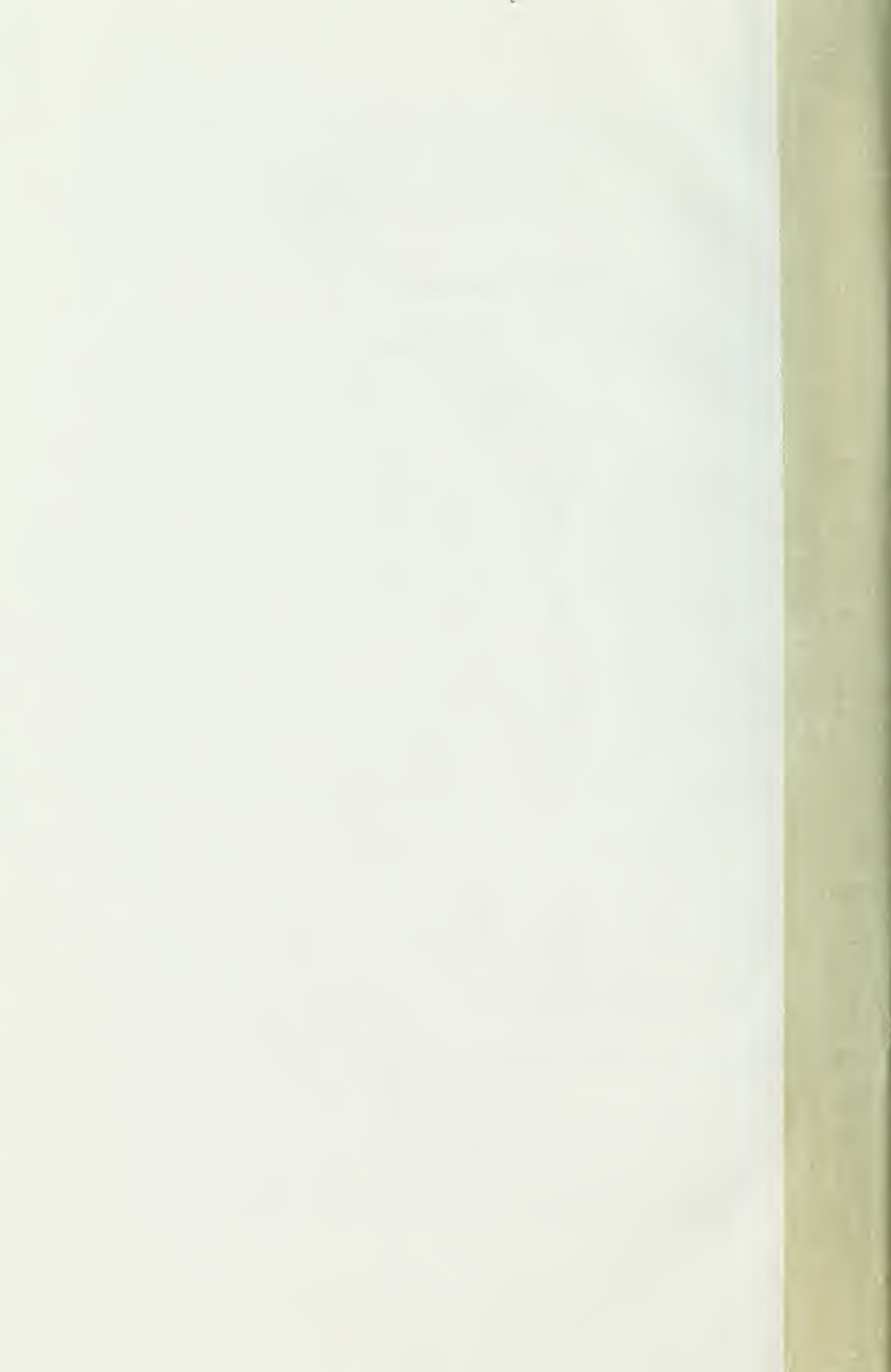
### FOR YOUR PROTECTION

Always handle pesticides with respect. After all, the people most likely to suffer ill effects from pesticides are the applicator and his family. Accidents and careless, needless overexposure can be avoided. From 1961 through 1970 there were 26 deaths in Illinois due to accidental ingestion of pesticides — 14 from insecticides, 5 from rodenticides, and 7 due to a herbicide.

Each year more than 750 Illinois children under 12 years of age are rushed to a doctor because of suspected pesticide ingestion or excessive exposure. A study of such cases showed that 50 percent of the children obtained the pesticide while it was in use and 13 percent obtained it from storage. Fifty-three percent of the cases involved pesticides used as baits. These accidents could have been prevented. The following suggestions for safe use of pesticides are designed to prevent such unfortunate careless accidents.

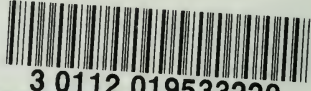
1. Store pesticides out of reach of children, irresponsible persons, or animals; preferably store in a locked cabinet away from food or feed.
2. Put pesticide containers back in the storage area before applying pesticide. Children have found open bottles by the water tap.
3. Avoid breathing pesticide sprays and dusts over an extended period. This is particularly true in enclosed areas such as crawl spaces, closets, basements, and attics.
4. Wash with soap and water exposed parts of the body and clothes contaminated with pesticide.
5. Wear rubber gloves when handling pesticide concentrates.
6. Do not smoke, eat, or drink while handling or using pesticides.
7. Do not blow out clogged nozzles with your mouth.
8. Leave unused pesticides in their original containers with the labels on them and in locked cabinets.
9. Wash out empty pesticide containers and then bury them, burn them, or haul them to the garbage dump.
10. Do not leave puddles of spray on impervious surfaces.
11. Do not apply pesticides to fish ponds, bird baths, or pet dishes.
12. Do not apply pesticides to dug wells or cisterns.
13. Observe all precautions listed on the label. Use pesticides only on the *crops* specified, in *amounts* specified, and at *times* specified.







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