

UNITED STATES SCHOOL GARDEN ARMY  
DEPARTMENT OF THE INTERIOR

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BUREAU OF EDUCATION  
WASHINGTON



LESSONS IN GARDENING FOR  
SOUTHWESTERN REGION

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## LESSONS IN GARDENING FOR SOUTHWESTERN REGION.

The following 40 lessons in gardening are suggested as a suitable course for schools that can devote only two lessons a week to the subject from January to June. This list is based on the Southwestern States Leaflets issued by the United States School Garden Army. Each lesson can easily be taught in a 15-minute recitation period in any grade above the third.

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## LESSONS IN GARDENING FOR SOUTHWESTERN REGION.

### *Lesson 1: FIRST, CATCH YOUR RABBIT.*

You remember the story of the boy who was telling about the rabbit he was going to eat, and his father said, "Son, first catch your rabbit." Well, that's the way you must do with these school gardens. Before you can eat the crops you expect to grow, you must get the garden.

For you boys and girls living in the country this will probably be an easy matter. Your fathers will be glad to give you a piece of land for your own use, as large as you are able to handle, where you can grow as many kinds of crops as you wish.

For you boys and girls living in the towns or cities it may be a little harder to get the land for your garden. But many of you will have a back yard of your own where many vegetables can be grown; or your next-door neighbor will be glad to let you use his back yard. At any rate, don't be discouraged if you can't find a place for your garden the first thing. By looking around and sticking to it you will find that there are a great many back yards and vacant lots near your own home which the owners will be proud to let you use after you have told them of the wonderful work the School Garden Army is doing.

If your garden is to be in a back yard, pick out one that is not shaded too much by trees or buildings. Growing things need sunlight and plenty of it. And try to pick out land that isn't all clay or gravel. You can't expect to grow much on soil like that. Ask one of your friends who is a farmer or who has a garden of his own to help you pick out the right place for your garden.

### *Lesson 2: HOW TO CHOOSE YOUR GARDEN.*

About 40 per cent of the food consumed in Germany was raised in home gardens. We can do as well as this if we try. The first important thing to do when you intend to raise a garden is to select a site that will be convenient and suitable. The garden should be placed in the home yard, if possible. When it is connected with the home it becomes a permanent part of our home life and will likely receive more careful attention than it would if located away from the home.

Vacant lots are only to be considered when there is no available space about the home. The lot, however, should be chosen as near the home as possible. Teachers can aid children in obtaining vacant lots from the owners and can greatly help in the selection of them. The distance from the home to the lot should not be too great. A great distance tends to decrease the interest and the feeling of proprietorship.

Lots that can be seen from the home can be more easily protected from garden vandals and thieves. All arrangements for lots should be made well in advance of the time for planting in order that the land may be improved by use of manures. After the lot is selected, whether it be at the home or away from it, the soil should be fertilized with street sweepings, gathered leaves, and stable manure.

If the lot is away from the home, the owner should be seen and his permission obtained to cultivate the lot. This is generally easily obtained, as nearly every man realizes that garden work will increase the value of his property. Sometimes it is necessary to pay rent for the lot. This should be entered as an item in the cost of the garden and should appear in the garden record.

After the garden plot is obtained you must dig up the grass. The soil should be well shaken out of this and the grass thrown in a pile at the side of the garden where it can rot and be used for fertilizer later on. Cover the piled-up grass with fallen leaves and you will have a little compost pile to use on your garden when you need it.



Heavy clay soils will require much work. If they lack humus you must supply it before your plants will grow. It is generally better to get sandy or humus soils, if you can. Clay soils should have at least a year of preparation before they are used for garden purposes.

Most home gardens are well adapted for garden work and do not require as much labor as the vacant lot. This is because the soil is generally worked over and over from year to year by the people living in the house.

### Lesson 3: HOW TO PLAN YOUR GARDEN.

Many of us think of gardening as work to be done only during a few brief weeks in the spring. This is wrong. Your garden will do its best for you if plans for it are made in the autumn and much of its preparation done then.

Here are some things you should think of in planning a garden:

1. *Size.*—The average boy or girl can easily spade and care for a garden 10 by 30 feet. A garden of this size will go far to supply vegetables for a family of four. Your garden should be sufficiently large to grow enough vegetables to make it worth while, but not so large as to make its care too much of a task.

2. *Width between rows.*—Rows must be farther apart if a horse or hand wheel cultivator is used than if you use hand tools, such as a hoe or rake.

3. *Paths.*—Since your plants must receive personal attention, you should plan your garden with paths so that you can reach all parts of it without tramping down the plants.

4. *Rotation.*—This means using the same ground for the growth of one kind of crop, followed by another of a different kind, as a crop of corn followed by a crop of beans. Your planting scheme should avoid growing the same kind of plants over and over on the same ground.

5. *Keeping your garden at work.*—A planting calendar will tell you how, by second and third sowings, you can have fresh vegetables at all times during the gardening season.

6. *Use all your land.*—Vegetables which ripen quickly may be grown among those which ripen slowly. Thus lettuce, radishes, spinach, and like vegetables may be planted in the soil between tomato plants, potatoes, corn, etc.

7. *Plants to grow.*—The kinds of plants to be grown will determine very largely the nature of your plan. Radishes and lettuce may be planted closer together than cabbages or corn.

8. *Adding a touch of beauty.*—Finally, if you wish to make your garden not only productive but attractive, flowers may be grown about the borders.

### Lesson 4: COMPANION CROPS.

The following list gives the names of the usual companion crops cultivated in your garden. No one gardener will employ all of them but will choose those especially adapted to the type of work he is undertaking:

Snap bean, cucumbers, squash, beets.

Pole beans, corn, onions, Swiss chard.

Beets, lettuce, beans, carrots.

Brussels sprouts, onions, beets, corn.

Cabbage, radishes, carrots, lettuce.

Cauliflower, beets, carrots, parsnips, salsify.

Carrots, beets, beans, onions.

Collards, onions, lettuce, spinach.

Corn, melons, lettuce.

Cucumbers, corn, tomatoes.

Kale, corn, okra, tomatoes.

Kohl-rabi, lettuce.

Lettuce, cucumbers, radishes, onions.

Melons, potatoes, corn, radishes.

Mustard, tomatoes, corn.

Okra, mustard, lettuce, onions.

Onions, beets.

Parsley, lettuce.

Parsnips, onions, radishes.

Peas, radishes.

Peppers, carrots.

Potatoes (Irish), lettuce.

Potatoes (sweet), corn.

Radishes, beets.

Rutabaga, parsnips.

Spinach, beans, corn.

Squash, corn.

Swiss chard, carrots.

Tomatoes, Irish potatoes, spinach.

Turnips, onions.



*Lesson 5: SUCCESSION CROPS.*

The following lists give the names of the usual succession crops cultivated in our gardens. No one gardener will employ all of them but will choose those especially adapted to the type of work he is undertaking:

SUCCESSION CROPS.

Early peas followed by late beets.  
 Early beans followed by summer turnips.  
 Onion sets followed by tomatoes.  
 Early lettuce followed by celery.  
 Early carrots followed by cabbages.  
 Radishes followed by cabbages.

TO BE PLANTED AT 10-DAY INTERVALS.

Beans (dwarf).	Parsley.
Beets, early.	Peas.
Carrots, early.	Radishes.
Corn, early.	Spinach.
Kohl-rabi.	Turnips.

LATE CROPS TO FOLLOW OTHERS.

Beets, late.	Flat turnips.
Brussels sprouts.	Kale.
Cabbage, late.	Peas, late.
Cauliflower.	Spinach.

*Lesson 6: SMALL GARDEN PLANS.*

The following plan for a small garden, 20 by 30 feet, has been found very satisfactory:

DIAGRAM OF 20 BY 30 FOOT GARDEN.

North end.

Lettuce, Radishes, followed by Celery			
Onions, followed by Celery			
Parsnips, followed by Celery			
Carrots, followed by Kale			
Beets, followed by Kale			
Early Peas, followed by Fall Cabbage			
Beans, followed by Fall Potatoes			
Cabbage, followed by Fall Potatoes			
Peppers, followed by Spinach			
Cucumbers, followed by Turnips			
Early Potatoes, followed by Fall Beans			
P A T H			
Egg Plants.	Tomatoes.	Cold Frame.	Hot Bed.

**Lesson 7: LARGE GARDEN PLANS.**

The following plan for a large garden, 50 by 75 feet, has been found very satisfactory:

**DIAGRAM OF 50 BY 75 FOOT GARDEN.**

North end.

Gate.

Lettuce, Radishes, Celery to follow		Hot Bed.
Onions, Celery to follow		
Carrots, Kale to follow		Cold Frame.
Beets, Kale to follow		
Early Peas, Cabbages to follow		Humus Pile.
Beans, Fall Potatoes to follow	P	Tomato Plants.
	A	
	T	
	H	
Cabbage, Fall Potatoes to follow		Cucumbers.
Cauliflower, Kohl-rabi		
Early Potatoes, Fall Beans to follow		Melons.
Squash, Turnips to follow		
Peppers, Spinach to follow		



*Lesson 8: SELECTION OF CROPS FOR THE GARDEN.*

Grow only those crops that can be used in your home or readily sold in the markets. Do not try to grow too many varieties; select the more easily grown crops at first, such as onions, radishes, peas, beans, turnips, beets, tomatoes, and cabbages. Study the local demands of your community and plant your garden to meet these.

The amount of space devoted to producing vegetables for home use will depend upon the size of the family to be supplied. One-fourth to one-half an acre is sufficient for an average family, and the rest of the garden space may be planted in crops to be sold in the local market. If a smaller garden is a necessity, only those crops used at home should be planted. By careful attention to rotation of crops and interplanting (that is planting between rows and other plants) one-fourth of an acre can be made to supply a family of six with all the vegetables needed.

Two important points: Keep your garden busy and plant only those things you can either eat or sell.

## PLANTING PLAN.

First planting: Radishes, onion sets, turnips, garden peas, beans, lettuce (from young plants), and cabbages.

Second planting (two to four weeks later): Beets, carrots, corn, and parsley.

Third planting (two or three weeks later): Beans, beets, tomatoes (from plants), melons, okra, and corn.

Fourth and fifth planting (late in summer or early in fall): Beans, turnips, carrots, onion sets, mustard, cabbage.

*Lesson 9: THE SEED LIST.*

Seeds for the garden should be selected in advance of the planting period. Only the amount of seed absolutely necessary should be purchased. The following table gives the approximate quantities of seed necessary to supply vegetables for a family of four. The amount needed by the student may be estimated from this table:

Bean:		Onion sets.....	4 to 6 quarts.
Bush lima.....	1 pint.	Pea, garden.....	4 to 6 quarts.
Pole lima.....	1 pint.	Parsley.....	1 ounce.
Snap.....	1 to 2 quarts.	Parsnip.....	$\frac{1}{2}$ ounce.
Beet.....	4 ounces.	Radish.....	1 ounce.
Cabbage:		Salsify.....	1 ounce.
Early.....	1 packet.	Spinach:	
Late.....	$\frac{1}{2}$ ounce.	In spring.....	$\frac{1}{2}$ ounce.
Carrot.....	1 ounce.	In fall.....	$\frac{1}{2}$ pound.
Cauliflower.....	1 packet.	Squash:	
Celery.....	1 packet.	Hubbard.....	1 ounce.
Corn, sweet.....	1 to 2 pints.	Summer.....	1 ounce.
Cucumber.....	1 ounce.	Tomato:	
Eggplant.....	1 packet.	Early.....	1 packet.
Kale.....	2 ounces.	Late.....	$\frac{1}{2}$ ounce.
Lettuce.....	$\frac{1}{2}$ ounce.	Turnip.....	2 to 3 ounces.
Melon:			
Muskmelon.....	1 ounce.		
Watermelon.....	2 ounces.		



### *Lesson 10: BUYING GARDEN SEED.*

It is very important that only the best garden seed be bought. You should exercise care in making up your seed order and only the most reliable seedsmen should be dealt with.

Although many seeds of a certain kind may look alike, yet the crops they produce will vary greatly. A seed is simply a baby plant wrapped in an outer covering and it is hard to tell what the seed will produce unless its ancestors are known.

The best seeds have had their ancestors carefully selected by the men who grew them. The poorer plants were discarded and only the best allowed to mature and produce these seeds. This process is called selection of seed, and is a very important step in producing the best varieties. Reputable seedsmen make it a rule to handle only selected seeds.

The different varieties of plants have been produced by selection. It is better for you to purchase a packet of a certain variety of seed, say Scarlet Globe Radish, than simply a packet of unnamed radish seed. You are much more likely to get a satisfactory crop and you will learn much more about gardening in growing the crop.

In planning the seed order, therefore, the first thing to consider is, buy good seed; and the second, buy by varieties.

Seeds may be bought in bulk much cheaper than in packets. As a general rule better seeds are obtained in this way. The seed bought in bulk should be divided into seed packets by the pupil, each packet containing sufficient seed for the garden of the individual pupil. The cost of the small packets should be computed from the cost per pound of the bulk seeds.

### *Lesson 11: HOW TO PREPARE YOUR GARDEN.*

The soil for your garden should be spaded or plowed if possible in the fall. If this can not be done, then you should do it as early in the spring as possible. If your garden is too small to be plowed with a team, you should spade it deeply with a spading fork. Deep plowing and spading, followed by thorough harrowing and raking, puts the soil in the best condition to make your plants grow. When the soil is spaded, each spadeful as it is turned over should be broken up by striking with the back of the spade. When your garden soil crumbles in your hands, it is just right.

Vegetables are heavy feeders and, therefore, they need a rich soil. Many experienced gardeners use what is known as compost on their gardens. A compost heap is made of a mixture of meadow sod, leaves, straw, grass, lawn clippings, unused portions of food and vegetables, sweepings from uncoiled streets, lime or wood ashes, stable manure, and soil. The plan usually followed is to first spread out a layer of manure about 4 inches deep, then one of leaves or straw or vegetable waste. Upon these sprinkle a small quantity of lime or wood ashes; then follow with a layer of earth an inch or two thick. Repeat this until all your material has been arranged in layers and placed in piles. Alternate layers of leaves or straw prevent the plant food contained in the stable fertilizer and street sweepings from being washed out and lost.

Turn over your compost heap with a spading fork about twice a season. This mixes the materials more thoroughly and makes them decay more. In a dry climate you should pour water on the heap occasionally.

As soon as part of your compost heap has rotted down enough to mix readily with the soil it should be spaded in wherever needed. The coarser portions which are slow to decay may well be buried in the bottom of border beds for perennial flowers or vegetables.

The thorough working into the soil of any stable or commercial fertilizer is important. Garden soils composed largely of clay are very likely to be sour, but you can fix this by putting



1 pound of air-slaked, burned, or hydrated lime; 2 pounds of ground limestone; or 3 pounds of unleached wood ashes on every 25 square feet of garden space. Coal ashes will help to loosen up a clay soil.

The proper preparation of the soil and thorough working of all fertilizers into the soil are of utmost importance. The success of your garden will depend very largely upon the thoroughness with which your seed bed has been prepared.

### *Lesson 12: HUMUS.*

Humus is the decayed parts of animals and plants and contains a great deal of plant food. Every bit of humus should be saved and used on your garden. In the cities we throw away every day thousands of dollars worth of humus that could be used to produce more food. This is one way we might conserve and help our country produce more, because every plant must have food and humus is the cheapest food we can give it. An ounce of humus is said to produce a pound of bread.

The black leaf mold found in the woods is almost pure humus. This is nature's way of fertilizing her plants. She lets the old leaves and twigs fall to the ground and decay so that other plants may get food. We could help our gardens a great deal if we were to collect all the old leaves and street sweepings and place them on our lot.

Many of the soils in the South lack humus because the sun has burned it all out. Then the heavy rains come along and wash it away. Old leaves, straw, grasses, any decayed animal matter are excellent for humus. The garbage cans, found at every house in our cities, that are carted away and added to the city dump pile, contain much valuable fertilizing material if we would only use it.

Your garden should have a humus pile for use when needed. This can be started in some convenient corner and added to as fast as the material can be accumulated. Mix old leaves in the pile and allow it to decay.

As your garden is cleared at the end of the year, many of the plants taken out can be added to the pile. No plant should be added that is diseased or has been attacked by insects. These should be burned as soon as the trouble is discovered. Some plants will decay much faster than others. Coarse woody stems will decay very slowly. These should not be added to the pile if it is to be used in the next year or two.

Many times flies gather about humus piles and are a nuisance. If the pile is covered with 6 inches of dirt the flies will not gather. The addition of dirt does not hurt the humus. As new additions are made to the pile, extra layers of dirt may be used to cover them.

### *Lesson 13: MANURE.*

All garden crops require a rich soil, well supplied with humus. Barnyard or stable manure is the best garden fertilizer because it furnishes this humus. In some localities it is impossible to get manures for the garden, and dependence must be placed upon commercial fertilizers.

When manures are selected for your garden, care should be taken that there are no elements in them injurious to the soil. Sawdust and shavings in manure tend to make the soil sour. If the manure used comes from stables, all shavings and sawdust should be removed if possible. The manure from sheep, pigeons, and chickens contains a great deal of plant food. These manures are more valuable than the ordinary barnyard manures but must not be distributed too thickly over your garden.

It is generally customary to work coarse manure into garden soils in the fall so that it will have time to decay. In the spring, well-rotted manure can be worked into the soil with a



digging fork. The amount of manure necessary for a garden depends upon the condition of the soil. Poor worn-out soils will necessarily need more than rich, mellow soils. From 20 to 30 tons of manure an acre is generally very satisfactory. This means about a pound of manure to every square foot of garden space.

Humus may be added to the garden soil by planting a leguminous crop. Cowpeas, soy beans, or vetch are excellent crops for this purpose. Such crops gather nitrogen from the air and store it in their roots. After these crops are plowed into the soil the nitrogen is "fixed" and becomes available for the young, growing plants. This method of supplying humus is only employed between cropping times and can not be successfully used to any great extent while the garden is being used.

#### *Lesson 14: FERTILIZERS.*

Many of our soils have been in continuous cultivation for so many years that they no longer furnish enough food for plant growth. This food must be supplied by the gardener or plants will not develop as they should.

We may supply this plant food by adding humus, manures, or fertilizers to the soil. Humus is any decayed vegetable or animal matter that we add to the soil to help plants grow. Lawn grass cuttings, rotted leaves, cover crops, etc., make excellent humus for the garden. Manure and its use was treated in Lesson 12.

Fertilizers are chemical compositions that contain food necessary for plant growth. Most fertilizers are composed of the three elements needed by plants—nitrogen, phosphoric acid, and potash. No definite rule can be given for the kind and quantity of fertilizer to be applied to your garden as this varies with the condition of the soil and the kind of crop to be raised.

Garden fertilizer may be bought from your local dealer. All such fertilizer is graded and labeled under the direction of the United States Government. A careful selection should be made and only the amount needed should be purchased. From 1,000 to 2,000 pounds of high-grade garden fertilizer may be applied to every acre cultivated. This means about 14 pounds to every 400 square feet of cultivated garden space.

As potash is scarce and expensive at the present time wood ashes may be used in its place. Unleached wood ashes should be applied to the garden at the rate of 1,500 pounds per acre.

Whenever it is possible, barnyard manures should be used to enrich the garden soil, but in some cities it is impossible to get them. In such cases, dependence must be placed on commercial fertilizers.

#### *Lesson 15: MULCHES.*

A mulch is anything placed on the soil to stop the evaporation of soil moisture. Straw and leaves are sometimes distributed over the ground about the plants for this purpose. Often the top soil is stirred into a fine dust with a common garden rake to make a surface mulch.

A mulch of any kind prevents evaporation. Soil moisture is continually coming to the surface and evaporating into the air. The moisture passes up through the soil in the same way that oil climbs the wick of a lamp. This movement of soil moisture is called its capillary action. Capillarity can not take place unless the soil particles are in contact. If this contact is broken, the moisture ceases to rise. The making of a mulch breaks this contact and thus destroys the capillarity of the soil moistures.

Plants need the moisture in the soil for their growth. In most places in the South it is necessary to conserve this moisture. During the summer months there are usually many very dry spells. At these times we may help our gardens by keeping a good dust mulch on them. This is easily done with a rake or cultivator, and does not take much time.



A shower of rain will destroy the mulch, and so, after each shower, it is necessary to prepare another mulch. Even if no rain falls, there is generally sufficient dew to destroy the mulch after a few days. The maintenance of a dust mulch throughout the growing season is best for most garden crops.

Let the pupil study the effects of the different kinds of mulches. For this purpose the following experiments are useful. Keep a record of results.

Add an equal weight of the same kind of soil to each of four tin pails of gallon size. Tall cans will serve as well. Add water to the soils, placing an equal quantity in each. Do not saturate the soils; add only enough to furnish capillary water. Number the pails of soils. Cover the soil of No. 1 with a two-inch layer of chopped straw, with a table fork pulverize the soil of No. 2 to a depth of 2 inches, pulverize the soil of No. 3 to a depth of 1 inch, and leave untouched the soil of No. 4. The pulverizing of the soils of Nos. 2 and 3 should be continued until a mulch of fine, dry soil is obtained in each. Weigh each pail and contents, and place them where they may be kept dry for several days. At the same time each day, for five days or longer, weigh each pail and calculate its loss of water.

### *Lesson 16: RADISHES.*

The radish is a hardy crop and may be grown in the open all winter along the Gulf coast. In the northern sections of the South it is generally grown in cold frames during the winter months.

#### VARIETIES.

1. Turnip-shaped or round: Scarlet Globe, Scarlet Turnip.
2. Olive-shaped or oval: French Breakfast, Early Scarlet.
3. Finger-shaped or long: Long Scarlet, Chartier, Long White Spanish, Icicle.

#### PLANTING.

Prepare the soil carefully as soon as it is dry enough to work. Remove all clods and work in a light dressing of commercial fertilizer. Smooth the surface with a rake. Sow the seed in drills from 12 to 15 inches apart (about 4 seeds to the inch is sufficient). Cover an inch deep and firm the soil over the seeds.

#### GROWING.

When the seedlings have come up, thin out to an inch apart. Keep all weeds out of the rows. If the soil is not rich enough, distribute a light dressing of fertilizer between the rows, but do not let it touch the plants. Radishes should be pulled as fast as they are large enough to eat. Successive plantings should be made every two weeks until summer and again in the autumn when cool weather comes.

Radishes may be sown between the rows of long-season crops.

### *Lesson 17: ONIONS.*

Onions can be produced on almost any good garden soil. They are one of our standard vegetable crops.

#### VARIETIES.

1. White: Southport White Globe, Silver Skin, White Silver King.
2. Yellow: Yellow Globe, Danvers, Ohio Yellow Globe.
3. Red: Red Globe, Red Wetherfield, Australian Brown.
4. Bermuda: Red Bermuda, White Bermuda, Crystal Wax.



## PLANTING.

Prepare the soil thoroughly as soon as the frost is out of the ground. Line rows about 14 inches apart. Plant the onion sets from 2 to 3 inches apart in the rows. Cover the sets with 2 inches of soil. About 8 bushels of sets are required for an acre. Let the student compute the amount of sets necessary for his garden.

## GROWING.

Onions require thorough cultivation, which is usually done by hand. Weeds must be kept out of the crop, as they seriously interfere with the growth of the onion plant. Onions may be pulled at any time after they are large enough to eat. These are known as green or bunch onions. When onions are ripe the outer skin of the bulb becomes dry and the tops fall. If seed-stalks are developed by the plant they should be removed at once, as they interfere with the development of the onion bulb.

Onions may be grown from seed either by starting in a hotbed and transplanting or else by drilling the seed in rows in the garden. With rich soil and proper care, fair-sized bulbs from seed may be grown in the garden in a single season. The usual method of planting, however, is to use onion sets.

*Lesson 18: LETTUCE.*

Lettuce thrives best in cool weather. During the winter months, in the northern section of the South, it may be grown in hotbeds. In some sections of the Gulf States it may be grown in the open all through the winter. It is generally planted in our gardens in the spring or in the fall.

## VARIETIES.

Tate's Giant, California Butter Cream, Big Boston.

## PLANTING.

To make lettuce leaves crisp and tender, the plants should be forced. Successive plantings should be made every 10 days. When grown in the garden, seeds are sown in rows about 14 inches apart and the plants thinned out. The heading plants should be at least 8 inches apart in the rows. If the loose-leaf lettuce is grown the plants may be placed much closer together. For very early plants, seeds are sown in a hotbed and plants transferred later to the garden. One-fourth ounce of seed is enough for every 25 feet of row space. Have soil well prepared and apply a good quality of stable manure, working it thoroughly into the soil. Lettuce planted in the fall may be left in the ground all winter in many sections of the South.

If seed is planted in hotbeds, plants should be transferred to cold frames about February or March and to the garden in April. Place the young plants about 8 inches apart in rows 1 foot apart.

## GROWING.

Keep the lettuce bed well hoed. In transplanting be careful not to get soil in the head. Lettuce should be grown in well-drained, rich soil. If plants are left in ground all winter, they may be protected with leaves or boards during excessive cold. Lettuce matures in from 60 to 90 days.



### *Lesson 19: TURNIPS.*

Turnips may be grown any time from February to September. The crop requires a rich, well-pulverized soil. Turnips should be grown both as a spring and fall crop.

#### VARIETIES.

Purple Top, White Flat Dutch, White Globe, Milan.

#### PLANTING.

If the crop is to be raised in the spring, the soil should be thoroughly spaded as early as the condition will permit. Do not work the soil when it is cold or wet. After spading, work in a liberal dressing of barnyard manure. Lay off the rows 18 inches apart, and sow the seed one-quarter of an inch deep rather thickly. About an ounce of seed is sufficient for every 100 feet of row space. After the plants reach 6 inches in height thin out to about 6 inches apart. The thinned out plants may be used for greens. If late turnips are grown, the seed is generally sown broadcast on some land previously used for another crop.

#### GROWING.

The cultivation of turnips is like that of carrots. Weeding and thinning should take place early. All grass should be kept away from the young plants. The turnip plant is very hardy and will withstand several frosts. Turnips may be stored in a cellar or buried in a pit in the yard. All tops should be removed before storing the plant. The turnip matures in from 60 to 90 days and is then ready for eating.

### *Lesson 20: BEETS.*

Beets grow best in a moist, well-drained soil. The red garden beet will grow in any good soil. Best results are obtained, however, from a rich, sandy loam.

#### VARIETIES.

Crosby's Egyptian, Early Eclipse, and Early Blood Turnip.

#### PLANTING.

The early varieties may be planted as soon as the ground can be prepared. The other varieties should be planted as soon as the soil becomes warm. Line your rows from 12 to 13 inches apart. Seeds are planted by hand or with the drill about 1 inch apart in the rows. After the beets are up, thin them out to 4 or 5 inches apart. The plants removed can be used for greens. Successive plantings should take place at intervals of about two weeks so as to have a supply of tender beets all the season. It is sometimes advisable to fertilize with nitrate of soda. About 200 pounds to the acre should be distributed three times during the growing season. Two ounces of seed are sufficient to plant 100 feet of row.

#### GROWING.

The beet reaches market size in four months' time. Beets should be used before they exceed a diameter of 2 inches. Those that are unused at the end of the season should be allowed to grow until frost.

The so-called beet seed is not really a seed but a fruit containing several seeds. Beets may be stored in a cellar or pit if the air is dry or may be canned for use later in the winter.



*Lesson 21: SEED TESTING IN THE SCHOOL.*

A seed consists of two parts—an embryo and an outer covering. If the embryo plant is alive, it will sprout into growth under favorable conditions. If dead, the seed is worthless. We ought to know that the seed we plant is good. It is a simple matter to test this sprouting ability of seeds by furnishing them with warmth, moisture, and air. Air is everywhere, so practically we need to provide only warmth and moisture.

## SOME SIMPLE WAYS OF TESTING THE VIABILITY, OR SPROUTING QUALITY, OF SEEDS.

1. Fill a water tumbler, a cup, or bowl half full of clean, moist sand. Place 10 seeds on top of the sand. Cover the top of the tumbler with a small piece of glass or a saucer. Keep the seeds moist and warm. Note the proportion of seeds that germinate.

2. Cut three or more pieces of blotting paper so that they will lie flat in a pie or a soup plate. Place 10 seeds between each two layers of the paper. Add enough water to moisten the paper. Keep in a warm room. Note the proportion of seeds that germinate.

3. Plant 10 seeds in the soil of a flower pot or a window box. Keep the soil moist and warm. Note the proportion of seeds that germinate.

Pupils should keep a record of these experiments, carefully noting results. If the pupil places 10 bean seeds in a germinating dish and 7 grow, let him work out the percentage of viability. It is especially important to test seeds that have been held over from previous years. It is worth while, however, to have pupils test samples of all kinds of seeds they sow.

*Lesson 22: WEEDING.*

Weeds are among the worst pests that a gardener has. They take up room that should be available for useful plants. They use plant food that should go to help the growth of more valuable crops and they deplete the soil moisture that our garden plants need so much.

A weed is any plant out of place. Cotton plants in our gardens are weeds and corn plants in our cotton patches are weeds. In each case the plant is out of place and is occupying room that belongs to other plants.

Weed seeds are easily distributed. Wind and insects help this distribution. In general, weed seeds are very hard to kill. Changes of temperature have little effect upon them. They sprout readily in small amounts of soil and will thrive well even under disadvantageous conditions. Weeds are very sturdy plants.

In order to get the weeds out of our gardens and to give our useful plants room to grow it is necessary to remove the weeds, roots and all. This is most generally done by pulling them up bodily from the ground. It is not enough to chop their tops off with a hoe, as many weeds will continue to grow after the tops have been cut off. This destroying of weeds is called *weeding*. We should know the most important weeds by name. We ought to be able to distinguish between the weeds and the young growing plants. Learn how the seedling plants look so that mistakes will not be made.

*Lesson 23: THINNING.*

When we plant garden seeds, we generally sow them thicker than we wish the plants to grow. All seeds do not sprout and therefore we sow many of them to get the desired number of plants. Then, when the seeds do sprout and grow, the mature plants will require more room for development than the seedlings. In order to give the best plants room enough we remove the others. This removal of plants is called *thinning*.



We generally thin plants in the garden early enough in their growth to avoid injuring the roots of the plants to be left in the soil. When a plant is young, a mere seedling, it has very few roots and can be removed without hurting its neighbors. After the plant has grown to several inches in height, it has many more roots running all through the soil, and its removal will sometimes hurt the roots of adjacent plants. If the roots of the plants to be left in the soil are broken, the plant suffers and may die.

Plants should be thinned out whether they are planted in rows or in hills. Thinning is especially needed with some crops, such as the vine crops, while it is not needed with others, such as the salad crops. Crops that are broadcasted are not thinned out except as plants are gathered for table use.

There is a constant struggle between plants to get food, air and moisture. The fewer plants there are in any given space the better chance each has to obtain all that it needs for growth. We can have too few plants just as we can have too many in a given space. The gardener's problem is to utilize every foot of soil to the best advantage; not wasting any or overcrowding his crops. The size of the mature plant will also help determine the amount of space needed.

#### *Lesson 24: TOMATOES.*

The garden tomato is generally raised from plants grown either in the house or in the hotbed. All early tomatoes must first be grown under glass where the plants can develop rapidly and become hardy quickly so as to withstand transplanting to the garden spot. In the southern section of the South, the early plants may be grown in a cold frame under canvas, but in the northern section, hotbeds must be used. Many people sow the seed in shallow boxes in the house and transplant when the plants are 4 or 5 inches high. If only a few plants are desired, this is an excellent method to follow. Plants are generally transferred to cold frames in March and to the garden in April or May.

#### VARIETIES.

Early tomatoes: Earlina, Early Jewel.

Medium tomatoes: Greater Baltimore, Beauty, Acme, Stone.

If the tomatoes are to be canned, the Stone variety is generally preferred.

#### PLANTING.

When plants are about 2 inches high, thin out so that plants stand about 2 inches apart. The thinned out plants may be transferred to other boxes. Tomatoes may be set in the garden as soon as all danger from frost is past. Prune the young plants to one or two stems. Set 18 inches apart in rows 3 feet apart. Have the soil well pulverized and thoroughly mixed with good stable manure. Drive stakes near each plant so that it may be trained on them.

#### GROWING.

Keep weeds down and stir the soil frequently. As the plant grows taller it should be fastened to the stakes to prevent dropping. Fasten the plant with inch bands of cloth; this will prevent cutting the stems. Remove all shoots starting at axils of the leaves. The plant matures in about 110 days.



*Lesson 25: PEAS (WRINKLED VARIETY).*

Early varieties of peas should be planted in the South from February 1 to March 15, depending upon latitude and the openness of the season. Wrinkled varieties may be planted as late as April 15 in the northern sections.

## VARIETIES.

Telephone, Nott's Excelsior, Mammoth, Long Island.

## PLANTING.

Peas require a sandy loam soil for best growth. Like beans, peas are a nitrogen-gathering crop and so do not need to be as heavily fertilized as many other garden crops we plant. A garden that has been well fertilized the previous year will be found suitable for the growth of peas without additional fertilizer. Plant seed about 2 inches deep, 1 inch apart, in rows 18 inches apart. About 2 pints of seed are sufficient for 100 feet of row space.

## GROWING.

Peas should be cultivated as soon as the rows can be seen and weeds removed from around the plants. Stake the tall varieties; do not hill them. Peas will mature from 40 to 90 days. Successive plantings should be made about every two weeks. Peas may be followed by okra, corn, pepper, or late tomatoes.

Peas are frequently damaged by the English sparrow. In many cities of the South these pests destroy whole crops. To guard against this depredation protect crop with cloth or hang strips of paper streamers over rows.

*Lesson 26: POTATOES.*

## IRISH.

The Irish potato is a good substitute for wheat and for this reason should be planted in every garden during war times. It is generally customary to plant the main crop of Irish potatoes in a field by itself as the crop requires much room for growth. However, every garden should have some early potatoes in it. The first crop in the South is usually planted from February to May and the second crop in July.

## VARIETIES.

Irish Cobbler, Triumph, White Triumph (early potatoes).

Green Mountain, McCormick (fall potatoes).

## PLANTING.

Cut the seed potato so that there will be two or three good eyes in each piece to be planted. Do not plant too many eyes to a hill. If too many are planted, there will not be enough room for the potatoes to develop. Prepare the soil thoroughly, as the potato grows beneath the surface, and if the soil is not thoroughly broken up the young tuber can not grow in size. Potatoes require a rich, sandy loam for good growth. If manure can not be obtained, use commercial fertilizer, mixing a light dressing in the bottom of the potato rows. These rows should be opened up about 2 feet apart and at least 5 inches deep. Plant about 1 quart of potato cuttings to every 100 feet of row space. Cover about 4 inches deep. The potato pieces should be at least a foot apart in the rows.



## GROWING.

Cultivate the soil with a hoe or a rake three or four times after the plants appear above the ground. When the plants are 5 or 6 inches high, the soil should be drawn up around them. This is called "hilling" the potatoes. Spray the plants with arsenate of lead two or three times to destroy potato bugs.

Irish potatoes are dug and stored in cool, dry places. Do not allow a temperature lower than 36° F. where Irish potatoes are stored. In the southern sections of the South it is better to grow a fall crop than to try to keep a spring crop through the summer.

## SWEET.

Sweet potatoes are not usually considered a garden crop in the South. They are generally cultivated in extensive tracts by themselves. However, it is advisable to have a few plants in the garden for early summer use. Sweet potatoes are not raised from seeds but from slips or small plants.

## VARIETIES.

Pumpkin Yam, Nancy Hall, Big Stem, Big Stem Jersey, Triumph.

## PLANTING.

Only well-drained land should be used for planting sweet potatoes. The planting is generally done in ridges. Plow or spade the soil well and break all clods. Mix in a dressing of stable manure or commercial fertilizer. If a plow can be used, two furrows are generally thrown together for a ridge. If no plow is available, these ridges must be made with a spade. Potatoes should be in the ground by April. About 100 plants are sufficient for every 100 feet of row space. Set plants 1 foot apart in ridges 2½ feet apart. Plant from 4 to 6 inches deep. The roots planted are generally those that are too small for marketing. If an early crop is desired, the roots must be bedded for five weeks in a hotbed before setting in the garden.

## GROWING.

Sweet potatoes grow well in dry, hot weather. After the plants are once established, little further attention need be given them. Keep weeds away from the very young plants.

Sweet potatoes, like Irish potatoes, are dug and stored through the winter. It is best to dig the potatoes before there is danger of a hard frost. Digging should occur when the soil is perfectly dry. After digging, allow the roots to lie exposed for three or four hours a day to thoroughly dry them. After they have become dry, place in a warm, well-ventilated room. Many people in the South bank their potatoes in the ground.

*Lesson 27: SWEET CORN.*

Sweet corn is a very important table vegetable. It can be grown to advantage in those home gardens that have room for the cultivation of the larger crops. Corn can be canned if desired and kept for winter use.

## VARIETIES.

Early: Golden Bantam, Adams Early.

Late: Black Mexican, Country Gentleman, Stowell's Evergreen.



## PLANTING.

Sweet corn should be planted on rich land. Spade the soil deeply and thoroughly with a spading fork. Break all clods and mix in a liberal dressing of barnyard manure. Corn has a great many small roots that spread out through the ground and therefore the soil must be broken up very fine so that these roots may have a good chance to grow. Plant the seed as soon as the soil is warm and make four or five successive plantings every two weeks. A pint of seed is sufficient for 200 feet of row. Four or five seeds should be planted 2 inches deep in hills about 3 feet apart. After the plants have grown about a foot, thin out to two or three stalks in each hill.

## GROWTH.

Sweet corn is cultivated in the same way that field corn is. Keep weeds away from the young plants. Hoe the soil about the cornstalks frequently. Gather the ears for table use when they are filled out. This is about the time when the silk on the cob begins to die. Corn loses its sweetness if not used directly after picking.

When two gardens are adjacent, corn rows should be planted next to each other. This gives a far better chance for the corn to develop than when planted alone in a single garden.

*Lesson 28: CABBAGE.*

Along the Gulf coast region of the Southern States cabbage may be sown in the open garden from late September to early January. In other sections of the South hotbeds or cold frames are used for starting cabbage plants. Seeds should be planted in frames about eight weeks before time of transplanting to the garden. Cabbages will withstand a hard freeze if the plants have been carefully hardened before transferring to the garden. Cabbages are not grown during the summer in the South, as they can not withstand the heat.

## VARIETIES.

Spring and early cabbage: Jersey Wakefield, Charleston Wakefield, Succession, Early Jersey.

## PLANTING.

Spade the soil deeply and break up all clods. Manure may be broadcasted or placed in the opened rows beneath the plant. If the latter is done, care should be taken that the manure does not come into contact with the roots of the tender plants. In order to avoid this danger place a little manure at the bottom of the row and cover with a light application of soil before plants are set. Remove plants from hotbed or cold frame and place in rows about 18 inches apart. Distance between rows should be at least 2 feet. Early potatoes may be followed by cabbages. None of the insects that attack potatoes will injure the cabbage plants. Set plants between potato rows about three weeks before potatoes are dug. After the plants are in the rows, draw the earth up around them.

## GROWING.

Cabbages are ready for use as soon as the heads are well formed. The interior of the cabbage plant should be white. It takes about 150 days for the cabbage plant to mature. Cabbages may be followed by fall potatoes, okra, or corn.



### *Lesson 29: ALL-SEASON CULTIVATION.*

Cultivation is the one indispensable thing for successful gardening. It should start when the seedlings first appear and be kept up until frost comes. Constant cultivation should be the watchword of every gardener.

Gardens can get along with less moisture if they are regularly and thoroughly cultivated. Once a week is none too often to cultivate your garden. This practice should be kept up right through the season. Besides keeping down the weeds, this regular cultivation helps to hold the moisture in the soil and allows air a freer entrance between the soil particles.

The amount of cultivation necessary will vary some with the type of soil and the kinds of plants cultivated. Those plants that are grown for their leaves, such as cabbage and cauliflower, will need all the water they can get. Others will not require as much. Light, sandy soils do not need as much cultivation as the stiffer clay soils. If these latter soils are not frequently cultivated, surface evaporation will take place rapidly and the crops will suffer from lack of sufficient moisture. All surface crusts, generally formed after a shower, should be broken up.

A garden rake is the best implement for surface cultivation. Early in the season deep cultivation is advisable, but later, when the plants have developed their root systems, it is unsafe to cultivate very deeply. If the tender roots are torn or cut, the plant suffers and may die.

When cultivating your garden, practice what is known as "level cultivation." Do not bank the dirt about the plants; keep it as level as possible. There are many good reasons for this. "Hilling" about plants tends to dry out the soil, as more of it is exposed to the air than would be if it were left level. When hoeing hills to kill weeds there is great danger of cutting the plant roots. This is less likely to occur in level cultivation.

For limited areas a small hand weeder is the only tool needed for cultivation. For larger areas the usual garden wheel hoe is advisable. Always use the tool that will produce the desired result with the least expenditure of labor.

### *Lesson 30: ROTATING YOUR GARDEN CROPS.*

When you grow certain crops on the same garden soil in such a way that they follow each other in regular order, it is called crop rotation. A rotation in which you plant corn in your garden the first year, followed by potatoes the second year, and some crop of the clover family the third year would be known as a three-year rotation. Many gardeners make the mistake of planting the same garden crop year after year in the same garden space, and hence do not rotate their crops.

#### ADVANTAGES OF ROTATION.

Experienced gardeners have found the following some of the advantages secured by rotating garden crops:

1. By planting potatoes in a new place in the garden you will get rid of the potato scab.
2. By planting cabbage in a new place club root is gotten rid of, and there are not so many insect pests.
3. Different plants will be able to get their food from different soil depths. The potato, onion, and beet get their food from the first 6 inches of the soil. When these crops are followed by sweet corn, because of the longer roots of the corn plant, its food is gotten from a greater depth.



4. A greater variety of vegetables may be grown and your labor spread out over the year.
5. If you were to grow only one crop, the ground would be bare part of the year, but with a variety of crops you can have something growing for a longer part of the time.
6. Weeds that prove quite troublesome to some garden crops, like onions, may be gotten rid of by planting sweet corn in the same space and cultivating the soil more thoroughly.
7. In general, it is a good practice to find a new place occasionally for your whole garden, if you have the room. If you do this, many plant diseases as well as insects will disappear.

### *Lesson 31: THE CARE OF THE GARDEN.*

Much of the waste in gardening is due to a lack of care after the garden has been successfully started. It is comparatively easy to plant a garden, but it requires patience and continued care to bring the garden to a full harvest. We ought not to waste anything, now that there is so much demand for food products. Every plant you have in your garden that is neglected and allowed to die is just so much loss to your country.

Every member of the U. S. S. G. should take pride in keeping his or her garden well cultivated during the summer months. The soil should be stirred after each rain in order to keep it from caking up and to prevent the soil moisture from escaping. Do not work the soil when it is too wet, as this will hurt the growth of the plants. When the soil is dry enough to crumble in the hand is plenty of time for surface cultivation. Use a rake or garden hoe to stir the soil. It is not necessary to go very deeply; just break up the top soil. This stirring of the soil should go on all through the growing period. Even in dry weather it is well to stir the soil as a surface mulch conserves the moisture that the plants need so much.

The continued cultivation of the top soil destroys all weeds and insects likely to injure the plants. While the plants are small this cultivation may go on very close to the young plants. As the plants grow larger and their roots expand through the soil, cultivation should be shallower. Care must be taken not to cut the delicate roots.

Frequent soil cultivation makes plant food more readily available to the plant. It allows heat and moisture to pass to the plant roots readily. Plants must have a great deal of food, moisture, and air while they are growing.

### *Lesson 32: GARDEN PESTS.*

The most troublesome pests in your garden are the insects. These pests are most usually abundant and destructive in gardens that are not well cared for. Clean gardens and watchful care are the best preventives. Every gardener should take pride in keeping the rows clean and the fence corners free from trash.

Gardens that are neglected in the fall after the food crops are gathered are breeding beds for insects unless all trash is removed and burned. Nearly all insects pass the winter either in the ground or under trash near the plants they feed on. Rake all the rubbish in piles and leave until cold weather comes. Insects will gather in these piles. After cold weather sets in burn the piles, thus destroying the insects. A late fall plowing or spading of the garden is advisable, as it tends to destroy the insects that hibernate in the ground. Exposing these ground insects to freezing tends to kill them.

Fungi cause much damage to our garden crops. These fungi are parasitic, that is, they feed on the plant tissues. They attack the different parts of the plant, such as the leaf, the stem, the root, or the fruit. The fungi grow on the part attacked and cause malformations



or destroy the tissues of the plant. This hurts the growth and development of the plant, and in many cases completely destroys it.

Fungi are very small spores. They can not be seen separately by the eye. They do not move about and so do not spread rapidly from plant to plant. The fungi that infect leaves generally cause discolored areas that are readily seen. Sometimes only the discolored spots are serious; at other times the entire plant is affected, causing a wilting and dying of a large amount of its foliage. The usual treatment for this trouble is spraying with Bordeaux Mixture.

*Bordeaux Mixture.*

Unslaked lime.....	pound..	1
Copper sulphate.....	do....	1
Water.....	gallons	3

Slake the lime in one half the water, dissolve the copper sulphate in the other half; mix both by stirring briskly. Spray without diluting.

Fungi affecting roots are harder to get rid of. In some cases the seeds may be treated by soaking in formaldehyde before planting. Rotation of crops helps to diminish root fungi. Diseased plants should be removed at once from the garden.

### *Lesson 33: SPRAYING.*

Many of the insects that attack your garden plants may be killed by spraying. In order to get rid of these insect pests we must know what kind of insect we are troubled with, how it lives, and how it eats.

There are two kinds of garden insects that are troublesome: the kind that bites its food, and the kind that sucks its food. The beetles and the grasshoppers are examples of the biting insects. These may be killed by spraying our plants with some poison.

The sucking insects, such as butterflies and moths, pierce the plant and draw the interior juices into their mouths. As the mark they leave is very small, it is difficult to detect their work. Exterior spraying would be of no use in killing these insects for their food supply is beyond the reach of poisonous sprays. To rid our plants of these pests it is necessary to use some strong spray that will kill them when it comes in contact with their bodies as they are feeding.

If a powdered poison is to be used on the plants, it may be easily put on with a dust bag. This bag consists of a piece of cloth through which the powdered poison can be sifted. These bags are usually tied to short poles for the protection of the user.

If liquid poisons are used, some machine must be employed. In some cases a simple waterpot may be used. There are several good hand pumps on the market that may be obtained at a small price.

Follow directions carefully when preparing poisons. Always remember that they are dangerous to handle.

*Spraying Formulas.*

**Arsenate of lead:**

- 1 teaspoonful arsenate of lead.
- 1 quart water.

**Kerosene emulsion:**

- 1 gallon kerosene.
- 1/2 pound laundry soap.
- 1/2 gallon boiling water.
- Dilute 1 to 10 parts water.

**Nicotine spray:**

- 1 scant teaspoonful nicotine, 40 per cent strength.
- 1 gallon water.



### Lesson 34: KEROSENE EMULSION.

You remember that there are two kinds of insects that may attack your garden: those that bite the leaves and stems and those that suck the sap from the plants. You have learned about the biting insects and how to protect your plants from them. Now you are to learn how to prevent damage by the sucking insects.

The best things to use to kill aphids or plant lice and other insects that suck the sap from the green leaves and stems of crop plants are kerosene wash or emulsion and the nicotine extracts of tobacco.

Kerosene, like other oils, kills any insects that it touches. The oil goes through the breathing tubes to all parts of the body, causing death. But kerosene alone also kills the green parts of leaves and stems, so it can not be used alone on crops that are being attacked by insects.

When kerosene and hot soapsuds are mixed together they make a wash or what is called an emulsion which you can put on the green surfaces of plants without hurting them. This mixture is still strong enough to kill the insects.

To make a supply of kerosene emulsion you will need a pail, a small spray pump, and a place to heat water. The emulsion is easily made by following these directions:

Heat one-half gallon of water to boiling. Slice half a bar of soap into pieces and stir it into the water until dissolved. Take it from the fire and pour these hot soapsuds into a pail into which you have put a gallon of kerosene. Then pump the mixture back and forth into the pail until the kerosene is thoroughly mixed with the soapsuds, forming an emulsion.

When the emulsion is made it can at once be diluted with water, mixing easily while still warm. One part of the emulsion should be mixed with 10 parts of water.

When the emulsion cools it becomes a jellylike mass, like soft soap. This will keep for months if stored in a cool place. Some of it may be used at any time, diluting with 10 parts of water to 1 part of emulsion. If it is first mixed with a little hot water, it dilutes more easily.

A small amount of kerosene emulsion may be made by dissolving 1 cubic inch of soap in half a pint of hot water and then shaking hard with a pint of kerosene until thoroughly mixed. This is then to be diluted with 10 parts of water.

### Lesson 35: CABBAGE PESTS.

The enemies of the cabbage are also the enemies of cauliflower and Brussels sprouts. Radishes, kohlrabi, and turnips are attacked by many of the same pests.

*Cabbage worm.*—This is one of the most destructive of our garden pests. The worm is really a caterpillar, velvety green in color, and almost the same shade as the cabbage leaves. The adult is a butterfly, almost white in color, with dark spots on its wings.

Control: Spray when plants are young with lead arsenate. After the plants are headed and the caterpillars have entered the head it is almost impossible to get rid of them. Birds are a great aid in ridding a garden of these pests and should be encouraged to make their homes near us.

*Cut worms.*—These insects attack the cabbage early in the spring and cut off the young plants. In the fall they sometimes do further damage by feeding on the leaves. Sprays will not affect cut worms. They must be destroyed by placing poisoned bait about the plants. This bait is usually made from 1 pound of bran, 1 teaspoonful of Paris green, 1 or 2 ounces of molasses, and one-fourth of an orange, with peel, mashed up. Add enough water to make a paste.

*Cabbage aphid.*—This is a small green aphid that attacks the leaves. Use a nicotine spray, as the aphids are sucking insects and are not killed by usual poisons.



*Harlequin bug.*—A bright-colored, red and black bug, that feeds on the plant by piercing the tissues and sucking the juices.

Control: No insecticide will reach this pest. Clean up all rubbish as a preventive.

*Brown rot.*—A fungus disease that affects the head and stalk of the cabbage plant. Causes brown decay.

Control: Remove infected plant at once and burn. Do not plant cabbage if rot has been present in plot.

### Lesson 36: WHEN TO GATHER YOUR VEGETABLES.

If you take good care of your garden all through the season, following the directions given in this manual, you may expect to gather a good crop. This table tells you when to gather several kinds of vegetables that you will grow.

Crop.	Time to gather.	Remarks.
Beets.....	When young.....	Beet greens, when tender, make a delicious dish.
Brussels sprouts.....	After frost.....	Cold improves this vegetable.
Cabbage (early).....	When three-fourths headed.....	May be left until frost.
Carrots.....	When young.....	Should always be gathered young when used for soups.
Chard.....	When outside leaves are about 1 foot high..	Cut lightly at first. Midribs of leaves can be used like asparagus.
Kohlrabi.....	Before skin hardens.....	The bulb should be about two-thirds as large as a baseball.
Lettuce.....	While leaves are tender.....	Small, young lettuce leaves make best salads.
Lima beans.....	While still green.....	Pods should be spongy at the tip.
Melons.....	When they crack around the stem.....	Let your melons ripen on stem if possible.
Potatoes.....	When vines are dry.....	Harvest a few at a time except at end of season.
Radishes.....	When young.....	Radishes get tough and spongy with age.
String beans.....	When they snap readily.....	Tips should be soft and easily bent or twisted.
Shell beans.....	When pods are well filled.....	Do not let them dry on vines.
Sweet corn.....	When it has just come to milk with blackened silks.	Should be used as soon as picked.

### Lesson 37: SELLING YOUR VEGETABLES.

After your own home table has been supplied with all the vegetables that it needs you should sell your extra products as fast as they are ready for the market. Your home needs should be supplied first before you attempt to sell to your neighbors. If you raise enough vegetables to supply the needs of your own family, you are doing a patriotic duty, because in so doing you are making it possible for other vegetables to go to our soldier boys.

You should not only supply your family needs and pay for the cost of your garden, but you should make a neat profit on the vegetables you raise. Don't you think it would also be a fine idea to invest your vegetable profits in War Savings Stamps?

Most selling from our village or city gardens is done by peddling among our neighbors. This encourages thrift and business system on your part. It is a training that you boys and girls ought not to neglect. To sell your vegetables readily there are a few rules that should be followed.

1. Gather all vegetables when they are ripe and ready for the market. Do not pick half-ripe fruits; choose only those that are ready for a quick sale.
2. Grade your vegetables according to size and quality. Do not have a mixture of large and small sizes and good and poor vegetables.



3. Make your display of fruit attractive. Customers will buy more quickly and pay more if the goods offered for sale look neat and clean.

4. Do not put the best vegetables on top while poorer ones are hidden beneath. It would be better to separate the kinds and sell them separately.

5. Be honest. Do not claim for your goods what they will not show. Try to keep your customers by honest dealing.

6. Whatever boxes or baskets are used for selling or displaying your vegetables, make them attractive.

Build up a reputation for yourself for honesty and fair dealing.

### *Lesson 38: STORING YOUR VEGETABLES.*

The storing of vegetables that are not used as soon as gathered is very important, as it is a fine way to lay up food for future use. It is a way to Hooverize many vegetables that you can't eat at once. Especially at this time, we must save and use every product possible, and we must not have any waste.

Potatoes, carrots, onions, beets, turnips, and many other of your garden products may be kept for winter use by storing. You will get the best results from storage if care is taken regarding the proper temperature and ventilation needed, the amount of moisture necessary, and the quality of the vegetables when first put in storage.

Some vegetables may be stored on your mother's pantry shelves while others should be put in the cellar, and still others kept in outdoor pits. Sometimes several neighbors join together and build a pit or storage cellar for their vegetables. This is known as community storage. When several gardeners do this the cost to each is small, and the vegetables can be handled more easily.

If you store your vegetables in the cellar, you must take care to see that there is enough ventilation and that the proper temperature may be easily kept. The cellar should have a good dirt floor, or, if it has a concrete floor, the floor should be covered with 3 inches of sand. This floor should be kept moist. Beets, celery, cabbage, parsnips, turnips, and potatoes may be stored in the cellar.

The best way to store vegetables outdoors is to use a pit. To build this, dig a hole in the ground 6 inches deep and as wide and long as necessary to hold the vegetables to be stored when piled up. Before putting the vegetables into the pit it should be lined with hay or straw. Cover the piled vegetables with several inches of hay or straw, and then cover the mound with 4 or 5 inches of soil. As cold weather comes on, add 10 or 12 inches of soil to the covering of the pit.

### *Lesson 39: TYPES OF MARKETING.*

Community types:

- (a) Children's community market in an attractive central location.
- (b) Children's space in the municipal market.
- (c) Children's market at the school.

Individual types:

- (a) Children's market at home. This plan provides for sale to those who call at the home, as well as that sold to neighbors.
- (b) By use of parcel post.

Cooperative types:

- (a) Provision for sale of produce through the U. S. S. G. A. officers at central location in city, at school, or in the municipal market.



## THE MARKET.

## Preparation:

- (a) All produce should be in the best possible marketable state.
- (b) Produce should be graded according to size.
- (c) All produce should be clean, fresh, and crisp.
- (d) Produce should be graded according to quality.

## Display of vegetables:

- (a) Make the market display attractive.
- (b) Use uniform and inexpensive containers.
- (c) See that all produce is free from defects.
- (d) Arrange the display according to types.

## Some examples of various types:

- (a) Root type—Carrots and turnips.
- (b) Head type—Cabbage and head lettuce.
- (c) Stem type—Celery and potatoes (underground).
- (d) Leaf type—Leaf lettuce and spinach.

*Lesson 40: JUDGING THE HOME GARDENS.*

The fairest way to judge a garden is to visit it while it is in operation. The judges can then see the conditions involved in making it successful, and can estimate pretty fairly the various points to be considered. Such an estimate is difficult at best, and the following score card is offered simply as a suggestive guide, which any set of judges may modify to suit themselves. Any such modifications should, of course, be agreed upon in advance.

## SCORE CARD FOR JUDGING HOME GARDENS.

A. General appearance.....	20
Arrangement of rows.....	5
Freedom from weeds.....	5
Cultivation and care.....	5
Proper thinning.....	5
B. Choice of vegetables.....	15
For home use.....	5
For marketing.....	5
For canning.....	5
C. Freedom from pests.....	15
Spraying for insects.....	5
Spraying for disease.....	5
Other remedial measures.....	5
D. Evidences of.....	15
Continuous cultivation.....	5
Companion cropping.....	5
Succession cropping.....	5
E. Care of tools.....	10
F. Value of produce.....	15
Used at home.....	5
Sold in the market.....	5
Used for canning.....	5
G. Accuracy of garden records.....	10
Total.....	100











