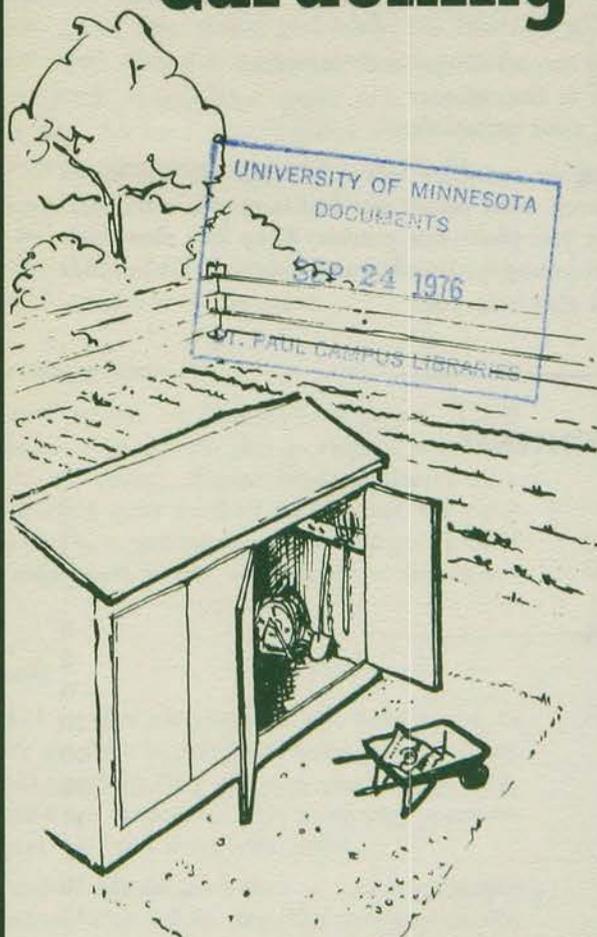


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Vegetable Gardening



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Vegetable gardening is an interesting and popular 4-H project. The things you learn will be useful the rest of your life. It is fun to sow seeds, to set out plants, and to watch plants grow! Imagine picking garden-fresh vegetables from plants that grew from tiny seeds.

The 4-H garden project is divided into three phases, *beginner*, *junior*, and *advanced*. In the beginning unit you will learn how plants grow; you will also learn to plan, plant, and care for vegetables for use at home.

Older 4-H members who enroll in a garden project will take the *junior* or *advanced* phase of the project. In addition to learning more about how plants grow, you may study other subjects such as varieties, insects, fertilizers, and approved methods of growing vegetables.

This bulletin will help you grow a good home garden. Some things you will learn are:

1. How to choose a good place for a garden.
2. How to decide what to plant and how much.
3. How to get the soil ready.
4. How to put fertilizer on the soil.
5. How to plant the seeds, thin the seedlings, and transplant.
6. How to care for your plants in the summer.
7. How to harvest and exhibit your vegetables.

The best gardens usually belong to members whose parents are willing to help. So get your parents to help work with you. They can help you select the best place for your garden and help you plan your garden. They can also show you how to fertilize the soil, set out young plants, harvest your vegetables, and many other things. Your leader will also help you.

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VEGETABLE GARDENING

Orrin C. Turnquist

Planning the Garden

Find the Right Place for Your Garden:

With good **SOIL**—"The best is none too good" when it comes to finding the right place for the vegetable garden. You'll want soil that's loose, fertile, and well drained. But almost any soil—if we handle it the right way—will grow thrifty vegetables.

That's **HANDY**—"Not too far from the house" is a sensible idea. Then, when you have just a short time, you're more likely to go out to work in the garden.

That's **LEVEL**—If the garden spot is level, the soil won't wash away as easily as it does on sloping ground. If there is a gentle slope to the south or to the southeast, the vegetables may be a bit earlier.

Avoid low spots; late spring and early fall frosts occur in low spots and shorten the growing season.

That's **SUNNY**—Vegetables need full sunshine most of the day. So have your garden where trees, buildings, fences, and shrubbery won't shade it.

Away from **TREES**—Trees will shade most; besides that, the tree roots will use moisture and plant food the vegetables need. Fruit trees are just as unwanted near a garden as other trees.

Garden Arrangement

Start your garden in January—on paper. You'll need a plan for your garden just as engineers need a blueprint for a building. Experienced gardeners may be able to keep a plan in their minds, but for most of us a real working garden map is necessary. This is especially important if we are going to use space savers.

Space Savers

Many 4-H garden members do not have space to expand their gardens in size from year to year. They must grow as much as they can in a small space. This is called intensive gardening. The following practices may help you use land more efficiently:

1. **Succession planting**—follow a quick-maturing crop like lettuce with a late crop like cabbage on the same area.

2. **Intercropping**—plant a quick-maturing crop that requires narrow spacing (peas or spinach are examples) between rows of crops requiring wide spacing (squash or cucumbers).

3. **Companion cropping**—sow an early-maturing crop like radishes (thinly) in the same row as a late-maturing, slow-germinating crop such as parsnips. This will aid germination and will make early cultivation easier.

4. **Staking or trellising**—To conserve space use these supports for such crops as tomatoes, pole beans, and vine crops.

If space is very limited you may want to incorporate vegetables in the flower border. Many vegetables lend beauty to the landscape setting. Tall plants like sweet corn and staked tomatoes can be in the background. Beets, carrots, and lettuce are quite ornamental and can be used near the front of the border.

A working garden map or plan drawn on paper is essential in the planning process. Your map will be most helpful if it is:

- a. Drawn to scale
- b. Shows the size of the garden
- c. Shows spacing between rows, crops, and varieties to be planted
- d. Tells the date of planting
- e. Shows the length of row of each crop
- f. Shows the spacing of transplanted crops in the row
- g. Shows the plan for succession plantings
- h. Gives a general arrangement of the crops.

Your finished garden map could look something like the scale map on page 4.

Planning Pointers

Here are some pointers to remember as you make your garden map:

1. Make all rows straight and parallel.
2. If you use power equipment, make the rows long to avoid unnecessary turning around.
If you hand cultivate, you'll find that short rows are less monotonous to work.
3. On a slope, run rows along the contour or across the slope.

Prepared by Orrin C. Turnquist, professor and extension horticulturist, with editorial assistance by Juanita J. Reed, Extension specialist, 4-H and Youth Development. Acknowledgment is gratefully given to Michigan State University 4-H Bulletin 197, by J. Lee Taylor, for illustrations and basic format. Trade names are sometimes used for clarity; no endorsement of products named is intended, nor is criticism implied of those not mentioned.

inches
between
rows↓

feet from
end of
garden↓

**Plan for a 20-
x 50-foot garden**

Scale: 1 inch = 5 feet

18	Pars- ley*	Dill*	Swiss Chard†	Pepper	1½
24	Parsnips* with radishes*				3½
18	Spinach* followed by carrots				5
18	Carrots* followed by kohlrabi**				6½
18	Radishes† followed by carrots				8
18	Beets* followed by turnips**				9½
18	Onions,* seeded or transplanted				11
24	Cabbage transplants†				13
24	x	x	x	x	13
24	Cauliflower† interplanted with broccoli†				15
24	x	x	x	x	15
24	Peas,* double row, first planting				17
6					17½
24	Radishes* followed by cucumbers§				19½
24	x	x	x	x	19½
24	Peas,† double row, second planting				21½
6					22
24	Lettuce* followed by tomatoes, staked				24
24	x	x	x	x	24
24	Peas,‡ double row, third planting				26
6					26½
24	Onion sets* followed by tomatoes, staked				28½
24	x	x	x	x	28½
24	Peas,§ double row, fourth planting				30½
6					31
24	Kohlrabi* followed by tomatoes, staked				33
24	x	x	x	x	33
30	Pole beans§ on trellis or green bush beans				35½
18	Green bush beans, second planting				37
18	Wax beans§				38½
30	Sweet corn‡		Sweet corn		41
30	First planting		Second planting		
30	Sweet corn‡		Sweet corn		43½
30	Sweet corn‡		Sweet corn		46
30	Sweet corn‡		Sweet corn		48½
18					50

KEY TO PLANTING DATES:

* When garden is prepared.

† About May 1.

‡ About May 10.

§ About May 15.

|| About June 1.

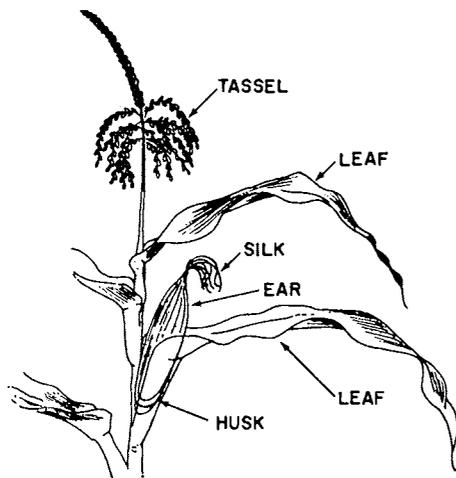
¶ About June 15.

** About August 1.

4. Arrange the crops so that tall plants like sweet corn and pole beans do not shade the small plants.
5. Put perennial vegetables like asparagus and rhubarb along with small fruits on one side of the garden where they will not interfere with garden preparation.
6. Group the crops according to the time they mature to facilitate succession plantings, rotation, or planting of green manure crops after harvest of the early crop.
7. Vine crops like melons, squash, and cucumbers can be planted on one side so they can spread into the fence row.
8. Do not crowd the plants; allow ample room for each vegetable to develop properly.
9. Do not plant too much of such crops as chard, leaf lettuce, and parsley. By removing a few leaves from each of several plants instead of harvesting an entire plant, you will encourage the plants to produce a continuous supply of high-quality produce over a longer period.

Plant sweet corn in blocks of two or more rows so that good pollination of the ears can take place. Pollination is the transfer of pollen grains from the tassel to the silk on the ears and is necessary to produce good plump kernels. Pollen grains are formed in the tassel at the top of the plant and contain the male sex cells. The pollen grains are carried by wind from the tassel to the silk at the tip of the corn ear. When a pollen grain falls on a silk, it sprouts and the male cells move down inside the silk until they reach the young kernel at the end of each silk. Then one of the male sex cells unites with the female sex cell (fertilization).

After fertilization, the young kernel starts to develop. If the young kernel isn't fertilized, it shrivels



Pollination—Wind carries pollen grains from the tassel to the silk at the end of the corn ear. There is a young kernel at the end of each silk.

up. So you can see why it is important to have good pollination.

If you plant sweet corn in a single row, a crosswind may blow the pollen grains away from the silk. Then all the silks will not be pollinated. This results in ears of corn that have many shriveled kernels. If you have several short rows of sweet corn, a crosswind will carry pollen grains to the next row of sweet corn and so on, and better pollination will usually take place.

What to Grow

When deciding what to plant, consider the size of the garden. In small gardens select vegetables such as lettuce, chard, onions, snap-beans, or tomatoes, that yield a lot in a little space.

Consider, too, the likes and dislikes of your family. Plant crops that will give the highest nutritive returns.

The selection of adapted varieties for Minnesota is a simple but important step to a successful garden. In Minnesota we should not grow all the same varieties of vegetables that are grown in southern Arizona or northern Maine, because our climate and soil conditions are different. Some varieties that do well there would not grow well here. Varieties differ in their habits of growth. Some require more room than others. Some are better for certain uses—others are resistant to disease.

Each year a new list of recommended varieties is published by the University of Minnesota Agricultural Extension Service. Ask your county extension agent for a copy of the Extension folder listing vegetable varieties. Order your seed *early* from reliable seed companies. New varieties disappear from the seed store shelves early in the spring.

Don't Save Seed

Generally, it is wiser to buy fresh seeds each year than to try to save seed from your garden. Many of our vegetable crops are cross pollinated. Some of these are corn, cucumber, melon, pumpkin, squash, onion, spinach, radish, beet, turnip, and cabbage. Seeds saved from these crops will not produce true to type. Sweet corn will cross with field corn so it is not wise to save sweet corn seed if field corn is grown nearby. Hybrid sweet corn or any other hybrid vegetables should not be saved for seed because the resulting plants usually will not be the same.

You can save seed from choice watermelon if no other variety of watermelon or citron grew near it. Seed from muskmelons is safe, even if the melons were grown next to cucumbers.

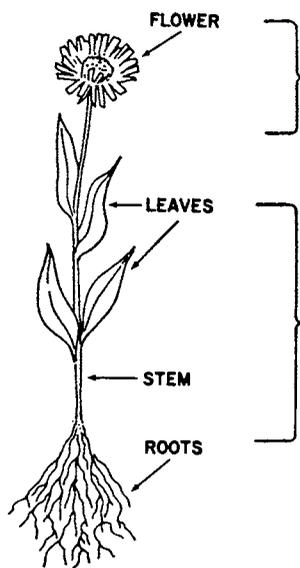
Some seeds retain the ability to grow longer than others. Seeds of corn, onions, parsley, and parsnips are relatively short lived and usually are not good

after 1 or 2 years. Beet, cucumber, muskmelon, eggplant, and tomato seeds last at least 5 years.

Parts of Plants and What They Do

It is important to know something about plants so that you can garden intelligently. After reading this section, you should know why you add fertilizer to the soil, why you water your garden, why you locate your garden in the sun, and many other things.

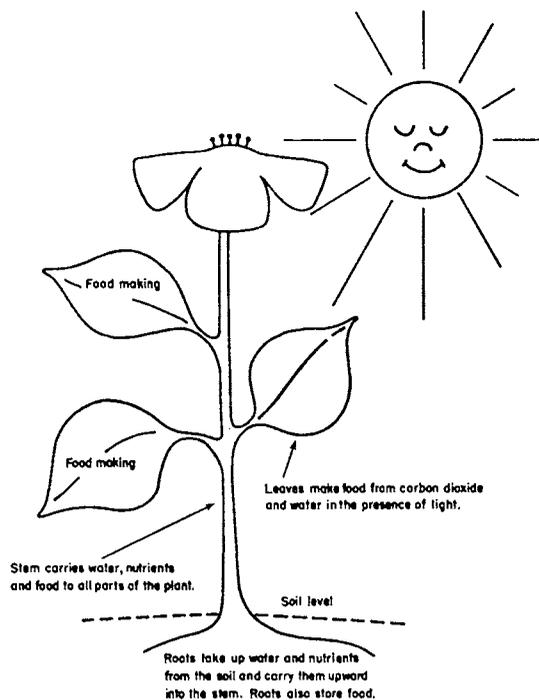
Plants have four basic parts: roots, stems, leaves, and flowers.



The parts of a plant

Flowers contain the *reproductive* parts of a plant and produce seeds.

Roots, stems, and leaves are called *vegetative* parts and are necessary for making the plant grow.



Photosynthesis—How leaves help make food for the plant.

What do the roots do?

They anchor the plant in the soil.

They take up water and *nutrients* (nu-tri-ents) from the soil. A nutrient is a mineral element such as phosphorous (fos-for-us) that a plant needs for normal growth just as your body needs iron and calcium and other minerals.

They carry water and nutrients taken in from the soil upward into the stem of the plant.

They store the food that is made in the leaves during the daytime.

We eat the roots of some vegetables. Examples are: carrot, beet, parsnip, radish, and rutabaga.

What do the stems do?

They produce and support the plant's leaves and flowers much as our bones help make and support our bodies.

They contain pipelines to carry water, nutrients, and food to all parts of the plant.

We eat the stem of vegetables such as asparagus and kohlrabi. Sometimes these stems are underground, such as the potato tuber.

What do the leaves do?

They make food for the plant by combining carbon dioxide (a gas) from the air with water from the soil. This food-making process is called *photosynthesis* (fo-to-sin-the-sis). It goes on in all green leaves in the presence of light. All the food we eat comes either directly from plants or in the form of meat, fish, eggs, milk, and other products produced by animals that eat green plants.

We eat the leaves of some vegetables. Examples are onions, cabbages, and lettuce.

What do the flowers do?

They produce fruits and seeds. A seed contains a tiny plant that will start to grow under the proper conditions.

We eat the flower parts of broccoli and cauliflower. We eat the fruit of many vegetables: cucumbers, tomatoes, melons, peppers, and snap beans. We eat only the seeds of some vegetables: peas, lima beans, and dry beans.

Tools Needed

How about tools? You can probably find most of the tools and supplies that you will need right at home.

You will need:

A *spade* or *spading fork* or *tiller* for turning the soil over and breaking up the large lumps. (This is called working the soil.)

A *rake* to smooth the soil surface, cover seeds, and clean up.

A *yardstick, string, stakes, and labels* for getting the rows straight and for labeling your vegetables.

A *trowel or small hand spader* for working close to the plants and for transplanting small plants.

A *garden hoe* for killing weeds and loosening the soil, opening trenches, and covering seeds.

A *sprinkling can or water hose* for watering your garden in dry weather.

An inexpensive *hand duster or sprayer* for pest control.

Planting the Garden

Organic Matter

Plants need water and air. Organic matter, which is decayed plant material, helps to provide water and air for the plants.

Organic matter can be supplied to the soil by using humus, such as barnyard manure or compost.

If barnyard manure is available use 3 to 4 bushels per 100 square feet. Work the manure thoroughly into the garden plot in the fall or spring.

Compost is made up largely of decayed plant materials. It can be made by piling up plant refuse—straw, leaves, old garden plants, etc.—in shallow layers with small amounts of garden soil and commercial fertilizer sprinkled between. The pile should be kept damp and turned occasionally as it decays.

Compost will be ready for garden use in about 6 to 8 months after the pile is started. It should be spread and plowed or spaded into the soil the same way as barnyard manure.

Plant Food

In addition to organic matter the soil should contain plenty of readily available nutrients for the plants. These are best supplied by the use of liberal applications of manure and superphosphate or commercial fertilizers. Almost any complete commercial fertilizer is suitable for the vegetable garden. This can be applied at the rate of 15 pounds per 1,000 square feet or 3 pounds per 100 square feet at the time the garden is prepared in the spring.

The fertilizer should be worked into the soil to a depth of 1 or 2 inches with a harrow or rake. Commercial fertilizer can also be applied as a sidedressing when you plant seeds. Apply the fertilizer in a furrow 2 or 3 inches deep and 2 to 3 inches on each side of the row where seeds are to be planted. Use 1 pound per 25 feet of row. This method is especially good when intensive gardening is practiced and when succession or fall crops follow early-planted ones.

Soil Preparation

It is very important to prepare the soil correctly because seeds need moisture and oxygen as well as warmth to grow.

Plow or spade the soil to a depth of 7 to 8 inches. This is done to:

- loosen the soil,
- turn under manure, remains of old crops, cover crops, and other materials,
- let air and moisture pass through the soil more easily.

The soil can be plowed or spaded any time in the fall or spring when it is not wet. Wet soil packs and forms big chunks that do not break up easily. The soil is too wet to work if it sticks to your shoes. Use a hoe or rake to break up soil lumps and to level the surface.

Garden is ready for spading when soil crumbles when squeezed.



Cool-Season Crops

Some vegetables can be seeded directly into the garden at the same time the garden is prepared. These are called cool-season crops. Vegetables such as leaf lettuce, radish, peas, spinach, and kohlrabi cannot endure hot weather, but reach edible maturity so quickly that they can be planted in the open ground early enough to attain full development before hot weather.

Some cool-weather crops have so long a growing season that they usually must be transplanted in order to reach their edible maturity before hot weather. Head lettuce, cabbage, and cauliflower come in this category.

Long-season vegetables requiring cool, moist conditions during early development but capable of enduring heat and dry weather after becoming well established are beets, carrots, parsnips, and onions.

Warm-Season Crops

Warm-season vegetables are those that need warm soil conditions for germination and growth. They are very sensitive to cool air and soil temperature. Some warm-season crops with a short enough growth period to enable them to perfect their products in temperate regions during warm weather are beans, sweet corn, popcorn, cucumbers, squash, and pumpkins.

Other warm-season crops require so long a growing season that in northern regions they usually must

be started under glass and then transplanted to the field when conditions become favorable. Tomatoes, eggplants, and peppers are examples. Sometimes early varieties of tomatoes may be seeded directly in the garden early in May.

Planting Depth

Generally speaking, depth at which planting can be done is largely determined by size of seed. Small seeds must be planted closer to the surface than larger ones. Such large seeds as beans and squash can be planted as deep as 2 or 3 inches. Such small seed as carrots and lettuce should not be planted deeper than one-half inch.

Plant Spacing

Planting distances may vary with the kind of plant, size of garden, method of cultivation, etc. Plenty of space should be allowed to give the plants room to develop naturally and reach full maturity. Spacing can be closer with hand cultivation than if tractor cultivators are used.

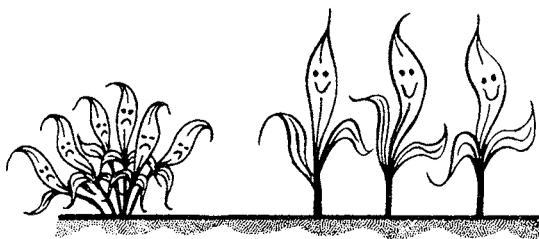
Such vegetables as cabbages, melons, etc. require about the same amount of space regardless of method of cultivating. But carrots, beets, lettuce, radishes, and the like, will grow in rows as close as 14 inches where cultivated by hand. Don't overcrowd!

Thinning

It's very difficult to sow small seed thinly enough to permit all plants to develop well. Surplus plants are just like weeds and should be removed.

Thinning is hand work and is best done soon after plants germinate. When the soil is moist the surplus plants can be removed easily without injuring the plants remaining. Early thinning is especially important in root crops like carrots, parsnips, beets, rutabagas, onions, and turnips. Thinnings of lettuce and chard can be used as food. Radishes and onions can be left in the ground until those that are to be thinned are large enough to eat.

Where several seeds are planted in hills, the plants must be thinned after germination. Thin corn, cucumbers, melons, and squash to three plants per hill.



Crowded plants do not grow well. Thin your plants.

Transplanting

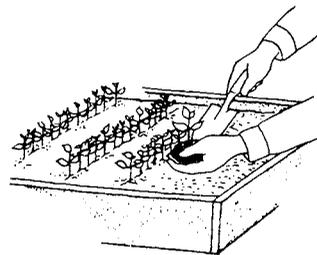
Transplanting is the moving of a plant from one place to another. If you take the plants that you thinned out and set them out in another place, you are transplanting them.

Move as much soil and as many roots as possible with each plant when transplant in your garden. Gently lift out a large clump of earth (use a tablespoon or trowel) which contains all of the plant roots. Do your transplanting when the soil is wet, or water the ground ahead of time, so the soil will cling to the roots.

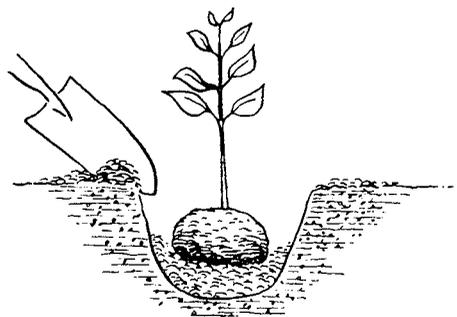
The plants will not stop growing if you can move them without disturbing their roots. Otherwise, it may take them several days to recover from the shock of transplanting, and some may die.

Transplant in the evening or on a cloudy day, if possible, so that the plants will have a chance to recover before being exposed to the hot sun. Set the plants in the ground $\frac{1}{2}$ to 1 inch deeper than they were before, and firm the soil around the roots.

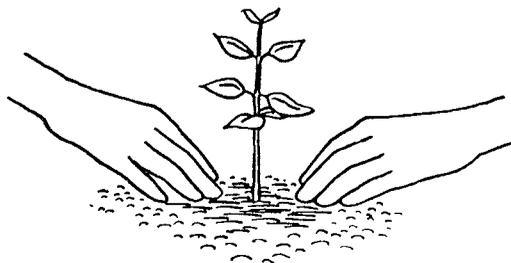
Use a *starter solution* to provide the young plants with early nourishment. This will help them get off to



Move as much soil as possible with each plant.



Set plants $\frac{1}{2}$ to 1 inch deeper than they were before.



Firm the soil around the roots after transplanting.

This planting chart is your guide for planting vegetable crops in your garden

Kind	Seeds for 100-foot row, ounces	Distance between rows, inches	Plants apart in rows, inches	Depth of planting, inches	Time of planting in open ground	Ready for use from date of seeding, days
Asparagus, seed	1	18 to 24	3	1	Early spring	365 to 730
Asparagus, root	66 [roots]	48	18	4 to 8	Early spring	730
Beans, bush snap	16	18 to 24	2	1	April to July	42 to 75
Beans, pole snap	12	36 to 48	36 to 48	1	May and June	65 to 90
Beans, bush lima	16	18 to 24	4 to 6	1	May to June	65 to 75
Beans, pole lima	2	18 to 24	36 to 48	1	May to June	80 to 90
Beet (and Swiss chard)	1	12 to 18	2	1	April to August	45 to 60
Beet, mangel and sugar	1	20	4	1	April to August	90 to 120
Broccoli	$\frac{1}{4}$	24 to 36	18 to 24	$\frac{1}{2}$	March and April	90 to 100
Brussels sprouts	$\frac{1}{4}$	24 to 30	12 to 16	$\frac{1}{2}$	May and June	100 to 120
Cabbage, Chinese	$\frac{1}{4}$	18 to 24	10 to 12	$\frac{1}{2}$	June and July	75
Cabbage, early	$\frac{1}{4}$	24 to 30	12 to 18	$\frac{1}{2}$	March and April	90 to 110
Cabbage, late	$\frac{1}{4}$	24 to 36	16 to 24	$\frac{1}{2}$	May and June	110 to 120
Cantaloupe, muskmelon	$\frac{1}{2}$		4 every 48	1	May to June	85 to 150
Carrot	$\frac{1}{2}$	12 to 18	2	$\frac{1}{2}$	April to June	55 to 80
Cauliflower	$\frac{1}{4}$	24 to 30	18	$\frac{1}{2}$	April to June	95 to 110
Celery	$\frac{1}{4}$	18 to 36	6	$\frac{1}{8}$	May and June	120 to 150
Collards	$\frac{1}{4}$	24 to 30	18 to 24	$\frac{1}{2}$	Late spring	100 to 120
Cornsalad	1	12 to 18	3	$\frac{1}{2}$	June and July	60
Corn, sweet	4	30 to 36	4 every 36	1	May to July	55 to 90
Cucumber	$\frac{1}{2}$	48 to 72	4 every 36	1	April to July	50 to 70
Eggplant	$\frac{1}{8}$	24 to 30	18	$\frac{1}{2}$	April and May	125 to 140
Endive	1	18	12	$\frac{1}{2}$	April (July)	100
Kale or borecole	$\frac{1}{4}$	18 to 24	18	$\frac{1}{2}$	August, September (March, April)	55 to 60
Kohlrabi	$\frac{1}{4}$	18 to 24	6	$\frac{1}{2}$	March to May	50 to 70
Leek	$\frac{1}{2}$	14 to 20	4	$\frac{1}{2}$	March to May	120 to 150
Lettuce	$\frac{1}{4}$	12 to 18	12	$\frac{1}{2}$	March to September	70 to 90
Mustard	$\frac{1}{4}$	12 to 18	6	$\frac{1}{4}$	March to May (September)	60 to 90
Okra	2	36 to 48	12	1	May and June	90 to 140
Onion, seed	1	12 to 18	2	$\frac{1}{2}$	April to May	125 to 150
Onion sets	1 [quart]	12 to 18	2	1	February to May	100
Onion seed for sets	16	12 to 18	$\frac{1}{2}$	$\frac{1}{2}$	April	90
Parsley	$\frac{1}{4}$	12 to 18	3	$\frac{1}{8}$	Early Spring	65 to 90
Parsnip	$\frac{1}{2}$	18 to 24	4	$\frac{1}{2}$	March to April	130
Peas	16	30 to 36	1	1 to 2	March to June	45 to 75
Peas, crowder	8	36	4 to 6	1	May	100 to 110
Pepper	$\frac{1}{8}$	18 to 24	15	$\frac{1}{2}$	May and June	130 to 150
Pumpkin	$\frac{1}{2}$	96 to 144	5 every 72	1	May to July	75 to 90
Radish	1	12 to 18	1	$\frac{1}{2}$	March to September	20 to 75
Rhubarb, seed	$\frac{1}{2}$	18 to 24	4	$\frac{1}{2}$ to 1	Early spring	360 to 730
Rhubarb, roots	40 [roots]	48	30	3 to 4	Early spring	2 or 3 [years]
Rutabaga	$\frac{1}{4}$	18 to 24	8	$\frac{1}{2}$ to 1	June to July	90
Salsify	1	18 to 24	2	$\frac{1}{2}$	Early spring	150
Soybeans, vegetable	8	16 to 36	2	1	May to June	90 to 120
Spinach	1	12 to 18	4	$\frac{1}{2}$	August and early spring	45 minimum
Squash, summer	$\frac{1}{2}$	36 to 48	4 every 48	1	April to June	65 to 70
Squash, winter	$\frac{1}{2}$	84 to 120	4 every 72	1	May to July	125
Tomato	$\frac{1}{8}$	36 to 48	36 to 48	$\frac{1}{2}$	May to June	125 to 150
Turnip	$\frac{1}{2}$	18 to 24	4	$\frac{1}{4}$	April and August	45 to 90
Turnip, for greens	1	12 to 18		$\frac{1}{4}$	April and August	45 to 50
Watercress	$\frac{1}{2}$			in water	April to September	60 to 70
Watermelon	1	96 to 120	24 to 48	1	May and June	100 to 130

a good start. A starter solution is a mixture of water and a *water-soluble fertilizer* that contains high amounts of nitrogen, phosphorus, and potash. Water-soluble fertilizers are available in most garden supply stores. Select one that is medium or high in phosphorus (16-33-16 or 10-52-17, for example) and follow the directions on the label. You can make your own by mixing $\frac{1}{2}$ cup of any complete fertilizer in 1 gallon of water. Apply $\frac{1}{2}$ cup of the solution around each plant right after transplanting.

Watering

Wise handling of garden soil to help it hold water is usually a better and cheaper plan than “watering.” In most seasons there is enough rain, but it does not always come at the right time. So we have to find ways to hold rain water in the soil where plants can get it.

Here are some things you can do to conserve moisture:

- Keep a good supply of well-rotted manure or compost in the soil—this will hold water.
- Keep down the weeds—don’t let them get a start or they will steal water that should go to other plants.
- Thin out the plants that aren’t needed—they will use water too.
- Cover the soil around plants with a mulch of straw or other material.

If you do these things, you’ll find watering won’t be needed very often. But if you have to water the vegetable garden, remember that a heavy watering now and then is better than many light waterings. Use plenty of water at one time and spread it evenly. The most common way to water the garden is with a hose and sprinkler.

Weed Control

A weed is a plant out of place. Volunteer vegetables not growing where you want them are weeds. They, like the weeds, compete with the other plants for moisture, nutrients, light, and air.

The weed control problem in most gardens can be made easier by following four simple rules:

1. Do a good, thorough job of soil preparation immediately before planting.
2. Cultivate between rows right after setting plants, or as soon as seeded crops come up. This kills a lot of small weeds before they are big enough to become well established.
3. Cultivate or stir soil to a depth of about an inch around plants and between rows at least once

a week and as soon as the soil can be worked after each rain.

4. Never let weeds “go to seed” in or around your garden plot. This job needs particular attention later in the season after crop harvesting begins.

The best time to check weeds is when their seeds are sprouting. If, at sprouting time, the top inch or so of the soil is stirred very carefully so it dries out, weeds will be checked. Weeds need plenty of moisture to get started. Dried-out soil will discourage them. Don’t cultivate too deeply or cut off roots of the plants you are growing. This will defeat the purpose.

Good Tools To Use

You can use several tools for weeding the garden. Some like a straight-tooth rake best, others prefer a blade-type wheel hoe. If used in the right way, it will work well and it’s easy to handle. Just an ordinary, well-sharpened hoe can be used, even though it is rather slow. All weeding—if it’s to do any good—must be shallow, thorough, and timely.

Mulching the soil with straw, hay, lawn clippings, or black plastic holds down weeds. But be sure the mulch is weed-free and that every bit of soil is covered. Make sure, too, that the mulch is close to the plant. Mulching the ground around tomato plants helps keep the fruit clean, checks loss from blossom-end rot, and conserves moisture.

A mulch is placed around transplanted vegetables when they are set in the garden or shortly after. Seeded crops may be mulched soon after they sprout.

Herbicide Use

Use of herbicides in the vegetable garden is not practical due to the variety of crops grown. However, they may be useful, before planting and after harvest to control quackgrass.

Dalapon can be applied in the fall to growing quackgrass at a rate of approximately 5 ounces per 1,000 square feet. Spring applications should be made at the rate of 2½ ounces per 1,000 square feet. Treated areas may be plowed 4 to 10 days later. Do not plant for 4 to 5 weeks after treating. Very good results have been found with fall applications of dalapon.

Insect Control

Insect control in your home garden should begin at planting time and continue throughout the season.

A clean-up of garden waste in fall or spring will help control some insect pests, but won’t do the whole job. Insecticides should be used for treating the soil, treating some seeds (like corn), and for spraying or dusting plants.

Many insecticides control only certain pests. Many have a long residual effect and should not be used on edible plant parts. Other insecticides are too poisonous to be used in the home garden. For detailed information on insect control ask your county agent for Entomology Fact Sheet No. 11, "Controlling Insects in the Home Vegetable Garden," or write to the Bulletin Room, University of Minnesota, St. Paul, Mn 55108.

Treating the soil with diazinon or other registered insecticides will control wireworms and white grubs. After the soil has been prepared for planting, sprinkle 2 lb. of 4 percent Spectracide (diazinon) evenly over a 1,000-square-foot garden plot. Rake it into the upper 2 to 3 inches of the soil immediately. Then the garden can be planted.

The soil treatment may help to control root maggots in cabbages, radishes, turnips, rutabagas, and onions.

Dust or Spray the Growing Plants

The number of insect pests will vary from year to year. Watch for the first signs of trouble so you'll have time to prevent serious losses. As insect problems are discovered, check the fact sheet to learn the best control.

Usually gardeners like one dust or spray for everything. The safest insecticides to use on vegetable crops are those containing either rotenone, pyrethrins, malathion, or methoxychlor.

The methoxychlor-malathion mixture is effective against a wide range of insects including leafhoppers, flea beetles, potato beetles, cabbageworms, and thrips. For some special problems such as soil insects, European corn borers, corn earworms, and squash bug, other materials must be used.

Rotenone and pyrethrum are also useful insecticides for crops nearing harvest. Use rotenone as a ¾-percent or 1-percent dust or as a spray containing 4 tablespoonfuls of a 4-percent wettable powder per gallon of water. Pyrethrum is usually available as a 0.2-percent dust. Spray concentrates vary in concentration, so follow the manufacturer's directions.

Malathion is effective against most aphids and red spider mites. Use 2 teaspoonfuls of 50-percent malathion emulsifiable concentrate per gallon of water or 2 tablespoonfuls of 25-percent malathion wettable powder per gallon of water.

Follow precautions on the label and always store insecticides in a safe place.

After potato plants are 3 to 4 inches tall they should be examined regularly for insect pests and sprayed or dusted when necessary. All gardeners should have a potato spray or dust containing sevin or methoxychlor.

Plant Diseases

Many diseases will not appear if you do the right things ahead of time. 4-H gardeners will want to have clean seeds, healthy plants, and clean soil.

Buy seeds from reliable seedsmen and grow plants carefully in clean soil or buy plants from trusted growers. All diseased garden refuse, such as plant stalks and roots, should be burned. If healthy it can be put in the compost pile or plowed under.

Anthraxnose and bacterial blight on beans, black rot and yellows on cabbage, and blight on celery trace back to diseased soil or diseased seeds, plants, and plant refuse.

Before sowing seed it is desirable to treat the seed with a fungicide such as thiram, captan, or dyclone. Follow directions on the container. Usually all you need is a toothpickful in the average seed packet. Shake the packet so the seeds are coated. This inexpensive treatment will help check such seedling diseases as damping-off, and will help produce more uniform stands of plants.

When you first see signs of plant disease, it is often too late to save the affected plants. Thus, you should know something about diseases that are likely to strike and how to take preventive measures. Some of these measures are selection of disease-free seed, soil, and plants; use of resistant varieties; seed treatment with chemicals or hot water; and destruction of insect or seed carriers of diseases. A good insect control program will help to prevent disease problems in the garden.

Sometimes if diseases are detected early enough, their spread to other plants or other parts of the same plant can be prevented or delayed by using fungicide. Zineb and maneb show promise in controlling early and late blight on potatoes, tomatoes, and celery.

Some seasons powdery mildew will attack the foliage of vegetables like melons, cucumbers, peas, pumpkins, and squash. The leaves become covered with a greyish powder and extensive drying and killing of foliage can result. Karathane is a new fungicide that gives good control of mildew.

Remember that there is no magic in fungicides. They protect only the plant part they cover. They wash off more or less when it rains. Consequently, frequent and thorough application is essential.

Many diseases as well as insects invade the garden from weeds which surround it. Spraying weeds with herbicides and insecticides will help greatly to control garden pests. Don't cultivate or harvest vegetables when plants are wet or you may spread disease, especially in beans. Tomatoes are very sensitive to 2,4-D. Vapor drift from spraying nearby weeds or traces left in the sprayer from weed spraying may affect them.

For further information on disease control, ask your county agent for Plant Pathology Fact Sheet No. 9, "Controlling Diseases in the Home Vegetable Garden."

Other Garden Enemies

Slugs are small snail-like creatures that feed on stems, leaves, and fruits of many vegetables. They may be killed with baits containing metaldehyde. You may also trap them under boards.

Scattering a trail of corn around the garden area may prevent pheasants from digging and eating seeds. Cottontail rabbits are best controlled by fencing. Nicotine sulfate sprayed on herbaceous plants will give some control. Set traps for moles and pocket gophers. Prepare poison bait for pocket gophers by treating pieces of carrot or potato with alkaloid strychnine and insert bait in runways.

Caution: Follow precautions on the label and always store poison bait in a safe place, out of the reach of children.

Harvesting and Storage

When to Harvest

To get the most out of a garden, harvest your vegetables at the proper stage of maturity. Most vegetables reach their highest quality and are used in the young or immature state. We may freeze or can vegetables as soon as they reach the proper stage; others are used fresh, right out of the garden.

How to Store

Many garden vegetables that are not canned or frozen may be stored. With proper storage you can assure yourself a supply of fresh vegetables during the winter.

For successful storage, however, you must have well-matured, good-quality vegetables. Your storage room must have proper moisture and temperature conditions. Frequent sorting and removal of decayed vegetables will help preserve your supply.

Harvested vegetables are not dead but still are living organisms. They continue to grow in storage. If growth is rapid, the food stored in the vegetable soon will be used, the quality will disappear, and the vegetable will break down and rot. Proper control of temperature and moisture will retard growth and prolong the storage life of the vegetable.

Not all vegetables require the same conditions for successful storage. They can be separated into the following three groups *warm dry* for squash and pumpkin; *cool dry* for onions and dry peas and beans;

and *cool moist* for root crops, potatoes, cabbages, and apples.

Warm Dry Storage

Furnace rooms, or upstairs storage rooms ordinarily are warm and dry. Humidity ranges from 50 to 70 percent and temperatures between 50° and 60° F.

Before placing pumpkins and squash in storage, be sure they are fully matured and cured. Keep them in a heated well-ventilated room at 75° to 85° F. for about 2 weeks after harvest to harden the shell. If weather is warm, this can be done by placing them in small piles in the field. Cover the piles if it looks like frost. Avoid bruising or scratching the skin.

Cool Dry Storage

Unheated storage rooms such as attics or closets are suitable for storing dry beans and peas. Onions can be stored in similar places if the temperature does not get below freezing.

Harvest beans after the pods are mature. Spread them out, dry, and shell. Place in bags, cans, or jars, and store at 25° to 32° F. and 70 to 75 percent humidity.

Popcorn should be thoroughly mature when placed in storage. It is best stored at 25° to 32° F. It may be stored shelled in airtight containers or on the cob. If too dry to pop well, add a tablespoon of water to one quart of corn an hour or two before popping.

Onions should be thoroughly mature. Remove tops, place onions in shallow boxes or trays with ventilated bottoms, and cure outdoors or in an airy shed or room for 3 to 4 weeks. Place in storage at 32° to 36° F. and 70 to 75 percent humidity. Onions may be stored in mesh bags hung from the ceiling of the vegetable storage room.

Cool Moist Storage

Most homes do not have cool moist places for vegetable storage. Basements are usually too dry or warm unless there is a special cool, dark, ventilated room that is insulated from frost on the outside and the heat of the furnace inside. Such a room may be built in the basement by insulating walls and ceiling and ventilating through a cellar window.

Carrots and beets store very well in 10-gallon crocks or any container that will prevent excessive shriveling. Low storage temperatures between 32° and 40° F. apparently are the key to successful carrot and beet storage.

Containers should be covered with a burlap sack or piece of cloth to keep the air moist. If carrots are stored at higher temperatures, completely remove the carrot crown and store carrots in damp sand. Do not

trim beets too closely. They will bleed unless at least one-half inch of the top is left.

Rutabagas, turnips, and parsnips may be waxed and stored at temperatures between 32° and 40° F. If not waxed, they should be placed in containers or buried in sand to prevent shriveling. Parsnips may be left in the garden all winter and used the following spring.

Potatoes should be free from dirt and disease. Destroy any blighted tubers. Seed potatoes may be stored as low as 32° F. but should not be allowed to freeze. Table stock potatoes should be stored above 36° F. to prevent sweetness. If they do become sweet because of exposure to lower temperatures, their natural flavor may be restored by holding them at room temperature for a few days.

Potatoes held at temperatures above 40° F. will start to sprout after 2 or 3 months. Several sprout-inhibiting substances are available; treat the potatoes when sprouts begin to break through the eyes. This usually occurs in late December or January.

The tomato season can often be extended by picking fruits at the pink stage or at the green-mature stage (when they turn from green to light green or white). At 40° to 50° F. pink-stage tomatoes can be kept 7 to 10 days, while green-mature tomatoes can be kept at 50° to 60° F. from 1 to 6 weeks. Ripening increases with higher temperatures. Just before frost kills the vines they can be pulled and hung in the garage or basement with fruits still attached. Fruit will continue to ripen.

Parsley and chives may be taken out of the garden in the fall, potted, and grown as house plants. It is important to take a considerable part of the root system with soil surrounding it. Remove several of the outer leaves of parsley to reduce water loss following transplanting. In addition to beautifying the kitchen, these plants will supply leaves for flavoring and garnishing dishes during winter months.

Preparing Vegetables for Exhibit

Much has been written on how to do a better job of raising top quality garden produce, but there is little information on the selecting and exhibiting part of gardening.

Exhibits must be educational; inspire gardeners to improve their exhibits, and promote pride in produce grown in the community.

If your exhibit is to meet these goals it must:

1. Show that better produce is the result of the use of good seed of adapted varieties.

2. Show what can be produced when improved cultural methods are used and when insects and diseases are controlled.
3. Show different kinds of vegetables and varieties.
4. Show balanced selection of vegetables for their nutritive value.
5. Show efforts of good showmanship: vegetables grown and prepared for attractiveness.

During the late summer and fall, you will have an opportunity to show the produce you have grown in your gardens. County and state fairs, and horticultural and garden club shows usually have places for you to exhibit vegetables. Here are some helpful suggestions to assist you in selecting and preparing a garden exhibit.

ASPARAGUS—Select straight, dark green spears with tight scales at tip. Should be free of rust, insect injury or other defects. Trim to a uniform length of 6 to 8 inches and tie 12 spears in a bunch with rubber bands or ribbon.

SNAP BEANS—Wax and green beans should be harvested before the constrictions appear between the seeds, when the seeds are about half grown. The ends of the pods should not be broken off in picking. The pods should be uniform in size, color and quality. The pods may be wiped clean but should not be washed. Avoid showing blemished or wilted specimens.

LIMA BEANS—Harvest when the seeds are full grown but still tender and before they have changed in color from green to white. Prepare like snap beans.

BEETS, CARROTS, PARSNIPS, TURNIPS, RUTABAGAS—Root crops should be mature but not overgrown, pithy or coarse in texture. Tops should be trimmed off 1-1½ inches above the crown. Side roots should be carefully trimmed off but not the tap root. Roots may be carefully washed but not scrubbed so that the outer skin is injured.

BROCCOLI—Although the heads quickly wilt, it is sometimes brought in to exhibits. Heads should be dark or purplish green and compact. Avoid any yellow flowers in the head. Stems should be cut about 5 inches from the top of the head. Specimens should be free from insects or defects.

CABBAGE—Select firm compact heads that are not soft or withered. Stems should be cut about ¼ inch below the head. Remove all blemished or broken leaves but care should be taken not to peel the heads too much. A few outside wrapper leaves are desirable. Specimens may be washed.

CAULIFLOWER—Heads should be white, compact and free of small leaves and ricey texture. Stems should be cut so as to leave 4 to 6 leaves. These outer leaves should be trimmed to 1-2 inches above the white head. Use a soft bristled brush to remove dirt from the heads. The curds of the head turn brown quickly if damaged.

CELERY—Remove roots of the stalk and trim the butt to form a triangle or pyramid. Trim off diseased and broken leaves on the outside until the color is uniform. Avoid pithy or woody and stringy stalks.

SWEET CORN — Select ears that are well filled out to the tip. Kernels should be milky and juicy. Remove outer husks but allow a short shank and the inner husks to remain. Ears should be uniform in size and color. They should be fresh and green and free from insects and disease.

CUCUMBERS — For pickling select fruits 3-5 inches long. All specimens should be at the same stage of maturity and uniform in size, shape and color. For slicers select fruits that are straight, dark green, and 6 to 10 inches long. They should be uniform in size, shape and color. Do not show over-ripe fruits that are usually dull in color.

EGGPLANT — Fruits should be of uniform purple color and free from bronzing and greening. Stems should be left on the fruits. Specimens should be wiped clean but not washed. Avoid large or wilted fruits. Dark spots indicate bruises or decay.

KOHLRABI — The ball should be 2 to 3 inches in diameter with the roots removed just below the ball. Remove all the leaves except the 4 to 6 top leaves and trim them to 2 to 3 inches long. Be sure there are no worms present on the petioles of the remaining leaves. Exhibit three specimens. Often the kohlrabi will be too large, tough, with a poor whitish color. There is also often damage caused by insects. They should be clean but not washed.

LETTUCE — Some people prefer to exhibit lettuce in a container of water to prevent it from wilting. This usually distracts from the exhibit more than it helps. If the lettuce is picked the night before and kept in a cool area it should be in good condition for showing. The outer older leaves should be removed and only fresh crisp well colored leaves exhibited. It should be exhibited as an entire plant rather than individual leaves. Only one plant is required.

MUSKMELONS — Harvest fruits when they separate easily from the vines. Specimens should be free of soft spots, mechanical injuries and discoloration. They should be wiped clean but not washed.

ONIONS — Have specimens mature and thoroughly cured. The neck should be small. Do not peel to give a slick appearance. Only such outer scales that are broken or discolored should be removed. Small basal roots should be left intact but trimmed to a uniform length of ½ inch. Wipe or brush but do not wash.

TABLE ONIONS — These are exhibited as green onions. Trim the tops to 3 inches long so the overall length should be 6 to 8 inches. Have 12 onions tied in the middle. The roots are trimmed to ½ inch length. In some cases the wrapper skin is removed to expose the long white shank. This is generally done just before showing as it often discolors if it stands too long. The general diameter of the onions should be ½ inch in diameter. They should be straight with a white stem and dark green leaves. The bulbs should not be enlarged. Some of the usual faults include crooked poor colored stems, dry or discolored leaves, and bulbs enlarged or too small.

PEAS — Select bright green, well filled pods with seeds at the best eating stage. Do not wash as "bloom" should be preserved. Exhibit 12 pods with stems attached.

PEPPERS — Select specimens that are uniform in size, shape and color. They should be free of disease

or other defects. Stems should be left ½-1 inch long. Wipe clean but do not wash the fruits.

POTATOES — Tubers should be uniform in size, shape and color. Washing is permitted but do not blemish the skin by scrubbing. Avoid specimens with defects or disease.

PUMPKINS — Specimens should be mature and uniform in size, shape and color. Stems should be attached to the fruits. Wipe clean but do not wash.

RADISH — The radish should be prepared by removing any discolored or injured leaves. The roots should be washed and tied in bunches of 12. They should be kept refrigerated until ready to exhibit. Only fresh, firm, crisp, good colored, smooth, blemish-free roots should be shown. Some of the common faults include spongy, wilted, or poorly colored roots. They should not be exhibited without the leaves.

RHUBARB — The stalk should be pulled from the plant and the leaves trimmed so only 2 inches of the leaf blade remain attached to the petiole or leaf stalk. Only 3 stalks need to be exhibited in the 4-H Exhibit. The stalks should be straight, free of any blemishes and should have a good color. The faces of the leaf stalk should be clean and free of any soil.

SPINACH — This vegetable is less succulent than leaf lettuce. However, some people still prefer to show it in a jar of water to prevent it from wilting. The best way is to display the entire plant with the roots removed. Trim the roots ¼ inch from the bottom leaf. Be sure the leaves are clean, fresh and crisp. They should also be well colored and free from blemishes. Spinach is often wilted and poor colored together with insect damaged leaves.

SUMMER SQUASH — Select small to medium size fruits when the rind is soft and easily punctured with thumbnail. Select specimens that are uniform in size, shape and color. Leave about ½ inch of stem and wipe fruits clean. Show 3 summer squash; 1 winter.

WINTER SQUASH — Select mature specimens where the rind resists the pressure of the thumbnail. Fruits should be uniform in size, shape and color and free of defects. Leave stems attached to the fruits.

SWISS CHARD — Select plants that are fresh, crisp, and have bright green leaves. Trim off roots and trim butts to a pyramid shape. Exhibit like celery.

TOMATOES — Select fruits that are uniform in size, shape and color. Remove stems. Fruits should be perfectly shaped and free of cracks or blemishes.

WATERMELON — Fruits should be mature but not overripe. Leave one inch of stem on each melon. Wipe but do not wash.

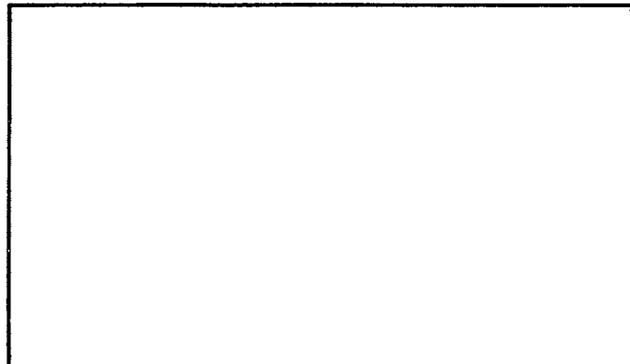


Exhibit Evaluation

Now that your exhibit is ready for display at county fair, achievement day, or state fair you may want to know the factors that may be considered by the judge in evaluating your exhibit. Here's the guideline which is generally used:

I. Factors considered in evaluating an exhibit

- A. Premium list requirement
 - 1. Exhibit the proper number of specimens for each kind of vegetable.
 - 2. In 4-H garden collections show only one variety of each kind of vegetable.
 - a. Either 3 or 6 kinds are usually required
 - b. For small vegetable show 12 specimens
 - 1. Green or Wax Beans
 - 2. Lima Beans
 - 3. Peas
 - c. For medium size vegetables show 3 specimens
 - 1. Beets
 - 2. Carrots
 - 3. Cucumbers
 - 4. Kohlrabi
 - 5. Parsnips
 - 6. Peppers
 - 7. Summer Squash
 - 8. Sweet Corn
 - 9. Tomatoes
 - d. For large vegetables show 1 specimen
 - 1. Broccoli
 - 2. Cabbage
 - 3. Cauliflower
 - 4. Celery
 - 5. Egg Plant
 - 6. Muskmelon
 - 7. Pumpkin
 - 8. Swiss Chard
 - 9. Winter Squash
 - 10. Watermelon
 - 3. When less or more than required number of specimens are shown, it is a white or disqualified exhibit.
- B. Showmanship
 - 1. The art of selecting or grooming for show.
 - 2. Uniformity
 - a. Specimens should be uniform in every respect, especially in size, shape, color and maturity.
 - 1. Size
 - a. Consider the variety
 - b. Not small or oversize
 - c. Consider market demand
 - 2. Shape
 - a. Must be typical for variety
 - 3. Color
 - a. Must be typical for variety
 - b. Must be bright and uniform
 - c. Don't shine or wax
 - 4. Maturity
 - a. All vegetables should be at the same stage of maturity
 - b. Variations in uniformity
 - 1. Excellent—Uniform
 - a. Not over 10% variation
 - 2. Good—Fairly uniform

- a. Not over 25% variation
- 3. Fair—Not uniform
 - a. Not over 50% variation
- 4. Poor—Extreme difference
 - a. Over 50% variation
 - b. Largest specimen is twice the size of the smaller one.
- 3. Proper trimming or grooming
 - a. Specimens should be clean
 - 1. Wash root crops
 - 2. Dip leafy vegetables in cool water
 - 3. Wipe some vegetables with a damp cloth
 - 4. Clean other vegetables with a soft bristled brush
 - b. Trim tops and tap root of root vegetables
 - c. Leave wrapper leaves on cabbage, husks on corn and scales on onions
 - d. Remove stems from tomatoes and muskmelons
 - e. Leave stems on beans, cucumbers, squash, pumpkins and watermelons
 - f. Exhibit swiss chard and celery as one plant
- 4. Most premium lists require the correct labeling of the specimens as to variety.
- C. Condition
 - 1. Quality
 - a. Should be of edible maturity
 - 1. Many reach their highest quality when young and immature
 - 2. Sometimes determined by size
 - 3. Sometimes determined by color
 - 4. Sometimes determined by texture
 - 5. Some vegetables should be fully mature
 - b. Select vegetables that have a longer shelf life for show
 - 1. Should be firm and not break down
 - 2. Some lose quality quickly such as leafy greens and sweet corn
 - 3. Should not be overripe, shrivelled or wilted
 - 4. Specimens are judged on the basis of appearance at time of judging
 - 2. Freedom from insects, diseases or defects
 - a. No insects should be present on specimens
 - b. Care should be taken in handling specimens to avoid mechanical injury
 - 3. Do not wrap specimens in transparent films to maintain quality
 - a. No specimens should be exhibited in water
- D. Nutritive balance
 - 1. A collection should have a good balance of nutritive quality
 - a. Red—tomato
 - b. Green—cabbage, beans
 - c. Yellow—carrots, squash
- E. Labeling
 - 1. All specimens should be neatly labeled as to variety and exhibit should be typical of variety
 - 2. In 4-H collections use a 3 x 5 card with variety names, exhibitor name and county



II. 4-H Vegetable Garden Exhibit Score Card 4-H GARDEN CHECK SHEET

Showmanship		40
Specimens uniform	10	
Specimens properly trimmed	10	
Specimens true to variety	10	
Specimens properly cleaned	10	
Condition		40
Quality or proper stage of maturity	10	
Freedom from insects	10	
Freedom from disease	10	
Freedom from defect	10	
Nutritive Balance	15	15
Proper labeling	5	5

If an exhibit contains more or less than the required number of vegetables and not the proper number of varieties within each kind, the exhibit becomes disqualified or a white placing.

III. 4-H Potato Exhibit Score Card POTATO CHECK SHEET

Showmanship		55
Specimens uniform	15	
Specimens typical of variety	10	
General appearance (dirty or skin not mature)	10	
Proper size of tubers (not too large or too small)	10	
Arrangement of specimens	10	
Condition		40
Maturity of tubers	10	
Freedom from insect damage	10	
Freedom from disease	10	
Freedom from defect	10	
Labeling	5	5

Any exhibit containing more or less than 20 tubers should be disqualified and given a white placing.

It is the policy of the Agricultural Extension Service of the University of Minnesota that all persons shall have equal access to its programs and facilities without regard to race, creed, color, sex, or national origin.

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