



HARRIS SEEDS

CARE OF THE HOME GARDEN

*A Guide to Help You Grow
Better Vegetables and Flowers*

1974 EDITION



with the compliments of

JOSEPH HARRIS CO., INC.

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YOUR GARDEN

We hope this pamphlet will help inexperienced growers to have a thriving garden, and others may find in it some useful suggestions. The general information that follows applies equally well to vegetables and flowers.

It is important to choose an open, sunny location for your garden where the plants will have plenty of light and good air circulation. The best soil is a sandy loam but both sandy and clay soils can be used if well drained. Light sandy soil usually needs humus, peat moss, compost or manure. Heavy clay can be made more workable with large amounts of peat moss, vermiculite, or perlite, and compost helps also.

Make your soil as rich and fertile as possible. The old recommendations called for plenty of well-rotted manure, and it is still excellent if available. For most modern gardens, peat moss, vermiculite and compost will substitute well, with a good garden fertilizer added. Mix thoroughly into the soil in early spring and add fertilizer along the rows during the season. Maintaining the humus or organic matter in your soil is most important for soil structure, proper aeration and water-holding capacity. Continue to use peat moss or compost liberally and sow "green manure" or cover crops whenever the land is not being used. Annual Rye Grass is excellent for this purpose and also for winter cover, sowed right on growing crops in August or early September.

Compost is an excellent source of soil building humus and every garden should have a pile. It may be either a pit about 3 x 4 ft. or built above ground. Put on it leaves, weeds, straw, grass clippings, waste vegetable material—anything that can be rotted down. Use soil or sod as needed to hold it together. Add a little fertilizer or manure to hasten decay and keep moist. By the next spring this half-decayed material may be spread over the ground and turned under, or the pile may be turned and left to rot further. It will then make excellent soil for raising potted plants.

PREPARING THE GROUND—It is a good plan to plow or spade a part of the ground in the fall. When this is done, early crops can be sown without so much delay in the spring. When plowing or spading is done in the spring, work up the whole garden to a depth of 8 inches as soon as the soil is in proper condition. Don't start too early, however. Wait until the soil dries out to the point where you can squeeze a handful that will

still hold its shape but will crumble when you press it with your thumb. It is then in ideal condition for working up. Sow early seeds such as peas and spinach at once and allow the rest to stand for a few weeks before sowing the other crops. Some weed seeds will germinate and may be killed by surface cultivation before later plantings are made. Working the ground early also helps keep it from drying out. Work it over as needed to keep weeds down but do not compact it too much. Rake over the area just before planting to loosen the surface.

MARKING ROWS—To get nice straight rows, stretch a heavy cord or rope taut along the ground and walk on it. It leaves a good indentation in soft earth. The corner of a hoe or a pointed stake will make a suitable furrow for most seeds.

SOWING SEEDS—If the soil is in good condition, moist and fairly loose, it is not difficult to get seeds up. Use care about depth of covering—sowing either too deep or too shallow could cause failure. Early in the season when the soil is moist and cool, shallow planting works well. Small seeds like lettuce and carrots may be covered only $\frac{1}{4}$ in. Later when the ground warms up and dries on the surface, somewhat greater depth is preferred. The "rule of thumb" is to cover three times the diameter of the seed.

If the soil is on the dry side, be sure it is firm around the seeds. Cover by hand or press into the soil with the back of a rake. Watering after planting is generally very helpful but if a heavy rain forms a crust over the row, it should be gently loosened.

DO NOT SOW TOO THICK—Inexperienced gardeners are apt to plant seeds much too thick, believing that they will therefore make sure of getting them to grow. The usual result is that the seedlings come up weak, spindly and crowded and are hard to thin out. Use a little more care in preparing the ground, sow thinly and you will get your crops off to a much better start.

TOOLS—The basic tools you need are a spading fork, a garden rake and a hoe. Others, including power tools, may be added as convenience and the size of your garden require.

SPRAYING OR DUSTING—Control of insects and disease requires spraying or dusting the plants. If possible, you should have a good serviceable hand sprayer or dust gun. The size depends on the size of your garden.

See next page for a handy Home Garden Vegetable Planting Chart.

HOME GARDEN VEGETABLE PLANTING CHART NORTHEASTERN STATES

	Quantity	Will Plant	Plant or Hill Spacing In Row	Distance Between Rows-Hand Cultivation	Planting Time		Plants Outdoors
					Seeds Indoors	Seeds Outdoors	
Asparagus	Pkt.	75 ft.	1-2 in.	20 in.		April-Early May	April
Beans, Bush	½ lb.	75 ft.	2 in.	2-3 ft.		Late May to Mid-July	
Beans, Lima	½ lb.	75 ft.	8-10 in.	2½-3 ft.		May 20-25 or after June 10	
Beans, Pole	½ lb.	50 "hills"	3 ft.	3½-4 ft.		Late May	
Beets	1 oz.	80 ft.	2 in.	14-18 in.		Late Apr. to Mid-July	
Bróccoli	Pkt.	200 plants	1½ ft.	2½-3 ft.	Late Mar.-Apr.	May-June	Early July
Brussels Sprouts	Pkt.	150 plants	2 ft.	3 ft.		Mid-May-June	Early July
Cabbage, Early	Pkt.	250 plants	1 ft.	2½ ft.	Feb.-Mar.		Late Apr. to May
Cabbage, Late	Pkt.	250 plants	1-1½ ft.	3 ft.		Mid-May-June	Early July
Cabbage, Chinese	Pkt.	40 ft.	1½ ft.	2 ft.		July	
Carrots	½ oz.	150 ft.	1½-2 in.	1½ ft.		Late Apr. to Mid-July	
Cauliflower	Pkt.	150 plants	2 ft.	3 ft.		Mid-May	Early July
Celery, Early	Pkt.	400 plants	6 in.	3 ft.	Late Feb.		May-Early June
Celery, Late	Pkt.	400 plants	6 in.	3 ft.	Mid-Apr.	Early May	June to Early July
Corn, Sweet Early	½ lb.	500 ft.	1 ft.	3 ft.		Late Apr.-Early May	
Corn, Sweet Late	½ lb.	600 ft.	1-1½ ft.	3 ft.		Mid-May to Late June	

Cucumbers	Pkt.	20 "hills"	1-2 ft.	5-6 ft.		Late May to Late June	
Egg Plant	Pkt.	30 plants	2 ft.	3 ft.	Late Mar.		Late May or Early June
Endive	Pkt.	30 ft.	8-12 in.	1½ ft.		Mid-July	
Kale	Pkt.	25 ft.	10-12 in.	2 ft.		Late Apr. to Mid-July	
Kohl Rabi	Pkt.	40 ft.	6 in.	1½ ft.		Apr. to July	
Lettuce, Head	Pkt.	40 ft.	12-15 in.	1½ ft.	Mar.-Apr.	Apr. to July	Late Apr. to Early May
Lettuce, Leaf	Pkt.	40 ft.	6 in.	1½ ft.		Late Apr. to Aug.	
Muskmelon	Pkt.	20 "hills"	2-3 ft.	6 ft.	Late Apr.-Early May	Late May	Early June
Watermelon	Pkt.	8 "hills"	4 ft.	8 ft.	Late Apr.-Early May	Late May	Early June
Onion Seed	½ oz.	100 ft.	1-3 in.	1-1½ ft.		Late Apr. to Mid-May	
Onion sets	1 lb.	50-75 ft.	2-3 in.	1-1½ ft.			Apr.-Mid-May
Onion plants	100	35 ft.	4-5 in.	1-1½ ft.			Apr.-Mid-May
Parsley	Pkt.	30 ft.	4-6 in.	1½ ft.		Apr.-May	
Parsnips	Pkt.	25 ft.	2 in.	2-2½ ft.		Apr.-May	
Peas	½ lb.	50 ft.	½-1 in.	2½-3 ft.		Apr.-Early May	
Peppers	Pkt.	75 plants	1½ ft.	2½ ft.	Late Feb. or Mar.		Late May to Early June
Radishes	Pkt.	25-30 ft.	1 in.	1 ft.		Apr.-May to Aug.	
Rutabaga	Pkt.	50 ft.	6-8 in.	2 ft.		Early July	
Spinach	1 oz.	80 ft.	3-6 in.	1-1½ ft.		Apr. to Aug.	
Squash, Summer	Pkt.	15-20 ft.	3-4 ft.	3-4 ft.		Late May to Late June	
Squash, Winter	Pkt.	15 ft.	6-8 ft.	6-8 ft.		Late May to Mid-June	
Swiss Chard	Pkt.	15 ft.	8 in.	1½ ft.		Apr.-July	
Tomatoes	Pkt.	150 plants	2-3 ft.	4-5 ft.	Late Mar.-Early Apr.		Late May to Mid-June
Turnips	Pkt.	50 ft.	2-3 in.	1½ ft.		Mid-July-Aug.	

STARTING SEEDS EARLY INDOORS

One of the greatest delights of gardening is starting your own plants from seed, and it is easier than you may suppose. Modern developments have made success far less uncertain, and conditions for growing fine husky plants are not at all difficult to set up.

In the past the greatest problem in starting plants indoors was the "damping-off" diseases, caused by soil-borne fungi. If seedlings are grown in unsterilized soil, these fungi will often kill them almost as soon as they sprout, but this danger has now been largely eliminated by the use of artificial soil mixes.

Based on Cornell University research, these mixes are not difficult to prepare and are also available in ready-made formulas such as Jiffy Mix and Harris' Seed Starter Mix. To make one peck of the "Cornell Mix" take 4 quarts of No. 2 grade horticultural vermiculite, 4 quarts of shredded peat moss, 1 tablespoon of 20% powdered superphosphate, 2 tablespoons of ground limestone and either 1½ tablespoons of 33% ammonium nitrate or 4 tablespoons of 5-10-5 fertilizer. (Tablespoon measures are level.) Mix *very* thoroughly.

Not only is this mixture sterile so that it does not support disease organisms, but its aeration and drainage are excellent, making it much easier to grow sturdy plants than in ordinary garden soil.

When using an artificial soil mix, make sure it is *thoroughly* moistened. Apply a light spray at least three times the day before sowing. (The Waterfog Nozzles which deliver a fine mist are excellent for this purpose.) If good drainage is provided in your seedling container, there is no danger of over-watering, since the mix will soak up all it can hold and the rest will run off. Make sure by stirring that it is wet all the way through.

Another important modern development is the remarkable Jiffy-7 Pellets. These highly compressed pellets of peat and plant nutrients are enclosed in a plastic net. When soaked in water they swell in minutes into a cylinder about 1-3/4 inches in diameter and 2-1/8 inches high, combining pot and potting soil in one handy unit. Seed may be sowed in them directly or they may be used for transplants or cuttings. They support excellent growth, and when the plants are ready to go in the garden, they can be set out with no check or wilting, since they are left in the pellets and their roots grow out through the plastic net.

Milled sphagnum moss is still a popular medium also. It is usually spread in a ¼-in.

layer over regular soil and sprayed several times until it is damp right through but not soggy.

If you use your own compost for seed starting, it must be sterilized before sowing to avoid damping-off. It should be baked in the oven long enough for *all* the soil to reach 180 degrees for half an hour. As a guide, bury a potato in the soil and leave until it is thoroughly cooked.

CONTAINERS: Many types of containers are satisfactory, such as plastic trays or shallow wooden boxes. Be sure your container has adequate drainage, however, to prevent over-watering. Fill to about ½ in. from top, level and firm gently but do not pack too tightly. Be sure the soil is uniformly moist.

Make rows by indenting the surface slightly, and scatter the seeds thinly in the rows. Do not sow too thick as crowding produces tall, weak "leggy" plants. Fine seeds like petunias and snapdragons fall into crevices in the surface and need not be covered. Larger seeds should be lightly covered. Sprinkle the surface with a fine mist but do not saturate. Slip a clear plastic bag over the tray or flat and place in a warm light spot, but not in direct sunlight. Fluorescent lights over the tray are excellent.

Check occasionally to see that the surface is still moist, but further watering is not usually necessary. When the seedlings are up, remove the cover and set container in a sunny window or leave under lights. It is important to have plenty of light to grow good plants.

Once the cover has been removed, it will be necessary to water occasionally. When the surface begins to show signs of drying out, set the container in a pan to soak up water through the drainage holes or water with a light spray. About three weeks after the seedlings sprout, a *light* feeding of soluble fertilizer may be applied.

TEMPERATURE: Allowing the seedling flat to get too cool is a common cause of failure. Particularly at night, a flat set next to a window may get much colder than you realize. For most seeds if you maintain a steady temperature of 68-75° for twenty-four hours a day until the seedlings are well up, you will have better results.

STARTING PLANTS UNDER ARTIFICIAL LIGHT: Fluorescent lights are a great help in producing better growth of newly started plants during dark winter

days. A two-tube fixture with reflector and 40-watt daylight bulbs is excellent. Do not use too little light or the plants will be weak and spindly. The fixture should be adjustable so that the lights can be kept about 6 inches above the tops of the plants. Leave the lights on for 14 to 16 hours a day, but it will do no harm if they occasionally stay on all night.

When the plants show one or two sets of true leaves, they are ready to transplant. They may be set in shallow boxes 2 to 3 inches deep, about 2 inches apart each way, but the best method is to transplant into Jiffy Pots or Strips, as they promote excellent growth. The soil should be fairly moist and finely worked and should contain some peat moss, sand or vermiculite to keep it loose and well drained. The containers should be filled solidly but not packed too tightly, and the plants should be set firmly enough so that they will not stir when you tug on the tip of a leaf. Water occasionally but not too much, since plants can be injured by over-watering.

About a week before the plants are to be

set in the garden, water them with a soluble fertilizer such as Rapid-Gro. They should be taken outside in the daytime to a sheltered spot when temperatures are about 60 degrees or higher, and brought in again at night to protect them from frost. This hardens them and makes them more resistant to adverse conditions and diseases. In a cold frame or hot bed, ventilate or remove sash entirely unless frost threatens. Then, at the proper time they can be transplanted into the garden.

Many plants, such as Petunias and Snapdragons, will benefit by pinching out the center terminal causing them to branch more freely.

TRANSPLANTING—Plants that are to be transplanted from frames or boxes to the open ground should be thoroughly watered at least 3 or 4 hours before taken up. The soil and the Jiffy Pot should be wet down to the very bottom. When setting out the plants, see that the soil is pressed firmly around the roots or the pot. Water with about $\frac{1}{2}$ pint per plant. Vertagreen or other starter solutions are a great help in getting plants established quickly.

WHEN TO SOW SEEDS

Dates given for planting and sowing in the following pages refer to the latitude of Western New York, and will apply to New England (excepting the extreme northern parts), Northern Pennsylvania, Michigan and Wisconsin. See the Vegetable Planting Chart on

pages 2-3. Sections further south, such as Long Island, New Jersey, southern Pennsylvania, Ohio and the Middle West have longer seasons and planting should be done correspondingly earlier than the dates mentioned here.

ASPARAGUS

TO GROW ROOTS FROM SEED.

Distance between Rows: 20 in.

Rate of Sowing: 1 or 2 seeds per in.

Cover: $\frac{1}{2}$ to 1 in. deep

Thin to: 2 or 3 in.

Time to sow: Early as possible

A deep, well-drained, sandy loam with good fertility will produce the best roots. Asparagus seed germinates very slowly, so drop a few radish seeds in the row to mark it. Weed carefully—asparagus emerges as a thin straight shoot that is somewhat difficult to see when small. Use malathion or sevin if beetles or worms appear.

Ordinarily the roots are dug early the following spring, sorted for size and vigor, and transplanted to the permanent bed.

In home gardens a row of asparagus along the side or back of the bed can be grown directly from seed if desired. The beds will require more thorough preparation at the start, with lime, fertilizer and organic matter worked in deeply. Allow at least 3 ft. on each side of the row. After the plants are well established, thin to one strong plant every 18

inches. Mulch with weed-free hay or straw for weed control and to prevent winter injury.

SETTING OUT ASPARAGUS ROOTS—

Since asparagus makes a large, vigorous deep-rooted plant that should thrive and produce for 10 or 15 years or more, thorough preparation of the soil is essential. Dig and work the soil more deeply than for most crops and incorporate large amounts of humus, manure or peat moss. Also mix in a complete garden fertilizer, 4 or 5 lbs. per 100 sq. ft.

Plant the rows 4 or 5 ft. apart, setting the roots 18 in. apart in the row. Dig a trench or furrow about 8 inches deep and work up some loose soil at the bottom. A light application of fertilizer may be added and mixed in. Select strong crowns and spread the roots out in the bottom of the trench, crowns in center. Cover firmly, but at this time do not put more than 2 in. of soil over the crowns. As the new shoots come up, the furrow can be gradually filled in.

In the spring, apply a complete fertilizer and cultivate as early as possible to avoid injury to the stalks.

Asparagus should not be cut at all the year it is planted, and even the following spring, it should be left alone. But no one can resist cutting a few spears the first week or ten days and it does no great harm. Two years after setting, it may be cut for 4 or 5 weeks, and in later years until late June or early July.

We recommend another application of fer-

tilizer when cutting is stopped, to encourage the best possible growth of tops in the summer. They may be left standing all winter to be disced under in the spring, or cut and removed in late fall when they have dried.

Malathion and sevin are useful for control of asparagus beetles. For weed control use Simazine or salt. Use 2 lbs. of salt in a gallon of water and wet weeds thoroughly. It is fairly effective when weeds are small — not over 3 in. high.

BEANS

GREEN OR YELLOW BUSH VARIETIES

Distance between rows: 2-3 ft.

Rate of sowing: 2 in. apart

Cover: 1 to 1½ in. deep

Beans are a warm weather crop and usually do not germinate satisfactorily when the soil is cold. However, treated seed permits earlier planting, even as early as the cherries bloom (near the first of May here). Follow with successive plantings every two or three weeks until late July. Make a couple of larger plantings in June to have enough for freezing.

Snap beans, green or wax, are generally successful in the garden on a wide variety of soils. Work in a little fertilizer before planting, and irrigate in dry weather for best production and quality.

BUSH LIMA BEANS

Distance between rows: 2½-3 ft.

Rate of sowing: 2 in. apart

Cover: 1 to 1½ in. deep

Limas are more sensitive to soil temperatures than snap beans and are best planted somewhat later. With treated seed, late May or early June is about right here. We find two tricks to get better yields: plant on rather heavy, not too rich land, and thin the plants quite far apart. 8 to 10 in. Excess

fertilizer seems to make big vines with little set.

POLE BEANS

The tall-growing beans, limas or regular, can be grown in several ways. We use a trellis made by stretching two wires between sturdy end posts, one wire near the ground and the other 5 or 6 ft. high, and running string up and down between the wires. "Trainetts" make a fine trellis in this way. Another method is to use wood poles 6 or 7 ft. long, sunk in the ground and tied at the top in units of three. Plant seeds around the poles or along the row, and when well up, thin them carefully. Leave only 2 or 3 vines per pole, or per foot of row, for limas and a few more for other pole beans.

On all beans, watch for Mexican Bean Beetles on the undersides of the leaves. If you find beetles or clusters of bright orange colored eggs, dust or spray with sevin or malathion, directing the insecticide underneath the leaves.

Field beans are grown like the bush types but allowed to ripen until the beans are fairly hard in the fall. Shell them out, dry thoroughly and treat for weevils by heat, placing the dry beans in an oven at about 130° F. for 30 minutes.

BEETS

Distance between rows: 14-18 inches

Rate of sowing: 1 or 2 seeds per inch

Cover: ½ to 1 inch deep

Thin to: 2-3 inches apart

Beets are not hard to grow, but to raise really good, tender beets and get them early, requires a little more attention than is often given to this simple crop.

Sow just as early as possible in well and deeply prepared soil. Thin when plants are still small and hoe frequently, working a little fertilizer along each side of the row as

soon as the beets come up. Irrigate if possible during dry weather. Harvest some while still small—they are delicious. Successive plantings can be made until July or early August for tender fall beets, and some for storing.

Many people enjoy beet greens which are easily grown by sowing a bit thicker and not thinning. Fertilize and water to promote quick growth, and cut the tops when 6 or 8 inches tall. Both greens and roots may be enjoyed by thinning only moderately when small and pulling every other one for greens.

BROCCOLI

EARLY CROP

Sow indoors: March or early April.
Transplant to: Jiffy Pots or 2 inches apart
in flats or frames.
Set plants outdoors: Late April or early May.
Spacing: 1½ ft. apart in 3 ft. rows.

LATER CROP

Sow outdoors: Early spring through June.
Sow thinly, in well prepared soil. Thin
to 1½ to 2 ft. apart, and transplant the
extras when about 6 in. tall.
Distance between rows: 2½ to 3 ft.

This hardy, easily grown crop is most rewarding in the home garden. It is delicious to eat fresh, matures quickly and can be harvested over a considerable period. For early spring crop, start with indoor or frame-grown plants and then sow some outdoors in May and June as outlined above. Plants left

in the seed row mature somewhat earlier than those transplanted, further extending the harvest. Broccoli is an excellent late season or fall crop and may be seeded as late as July 1st. The plants and heads will stand considerable frost. Be sure to cut the large center heads before they get past prime stage and the buds begin to open. Side shoots are then produced in abundance.

Cabbage worms or loopers are often a nuisance. Spray or dust with sevin as soon as they appear, and apply at weekly intervals as long as necessary, being careful to cover the undersides of the leaves. Use malathion for aphids. To check root maggots on early-set plants, spray the stems with diazinon at planting time and the soil around the plants a week later.

BRUSSELS SPROUTS

Rate of Sowing: 3 or 4 seeds per inch.
Cover: ¼ in. deep.
Transplant: Late June or early July.
Spacing: 2 feet apart in rows 3 feet apart.

This crop is handled much the same as late cabbage, sowing outdoors in May and transplanting to the permanent bed when 5-6 inches tall.

When the sprouts are formed, remove some of the lower leaves and stems. The largest sprouts on the bottom should be picked off and eaten as they get ready, and the plants will continue to produce more sprouts until stopped by very cold weather.

A good trick: about mid-September, pinch out the growing point or center of the plant

at the top. This encourages more rapid development of the upper sprouts.

Sevin may be used on the young plants for worms. Then spray with malathion at weekly intervals throughout the season to prevent aphids from getting started. Do not spray within 7 days of harvest.

If it is desired to keep the sprouts into the winter, take up the plants with some soil on the roots and stand them up together in a cold cellar, root house or pit, where they will not freeze hard; moist earth should be packed around the roots to keep the sprouts crisp and tender. The plants may be left in the open ground until very cold weather. Moderate freezing will not injure them and is better than too much warmth.

CABBAGE

EARLY CROP

Sow indoors: February or March.
Cover: ¼ in. deep.
Transplant to Jiffy Pots or thin to 2 in. apart.
Set outdoors: Late April.
Spacing: 12 in. apart in rows 2½ to 3 ft. apart.

Sow about six weeks before you expect to set the plants in the open ground. The plants should be grown at cool temperatures with plenty of light and air circulation. The last week before setting out, the sash should be left off entirely in order to harden the plants. If properly conditioned, they will stand considerable frost, and may be set out as early as the ground can be worked. Make the soil rich with plenty of fertilizer.

The cabbage root maggot can be a difficult pest, especially on early cabbage. A fly lays

eggs at the base of the plant, and the larvae hatch quickly, move down the stem and feed on the roots, sometimes destroying nearly every plant. Spray the stems of the plants with diazinon when setting them out. Then make another application to the soil around the base of the plants one week later.

FALL AND WINTER CROPS

Sow outdoors: May 10 to June 5th.
Rate of sowing: 3 or 4 seeds per inch.
Cover: ¼ in. deep.
Transplant: June 20 to July 10.
Spacing: 12-18 inches apart.

A good succession of harvest is obtained by setting early, midseason and late varieties all together. For winter storage, late-set plants are best, provided they have time to

mature, as they will keep better if not over ripe.

Cabbage will grow on many soils, but a sandy loam or light clay loam is more suitable than very light or too heavy land. Fertilize well before planting, working the soil deeply. If the land is prepared early and kept clean until the plants are set, there should be little weed problem in the crop.

Transplanting should preferably be done on a cool, overcast day, and the roots must be kept moist in handling. Use a starter solution

such as Vertagreen in the transplanting water. Make sure the plants are set tightly, and irrigate if the weather becomes hot and dry. Side-dressing with extra fertilizer after 2 or 3 weeks is helpful.

Cabbage worms and loopers are the chief insect problem and sevin, malathion or diazinon may be used up to 7 days from harvest. They will help to control aphids also. Diazinon sprayed on the stems at planting time and on the soil a week later will check cabbage root maggots.

CHINESE CABBAGE

Distance between rows: 2 to 2½ ft.

Rate of sowing: 1 or 2 seeds per in.

Cover: ½ in. deep.

Thin to: 12 to 18 in. apart.

Hybrid Chinese Cabbage may be sowed in early spring, but do not sow the standard

type until after July 1 as it bolts to seed quickly if planted early. It matures in 8 to 10 weeks and will succeed on any good soil.

Spray or dust the young seedlings with sevin to keep flea beetles off. If aphids appear, use malathion.

CAULIFLOWER

For early crop, sow the seed indoors in late February or March and raise the plants in the same manner as cabbage plants described above. Transplant to warm rich soil when the plants are about 6 inches high, setting the plants in rows 3 feet apart and 2 feet in the row.

Cauliflower is difficult to raise for an early crop as it does not head well during the hot summer months. For the amateur gardener it is much better to raise cauliflower that will head in September and October, and for this purpose the seed should be sown outdoors in a well prepared seedbed in May and transplanted in late June or early July.

Cauliflower needs a moist, very fertile soil and does best where the atmosphere is cool and humid. It is very important that the plants are not checked in growth at any time. They must be kept growing steadily and

vigorously or the heads will be small and poor. Cauliflower responds well to fertilizer and one or two side dressings during the growing period will be of great help.

When the heads commence to form, about silver dollar size or larger, gather the large outside leaves together over the head and tie them with twine or raffia, thus protecting the head from weather and light. The development of the head can be checked by pulling open one side, without untying, until ready to cut.

To control maggots, spray the stems with diazinon when setting out the plants and follow this 7 days later with another application on the soil around the base of the plants. To control aphids and worms, spray with malathion or diazinon up to 7 days from harvest.

CARROTS

Distance between rows: 15 to 24 in.

Rate of sowing: 3 or 4 seeds per inch.

Cover: ¼ to ½ in. deep with fine, light soil.

Thin to: 1½ to 2 in. apart.

The land for carrots should be light, moist and deeply worked, and should be made rich with manure or fertilizers. Plow or spade the soil as deeply as possible and work into fine condition. Do not let the soil become

compacted as carrots are generally short, rough and of inferior quality if grown in hard soil. If possible, plant them on raised beds or ridges and keep the soil as loose as possible. Carrots grown in this way are of fine quality.

Sow at any time from early spring to mid-July. Make successive sowings every two or three weeks for a continuous supply of tender young carrots throughout the season.

Sow thinly and cover lightly. Do not allow a crust to form over the row. The seed germinates slowly and it is a good plan to sow a little radish seed with the carrots to mark the rows for cultivating.

It is most important to weed and thin the carrots just as soon as they come up and to keep clean afterwards. A little fertilizer applied alongside the rows shortly after the

plants come up is often beneficial.

The roots can be stored in moist sand in a cool cellar, or outdoors in pits. A little freezing will not hurt them.

For young, tender carrots for table use in the fall and winter, sow the seed thinly about July 10th-20th, and do not thin. These little carrots grow to about the size of one's finger and are delicious either raw or cooked.

CELERY

EARLY CROP (August and September)

Sow indoors: Late February.

Cover: 1/16 in.

Transplant or thin to: 2 or 3 in. apart.

Set outdoors: May.

Spacing: See below.

LATE CROP

Sow outdoors or in flats: Mid-April.

Rate of sowing: 8-10 seeds per in.

Cover: 1/16 in.

Transplant: Late June.

Spacing: 5 to 6 in. apart in rows 3 ft. apart.

The modern artificial growing media have made it much easier to start good celery plants indoors or in frames. (See page 4.) Cover the seed very lightly, if at all, and keep moist and cool.

The development of "seeders" is reduced later on if plants started indoors are kept at a temperature above 55°.

To raise celery plants in the open ground, sow as early as the land can be properly worked. A fine soil is needed, well fertilized and manured if possible. As it requires about three weeks for the plants to come up, scatter a little radish seed with the celery to mark the rows for cultivation.

Moist muck land is the best for celery, but good crops can be grown on upland if it is rich and kept watered. Well rotted manure

is almost essential to this crop; together with commercial fertilizer, it should be mixed in large quantities with the soil and may also be used as a side dressing between the rows later.

Space the rows about 2 ft. apart if not blanched, and 3 ft. or 3½ ft. apart if you wish to blanch with boards or by banking up the soil. Be sure not to let the fine roots dry out in transplanting and water thoroughly immediately after setting out. Side dressing with nitrate fertilizer every few weeks is very helpful.

Celery may be subject to blight which can be controlled by using Captan or Maneb, applied every week to ten days all season, starting with one or two applications in the plant bed. Malathion may be added in mid-summer for tarnish plant bug control if needed.

CELERIAC OR TURNIP-ROOTED CELERY

This crop is raised in the same general manner as unblanched celery. Use the roots when about 2 inches across. They can be stored by simply cutting the tops off and covering the roots with sand in the cellar.

CHICORY

FOR EARLY SPRING GREENS:

Distance between rows: 18 inches.

Rate of sowing: 3 or 4 seeds per in.

Cover: Lightly, about ¼ in.

Thin to: 3 or 4 in. apart.

Sow as early as the ground can be worked. Chicory grows very rapidly and produces quantities of tender, dandelion-like leaves and seed stalks that have flavor something like that of asparagus. It is seldom affected by insects or disease.

FRENCH ENDIVE (Witloof Chicory)

Distance between rows: 18 to 24 in.

Rate of sowing: 2 or 3 seeds per in.

Cover: ¼ - ½ in. deep.

Thin to: 3 or 4 in. apart.

Sow in late spring or early summer. The tops make a large husky growth, somewhat like smooth dandelion leaves, and require no special care.

Before the ground freezes in fall, dig the roots so as to save at least 8 inches of each main root. Discard roots smaller than ¾ in. in diameter, cut off tops leaving the stubs of

the leaf stalks about two inches long. Store in a cold moist cellar, or a "pit," such as is used for potatoes or turnips. From this storage, remove roots for forcing as needed.

Preparatory to forcing, trim each root to an even length—all 8 or 9 in.—so they will be uniformly deep when placed together for forcing.

A good place to force Witloof Chicory is in a cellar where the temperature is kept between 50° and 60°. Any old wooden box about 18 inches deep, will do to hold the roots and sand. Put a little soil in the bottom of the box and then place the roots, crown up, in rows almost touching each other. Put a little soil or sand about the roots to hold them in place. When the box is full, put enough soil over the roots to cover them.

Water thoroughly so the soil is wet to the bottom and then cover with dry sandy soil 6 or 7 inches deep.

Examine in three weeks and if the heads or sprouts are coming through the surface, the heads are ready to use and may be cut as wanted. The best heads are 4-5 inches long and weigh 2 or 3 ounces. In the meantime, other boxes should be filled so as to give a constant supply during the winter months.

The fertility of the soil used is of no importance, and the roots do not require anything except water. No light is needed.

It may be necessary to water the roots a second time. This is best done by making a hole down through the top sand and pouring the water in without wetting the top soil.

CRESS

Distance between rows: 1 ft. apart.

Rate of sowing: 3 or 4 seeds per in.

Cover: About $\frac{1}{4}$ in.

Thin to: 1 or 2 in. apart.

Curled Cress or Peppergrass is a very quick-growing crop of pleasing, pungent taste, exceptionally easy to grow. Plant in early spring and again two or three weeks later for a continuous supply. It will be ready to cut in four or five weeks. It does not do well in mid-summer but is excellent for spring or fall.

Watercress is a slow-growing perennial and thrives only where there is running water or very moist soil. The seed can be simply scattered on the muddy banks of a stream, either in spring or summer. A small stream fed by springs and running through low land is the ideal place to raise *Watercress*. If a large amount is wanted, dam up the stream so as to overflow the land a few inches deep and scatter seed all over the flooded land. *Watercress* can also be successfully grown in greenhouses and gardens by the liberal use of water.

SWEET CORN

Distance between rows: $2\frac{1}{2}$ to 3 ft.

Cover: 1 - $1\frac{1}{2}$ inches deep.

Rate of sowing: 4 to 6 inches apart.

Thin to: 1 ft. apart for early varieties
 $1\frac{1}{2}$ ft. for later varieties.

Sweet corn will succeed on many types of land, but responds best to well-fertilized soil in good condition, well-drained and rich in humus. Apply 10 lbs. of 5-10-5 or similar fertilizer per 1000 sq. ft. and work into the soil before planting. Side-dress with nitrate or mixed fertilizer when about half grown.

Our early hybrids may be sown in late April or early May for the first crop. Although there is risk of frost damage, the plants are usually not severely injured. About the middle of May, plant early, midseason and late varieties together for a succession, and then make more plantings of your favorite type every 10 days or 2 weeks. The latest safe date is usually around July 4th here.

Plant sweet corn in blocks of at least three rows side by side, rather than in a single

long row, to insure pollination and the development of a full set of kernels. If you prefer to grow in "hills" or groups rather than rows, plant 5 or 6 seeds per hill 2 or 3 ft. apart, leaving 3 plants of early kinds and 2 of the later. (Note: the word "hill" as used here is often confusing. It means several plants together, not a mound of soil. Level planting is best, although a little soil may be thrown up around the group after they are well up.)

Corn borers and corn ear worms are often troublesome, especially on larger plantings. Borers usually attack only the early crop in this area, entering the ear from the stalk or side. They can be controlled by four applications of sevin at 5-day intervals. Start when the corn is about 18 in. high and drive the dust or spray down into the crown and the axils of the leaves. The corn earworm, which principally affects the midseason crop, is larger and enters the ear only through the silks. Make five applications of sevin dust or spray at 2 to 3 day intervals to check this pest, starting as soon as

the silks begin to come well out. Be careful to keep the silks lightly but thoroughly covered.

The quality of any sweet corn is improved by growing it under the best conditions you can provide. Be sure to space adequately, and water as needed, especially when the

silks appear and the ears are developing. Pick in the milk stage before it gets over-ripe and if possible not over half an hour before it is to be eaten. Fresh picked corn from your garden has far more sweetness and flavor than any you can buy.

CUCUMBERS

Distance between rows: 5 to 6 ft.
Rate of sowing: 2-3 inches apart.
Cover: $\frac{1}{2}$ in. deep.
Thin to: 1 - 2 ft. apart.

For best yields, make the land rich with fertilizer or manure if available. Plant from the middle of May to the middle of June for slicers and up to July 15 for pickles. If planting in "hills" (groups of plants together, not mounds of soil), space 4 ft. x 5 ft., sowing 8 or 10 seeds per hill and thinning to 4 plants per hill.

Cucumbers should be protected from the striped beetles which injure the plants and spread disease. Planting the seed under paper protectors such as Hotkaps affords initial protection but they must be ventilated when the plants are well started. Keep the vines protected with applications of sevin at weekly intervals as long as necessary, and also a fungicide such as Captan or Maneb. Apply lightly but thoroughly every week or ten days. Be sure to pick cucumbers frequently, especially the pickling types, to keep the vines producing well.

EGG PLANT

Sow indoors: Late March.
Cover: $\frac{1}{4}$ in. deep.
Transplant to: Jiffy Pots.
Set outdoors: Early June.
Spacing: 2 ft. apart in rows 3 ft. apart.

Sow in a greenhouse or hotbed in the same manner as tomatoes (see page 17), and keep very warm all the time. The seed will not come up unless the temperature stays between 70° and 90°. Keep the plants growing right along and do not set out until the

weather has become warm; about June 1st in this latitude is recommended.

A rich, sandy, warm soil produces the best eggplant and the most fruit. If possible, plant on new land that has not been in tomatoes, potatoes, peppers, strawberries, etc., to avoid verticillium wilt, a soil-borne disease. The fruit are tastier if picked young, not over $\frac{2}{3}$ of their full size.

Dust or spray with sevin or malathion a week or so before the plants are set out and keep protected as needed.

ENDIVE

Distance between rows: 18 to 24 in.
Rate of sowing: 2 or 3 seeds per inch.
Cover: $\frac{1}{4}$ in. deep.
Thin to: 8 to 12 inches apart.

Endive is now grown commercially throughout the season, but it is essentially a cool weather crop and does best in the fall. An early spring crop can be grown by planting outdoors as early as possible. Fall crops should be sown in June or July.

Leaving the plants 7 or 8 inches apart produces a more upright growth and blanches

the hearts to some extent. To get the very best texture and flavor, space 10 or 12 inches apart and when nearly full grown, gather the outer leaves up over the heart and tie loosely with string. Another method is to blanch with a board about 5 in. wide, placed over the row and supported by bricks or stones just off the plants. Either way, examine occasionally and let the hearts dry off if they show any sign of decay. Endive stands some frost and may be protected from hard freezes with a mulch of straw.

FENNEL

Distance between rows: $1\frac{1}{2}$ to 2 ft.
Rate of sowing: 2 or 3 seeds per inch.
Cover to: $\frac{1}{4}$ to $\frac{1}{2}$ in. deep.
Thin to: 8 in. apart.

The bulb type of fennel, also known as Finocchio, is best grown as a spring or fall

crop as it tends to develop seed stalks in hot weather. Plant in early May for spring crop and in late June or early July for fall use. When the bulbs begin to form, draw earth up to cover and blanch them.

GARLIC

Garlic is raised in much the same manner as onions from sets. It does best in a moderately fertile soil. In rich soil the tops become over-developed. Separate the bulb into flakes or "cloves" and plant them about 4 in. apart, covering 2 in. deep. They may be set

early in the spring or planted in the fall for next season's use. In the late summer, the tops begin to ripen and fall over. When this occurs, pull the bulbs and dry them like onions.

KALE

Distance between rows: 1½ to 2½ ft.

Rate of sowing: 1 or 2 seeds per in.

Cover: ½ in. deep.

Thin to: 10 to 12 in. apart.

Kale is an easily grown, hardy vegetable producing an abundance of finely cut and curled leaves. It may be sown in early spring

for summer use and is excellent as a fall crop. Plant in late June or July—light frosts improve the flavor. With some protection it survives into the winter and furnishes delicious greens after most vegetables are gone. Spray with sevin for flea beetles when plants first come up, and use rotenone or malathion for control of other insects if needed.

KOHL RABI

Distance between rows: 15 in. to 2 ft.

Rate of sowing: 1 or 2 seeds per in.

Cover: ½ in. deep.

Thin to: 6 in. apart.

Sow at any time from April to July or start early in the hotbed and set out like early

cabbage. It is at its best when grown in the cool days of spring or autumn and should be used when young and tender, not larger than a baseball. Pare the outside off, cut into ½ inch cubes and cook the same as cauliflower. Use rotenone or malathion for control of flea beetles and other insects.

LEEK

Distance between rows: 18 in.

Rate of sowing: 2 or 3 seeds per in.

Cover: ¼ in. deep at the bottom of furrows 4 to 6 in. deep.

Thin to: 4 to 6 in. apart.

Leek is a very slow growing crop which should be started early. It may be started indoors by sowing thinly in flats, in February or March. Set out as early as possible. Make

trenches 4 to 6 in. deep, the same as for direct seeding. Fill in the trenches gradually as the plants grow. The soil should be made very rich and the plants given as much moisture as possible. The leek will be ready to use in October, and may be pulled and stored in a pit for winter and spring use, or they may be wintered over outdoors by banking earth well up on the stalks.

LETTUCE

Distance between rows: 18 in.

Rate of sowing: 2 or 3 seeds per in.

Cover: About ¼ in. deep.

Thin to: 5 or 6 inches apart for loose leaf varieties, about 8 inches for Bibb and Boston Types, and at least 12 inches apart for heading varieties.

Leaf Lettuce: Very easily grown in any good garden soil. Sow any time from early spring till July, making several plantings for a continuous supply. Thin to 6 in. apart at first and then pull every other plant for early use.

Bibb, Boston and Cos Types: These are usually better in the home garden than the Iceberg or heading types. Make several

plantings throughout the season, thinning to about 8 in. or a little more.

Head Lettuce: For good head lettuce early in the summer, sow in the hotbed or greenhouse about mid-March for transplanting to the garden in April. Seed direct in Jiffy Pots, thinning to one plant per pot. Give them plenty of air and do not keep them too hot or wet. Harden them off well before transplanting outdoors, since this will prepare them to stand considerable frost.

When sowing in the open ground, start early in the spring. Do not sow too thick, and be sure to thin out the plants before they crowd. Good heads cannot be grown unless the plants have plenty of room. For

fall use sow the seed the last of July or first part of August and treat in the same way as the spring crop.

A top dressing of good fertilizer applied around the plants and worked in the ground when the plants are about half grown will

make better heads. Good crisp lettuce is produced when grown rapidly on rich soil with plenty of moisture. Water thoroughly in dry weather. Control leaf hoppers with Malathion or Diazinon.

MELONS

Sow indoors: Late April or early May in Jiffy Pots, or other individual plant containers.

Cover: 1/2 inch deep.

Set outdoors: End of May or early June.

Spacing: 2 to 3 feet apart in rows 6 feet apart.

For best results with melons, start them indoors in a light, rich *sterilized* soil. Sow in a flat or box and transplant in about 5 days. Or seed direct in Jiffy Pots or similar containers, 2 or 3 seeds per pot, thinning to 1 or 2. Be sure to keep the soil very warm, 70°-80°, during germination. The plants will be ready for setting out in 3 to 4 weeks.

If possible, plant melons on a warm, sandy, well-drained soil where melons and other similar crops have not been grown in recent years. They do not succeed on poorly drained, cold soils and they are less subject to disease on new ground. Delay planting until the soil is warm. Hotkaps and similar plant protectors are ideal for melons, which are injured by cool nights and cold

winds. Ventilate the protectors well when the sun is out.

Melons respond well to growing on black plastic mulch. Simply set the plants through holes or slits in the plastic but be sure the soil has good moisture before laying the plastic. Irrigate in dry spells. In warm areas, melons may also be seeded direct in the field, through slits in the plastic mulch or in open ground, but the crop will be later than when started indoors. Sow in 6 ft. rows, covering the seed 1/2 to 1 inch deep and thin to stand about 1 ft. apart.

Protect melons from cucumber beetles and other insects with sevin or malathion. Dusts seem to work better than sprays. A fungicide such as Captan or Maneb is generally desirable also. Apply regularly throughout the season.

Well-rotted manure is excellent for melons, worked into the soil under the row before planting. Fertilize well and side-dress with extra fertilizer along the row when the plants begin to run. Avoid injuring or moving the vines when cultivating or hoeing.

WATERMELONS

In general, watermelon culture is similar to melons, but except for the Midget types, they should have more space, 8 ft. rows and 2 to 3 ft. spacing in the row are recom-

mended. In cool season areas, they do best on light sandy soils with a southern slope. Fertilize well and irrigate if needed.

MUSHROOMS

Mushrooms growing requires some special conditions and full directions are sent with each order. In general they can be grown in an area such as a house cellar where the temperature is maintained between 55° and

65° with fairly high humidity and some air circulation. A compost of specially prepared horse manure is a necessity. If conditions are right, mushrooms will be produced in 6 to 7 weeks after the beds are spawned.

MUSTARD

Distance between rows: 1 1/2 feet.

Rate of sowing: 2 or 3 seeds per inch.

Cover: 1/4 inch.

Thin to: 4 to 6 inches apart.

Sow early in the spring and again a few weeks later for a succession. Spray with Sevin for flea beetles and fertilize well to promote succulent leaf growth which greatly improves the quality. It will be ready to cut in 6 or 7 weeks.

OKRA

Distance between rows: 2 1/2 to 3 feet.

Rate of sowing: 1 inch apart or less.

Cover: 1/2 inch deep.

Thin to: 1 foot apart.

Sow outdoors after the soil has become thoroughly warm, usually early in June. Pick the pods while still young and tender for best quality, and remove any old pods to keep the plants producing. Okra is a hot weather crop and does best in more Southern areas.

ONIONS

Distance between rows: 12 to 18 inches.

Rate of sowing: 3 or 4 seeds per inch.

Cover: $\frac{1}{2}$ inch deep.

Thin to: 1 to $1\frac{1}{2}$ inches apart for green onions, 2 to 3 inches for mature bulbs.

Onions do best on a rich sandy loam with plenty of humus, or on muck. The land should be well-drained, and clean; sod land is not suitable. Liberal applications of fertilizer are highly beneficial and well rotted manure is excellent if obtainable. If the land is not fairly light, work in peat moss and fertilizer in early spring. Prepare the soil as early as possible and work it into fine condition before planting. In the garden, onions are most easily raised from sets or plants (see below).

Sow anytime from April to mid-May. Onions require frequent shallow cultivation and must be kept clean and free of weeds. Control onion maggots by spraying the furrow at planting time with Diazinon. Check thrips with Sevin, Diazinon or Malathion.

In the early fall, the tops will begin to droop and die. When about half are down, push the rest over to hasten ripening. A few days later, pull the onions and cure them in the shade for a week or so before storing. Do not leave the onions in the ground after the tops die as new growth will often start and the onions become soft and useless.

SETS—These should be planted early in the spring in rows 1 to $1\frac{1}{2}$ feet apart and about 3 inches apart in the rows (thicker if small early green onions are wanted). Make the rows about 3 inches deep and cover the sets completely. They may be pulled in a few weeks for green onions or will mature large onions in July.

PLANTS—To raise very large onions, set out seedling onion plants very early in the spring. These plants are grown in the South and may be purchased ready to plant, or they may be raised in greenhouses and hotbeds. Sow the seed thinly in shallow boxes or flats in January or February. Use light rich soil and keep warm. When the plants get about 6 in. high, trim them back to about 4 in. with shears. Set out in the open ground as early as the ground can be prepared, spacing the plants four to six inches apart in the rows. Spread the roots well out in the bottom of a furrow $\frac{1}{2}$ in. deep and cover firmly.

BUNCHING ONIONS — To raise green bunching onions or scallions sow the seed thickly in the row. They may be planted any time from early spring to midsummer. The hardy types may be planted in July for wintering over. Draw some soil up to the rows on both sides, and mulch lightly with straw. Harvest early in the spring before seed stalks are formed.

PARSLEY

Distance between rows: 15 to 18 inches.

Rate of sowing: 4 or 5 seeds per inch.

Cover: $\frac{1}{2}$ inch deep.

Thin to: 4 to 5 inches apart.

Parsley will succeed in any good garden soil and does well in partial shade. The seeds germinate very slowly, taking as long

as 5 or 6 weeks to sprout, and care must be taken that weeds do not smother the young plants before they get well started. A little radish seed sowed with the parsley will mark the rows for cultivating. For winter use the plants can be taken up and planted in pots which may be kept in a window in the house.

PARSNIPS

Distance between rows: 24 to 30 inches.

Rate of sowing: 3 or 4 seeds per inch.

Cover: No more than $\frac{1}{4}$ inch deep.

Thin to: 2 or 3 inches apart.

Parsnips do best on a rich, loamy soil which should be plowed or spaded deep to get roots of good shape. Sowing radish seed

with the parsnips will serve to break the crust and to mark the rows for early cultivation. Parsnip seedlings are normally small and weak and are not able to push through a crusted surface. The roots may be left in the ground all winter or stored in earth in a cold cellar or pit. Freezing in the soil improves the flavor.

PEANUTS

Distance between rows: $2\frac{1}{2}$ to 3 ft.

Rate of sowing: Shelled nuts 3 to 6 inches apart; in hulls, 8 inches apart.

Cover: $1\frac{1}{2}$ inches deep.

Peanuts are a long season crop and subject to injury by light frosts, but they can be grown successfully in central New York if given proper conditions. They require a

very warm sheltered location with a southern exposure and a fairly rich light soil. They may be planted either in the hulls or shelled.

Sow about the first of June and cultivate and hoe freely. After the flowers are fertilized, the short stalks which bear them become elongated. They bend down and push the flower into the soft soil where it de-

velops into a peanut underground. Before frost in the fall dig or lift the entire vine and hang under an open shed to cure.

The flavor of peanuts is much improved by roasting. Place the unshelled nuts in a collander which will allow plenty of air circulation and roast in a 300°-325° oven for an hour, stirring frequently.

PEAS

Distance between rows: Dwarf varieties 2½ to 3 feet apart; tall varieties 3½ to 4 feet.

Rate of sowing: About 15 peas per foot, 1 lb. to 100 feet.

Cover: 1 to 2 inches deep.

Peas should be sown as early as the ground can be prepared. At this time the soil is usually moist and they need be covered only an inch deep. Later when the surface has dried, make a furrow 3 inches deep and do not quite fill it when covering the seed.

To have plenty of peas over a considerable period, it is best to choose early, medium and late varieties and sow them all at once for a succession. A second sowing to prolong the season may be made about two or three weeks later than the first. Peas sown in late spring or summer rarely suc-

ceed on account of mildew, but in some seasons fairly good crops are obtained.

Most of the modern dwarf varieties do not require support for the vines and produce delicious crops with no special care except for weeding. If aphids should appear, spray, with Malathion or Diazinon. Try to plant peas on land where they have not been grown before to avoid root rot organisms. Side dress lightly when about half grown.

Alderman peas do best on supports. Most gardeners use a trellis of chicken wire or of string or netting such as Train-etts, hung on wire between posts. Trellised peas make picking easier.

Fresh peas handpicked in the garden have a wonderful flavor, quite superior to the commercial canned or frozen product.

PEPPERS

Sow indoors: February or March.

Cover: ¼ inch deep.

Transplant or thin to: 2 inches apart.

Set outdoors: Late May or early June.

Spacing: 18 inches apart in rows 2½ to 3 feet apart.

Peppers are a warm weather crop and need warm temperatures in the greenhouse

or indoors. Do not let the temperature fall below 65°, and close to 80° is best. In the garden, set the plants in a spot where they get full sun. The soil should be fairly fertile but not too rich, as excess nitrogen overstimulates plant growth and few fruit will set. If aphids appear, spray with Malathion.

PUMPKINS

Sow outdoors: Mid-May to early June.

Distance between rows: 6 to 9 feet.

Rate of sowing: 4 or 5 seeds per foot of row or about 6 per hill.

Cover: ½ inch to 1 inch deep.

Thin to: 1½ to 2 feet apart or 2 or 3 per hill 4 feet apart.

Pumpkins are grown much the same as Winter Squash, and a moderately fertile soil will produce good crops. Dust regularly for protection against cucumber beetles. Harvest in fall when the skin becomes hard. The pumpkins will not be injured by light frost if mature, but keep better if not left too long in the field.

RADISHES

Distance between rows: 6 to 18 inches.

Rate of sowing: 2 or 3 seeds per inch.

Cover: ½ inch deep.

Thin to: 1 to 2 inches apart.

Radishes are an easy crop to grow, being hardy and quick to mature. They may be sown outdoors anytime from early spring to early fall. Make successive plantings every few weeks for a continuous supply, except during hot, dry weather when they do not

do well. A light, rich soil is ideal and frequent watering improves the quality.

Mix in a few radish seeds when sowing carrots, parsley or parsnips. This helps to mark the rows for cultivating these slower-growing crops and to break the crust for their smaller, weaker seedlings.

Root maggots are often a serious problem on radishes. To control them, spray

diazinon in the furrow at planting time and along the rows just as the plants are coming up. *Do not apply after bulbs start to form, however.* Fall crops are less subject to maggot damage but some protection may be necessary.

The best radishes are those raised in

greenhouses or hotbeds, as they are not as sharp or "hot" as those grown outside. Sow in rows 4 in. apart, thin as above, and water often.

Winter radishes are sown in the summer, in rows 18 in. apart and thinned to 3 or 4 inches. They can be stored in moist sand for winter use.

SALSIFY or Vegetable Oyster

Distance between rows: 18 to 24 inches.

Rate of sowing: 2 or 3 seeds per inch.

Cover: $\frac{1}{2}$ inch deep.

Thin to: 2 to 3 inches apart.

Sow in May, preferably in light, rich soil which produces the largest and best-shaped

roots. Any good garden soil is satisfactory, however, if deeply worked. The roots may be used whenever large enough. For winter use, dig them in the fall, trimming the tops at least 1 in. above the root and store in moist sand in the cellar.

SPINACH

Distance between rows: 14 to 18 inches.

Rate of sowing: 2 or 3 seeds per inch.

Cover: $\frac{1}{2}$ inch deep.

Thin to: 3 to 6 inches apart.

Spinach is a quick-growing hardy crop which thrives best in cool weather. Any good fertile soil is satisfactory and it will respond well to high nitrate fertilizer applied along the rows and worked in lightly. It should be planted just as early in the spring as possible.

Successive plantings will give you a supply throughout the season, but after the middle of May, use only long standing varieties since others do not do well in hot weather. For fall use, sow a blight resistant variety in August, and to winter over sow

the seed about the first of September, in the latitude of Western New York, and later further south. If sown in a sheltered place where snow is apt to collect, spinach will usually survive the winter.

NEW ZEALAND SPINACH is quite different from other varieties as it is not a true spinach. The seed germinates slowly and it is a good plan to soak it for 24 hours before sowing. It may be sown in the early spring or summer, and will grow during the hottest weather. The rows should be 3 feet apart, as the plants spread out nearly 2 feet each side of the row. The tender new leaves at the tips of the branches may be picked off as wanted in summer and fall. This spinach is killed by hard frost.

SQUASH

All kinds of squash are best grown on a fertile, deep soil. Manure is excellent if available and a couple of handfuls of fertilizer worked into the soil around each group of plants is very beneficial.

Summer Squash

Distance between rows: $3\frac{1}{2}$ to 5 feet (or in hills 3 or 4 feet apart each way).

Rate of sowing: 4 or 5 seeds per foot of row or 6 to 8 per hill.

Cover: $\frac{1}{2}$ to 1 inch deep.

Thin to: 1 foot apart in rows, or 3 plants per hill.

Plant after the soil is warm, usually late in May, through June or early July. Modern summer squash hybrids take little space and produce abundantly. Protect from cucumber beetles and squash bugs with Rotenone, Sevin or other vine crop insecticides.

Pick the fruit while young and tender, from just after the blossom drops until 6 or

8 inches long. Keep all fruit picked so the vines continue to produce for a long time.

Winter Squash

Distance between rows: 6 to 8 feet for smaller varieties, 9 feet or more for large ones.

Rate of sowing: 4 or 5 seeds per foot of row or 6 to 8 in groups or hills 4 feet or more apart.

Cover: $\frac{1}{2}$ to 1 inch deep.

Thin to: 1 to 2 feet apart, or 3 plants per hill.

Plant in warm soil in late May or early June and keep well-cultivated as long as possible without injuring the vines. For protection against beetles and squash bugs, dust or spray regularly with malathion, sevin or other vine crop insecticides. Apply thoroughly on the stems and around the base of the plant in the latter part of June

and early July to keep out the squash vine borers. (Note: Butternut and the acorn types are not troubled with this pest.) The borer is a whitish grub which burrows into the stem and causes wilting of the vines. It can usually be located by a small mound of sawdust-like frass along the stem. Slit the stem carefully with a sharp knife and remove the grub. Then mound earth over the slit and along the stem.

SWISS CHARD

Distance between rows: 18 to 24 inches.

Rate of sowing: 1 or 2 seeds per inch.

Cover: $\frac{1}{2}$ to 1 inch deep.

Thin to: 8 inches apart.

This crop is closely related to the beet and is grown in much the same way, but

Winter squash should ripen thoroughly in the field, until the shell is quite hard and resists the pressure of a thumbnail, but do not leave them exposed to frost as this injures their keeping quality. A good fungicide applied during the season to keep the vines healthy will help produce long-keeping squash. Store in a dry place where the temperature is about 50 to 60 degrees.

thin first to 4 inches apart and pull every other plant for use when they are about 10-12 inches high. In early August cut off all old leaves, give the ground a light dressing of high nitrate fertilizer, and you will have fine greens right up to freezing weather.

TOMATOES

Sow indoors: Mid-March or April.

Cover: $\frac{1}{4}$ inch deep.

Transplant to: 3 or 4 inch Jiffy Pots for early crops; or for later crops set in smaller pots or 2 inches apart in flats.

Set outdoors: Late May to mid-June.

Spacing: 2 or 3 feet apart in rows 5 feet apart, or somewhat closer if staked or on a trellis.

Tomatoes can be started indoors without difficulty, but they are a little particular in their temperature requirements, and failure to germinate is often due to uneven heat. For germination, a steady temperature of 65-70 degrees is best, but after they are up, they should be kept at about 65 degrees, if possible.

Sow in an artificial soil mix, fine-ground compost or Jiffy-7 Pellets. (See page 4 for details on starting plants indoors.) In sowing, spread the seed out as evenly as possible, not over 8 or 10 per square inch. Cover lightly with more soil, firm down gently and sprinkle with warm water.

Transplant as soon as the plants are large enough to handle, water thoroughly and keep slightly shaded for a day or two.

When danger of frost is past, set out the plants in the open ground. They may be set fairly deep, especially if the plants are tall. New roots are formed along the stem. Set firmly and water, preferably with a starter solution such as Vertagreen.

Fertilizer may be applied by scattering it around the plants a few inches away from the stem and mixing it with the soil with a hoe or cultivator.

In gardens the vines are often tied to stakes so the fruit is kept off the ground. This practice gives cleaner fruit, less foliage disease, and greater early yield. The plants may be set closer—3 x 2 feet if pruned to two stems on each plant. Good strong stakes 4 to 5 feet long should be driven by the side of each plant, and when the plants are a foot or more high they should be tied to the stakes with soft twine, strips of cloth or "Twist-ems." To prune, remove the shoots that grow in the axils of the leaves while they are still small.

Tomatoes should be sprayed to prevent blight. Manzate (maneb) is excellent for early or late blights. Combination sprays or dusts are also effective.

TURNIPS AND RUTABAGAS

Turnips

Distance between rows: 15 to 20 inches.

Rate of sowing: 3 or 4 seeds per inch.

Cover: $\frac{1}{4}$ inch deep.

Thin to: 3 or 4 inches apart.

Turnips should be sown in July and Au-

gust, as they are of much better quality than when sown earlier.

They are usually planted on land from which an early crop such as peas or spinach has been harvested earlier in the sea-

son. The soil should be worked up fine and smooth.

Turnips may also be sown broadcast,

using 3 to 4 lbs. per acre. If the land is well prepared and the seed sown evenly, no thinning or cultivating will be needed.

Rutabagas or Swede Turnips

Distance between rows: 2 feet.

Rate of sowing: 2 or 3 seeds per inch.

Cover: $\frac{1}{4}$ inch deep.

Thin to: 6 to 8 inches apart.

Rutabagas may be sown in late June, but for table use they are better if sown a little

later so they do not get too large and coarse.

As soon as the turnip or rutabaga seedlings break through the ground, use malathion or sevin to control the small black flea beetles which eat holes in the young leaves. Diazinon is helpful for maggot control.

GARDEN HERBS

Most of the Herbs in common use are annuals and must be sown each year. Some, however, are hardy and will live over the winter. Such kinds should be raised where they can be left undisturbed for a number of years. These are called hardy perennials. Tender young leaves may be used any time during the growing season, but to preserve herbs for later use, they should be cut when they first begin to flower and dried rapidly in a well-ventilated, dark room. Wash the leaves in cold water and allow to drain before drying.

As soon as the leaves are dry, separate them from the stems and put them in glass jars or metal containers which can be closed tightly to preserve their flavor.

BASIL. Sow the seed in the early spring in rows 18 inches apart and thin the plants to 3 inches apart.

BORAGE. The plants grow 3 feet tall and should have plenty of room. Sow in rows 2½ feet apart and thin to a foot in the rows. The seed should be sown in the spring.

CHIVES. Sow early in the spring and thin to 3 in. apart. The following spring, set the plants in their permanent location, 8-10 in. apart in rows 20 in. apart. Cut frequently for a continuous supply of fresh, new leaves. Divide clumps every 2-3 years.

DILL. Sow in rows 2 feet apart and thin the plants 4 inches apart in the row. Sow in early spring or later.

FENNEL. See page 11.

LAVENDER. A perennial plant but requires some protection in the Northern states. Cover with leaves in the late fall. Sow the seed rather thickly as it is extremely slow to germinate. The plants may be readily transplanted.

SWEET MARJORAM. Sow in rows 18 inches apart and thin to 4 inches in the row. Pick and dry the young and tender tops for flavoring.

SAGE. A hardy perennial plant growing 2 feet high. Sow the seed in the spring or summer in rows 2 feet apart and thin the plants to 6 or 8 inches apart. Cut the tender leaves just as the plants commence to flower.

SUMMER SAVORY. Treat the same as Sweet Marjoram.

THYME. A hardy perennial. May be sowed outdoors but is usually started early indoors (see pages 4-5). Set plants 12-18 inches apart in 3-foot rows. New plants should be started every 3-4 years, as older plants become woody.

SMALL FRUITS

RASPBERRIES AND BLACKBERRIES

These fruits do best in a fine, deep sandy loam but can be grown successfully in any good garden soil. However, they should be planted on land that has been under culture for at least one year and two or three years is better. The land should be plowed or spaded deeply and worked thoroughly. Set

the plants as early as possible in the spring, taking care to place them a few inches deeper than they were in the nursery or field.

Red Raspberries should be in rows 6 or 7 feet apart and 2 to 3 feet apart in the row. Black and Purple Raspberries should be in

rows 7 feet apart and $2\frac{1}{2}$ to $3\frac{1}{2}$ feet apart in the row. Blackberries should be set 3 feet apart in rows 8 feet apart.

Cut back the tops of red raspberries to 6 inches before setting and purple and black varieties even closer, since new growth comes from shoots around the base, not from this cane. Open a hole with a spade and thrust the roots in, then insert the spade again an inch or so away and force the soil firmly against the roots. Stamp it in firmly with your heel to make sure that no air pockets are left. A well set plant should resist a strong tug without loosening. Water promptly after setting if the soil is at all dry.

Since the crop is borne on the tips of last year's canes, no berries can be expected the first year (except a few on the fall bearing types). Full production begins the third year and with care the plants will produce for several years thereafter.

PRUNING: RED VARIETIES: As soon as the crop is harvested each year, cut out close to the ground all canes which bore fruit. New canes come from the base of the old ones and also from suckers at a distance from the crown. Keep the suckers limited to a narrow row 12 or 15 inches wide and cut all weak canes to prevent crowding.

In spring, thin to 4 to 7 strong canes per plant. Cut back these fruiting canes to about 4 feet in height, mainly by removing weak growth at tips. Side branches on the main canes may be cut back to about 10 inches or 15 buds.

FALL BEARING RASPBERRIES: These bear the fall crop on the tips of new canes started the same year. Do not allow the plant to send up more than four growing canes. During the winter the tips of the canes that have fruited may be cut off but if a spring crop is desired do not cut them

out entirely, as they also bear the next summer. After the summer crop, cut them out close to the ground.

BLACK AND PURPLE RASPBERRIES: Summer-pinching is needed on the new canes to encourage side branches and a sturdy plant. Go over the planting several times in June and pinch or cut off the tip ends of the shoots when they have reached a height of 18 to 24 inches.

After harvest, all fruiting canes are cut out close to the ground. The following spring, thin out the plants to three or four strong canes. The lateral branches from these canes are shortened to 5 or 6 inches on black-caps and 10-12 inches on purple varieties.

BLACKBERRIES: Old canes are removed after fruiting as with raspberries. To get short sturdy plants, pinch off the tip ends of the new shoots about 2 feet high in June. Thin in the spring to 4 to 6 good canes and cut off lateral branches, 8 to 10 inches from the main canes.

FERTILIZING: Manure is excellent if available. If not, use peat moss and a nitrate fertilizer (urea, ammonium nitrate or nitrate of soda). Or use a general fertilizer, such as 10-10-10.

DISEASES AND INSECTS: To prevent spread of mosaic, plant red raspberries well away (200 feet or more) from purple or black varieties, older plantings of any kind, and from wild raspberries. Rogue out any plants showing disease symptoms. Anthracnose and spur or cane blight may be controlled by a dormant spray applied in early spring and Captan later. Use Malathion for most insects. Consult your County Agent or State Extension Service (at your State College or Experimental Station) for further help if needed.

GRAPES

Plant grapes as early as possible. They need a sunny location but only moderately fertile soil. Unless trained to an arbor, plant the vines 8 ft. apart in a single row and grow them on two wires, one about $3\frac{1}{2}$ feet and the other $5\frac{1}{2}$ feet from the ground.

PLANTING: Dig holes deep enough so that the roots will be spread out. Pack the soil firmly around the roots and water promptly. Cut back new plants to one or two strong shoots with two or three buds each. Keep well cultivated until midsummer. In the following years they should be cultivated and hoed in midsummer and

then left, in order to allow the new wood to harden.

PRUNING: Grape pruning seems complicated but the basic principle to remember is this: grapes bear their best on new growth arising from a few long canes left from the past season's growth. (These in turn come from two-year-old wood.)

In the late winter or early spring following planting, prune the vines to one or two strong shoots and tie these to the trellis. The second year after planting select the best cane for the central trunk. Bring this cane to the top wire and tie. Now also se-

lect four side shoots from this central cane and tie these to the wires, forming a double T. Prune the shoots on the lower wire to 18 to 24 inches and the top wire to 3 or 4 feet. Remove all other shoots. Each following year prune the vines back as above except that the shoots on each wire on each side of the trunk should now be four feet long.

STRAWBERRIES

SOIL: A deep sandy or gravelly loam is best for strawberries, but either sand or clay can be made suitable with cover crops, peat moss or manure. Freshly turned sod may contain white grubs and should be treated with diazinon or other recommended insecticide at least a week before planting. Plant in full sun and on a slope or higher land where water will not stand.

FERTILIZER: Rich, friable garden soil may need no additional fertilizer. If manure is used, be sure it is well rotted and mix it well with the soil. Use commercial fertilizers carefully — they can injure new plantings. If needed, use 10-20 lbs. per 1000 sq. ft. of 5-10-5, but apply it, mixing well with the soil, at least a week before planting. Supplementary nitrogen (urea, ammonium nitrate, etc.) may be added in August and September.

PLANTING: Set strawberries early. Mark rows 36-42 inches apart and space plants 18-24 inches in the row. Trim off ends of the roots just before setting, but leave at least four inches from the crown. Make a wedge-shaped hole 7 to 8 inches deep by rocking a spade back and forth. Fan out the roots and set the plant with the crown just level with the surface. Cover all roots but do not smother the crowns. Press soil tightly against the roots, then stamp with your heel next to the crown. Test your anchoring by jerking a leaf tip and if the plant moves, it is too loose or the soil is too dry. It is most important to have all roots in tight contact with the soil. Water plants after setting, preferably with a starter solution.

WHAT SYSTEM OF GROWING: (1) Matted Row. Generally used by commercial growers. It allows runners to set in all directions and all that is necessary is to keep weeds out. Production is satisfactory but berries run smaller than with other systems. When the matted row gets 18-20 inches wide, trim off late runners. If plants become crowded, thin them to 6 inches apart.

As the vine bears its fruit only on new shoots from last year's wood growth (distinguished by its somewhat lighter color), it may also be desirable to leave spurs on the main trunk or on branches of the trunk. Cut these back to form one to four eyes. These spurs can then be used the following year as branches.

(2) Spaced Row (Hedge Row). Allow 2-7 runners to set evenly around the plant, and the rest are trimmed off. At least once a week during the summer, snap off all additional runners from the mother plant and the established runner plants. This method gives high yield and large, fine berries but requires more attention.

(3) The Hill System consists of removing all runners as soon as they appear. The mother plant spreads out and produces bigger fruit early in the spring the following season. Plants may be set as close as 15 in. apart in a double row, and this system is best if you use black plastic mulch.

With all systems pick off all blossom stems in the spring and early summer after planting to help plants get established.

WATERING AND CULTIVATION: Be prepared to irrigate if necessary, since strawberries thrive on an even, generous supply of moisture all season. Soak thoroughly when first set out and water to a depth of six inches every week unless rainfall is sufficient, but do not allow water to stand around roots. Frequent, shallow cultivation and hand hoeing are needed to control weeds. Do not work too deep — the roots may be injured.

MULCHING: Strawberries need to be protected even where temperatures do not usually go below 15 to 20 above zero. Apply a mulch of 2-4 inches of clean wheat straw or marsh hay spread evenly over the patch when the plants are fully dormant and light freezes have occurred (usually November 15 to December 1st in this area).

When plants begin new leaf growth under the mulch, remove half to two-thirds of it from the plants and tramp it down between the rows. The mulch left on does not inhibit growth and it helps keep berries clean, conserves moisture and reduces weeds.

DISEASE AND INSECTS: Under really good conditions, little spraying or dusting is needed. If leaf spots appear, spray with Captan. Most insects can be controlled with Malathion.

Growing Flowers From Seeds

For instructions on preparing the soil, sterilizing, marking the rows, depth of covering and protection against diseases such as damp-off, refer to the general information on pages 1 and 4.

* * *

Fast growing annuals can be planted directly outdoors after danger of frost is past. This is usually about the time the trees start to leaf out.

A few annuals such as sweet peas and larkspur require earlier planting and this should be done as soon as the soil can be worked. The young plants will not be affected by frost.

Slower growing annuals perform better if the seed is started indoors at room temperature or in the basement under fluorescent lights. A good hot bed is also satisfactory. The time of sowing indoors depends on the variety, but in general this should be about six to eight weeks before the plants are to be set outdoors.

Perennial seed may be started outdoors any time from late spring until midsummer. Some quick growing kinds may be planted even in late summer. However, it should be remembered that the periods of high temperatures and low moisture are the most difficult in which to germinate seed.

Practically all varieties of annuals and perennials, even the kinds which do not

transplant easily, can be started indoors or in a cold frame or hot bed for planting in the garden later. For those kinds which do not transplant easily, a recommended procedure is to plant three or four seeds in a Jiffy Pot or Jiffy Pellet, and the young plants can then be moved to the garden without any shock from transplanting. This works well with Clarkia, Godetia, Larkspur, Lupins, Morning Glory, Phlox, Poppy and Salpiglossis.

Avoid the most common reasons for failure:

Do not cover the seed too deeply.

Do not plant in heavy soil that will form a crust over the seed.

Do not allow the soil to dry out but do not overwater.

Do not plant tender kinds in soil that is too cold.

Do not plant too thickly.

ANNUALS WHICH SHOULD BE STARTED EARLY INDOORS

Ageratum	Lobelia
Asparagus Fern	Petunia
Begonia	Salvia
Carnation	Snapdragon
Coleus	Thunbergia
Geraniums	Torenia
Heliotrope	Verbena
Impatiens	Vinca

OUTDOOR SOWING

When sowing in the garden where the plants are to remain it is a good plan to drop 3 or 4 seeds together in groups or "hills" spaced 6 to 10 inches apart. When the seedlings come through, thin them to the one or two best plants in each group. This prevents overcrowding and permits proper cultivation. Always keep in mind the ultimate size of the well grown plant and allow plenty of room.

The proper time for outdoor sowing of most annuals is about the time the trees start to leaf out. A few varieties such as

Zinnias, Marigolds, Nasturtiums and Portulaca require warm soil for germination and these should be sown about a week or two later. Sweet Peas and Larkspur should be sown earlier or just as soon as the ground can be worked.

In general, quick germinating varieties such as zinnias, marigolds, candytuft, etc. will give good results if the seed is sown directly in the ground outdoors. Slower growing kinds such as hybrid petunias, snapdragons, impatiens, etc. are best handled by starting the seed indoors (see page 4).

FALL SOWING OF FLOWER SEEDS

Sowing annual flower seed in the fall is, at best, rather undependable in this northern latitude, but if you succeed, the exceedingly hardy plants you get in the spring are well worth the effort. Even a small percentage of success is worth it.

In the first place, the area where the seed is to be sown should be well protected from

winds and so situated that it will catch all the snow possible.

The soil should be exceptionally well drained and of a character and location that warms quickly in the spring. A warm, well drained, sandy soil with a slight slope and protected by shrubs or buildings on the three sides, except the south, is an ideal situation.

Lacking such a situation we recommend the building of a frame 1 foot high around the seed bed and covering it in the winter with boards and brush.

The time of sowing is always very problematical. Annual Larkspur may be planted as early as September 10th. Such a sowing will produce small plants that will, under favorable conditions, withstand the winter. All other varieties, however, should not be sown until just before the ground freezes so that the seed will lie dormant over the winter and commence to sprout with the first warm rains of spring.

Do not bury the seed; merely stir it into the surface of well prepared soil, and cover the seed-bed with light brush, such as shrub trimmings.

Annual Flowers Which May Be Sown in the Fall, Results Depending Upon Winter Conditions:

Alyssum	Gypsophila
Asters	Four O'Clocks
Baby's Breath	Kochia
Bachelor Buttons	Larkspur
Calendula	Lupins
Calliopsis	Nicotiana
Candytuft	Petunias
Carnations	Poppies
Celosia	Portulaca
Centaurea	Scabiosa
Cleome	Snapdragons
Cosmos	Snow-on-the
Cynoglossum	Mountain
Dianthus	Sweet Peas
Eschscholtzia	

GROWING PERENNIALS FROM SEED

Contrary to advice generally given, we advocate May or June sowing of most hardy perennial seed in the Northeastern states. Soil and temperature conditions are much more favorable for germination, and transplanting can be done early enough for the roots to become well established before freezing weather. The more rapid growing varieties such as Sweet William, Lupins, Carnations, etc., can be sown as late as July.

A later sowing will usually not produce plants large enough to bloom the following year.

Many perennials do not "come true" from seed; many are slow to germinate and still others require very specialized treatment. For these reasons we list seed of only those which are not difficult for the amateur to handle.

PLANTS FOR SHADY LOCATIONS

Making flowers succeed in the shade or partial shade is more a matter of sufficient nutrition and moisture than lack of sunlight. Trees will take much of the plant food from the surface soil, and it is necessary to fertilize four times as heavily. It is also necessary to water more heavily, although the soil may not appear to be dry on top. The soil also requires deeper spading each season in order to cut off as many of the tiny tree feeding roots as possible.

If there is good indirect sunlight, most flowers can be made to grow, but few will bloom as profusely. There are only a few plants that thrive in dense shade, such as caused by overhanging shrubbery. We suggest a few of the most satisfactory varieties for partial shade and shade that is not too dense.

Varieties marked with (*) will stand the most shade:

Annual Flowers

Alyssum	*Coleus
Asters	*Impatiens
Balsam	Lobelia
*Wax-leaved and	*Myosotis or
Tuberous Begonias	Forget-Me-Not
*Bellis or English	Pansies
Daisy	Snapdragon
Centaurea Cyanus	Torenia
Clarkia	Viola

Hardy Perennials

Anchusa	Digitalis
*Anemone	Heuchera
Aquilegia	*Iberis
Arabis	Lupins
Aubrietia	*Myosotis
Bleeding Heart	*Pachysandra
Campanula	Phlox subulata
Delphinium	*Primula
Dianthus	*Vincetoxicum or Myrtle

FOR GROUND COVERS AND BANKS — PLANTS AND SHRUBS

Frequently a situation is encountered where neither grass nor flowering plants will do well, such as banks, steep slopes and densely shaded areas. In these cases we recommend the following:

- *Vinca Minor (Myrtle)
- *Pachysandra (Japanese Spurge)
- Rose Wichuriana (Memorial Rose)

*Will do well in the shade. Most of the above are not available from seed and must be purchased as plants.

- Euonymus Coloratus (Purple-leaf Euonymous)
- *English Ivy
- *Japanese Honeysuckle
- Lathyrus Latifolius (Hardy Sweet Pea)
- *Ajuga Reptans
- Polygonum Reynouteri
- Viola

FLOWERS FOR EDGINGS

- | | |
|-----------------|-------------------|
| Ageratum | Petunia |
| Alyssum | Phlox, Annual |
| Candytuft | Portulaca |
| Dianthus, Dwarf | Snapdragon, Dwarf |
| Lobelia | Verbena |
| Marigold, Dwarf | Viola |
| Pansy | Zinnia, Dwarf |

FLOWERS FOR FRAGRANCE

- | | |
|----------------------|---------------|
| Alyssum | Nicotiana |
| Candytuft | Pansy |
| Carnation | Petunia |
| Centaurea Imperialis | Pinks, Hardy |
| Heliotrope | Stock |
| Lavender | Sweet Peas |
| Mignonette | Sweet William |
| Nasturtium | Verbena |

FLOWERS FOR DRIED BOUQUETS

- | | | |
|------------------|-----------------------|---------|
| Bells of Ireland | Gomphrena | Honesty |
| Celosia | Gypsophila paniculata | Statice |
| | Helichrysum | |

In the following directions, flowers not indicated as perennial are annuals and complete their full growth cycle in one season.

AFRICAN DAISY, see *Dimorphotheca*.

AGERATUM. Best results are obtained by starting the seed indoors. When the first true leaves have developed, transplant or thin to prevent crowding. May also be sown directly out of doors after danger of frost, but bloom will be considerably later.

ALYSSUM is sown outdoors in rows as a border as early as possible and thinned to 6-8 inches apart. May be started indoors for early transplanting.

ALYSSUM (*Hardy perennial*). Usually sown outdoors as a border during the spring or summer and thinned to 8-10 inches apart. May also be started indoors for later transplanting.

AMARANTHUS. Usually started outdoors after weather and soil have warmed up. Seed is fine and should be only barely covered. Keep moist until seedlings are established. Space to 12-18 in. apart. May also be started earlier indoors in Jiffy Pots or Jiffy Pellets. Grow in full sun for most intense color.

ANCHUSA. Sow outdoors when the ground becomes warm and thin to 10-12 inches apart.

AQUILEGIA or *Columbine* (*Hardy perennial*). Prefers partial shade and plenty of

moisture. The seed is usually started in boxes, cold-frame or seed-bed any time during the spring and early summer for transplanting into the garden in the early fall or following spring. Space at least 1 foot apart. The seed may also be sown outdoors in the garden where the plants are to remain but the soil must be kept moist and shaded. Germinates slowly.

ARABIS (*Hardy perennial*). Usually sown outdoors as a border where the plants are to remain, and thinned to 8-10 inches apart. Can be sown in boxes, cold-frame or seedbed and later transplanted.

ARCTOTIS. Sow seed outdoors in a sunny location and thin to 1 foot apart.

ASPARAGUS FERN (*Sprengeri* and *Plumosa*). Used primarily as a house plant or in window boxes. The seed which germinates very slowly may be sown indoors at any time of the year and needs constant heat and moisture. Requires about four weeks to germinate and about a year to produce sizable plants.

ASTER. The seed is usually sown in a coldframe or seed-bed about April 1 to 15. Thin the seedlings to about 1 inch apart. When about 2-4 inches high they can be transplanted into the garden, spaced 1 foot apart each way. They will do well in partial

shade and good rich soil. Seed may also be sown indoors in boxes for earlier transplanting.

Asters prefer cool weather. They are mainly troubled by two diseases, fusarium wilt and aster yellows. Fusarium wilt, sometimes called aster wilt, is carried by soil-borne bacteria and can be spread by many other plants, including tomatoes. Use wilt-resistant strains and plant in soil that has not been contaminated by previous plantings.

Aster yellows, also called blight and rust, is a virus disease spread by leafhoppers. It can generally be prevented by growing them in the shade. Regular spraying with malathion or sevin will also check the hoppers, as well as tarnished plant bugs and black blister beetle, three serious pests on asters in many localities.

BALSAM. Sow outdoors after the soil is warm and keep seedlings sufficiently spaced to prevent crowding.

BEGONIA (*Fibrous rooted*). Sow the seed indoors in February or early March. An artificial soil medium such as Harris Seed Starting Mix, Jiffy Mix or Jiffy-7 Pellets is essential. Since the seed is powder-fine, it requires great care in sowing. Mixing it with fine, dry sand will give better distribution. Temperature should be kept at 75° at least, and fluorescent lights, six inches above the seedlings, will greatly increase the growth rate. After all danger of frost is over, the plants are set out in the garden. Begonias grow well in semi-shade, but the hybrids will give an excellent performance even in full sun if a mulch is provided and the plants are well watered. They grow well in pots and make fine houseplants also.

BEGONIA (*Tuberous rooted*). These are generally raised from bulbs because the seed requires expert handling. Can be planted in window boxes or in the garden after all danger of frosts, and prefer shade and protection from wind. Dormant bulbs should be started in a warm place in the early spring or purchased later as started plants. Ask for our special leaflet on Begonias.

BELLS OF IRELAND. Seed will not germinate unless given cold treatment. If started outdoors the seed should be planted early while the soil is still cold. If started indoors, prechill the seed in the refrigerator for 2-3 weeks. After cold treatment, grow at a daytime temperature of 85° and 60° at night.

BELLIS or *English Daisy*. See culture for Pansies.

BROWALLIA Speciosa Major. Start indoors in an artificial soil such as Jiffy Mix. Press the fine seed into the soil, but do not

cover. A plastic sheet over the box will conserve moisture and keep temperature more even, but remove as soon as the seedlings appear. For good germination, a soil temperature of 75-80° is a necessity. Useful in hanging baskets and urns but must be grown in the shade.

CALENDULA. In areas where the summer temperature consistently rises above 80° we recommend a late June outdoor sowing which will produce flowers in the cool weather of September and October. In cooler localities the seed can be sown directly out of doors as soon as danger of heavy frosts is past. To control black lice spray with malathion or rotenone.

CALLIOPSIS. Sow seed outdoors as soon as the soil becomes warm and thin to 8-10 inches apart.

CALIFORNIA POPPY or *Eschscholtzia*. Sow outdoors in shallow trenches or scatter broadcast in the garden as early as the soil can be prepared. One of the most satisfactory annuals for fall sowing (see page 21). Plants will withstand frost.

CAMPANULA or *Canterbury Bells* (*Hardy biennial*). New sowings should be made each year for the following year's blooms. Usually sown in seed-bed or cold-frame, barely covering the seed, in the spring or early summer for transplanting in the early fall, or they may be sown in the garden where the plants are to remain. Should be spaced 12-18 inches apart each way. Germinates slowly.

CAMPANULA. *Carpatica* or *Harebells* (*Hardy perennial*). Can be sown any time during the spring or early summer and transplanted in the early fall.

CANDYTUFT (*Annual*). Sow outdoors in the late spring or early summer in rows and thin to about 6 inches apart.

CANDYTUFT or *Iberis* (*Hardy perennial*). Best started in boxes or cold-frame in the spring or early summer for later transplanting into the garden 8-10 inches apart.

CARNATION (*Annual*). Sow in boxes indoors about March 1 for later transplanting into the garden 1 foot apart. In many locations they can be sown in the late summer and treated the same as Pansies.

CARNATION (*Hardy perennial*). The seed may be sown in boxes, cold-frame or seed-bed any time during the spring or summer for later transplanting into the garden a foot apart each way. The seed may also be sown outdoors in the garden where the plants are to remain and thinned to 1 foot apart. If the flowers are kept cut off before

they wilt, the blooming period will be prolonged. If the plants are severely trimmed back after they are through blooming and are on well drained soil they will persist for several years.

CASTOR BEAN. Sow outdoors when the weather is thoroughly warm, spacing them about 3 feet apart. Seed may also be started in pots earlier in the house and later transplanted into the open ground when all danger of frosts is past.

Seed is poisonous if eaten.

CENTAUREA. *Cyanus* or *Bachelor's Button*. The seed is usually sown outdoors in the garden where the plants are to remain, as early in the spring as the ground can be prepared. Can be thinned to 6-8 inches apart. Does not transplant easily, but is ideal for naturalizing by broadcasting seed, either in spring or fall.

CENTAUREA. *Imperialis* or *Sweet Sultan*. Sow outdoors in the spring after the soil has become warm and space to 8-10 inches apart.

CENTAUREA. *Montana* (*Hardy perennial*). Grows rapidly from seed sowed in late spring or early summer. Can be sown outdoors where the plants are to remain, or in seedbeds and transplanted later. Space 18 inches apart.

CHRYSANTHEMUM (*Annual*). May be sown outdoors as soon as the ground becomes warm, but are better treated in the same manner as Asters.

CHRYSANTHEMUM (*Hardy perennial*). While it is possible to grow Chrysanthemums from seed, many are inferior in type and color and it is much better to grow them from plant divisions or rooted cuttings.

Spring is the safest time for setting out plants. These should be young succulent divisions or cuttings, remembering that a small plant consisting of a single stalk and good roots will with proper care, make a large clump by fall. Space at least 18 inches apart. *Clumps should be divided each spring* using the stronger shoots from the outer edge of the clump. If plants are inclined to become spindly they can be pinched back until the middle of July. Later pinching interferes with a good set of buds and flowers.

Chrysanthemums are heavy feeders, but any good garden soil will usually be satisfactory. Use well rotted manure if available or commercial fertilizer. Leaf hoppers often

sting the terminal buds and cause the flowers to become distorted. These can be controlled by spraying at week or ten day intervals with Malathion or Sevin. For leaf spot, spray with Captan. The most common cause for winter killing is "wet feet." The location for planting should be well drained and if this is not possible the clumps should be dug in the fall and "heeled in" in a protected spot or coldframe over winter. Winter mulch with brush or evergreen boughs.

CHEIRANTHUS or *Siberian Wallflower* (*Biennial*). Usually sown in the early summer in the garden where the plants are to remain for next summer's flowers. Space 12" apart. Will bloom the first year if started early indoors.

CINERARIA *Maritima* or *Dusty Miller*. Used as an edging plant in the garden or in porch boxes for its gray foliage. Sow in boxes indoors in March and transplant. Germinates slowly.

CLARKIA. Sow outdoors as soon as the ground becomes warm and space 6-8 inches apart. Difficult to transplant unless started in Jiffy Pots. Does best in areas which are cool and moist.

CLEOME. Sow outdoors as soon as the soil becomes warm and space 2 feet apart. For earlier bloom, start the seed indoors. More effective if used as a mass planting rather than individual plants, and is splendid for tall backgrounds.

COCKSCOMB or *Celosia*. May be sown outdoors as soon as the soil becomes warm and thinned to 6-8 inches apart. May also be started indoors in boxes and later transplanted.

COLEUS. Used only as a foliage plant in the garden or window boxes. The leaves retain their color much better when planted in the shade or partial shade. Start the seed indoors in boxes in March and do not transplant outdoors until after all danger of frosts and cold weather is over.

COREOPSIS (*Hardy perennial*). Sow outdoors any time during the spring or summer and thin to 1 foot apart. May also be started in cold-frame or seed-bed.

COSMOS. Sow outdoors as soon as all danger of freezing is past. Best sown in groups spaced 2-3 feet apart. Sow 3 or 4 seeds together in each space, later thinning to one plant.

CYNOGLOSSUM. Sow outdoors after the soil becomes warm and thin to 8-10 inches apart.

DAHLIA. The named varieties and separate colors are available only as tubers. The bush type with semi-double and single flowers can be grown from seed. Sow outdoors after danger of frost or start in peat pots indoors in early March. Plant 3 or 4 seeds in a small pot and thin out to the strongest seedling. Plant into the open ground in May. Tubers may be taken up in the fall when the tops have been killed by the first frost and stored in a frost-proof basement but not allowed to become too dry. Dwarf Dahlias are planted 10-12 inches apart and the giant varieties 2-3 feet apart. Keep sprayed with Malathion or Sevin to prevent stunted plants and blasted buds caused by leaf hoppers.

DELPHINIUM (Hardy perennial). Plants from seed sown early indoors will produce some bloom in August. Plants from seed sown outdoors in early spring will have some flowers in September while a June sowing may have a few blooms in early fall, but produces its best flowers the following June. The seed should be started in boxes, cold-frame or seed-bed and later transplanted 18-24 inches apart but may be sown in the garden where the plants are to remain. As the seed germinates rather slowly and the young seedlings are quite delicate, we do not recommend sowing directly into the garden. The soil in which the seed is sown should be loose, preferably sandy, for good drainage and of a type that will not crust over the seed. The seed-bed should be kept moist, shaded and cool until after the seed has germinated. Germination is best at a temperature of 55° to 70°. Excessively high temperatures of mid-summer will prevent germination.

Delphiniums need good deep soil, rich in lime. Unless it is definitely a limestone soil we recommend a generous application of lime in the soil each year.

Crown-rot, which is a soil-borne virus, seems to be the most destructive Delphinium disease and there is no sure cure known. We have found the best preventative is to encourage healthy plant growth by liberal use of lime, not too nitrogenous fertilizer, and good drainage. Karathane is excellent to check powdery mildew. Phaltan and Captan are good for black spot and will give some mildew control also. Usually an all-purpose spray or dust recommended for roses will control the problems of delphinium. Always treat the soil around the plants at the same time. Keep all dead foliage removed, and if you cut the flower stalk back as soon as the flowers wilt, they will

usually bloom again in late summer. Cut the plants back again as they die down in the fall. For red spider and cyclamen mite, spray with Isotox, Kelthane or Malathion.

Delphiniums do well in either sun or partial shade. Seed usually germinates in 12-14 days.

DIANTHUS or Pinks (Annual). Sow outdoors in rows or clusters as soon as the soil can be worked. Thin to 6-8 inches apart. In some localities it may be sown in the fall.

DIANTHUS (Hardy perennial). May be sown either in boxes, cold-frame, seed-bed or in the garden any time during the spring or summer and thinned to 6-8 inches apart.

DIDISCUS or Blue Lace Flower. Usually sown outdoors as soon as the ground becomes warm, and thinned to 6-8 inches apart. Seed started earlier indoors will make larger plants and produce more flowers. Germinates slowly.

DIMORPHOTHECA or African Daisy. Sow outdoors after the ground becomes very warm and thin to 6-8 inches apart. This is a tropical hot-weather plant and requires heat and full sunlight.

DIGITALIS or Foxglove (Biennial). The seed is so fine it should be sown on top of the ground and merely pressed in lightly. Keep the ground moist and shaded if possible until the seed germinates. It can be started in boxes or cold-frames for later transplanting. Since the plants die after flowering, a new seeding must be started each year, but foxglove self-sows readily and a planting will persist if left undisturbed. Transplant or thin to 8-12 inches apart.

FOUR O'CLOCK. Marvel of Peru or Mirabilis. Sow outdoors as soon as danger of frost is past. Plants should be kept spaced at least 18 inches apart. The roots are sometimes dug in the fall, stored in a basement in a box of sand and planted out again the following spring. These will make immense growth the following year.

GAILLARDIA (Annual). Sow outdoors in the spring after the soil becomes warm and thin to 6-8 inches apart. They prefer full sunlight and a warm light soil. May also be started indoors for earlier bloom.

GAILLARDIA (Hardy perennial). Sow in boxes, cold-frame, seed-bed or in the garden anytime during the spring or summer. The plants should be spaced to 12-18 inches apart. Needs full sunlight.

HYBRID GERANIUMS FROM SEED. Sow indoors early. A February 1 sowing will produce bloom in 130 to 150 days, but flowering can be advanced three to four

weeks by the use of supplemental light while growing indoors. Use an artificial seed starting mixture (see page 4) and cover the seed $\frac{1}{4}$ inch deep. Keep the surface slightly moist *all the time* and maintain a *steady* minimum temperature of 70-75° until germination is complete. Then night temperatures may be lowered to 60-65°.

The amount of light available to the seedling plants determines flowering time, so if fluorescent light is not supplied, put the box in a window where they will get the most sunlight.

As soon as the plants are large enough to handle, transplant them to Jiffy Pots or Jiffy-7 Pellets, and when all danger of frost is past, they may be set out in the garden, spacing 12-15 inches apart. Geraniums prefer full sun but will do well with as little as half a day of direct sunlight.

GEUM (*Hardy perennial*). The seed is usually started in boxes or cold-frame in the spring and transplanted in a well protected situation in order to become thoroughly established before cold weather. Germinates slowly.

GLADIOLUS. The first glad bulbs may be planted as soon as the soil can be worked and successive plantings made for about two months, providing a long blooming season. Make a trench about 6 inches deep and scatter fertilizer in the bottom, mixing it with the soil so that it does not come in contact with the bulbs. Any commercial fertilizer with an analysis such as 5-10-5 is satisfactory, but avoid manure which can carry disease. Cover only about 2 inches deep at first. As they grow, the trench may be filled in. If planted too shallow they will tip over when in flower. Thrips are their most serious insect pest, damaging both the flowers and bulbs. Diazinon or Sevin are effective when used as a spray during the growing season at weekly intervals, starting when the plants are 6-8 inches tall. When the corms are put into storage, cover them lightly with 5% Sevin dust.

Diseases known as hard-rot, dry-rot and black-rot attack the bulbs and as a precautionary measure all bulbs should be soaked for about 20-30 min. just before planting in a solution made up of 8 tablespoons of Captan to 1 gallon of water. For dry treatment, shake the bulbs in a paper bag with enough Captan to coat them thoroughly. This may be done several weeks before planting. Gladiolus should not be planted back in the same soil for some time. The tops are cut off from gladiolus bulbs when dug and the bulbs stored in a dry, frost-proof place at 50° temperature until spring. Baskets

suspended from the floor joists in the cellar are usually the best place. Directions for growing are enclosed with each shipment of our bulbs.

GLORIOSA DAISY or *Rudbeckia*. (*Perennial*.) If started early indoors, it blooms profusely the first year. Use a finely prepared starting mix and cover seed about $\frac{1}{16}$ in. Good surface moisture and 70-75° temperature produce seedlings in 8-10 days. In the garden, space 12-18 in. apart. If mildew becomes a problem, spray with Phaltan.

GODETIA. Sow outdoors in the spring, and thin to 8 inches apart. They prefer a cool semi-shady position.

GOURDS. (*Annual Vine*). Sow outdoors after all danger of frost and the soil is thoroughly warm or start indoors in peat pots or Jiffy-7 Pellets for transplanting outdoors when the weather is settled. If vines are allowed to grow on the ground, spacing should be 3 ft. each way. They can also be trained on a fence or heavy trellis and in this case spacing may be closer. Trellis-grown plants will produce cleaner fruit.

Drying Gourds: Pick fruit from the vines when completely ripe, being careful not to cause injury in handling. Wash with a strong disinfectant to remove dirt and fungi that might cause rotting. Spread the fruit out on a wood floor or raised screen in a cool, dry room. Make certain the fruits are spaced so that they do not touch each other. A small hole made in the end of the fruit with an ice pick will hasten drying on the inside. Be sure to turn the fruit regularly during drying.

When completely dry, the fruit can be waxed (using ordinary floor wax) and polished with a soft cloth. Sometimes shellac is used but this tends to change the color and appearance. A spray paint can also be used with various colors to suit your taste.

GYPSOPHILA. *Elegans* or *Baby's Breath* (*Annual*). Germinates quickly and flowers in a few weeks. To maintain a succession of bloom throughout the summer, sowings should be made every two weeks from early spring until mid-summer. Sow outdoors in the garden where the plants are to remain and thin to 3 or 4 inches apart. In some localities a fall sowing will come through the winter.

GYPSOPHILA *Paniculata* or *Baby's Breath*. (*Hardy perennial*). For uniform double-flowering, it is best to buy the plants, since growing them from seed produces a number of singles also. The best double flowered plants are obtained by buying plants of a grafted variety such as Bristol Fairy. Seed of either the single or double form can be sown any time from spring until

midsummer in boxes, cold-frame or seed-bed or where the plants are to remain. They should be spaced about 2 feet apart.

HELICHRYSUM or *Strawflowers*. Sow outdoors as soon as the ground becomes warm and thin to 8-10 inches apart. If the flowers are to be used for winter bouquets, cut them before the flowers are fully open and suspend upside down in a light airy place to dry. Earlier bloom can be had by starting the seed indoors or in a cold-frame.

HELIOTROPE. Start indoors in boxes in March and do not transplant into the garden until all danger of frosts is past. Set out at least 1 foot apart. Germinates slowly.

HIBISCUS. (*Perennial*.) Seed started early indoors will produce flowering plants the first year. Cover the seed about $\frac{1}{8}$ in. and keep moist until seedlings appear. A temperature of 70-75° is satisfactory. If started out of doors, do not sow until the soil is warm. Transplant to 18-24 in. apart. Since this is one of the first plants to start new growth in the spring, be careful not to disturb the roots during early cultivation.

HOLLYHOCK (*Hardy perennial*). Sow outdoors in the spring or during the summer where the plants are to remain and space to 1 foot apart. Hollyhocks should be kept sprayed with a fungicide containing zineb in order to prevent rust which attacks the foliage, particularly that of double Hollyhocks.

HONESTY. *Lunaria* or "Money." A tender biennial grown for the white seed pods which are used as everlasting flowers for winter decoration. Seed sown outdoors in the summer will, with protection, carry through the winter in most localities and produce seed pods the following summer. Space 8-10 inches apart.

IBERIS, see *Hardy Candytuft*.

ICELAND POPPY, see *Poppy Nudicaule*.

IMPATIENS, SULTANI. Impatiens must be started indoors at a temperature of 70-75°. An artificial soil medium, such as Harris Seed Starting Mix or Jiffy Mix, is essential. Since the seed is light-responsive, it should not be covered. Glass or clear plastic may be placed over the flat to conserve moisture and heat. Covering the seed with soil, paper or other dark material will prevent or seriously inhibit germination. Keep moist by misting occasionally, but do not over-water as plants are susceptible to damping-off.

In transplanting impatiens, it is important to handle the seedlings only by the leaf. The slightest pressure on the stem may injure it and cause the plant to lop over.

The plants are very tender and should not be set out of doors until you are sure they will not be exposed to cool weather. They require shade or semi-shade since they tend to burn off in full sun. Soil low in nutrients will give shorter plants and more bloom. Rich soil encourages vegetative growth and inhibits flowering.

KOCHIA or *Summer Cypress*. Usually used as a low hedge or border plant. Sow outdoors in shallow rows in the late spring and thin the seedlings to 10 inches apart. Seed may also be started earlier indoors for quicker results.

LARKSPUR (*Hardy*), see *Delphinium*.

LARKSPUR (*Annual*). Usually sown very early in the spring just as soon as the frost is out of the ground and the seedlings thinned to 8-10 inches apart. Good results can be had in some localities by sowing the seed in September outdoors. They will bloom much earlier the following summer and grow more vigorously. The seed can also be started in Jiffy Pots either indoors or in a cold-frame in very early spring and transplanted into the garden. Freezing does not injure Larkspur. Seed germinates best under cool conditions.

LATHYRUS or *Hardy Sweet Peas* (*Perennial*). Easily grown from seed sown outdoors in spring or early summer. Usually planted along a fence, around a stump or on steep banks where there is support to climb. The seed may also be started indoors or in a seed-bed and later transplanted 3 ft. apart. Germinates slowly.

LAVATERA or *Mallow*. Sow outdoors where the plants are to remain in the late spring after the soil becomes thoroughly warm. Thin out the seedlings to at least 12 inches apart.

LAVENDER. (*Perennial*). Seed is difficult to germinate unless given special treatment. The best method is to mix one part seed with two parts of moist soil. Place this mixture in a jar or similar container and put in a freezer for about one month. When removed, plant immediately, using the mixture as you would clear seed. When plants are large enough, set into the garden one foot apart. Very slow growing.

LINUM or *Flax* (*Annual*). Grows easily from seed sown outdoors as soon as the soil becomes warm, and the seedlings thinned to 6-8 inches apart.

LINUM Perenne (*Perennial*). May be sown outdoors any time from spring to mid-summer. The plants should be kept sufficiently thinned to prevent crowding.

LOBELIA. (*Annual*). As the seed is exceedingly small it is better to sow in boxes indoors. Just scatter it on top of the soil and do not cover. For best effect in the garden it should be started in March. Do not allow the seedlings to become crowded. Set the plants out in the garden 6-8 inches apart as an edging.

LUNARIA, see *Honesty*.

LUPINS *Polyphyllus* (*Perennial*). Most satisfactory results are obtained if the seed is sown where the plants are to remain, as Lupins do not like to be moved, although they can be seeded indoors in peat pots and later moved to the garden without any shock from transplanting. A soil well supplied with organic matter and a little on the acid side with a pH of 5.5 to 6.0 is considered best for Lupins.

The green aphids which sometimes infest the plants at blooming time can be controlled by spraying with Malathion.

LUPINS (*Annual*). Sow as early as possible in the garden where the plants are to remain and thin them to at least a foot apart.

MARIGOLD. *Tall Varieties*. Sow outdoors as soon as the soil is warm and danger of frost is past. More growth and earlier flowers result from starting the seed indoors about four weeks before you plan to set them outside. In the garden the plants should be spaced 18 inches apart.

MARIGOLD. *Dwarf Varieties*. These are all earlier flowering and are very successful from seed sown outdoors in the spring as soon as danger of frosts is over. Dwarf Marigolds are generally used in rows as edging. Space 10 to 12 in. apart.

Note: In areas where leaf hoppers are present, Marigolds should be sprayed at weekly intervals with Malathion or Sevin.

MATRICARIA or *Feverfew* (*Perennial*). May be started outdoors or in a cold-frame during spring or early summer. When the plants are sufficiently large, set them out 8 inches apart. If started early, they will usually bloom the first year.

MIGNONETTE. Easily grown from seed sown outdoors in the early spring. Sow very shallow and thin seedlings to at least 6 inches apart.

MORNING GLORY. The ordinary Morning Glory grows very rapidly from seed sown outdoors in the early spring and thinned to 6-8 inches apart. They must be planted where they can have a trellis or strings to climb upon. Train-ets are ideal for this purpose.

The large-flowering Morning Glories such as Heavenly Blue, Pearly Gates, etc. are more satisfactory if the seed is started earlier indoors. The best method is to sow 2 or 3 seeds in a small peat pot about three weeks before they are to be planted outdoors, but this should not be done before all danger of cold weather is past. The seed germinates very readily if the soil is kept soaked and very warm until the seed sprouts. Nicking the pointed end of the seed with a knife will also hasten germination. Until the seedlings come up, the soil should never be allowed to get dry.

MYOSOTIS or *Forget-Me-Not*. (*Biennial*). In general they are grown the same as Pansies. For naturalizing in shady places the seed is scattered broadcast any time from spring until mid-summer. Also plants may be set out any time during the growing season and allowed to re-seed.

NASTURTIUMS. Do not sow until the ground has become warm. The seeds will decay in cold, wet soil. Nasturtiums will flower much better in rather dry, unfertilized soil, as rich soil will produce an abundance of foliage and few flowers. Seedlings should be thinned to 8 inches apart. If troubled with black aphids, spray with malathion.

NEMESIA. Although it will grow satisfactorily from seed sown outdoors in the garden, it is usually started indoors in boxes or pots and later transplanted into the garden. Nemesia prefers a cool climate or semi-shaded locations, as it tends to stem rot during a hot dry summer. The plants should be spaced about 8 inches apart.

NIEREMBERGIA. A very low-growing annual used the same way as Lobelia. As the seed is very fine it is much better to start it indoors in boxes or pots and later transplant into the garden 8 to 10 inches apart.

NICOTIANA grows easily from seed sown outdoors if sufficient care is used. The seed is very fine and must not be covered with soil. Keep the sowing shaded until the seed sprouts. Usually more satisfactory if started indoors. Tall growing varieties should be spaced 1½ ft. apart.

NIGELLA or *Love-in-a-Mist* Easily grown from seed sown outdoors and thinned to 8 inches apart.

PANSY. Pansies are cool weather plants and temperatures especially at night should not be above 70° for good germination. For summer and fall flowering plants, seed may be started indoors or outdoors in a cold-frame or seed-bed as soon as weather per-

mits. The ideal temperature for good germination is 65-75°.

The seed requires about two weeks to germinate and during this period great care should be taken not to allow the soil to dry out, as this is sure to cause failure. In 6-8 weeks, when the plants have four to six leaves, they can be transplanted into the garden. Space 6 in. x 6 in.

For early spring bloom seed is sown any time from July 20th to Sept. 1st in a cold-frame or seed-bed that can be kept shaded and watered. Seedlings will be ready for transplanting in September and in most areas will winter over without protection. However, it is a good idea to give them a light covering of hay, straw or similar material after the ground freezes. Pansies are heavy feeders and the size of bloom depends to a great extent on the fertility of the soil. It is a good plan to work processed cattle manure into the soil before transplanting and to use a good commercial fertilizer as a side dressing during the growing season. Plenty of moisture at all times is essential. (Ask for our special leaflet on growing Pansies commercially.)

PETUNIAS. Seed must be started early indoors. As the seed is very small and the tiny seedlings are weak, great care must be used to have your planting medium well firmed and level, about 3/4 inch below the top of the box or pot, and thoroughly moistened. Sow the seed evenly on top of the soil and cover with a pane of glass or enclose the container in a poly bag. Admit a little air as condensation gathers on the covering.

Germinate at 70-75°. Keep the container out of direct sunlight until the seed sprouts; then remove the covering and put the container in a sunny spot. Fluorescent lights, adjustable to 6 in. above the plants give good results. See page 4 for more detailed information on starting plants indoors.

Watering should be done by setting the box or pot in a shallow pan of water warmed to room temperature, but do not keep the soil wet.

After the seedlings are 3/4 to 1 inch tall they should be transplanted into other boxes or pots and kept outdoors in the sun every warm day (above 40 degrees). When two inches or more tall they may be set into the garden.

PHLOX Drummondii (Annual). Easily grown from seed sown outdoors in the garden after the ground and weather become thoroughly warm. Space the plants 6 inches apart.

PHLOX Decussata (Perennial). Seed will not germinate unless pre-chilled. This is done by placing one part seed and two

parts moist soil mixed together in a jar and freezing for one to two months. An outdoor sowing made in the fall will give good germination in the spring.

The colors do not "come true" from seed, so to be sure of the colors you want, purchase plants. Be sure to cut off flower heads before they go to seed. If this is not done, the seeds drop to the ground producing vigorous seedlings which crowd out the older plants. Flowers on these seedlings are often a muddy magenta color.

Mildew and black spot are quite common to Phlox and can be controlled to a large extent by planting so that there is a good circulation of air around the plants and by spraying at weekly intervals. Use Phaltan for mildew and black spot. Water generously during dry periods.

PHLOX. *Dwarf subulata* or *Mountain Pinks*. The flat, spreading perennial that blooms in May and June in shades of blue, lavender, crimson, pink, rose and white. This type is not available from seed and is grown only from division or cuttings.

PINKS, see Dianthus.

POPPY, Shirley (Annual). Easily grown from seed sown outdoors any time from early spring to midsummer. As the seed is very fine, simply sow it on top of the soil. Seed sown in the fall usually comes up the following spring, providing earlier flowers. A sowing once started will usually continue to self-sow.

POPPY, Oriental (Hardy perennial). As the seedlings are very difficult to transplant, it is better to sow where the plants are to remain. Sow in spring or early summer on top of the soil and keep shaded until seed starts. May also be sown in peat pots in the house or outdoors in a shady place and planted in the garden when large enough without disturbing the roots.

The clumps of plants should be at least 18 inches apart. Colors do not reproduce true from seed and for this reason named varieties should be purchased as plants in August or September when the roots are dormant.

POPPY, Iceland or Nudicaule (Biennial). Follow directions for Oriental Poppies, spacing only 8 inches apart.

PRIMROSE, Polyanthus and Veris (Perennial). Hardy Primroses are easy to raise from seed if all conditions are right. It is usually the most satisfactory method to sow the seed indoors in winter or early spring in boxes which are kept in a cool place and not allowed to dry out. The germination

may take from 3 to 4 weeks. Set out the plants 10 inches apart.

PYRETHRUM (*Hardy perennial*). May be sown either outdoors where the plants are to remain or started in boxes or cold-frame. May be sown in spring or early summer. Cover very lightly and keep the ground well shaded until the seed germinates. Space the plants to 1 foot apart.

PORTULACA. Easily grown from seed sown outdoors where the plants are to remain as soon as the ground becomes warm. Prefers a warm sunny situation, and as the seed is very fine it must be covered very lightly or sown on top of the soil. Can be transplanted if handled carefully.

RICINUS. See *Castor Bean*.

RUDBECKIA, see *Gloriosa Daisy*.

SALPIGLOSSIS. Sow the seed outdoors after the weather becomes warm on the surface of well prepared soil. The seed is very fine and should not be covered. Keep shaded and moist until it sprouts. Young plants grow very slowly and are often attacked by a small black beetle and by leaf miners. Dusting with Rotenone, Sevin or other good insecticides will prove effective. Space the plants 8-10 inches apart.

SALVIA. The seed should be started indoors early at a temperature of at least 70 to 75 degrees. Do not set into the open ground until all danger of freezing is past. The larger growing varieties like Bonfire should be spaced 1½ to 2 ft. apart; dwarf varieties about 12 to 18 in. apart.

SCABIOSA (*Annual*). May be sown outdoors after the ground becomes warm or started indoors early and later transplanted. The tall varieties should be spaced at least 12 inches apart; dwarf varieties only 6-8 inches apart.

SCABIOSA Caucasica (*Hardy perennial*). As the seed does not germinate very easily, it is better to sow in a coldframe or box in the spring or early summer. Keep the soil moist and shaded until the seed sprouts, and later transplant to the garden, spacing at least 12-15 inches apart.

SCHIZANTHUS. Grows quite easily from seed sown outdoors in the early summer after the soil becomes very warm. Thin the seedlings to 8 inches apart.

SIBERIAN WALLFLOWER, See *Cheiranthus*.

SHASTA DAISY (*Hardy perennial*). Grows easily from seed sown outdoors from spring to early summer. Plants should be thinned to a foot apart.

SNAPDRAGON. If sowed in the open ground in May and thinned to 8 inches apart, the plants will start blooming in mid-summer. For earlier bloom and more vigorous plants, sow indoors in March for later transplanting into the garden. The seed is very fine and should not be covered. To make the plants more bushy, the tops of the seedlings should be pinched out.

SNOW-ON-THE-MOUNTAIN. Easily grown from seed sown outdoors in the early spring. Thin the plants to about 10 inches apart.

STATICE Sinuata (*Annual*). The seed should be sown in a light, warm, sandy soil in a sunny position and kept well moistened until the seed sprouts. May also be started indoors and transplanted to a warm sunny spot. Germination is slow.

STOCKS. The common Ten-Weeks Stocks may be treated the same as Asters and may either be sown in the open ground after heavy frosts are over or started indoors. The Giant Imperial varieties and Beauty of Nice types are larger flowering and should be started indoors in boxes since they will not flower in the northern states if sown in the open ground. Transplant 15 to 18 inches apart.

Sometimes stocks fail to bloom. This is especially true of the taller and later flowering varieties. Seed of these should be started early, about three months before planting in the garden, and after the transplants are established they should be kept as nearly as possible at a temperature of 40°F to 50°F until ready to plant in the garden. Stock plants grown cool during the early stages will usually bloom 100%.

STRAWFLOWERS. See *Helichrysum*.

SUMMER CYPRESS. See *Kochia*.

SUNFLOWER. Sow outdoors after danger of frost and thin to 1 foot apart.

SWEET PEAS. The most important thing about getting good Sweet Peas is to sow the seed early. Just as soon as the frost is out of the ground, sow in rows 3½ to 4 feet apart. Make a trench the same as for garden peas. Sow the Peas so that there are 2 or 3 to the inch. The trench should be 4 inches deep, but the seed covered with only ½ inch of soil. As the plants grow, soil may be drawn up around

them. A rather heavy soil is best, as Sweet Peas do not do well on light sand. Rich soil and ample moisture are two requisites for good Sweet Peas. Another method is to start seed indoors in mid-March and set outdoors in April. Use black plastic as a mulch and make holes for transplanting with a bulb planter.

Sweet Peas can be trained onto a trellis or allowed to run on the ground, making a large cluster or mound.

Sweet Peas are often infested with green aphids which carry mosaic disease and cause the foliage to turn yellow. They should be kept sprayed with Malathion or Diazinon.

Water plentifully in dry weather. One good soaking is better than a dozen sprinklings. Water so that the ground is damp 8 or 10 inches deep. This will last for 10 days even in very dry weather. A ground mulch will help to conserve moisture, keep the soil cool and eliminate weeds. Keep the flowers picked off as closely as possible.

In places south of New York City it is an excellent plan to sow Sweet Peas in the fall. The time to sow depends on the locality. The aim should be to get the seeds started, but not above ground, before the ground freezes. Much finer flowers are obtained in this way than from spring sown seed and they bloom much earlier.

SWEET WILLIAM (*Hardy perennial*). Sow the seed outdoors where the plants are to remain any time from spring until mid-summer for flowers the following season. Thin the seedlings to about 8 inches apart before they become crowded. In some locations Sweet William is a biennial, but usually persists by self-sowing.

THUNBERGIA or *Clock Vine*. Seed can be sown directly in the garden or started indoors and later transplanted outside. A climbing vine of moderate growth.

TITHONIA. Seed can be sown outdoors after the soil has become warm or it may be started earlier indoors for later transplanting. Space to 18 in. apart in the garden.

TORENIA or *Wishbone Flower*. Seed should be started early indoors under the same conditions recommended for petunias. Since the young plants are very sensitive to cold, they should not be set out until warm weather.

VERBENA. As the seed does not germinate when sown outdoors until the ground becomes very warm, it is usually more satisfactory to start the seed indoors in boxes and later transplant the seedlings to the garden, spacing 1 foot apart.

VINCA ROSEA. Sow the seeds indoors in February or March as the seedlings are slow growing. Temperatures of 80° or higher are recommended for best germination and good growth. Do not over-water the seedlings.

VIOLA. Treat same as Pansies.

WALLFLOWER. Treat same as Stocks.

ZINNIA. Sow in the open ground in spring after the ground has become thoroughly warm as zinnia seed will not germinate in cool soil. A good method is to sow 3 or 4 seeds together in groups 1 foot apart each way. When the plants are small, thin to one plant. May also be sown in rows 2½ or 3 feet apart and thinned to 1 foot apart in the rows. They are sometimes started early in hot-beds or cold-frames and later transplanted, but the seedlings should be small when transplanted.

In areas where leaf-hoppers are present, Zinnias should be sprayed at weekly intervals with Sevin.

A disease called Alternaria is sometimes a serious threat to zinnias. The best control at present is a regular spray program with Phaltan.

Certain types, including the Pompon, Cut and Come Again, Cupid, Mexican and the F₁ hybrids show considerable resistance to this disease. The Dahlia Flowered and California Giant types are somewhat less susceptible than the Cactus Flowered types, but if the disease is present, it usually will spread to all large flowered varieties.

CALENDAR FOR A HOME VEGETABLE GARDEN

Northeastern States

MARCH

FIRST WEEK

Sow Early Cabbage indoors or in hotbed.

SECOND WEEK

Sow Head Lettuce indoors or in hotbed.

THIRD WEEK

Sow Peppers, Early Tomatoes, Egg Plant indoors or in hotbed.

APRIL

MIDDLE of MONTH

Sow Celery, Tomatoes, Broccoli, more Cabbage indoors or in hotbed.

LAST of MONTH

Sow seed outdoors of: Beets, Carrots, Kohl Rabi, Leaf Lettuce, Parsnips, Parsley, Peas, Radishes, Spinach.

Put plants outdoors of: Asparagus, Early Cabbage, Lettuce, Onion Plants and Sets.

MAY

FIRST WEEK

Same as above, also Early Corn outdoors.

Sow Melons and Watermelons indoors or in hotbed.

SECOND WEEK

Sow in outdoor seedbed: Broccoli, Brussels Sprouts, Late Cabbage, Cauliflower, Celery.

THIRD WEEK

Sow seed outdoors of: Beans, Lima Beans, Corn.

Set out early Tomato Plants.

LAST WEEK

Sow seed outdoors of: Beans, Squash, Cucumbers, Melons.

Put plants outdoors of: Tomatoes, Peppers, Egg Plant or wait until first week in June.

JUNE

FIRST WEEK

Set out Melon plants.

Make second planting of Beans, Kohl Rabi, Lettuce.

MIDDLE of MONTH

Set out Celery plants.

JULY

FIRST and SECOND WEEK

Set out plants of Broccoli, Brussels Sprouts, Late Cabbage, Cauliflower.

Make second sowing of Beets, Beans, Carrots.

MIDDLE of MONTH

Sow Chinese Cabbage, Endive, Rutabagas, Turnips.

AUGUST

Sow seed outdoors of Lettuce, Radishes, Spinach.

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