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Flower Gardening



Extension ³ 4-H Bulletin 62



UNIVERSITY OF MINNESOTA
Agricultural ² Extension Service

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Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Roland H. Abraham, Director of Agricultural Extension Service, University of Minnesota, St. Paul, Minnesota 55101.

FLOWER GARDENING

CHAPTER I GROWING ANNUAL AND PERENNIAL FLOWERS

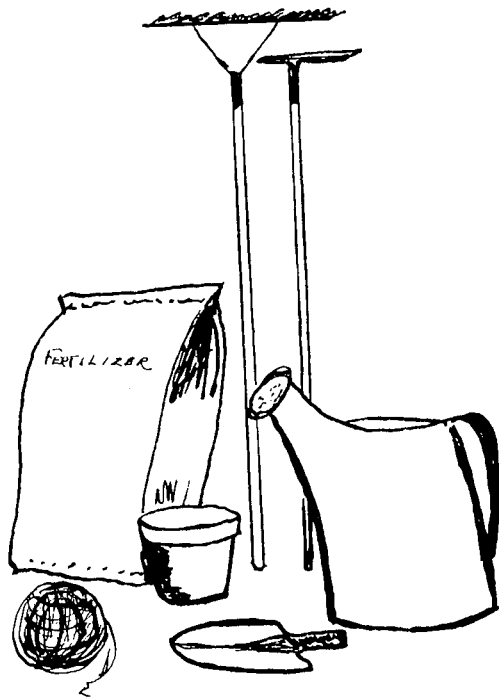
Three main types of plants are used in a flower garden—annuals, biennials, and perennials. An annual is a plant that lives only one season. It grows from seed, flowers, produces seed, and dies all in 1 year.

Biennials complete their life span in two seasons, producing seed one summer for bloom the following summer. Herbaceous perennials produce new tip growth from their roots each year. Zinnias and marigolds are examples of annuals, pansies and foxgloves are biennials, and peonies and irises are perennials.

Materials You Need

For your flower garden, select a site that is sunny and well-drained. Most annuals need plenty of sun.

You will need a pencil, paper, and ruler for making a garden plan. For preparing your garden you will need a spade or spading fork, garden rake, trowel, hoe, heavy cord, watering can, agricultural limestone, peat moss or humus, and a commercial fertilizer such as 5-10-5.



Some equipment you'll need for flower gardening.

You will also need seeds of annual flowers and plants for perennial flowers. Since you will be growing annual flowers outdoors, choose annuals that grow

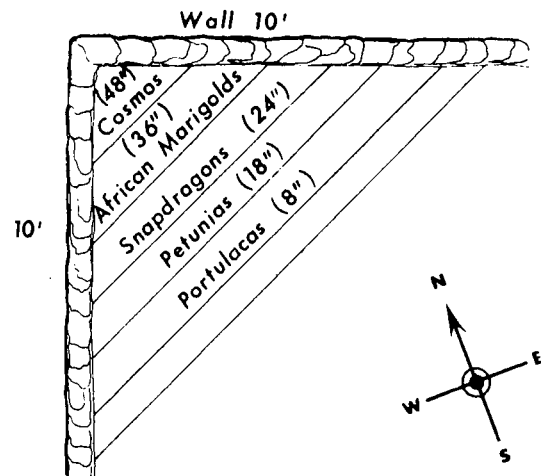
quickly from seed such as zinnia, marigold, annual dahlia, calendula, cosmos, cornflower, and spider plant.

You may select any perennials but those that divide easily are especially good choices. These include chrysanthemums, phlox, iris, daylilies, pinks, sundrop, peonies, and other plants that tend to form clumps.

Making the Plan

Measure your garden area and make a plan on paper using a scale. As a scale, make $\frac{1}{2}$ inch on paper equal to 1 foot of your garden. Use a smaller scale for larger gardens. Mark the measurements in feet on your garden plan.

If buildings, walls, fences, or trees are near your garden, put them on your plan. Include an arrow showing where north is relative to your garden.



Draw your plan to scale and indicate which direction is north.

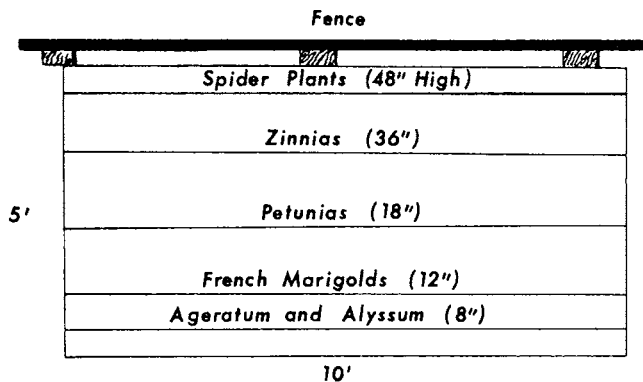
Talk over with your leader and parents what types of flowers you would like to grow. Try some easy ones the first year and the more difficult ones later.

Check the heights of plants you select and plant tall ones in the back, shorter ones in front. Grow your plants in rows to make weeding easier.

Wait until frost danger is over before planting your garden. Late frosts may kill annuals.

Preparing the Soil

Most flowers will grow on a variety of soils but they will grow better if the soil is supplied with humus and fertilizer and with lime if it is needed.



Mark dimensions on your garden plan.

To tell when your garden is ready for spring planting, squeeze a handful of soil. If it crumbles, you can begin spading. If it forms a mudball, wait a few days and test again.

Spread some peat moss, leaf mold, well-rotted manure, or other humus on the soil surface, then spade the garden turning under lime and humus. Break up lumps with a hoe and smooth the surface with an iron rake. Remove all stones and hard lumps of soil.

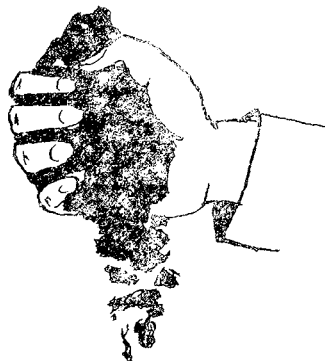
Spread 1½ to 2 pounds of commercial fertilizer such as 5-10-5 (a pint jar holds about 2 pounds of this fertilizer) for 100 square feet of garden and work it into the soil with a rake. Now your garden is ready for planting.

Planting Your Garden with Annuals

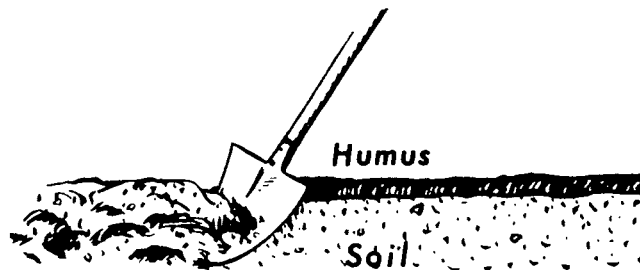
Your leader can help you locate a greenhouse, garden store, or nursery where you can buy plants for your garden. Use your plan in deciding how many plants you need. Rows can be 1 to 2 feet apart depending on plant size when fully grown.

Mark off the rows with heavy cord using a measuring stick to space between plants. If your rows are straight, your garden will be neat and easy to weed.

Keep as much soil around young plants as possible. Dig holes for the plants with a trowel, setting them a little deeper than they were in the greenhouse pots.

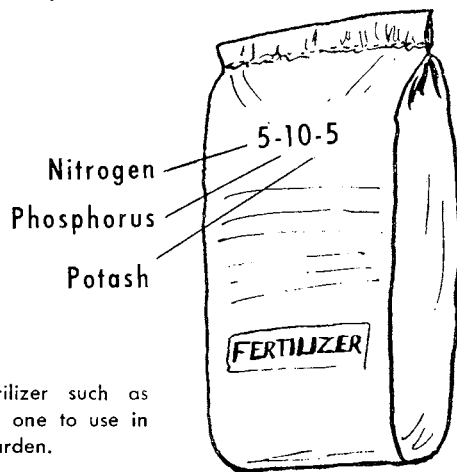


Your garden is ready for spading if the soil crumbles when you squeeze it.



Prepare your garden by turning under humus with a spade.

or flats of soil. Do your transplanting on a cloudy day or in the late afternoon. Give plants a little water each day until they are established.

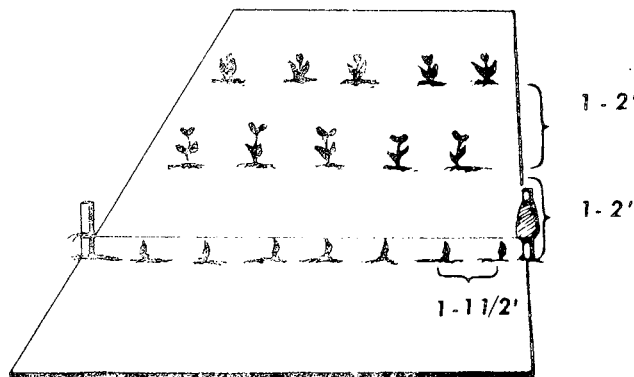


A complete fertilizer such as 5-10-5 is a good one to use in your garden.

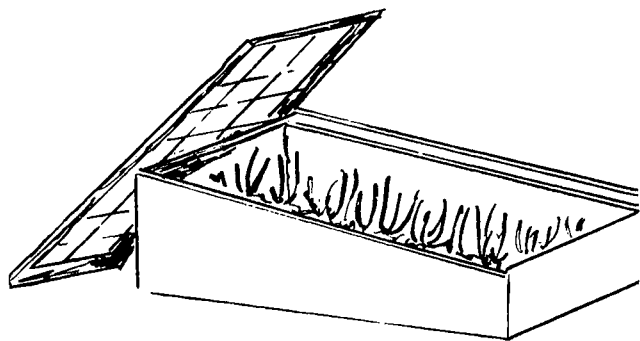
Sowing Annual Seed Outdoors

Dates for sowing seed outdoors vary with the area. If you are going to seed in the open ground, wait until frost danger has passed and the soil is warm. Seed sown too early in cold soil is apt to rot and may not grow well even if it does germinate. Safe dates to sow seed in Minnesota are May 15-June 1.

By using a coldframe for starting seedlings outdoors, you can start seeds several weeks earlier than usual. The glass will protect the seeds from frost and will allow the soil to warm up quickly. The glass



Use heavy cord for making rows straight. Space plants 1 to 1½ feet apart and rows 1 to 2 feet apart.



Make the back of your coldframe higher than the front so it will shed water. You can use either a window or coldframe sash.

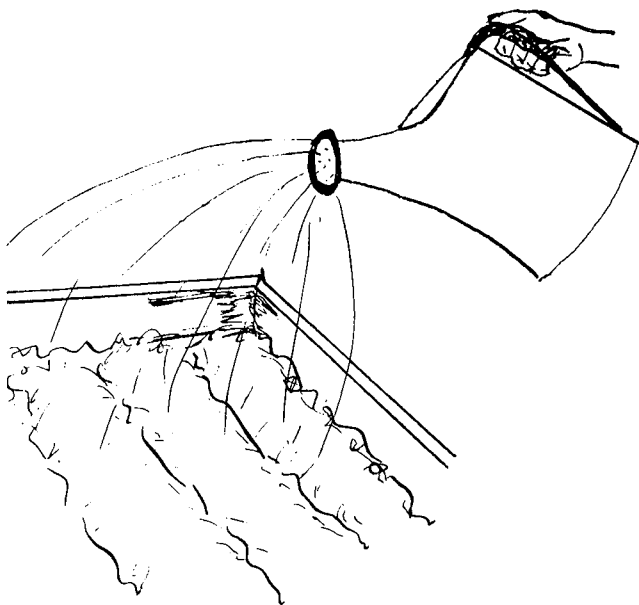
covering will also protect seedlings from heavy rains that might otherwise wash them from the soil.

You can make a coldframe from an old window sash or several large pieces of glass. A standard coldframe is 3 x 6 feet and is awkward to handle but you can use one successfully. Make a frame for the sash or glass by placing the side boards partly in the soil. The boards should extend about 6 inches out of the ground with the back slightly higher than the front so water will run off.

Prepare seedbed by working in leaf mold or peat moss, raking off the stones and lumps of soil, and leveling the surface with the back of a garden rake. Build up the soil level to provide good drainage.

Mark off straight shallow rows about 6 inches apart using a stick or spoon handle along the board edges. Sow seed very thinly in rows and cover with a little finely sifted soil. Mark ends of rows with labels. Sow seed no deeper than twice its smallest diameter.

As soon as seedlings appear, remove glass from frame during the day but replace it at night or when rain is expected.



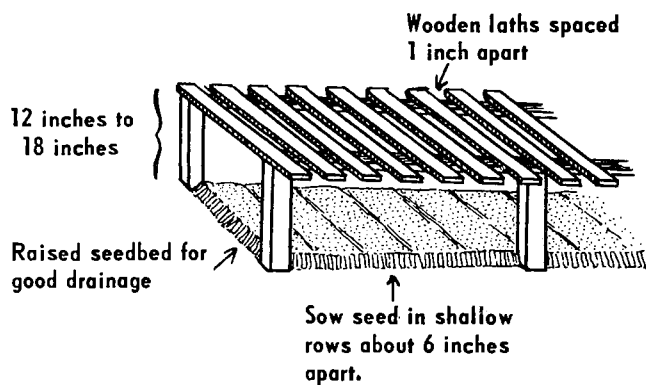
Use a watering can with a fine "rose" nozzle to water seeds and seedlings.

Water seeds with a watering can that has a very fine "rose" nozzle. You can easily expose the seed by forceful watering.

Shade

On warm days, shade your seedbed with an old window screen covered with cheesecloth. Or, make a lath shade by spacing the laths about 1 inch apart. On warm muggy days raise the shade to allow good air circulation.

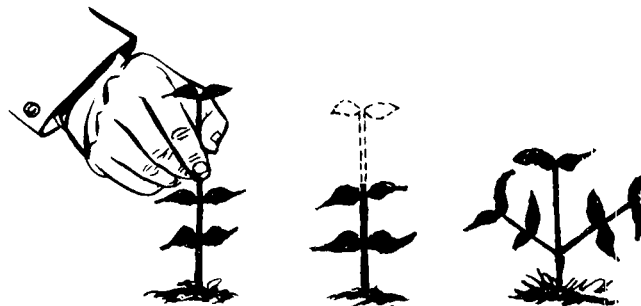
As soon as seedlings have three sets of true leaves, transplant them into the garden. For the first few days, until seedlings are established, shade them with flower pots or berry boxes.



On warm days, shade your seedbed with laths or a window screen covered with cheesecloth.

Pinching

Most annuals grow tall and spindly if left to grow naturally. To make them bushy, "pinch" back plants when they have three or four sets of leaves. Using your thumb and forefinger, remove the top inch of growth. Do not pinch cockscomb, poppies, stock, or balsam.



Use thumb and forefinger to pinch off top.

Plant after pinching.

Bushy plant results from pinching.

Perennials

Perennials may be used along the sides of an annual garden or planted by themselves in a perennial border. When placing them, consider height and size to which clumps will grow.

After planting, your perennials may require shade for a few days until roots are established. Use large flower pots, baskets, or tree branches for shading.

Planting time for your perennials will vary with the type of plants you select. Most of them are available for planting in early spring. Irises are usually planted in June or July, peonies and Oriental poppies in August or September. You may leave spaces in your garden for perennials that are to be planted in late summer. Fill these spaces with pansies, foxgloves, sweet williams, or other biennial plants that will die by mid-summer.

Your garden will require summer care, and your perennials will require some additional care before winter arrives. Wait until the tops die in the fall, then remove them close to the clump. About mid-December, after the ground freezes, mulch the perennials with hay, straw, or leaves from oak trees. Work the mulch in around the perennials to prevent the ground from alternately freezing and thawing. Otherwise, this alternation will heave the plants and expose their roots. Remove the mulch about the time tulip leaves begin to grow in the spring.

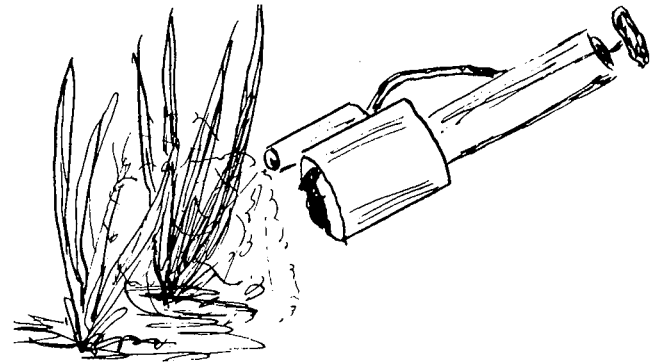
Summer Care of the Garden

Weed Control—Weeds are one of the main problems in a summer flower garden. Unless they are removed while they are still small they will compete with flowers for moisture and fertilizer. Cultivate the

surface lightly about once a week. Go no deeper than about ½ inch or you may injure plant roots that are near the surface. Placing a light mulch of about 1 inch of peat moss or grass clippings on the soil surface will help conserve moisture during the summer and will also help control weeds.

Watering—During dry periods, water your garden about once a week to a depth of 4 inches. Use a trowel to make certain the moisture has reached this depth. Frequent light watering will only encourage shallow rooting.

Disease and Insect Control—A good all-purpose material for control of most insects and flower diseases is one containing malathion, DDT, and ferbam. Dusting is a convenient way to apply this combination.



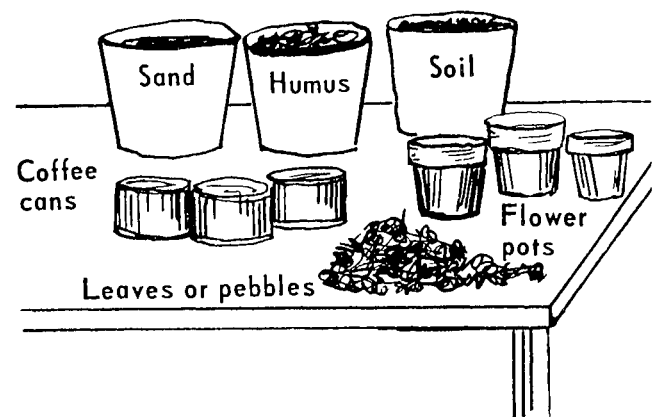
All-purpose dusts help keep plants free of insects and diseases.

CHAPTER II STARTING ANNUALS INDOORS AND DIVIDING PERENNIALS

Growing plants from seed indoors or in frames and growing them from divisions are interesting parts of flower gardening. This chapter will teach you how to do both of these things.

Materials You Need

To start your seeds indoors, you need several flower pots, 5 inches in diameter, and an equal number of coffee cans into which you will place the pots. You also need some dry leaves or pebbles and a supply of coarse sand, humus, and good soil for filling the flower pots. A glass tumbler, pot labels, a tea strainer, and small pieces of glass and cardboard for covering pots when seeds are first sown are other materials you need.



Materials you'll need for starting seed indoors. Use sand, leaves, or pebbles in pot bottoms. Fill pots with a mixture of sand, humus, and soil.

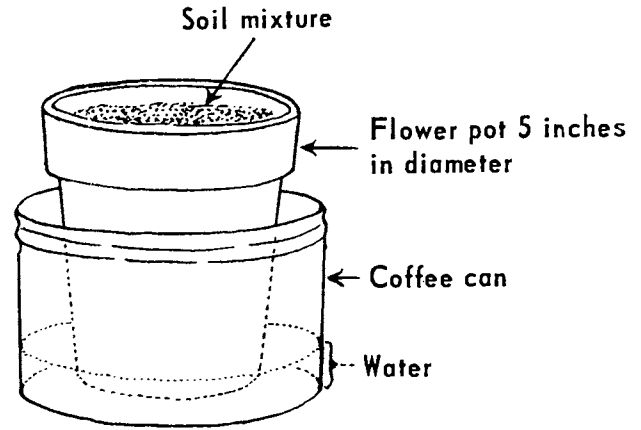
Starting Seed Indoors

Dates for starting annuals indoors differ depending on the rate of seed germination and growth. Dates for starting the more common annuals appear in table 1.

If you follow the planting dates in table 1, your plants will be ready for transplanting outdoors about mid-May. They will bloom much earlier than plants grown from seed sown outdoors. Before transplanting, check with your leader to make sure frost danger in your area has passed.

Soil for starting seedlings should contain plenty of humus to prevent packing. A mixture of equal parts of coarse sand, leaf mold, and good garden soil is satisfactory. Do not add manure or fertilizer to this soil.

Place some dry leaves, sand, or pebbles in the bottom of each pot. These materials will aid draining. Then fill the pots with the prepared mixture and press it down gently with the base of a glass tumbler. Leave



A flower pot filled with prepared soil and placed in a coffee can is an excellent container for starting seeds indoors.

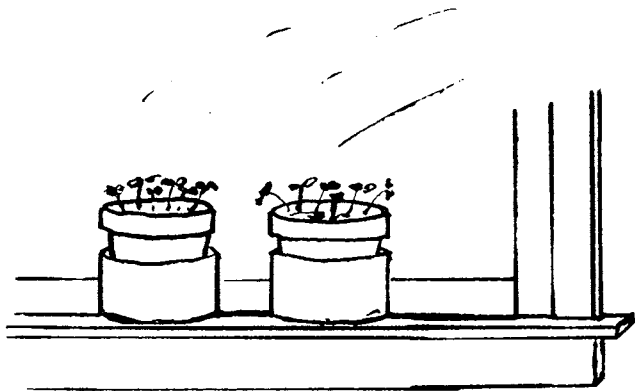
about $\frac{1}{2}$ inch of the inside rim of the pot showing. Submerge each pot almost to the rim in water until moisture shows on the surface of the soil. Then re-

Table 1. Annuals that should be started indoors†

Common name	Date to sow seed indoors	Height (inches)	Color	Spacing of plants in garden (inches)
Ageratum	Mar., 1st week	6 to 20 depending on variety	Blue, white	6 to 24
*Babysbreath	Apr., 2nd week	12 to 18	White	12
Balsam	Apr., 1st week	18 to 24	White, rose	18
*Bachelor's Button	Apr., 1st week	30	White, rose, blue	12
*Calendula	Apr., 1st week	24	Orange, yellow	18
Cockscomb	Apr., 1st week	36	Crimson, yellow	12
*Cosmos	Apr., 2nd week	30 to 48	Pink, white	18
*Dahlia (annual)	Mar., 3rd week	18 to 24	Crimson, yellow, orange, and lavender	12
Dianthus (annual)	Mar., 2nd week	12	Pink, white, crimson	12
*Gaillardia (annual)	Apr., 1st week	24	Orange, yellow	12
*Larkspur	Mar., 3rd week	30	Pink, blue, white	12
Lobelia	Mar., 1st week	6 to 12	Violet, blue	12
*Marigold (African)	Apr., 1st week	36 to 48	Gold, yellow	12
(French)	Apr., 1st week	8 to 12	Orange, yellow	12
Morning-Glory	Apr., 1st week	10 feet	Blue, white, red	12
Nasturtium	Apr., 1st week	12	Yellow, red	12
Petunia	Feb., 3rd week	12 to 18	White, rose, purple	12
*Portulaca	Mar., 3rd week	8	Crimson, yellow, white	6
Scabiosa	Mar., 1st week	36	Purple, rose, white, blue	12
*Snapdragon	Feb., 4th week	24	Yellow, white, pink, orange	12
*Spider Plant	Mar., 3rd week	36 to 48	Rose, white	24
Statice	Mar., 3rd week	24	Yellow, purple	12
Strawflower	Mar., 3rd week	36	Yellow	12
Tobacco Plant	Mar., 3rd week	24 to 36	White, red	12
Torenia	Apr., 1st week	8 to 12	Blue	8
Verbena	Mar., 1st week	8 to 12	Blue, white, crimson, purple	12
*Zinnia	Apr., 2nd week	36	Many	12

† Set plants outside in mid-May.

* Seed can also be sown outside about May 15, but the plants will bloom later than those started indoors.



Place pots of young seedlings on a window sill close to the window. Turn the pots every few days to keep seedlings straight.

move all pots and let them drain. This method of supplying moisture from below prevents seedlings from drying out or being washed out by overhead watering.

Sow seed thinly on the surface since overcrowding encourages disease and tends to make plants spindly. You can divide pots with a wooden label so that two varieties can be planted in each pot. Cover seed very lightly with soil sieved with an old tea strainer.

Cover pots with a piece of paper and a piece of glass and place them in coffee cans containing about 1 inch of water. Place them where they will receive a constant temperature of about 65° F. Remove condensation from glass covers daily.

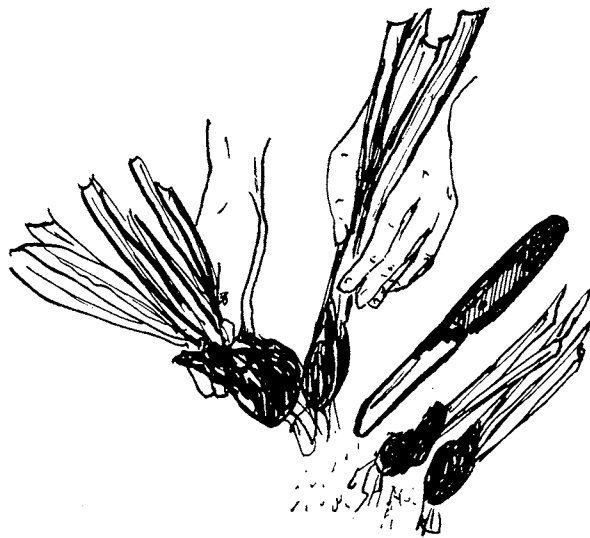
As soon as seeds germinate, remove the glass and paper and place the pots on a window sill where they will receive plenty of light. This will prevent your seedlings from "stretching," common when there is insufficient light or too much heat. As long as there is water in the coffee cans, little additional watering will be necessary. If surfaces become dry, submerge the pots almost to the rim in water and remove as soon as moisture shows on the surface.

Transplanting

As soon as seedlings develop three sets of true leaves, you can transplant them. Lift seedlings with the point of a knife and transplant them into small flower pots. Containers such as paper cups, cheese boxes, old ice trays, and tin cans provide little drainage and are not as satisfactory as flower pots, but they can be used if drainage holes are provided.

Seed flats can be used for starting or transplanting seedlings, though they are usually cumbersome. Also, seedlings in flats tend to "stretch" toward light because they can't be placed close enough to the glass.

After transplanting, you can water your plants from the surface whenever necessary.

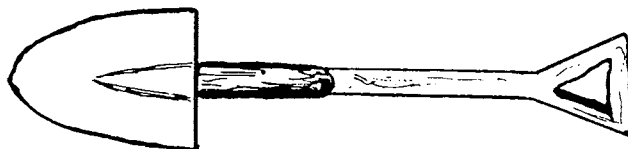


Perennials can be propagated by dividing clumps.

Dividing Perennials

Perennials can be propagated by dividing the clumps or by seeding. Some perennials such as chrysanthemums need to be divided each year to keep the plants vigorous and in bounds. You can leave others such as peonies in the same location for years without dividing the clumps.

The time of year for dividing perennials depends on their blooming time. Spring flowering plants can be divided in August and September, those that bloom in late summer and fall in March and April. Two exceptions are Oriental poppies and bearded iris. Oriental poppies die to the ground soon after they bloom and should be divided when new shoots appear in July. Bearded iris should be divided in June or early July before feeding roots are produced.



Divide perennials with either a knife or a flat spade.

You will need a flat spade and a knife to divide perennials. Dig up the clump of stems and roots and cut the clump into as many pieces as you need. Plants such as chrysanthemums, beebalm, and hardy ageratum spread quickly and can be divided into small clumps or single plants. They will make a good showing the same season.

See chapter I for information on the placement and summer care of perennials.

Use the following guide for dividing perennials. When you are more familiar with growth habits, you can use clump appearance as a guide.

Divide Each Year—beebalm (Monarda), false dragonhead (Physostegia), common valerian, hardy ageratum (Eupatorium), hardy marguerite (Anthemis), sneezeweed (Helenium), chrysanthemums.

Divide at 2-Year Intervals—hardy asters, rockrose (Helianthemum).

Divide at 3- or 4-Year Intervals—bearded iris, phlox, sea thrift (Armeria), pyrethrum.

Seldom Need Dividing—bleedingheart, peony, Oriental poppy, Japanese anemone, lupine, baby's-breath, gas-plant.

For additional information ask your county agent for Home Garden Bulletin 91, *Growing Flowering Annuals* and Extension Bulletin 295, *Perennials for Minnesota*.

CHAPTER III GROWING PERENNIALS FROM SEED AND ARRANGING A FLOWER BORDER

In this chapter you will learn how to grow perennials from seed and how to arrange an attractive flower border.

Divisions of perennials always produce similar plants, but seedlings usually vary. Named horticultural varieties cannot be produced true to type from seed, so don't be surprised if some of your flowers vary in color or size.

Selecting the Seeds

Discuss selection of perennials with your leader. (See table 2, on the following page, for some suggestions.) Almost all herbaceous perennials can be grown from seed but start with the easy ones and plan to add more difficult ones later.

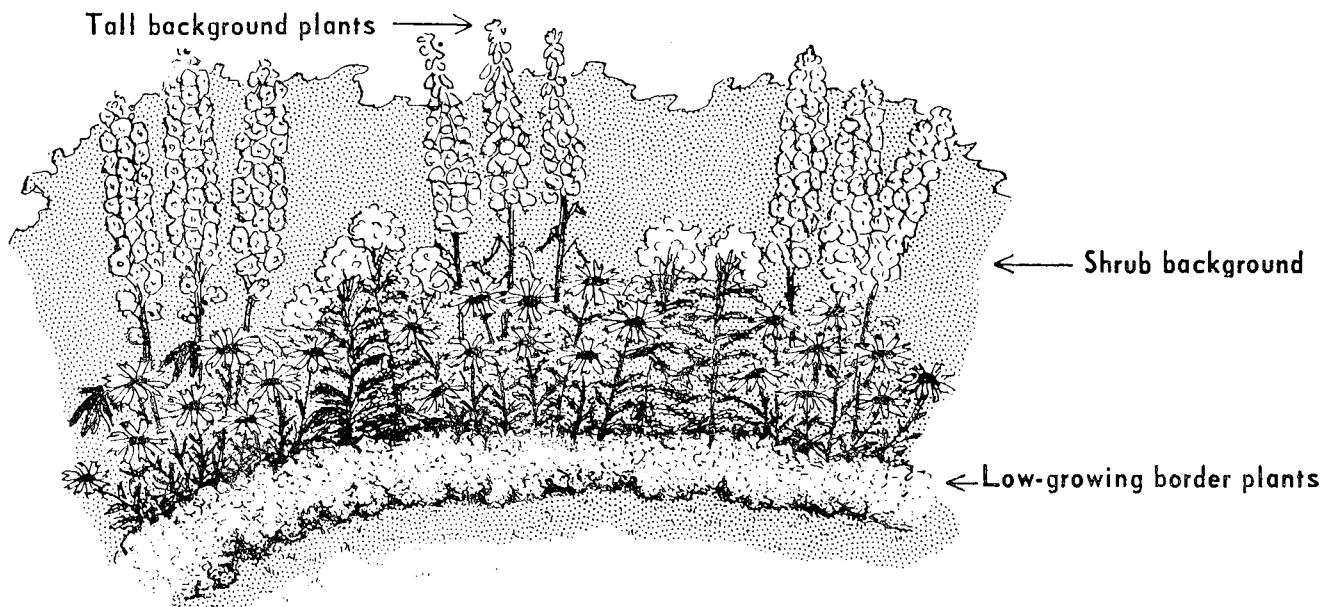
Equipment Needed

If you have a coldframe like the one mentioned in chapter I you can use it for perennial seedlings. You will not need the glass.

The Soil

Perennial seeds germinate slowly and remain in the seedbed much longer than annual seeds so more care must be taken in preparing the soil for them than for the annuals. Prepare enough of the following mixture to fill the frame to within 6 inches of the top:

- $\frac{1}{3}$ best garden soil
- $\frac{1}{3}$ coarse builder's sand
- $\frac{1}{3}$ peat moss, leaf mold, or screened compost



Plant low-growing perennials along the front of your flower border and taller varieties in the back. Group three or more of the same variety together so that your garden won't have a spotty appearance.

Table 2. Good perennials for your garden

Common name	Color	Remarks
For spring bloom—to mid-June (less than 1 foot tall)		
Goldentuft Alyssum	Yellow	Mass of yellow flowers
Lily-of-the-Valley	White	Excellent for shade
Evergreen Candytuft	White	Mass of white flowers
Coralbells	Coral red	Propagate by division
(1 to 3 feet tall)		
Columbine	Red, yellow, blue	Long-spurred types are excellent
Common Bleedingheart	Pink	Likes part shade
German Iris	Various	Divide in July and August
Peony	White, pink, red	Divide in September
Oriental Poppy	Orange, pink	Transplant in August when dormant
For summer bloom—June to September (1 to 3 feet tall)		
Astilbe	Pink, white	Needs moist soil; propagate by division or seeds
Painted Lady (Pyrethrum)	Various	Good cut flower
Shasta Daisy	White	Cut flower
Coreopsis	Yellow	Long bloom; cut flower
Pinks	Pink and white	Needs full sunlight
Gaillardia	Crimson, orange	Full sunlight
Geum	Orange, yellow, scarlet	Needs good soil
Daylily	Yellow, red, orange	Good summer flower
Plantain Lily	Blue, white	Good in shade; large foliage
Perennial Flax	Blue, white	Evergreen
Phlox	White, pink, red	Divide in fall
Balloon-Flower	Blue, white	Slow to appear in spring
(over 3 feet tall)		
Monkshood	Blue	Needs staking; prefers shade
Delphinium	Blue, white	Needs staking and good drainage
Kansas Gayfeather	Rosy purple	Needs moisture
Purple Loosestrife	White	Good in moist soil
For fall bloom—September and October		
New England Aster	Pink, blue	Good fall flower
Hardy Chrysanthemum	Various	Best in sunlight; use hardy types

Do not add any commercial fertilizer. Level the mixture and be sure you pack it along the sides.

Locating the Flower Border

You should now have several types of perennial plants for your flower garden. These plants will form the framework of your garden, but you can use annuals and biennials to fill in the bare spots and move perennial seedlings to the border as they mature.

For your border, select an area at least 5 feet wide and 20 or more feet long. If possible, place your border where a fence, hedge, or shrub border can serve as its background. Be sure to leave enough room so that you can walk between the border and the background.

This will make it easy for you to cultivate your garden and will prevent the vigorous roots of shrubs and hedges from penetrating your flower border.

Your border need not have a straight front if a curved area fits into the landscape better. Most perennials do best in full sunlight, but if your garden is shaded, select plants that can tolerate shade.

Planning the Border

Now that you have decided on the shape and location of your perennial border, draw a plan of it on paper. For a scale, make ½ inch equal to 1 foot.

Before sketching in your plans, list the plants you need. Learn as much as you can about each plant. Some things you will need to know are each plant's

season of bloom, flower color(s), height and spread, habit of growth, and color and texture of foliage.

Plan your garden so that some plants are in bloom from early spring to late fall. For large plantings, you can group your flowers by seasons so that some areas are especially attractive at each blooming time.

Plan to have tall plants at or near the back of the border. Use medium high plants in the middle and short and dwarf plants in front, but don't follow too regular a pattern. Use fairly large groups of plants to prevent a spotty appearance. Usually three or more larger plants are used in a group and five or more smaller ones are needed for a group. Include at least two biennial flowers in a group.

Use crayons or watercolors on your diagram to duplicate various flower colors. Correct color combinations are important. Some combinations of closely related colors are not attractive. For instance, scarlet and crimson clash and magenta or purple roses appear muddy when near salmon or clear pink ones.

Seed Sowing

You can sow most perennial seeds about the time plants bloom in the garden, usually in June. You can sow biennials such as foxglove, Canterbury bells, and sweet william, which will bloom the following year at the same time. Sow perennials such as pinks, delphiniums, and columbines in a coldframe in February or March for bloom during the same season. Sow the seeds in very shallow rows about 6 inches apart. One good sowing method is to press the flat side of a lath into the soil making depressions about two to three times the diameter of the seed. The seed can then be broadcast the full width of the depression made by the lath. Cover the seed with clean sharp sand or horticultural vermiculite. Vermiculite will require less frequent watering than the sand. Water seeds with a watering can that has a very fine "rose" nozzle.

When the first true leaves appear, you can either transplant the seedlings or thin them out and leave them in the bed until they are 4 inches tall. If you start early in the spring, many plants will bloom the first year. If your plants are small when cold weather comes, leave them in the frame and protect them with a mulch of hay or some other fibrous material.

Planting the Border

Prepare the soil for your perennial garden very thoroughly. You can prepare it in either the spring or fall. If you want a curved border, use a garden hose to outline the area for digging. Dig a 2-inch layer of organic matter such as peat moss or humus into the soil before planting. Check the pH of the soil and if necessary add ground limestone to raise the pH to



You can use pressed specimens, slides, and seed catalogs to help you in learning to identify flowers.

between 6.0 and 6.5. You can work the organic matter and ground limestone into the soil at the same time. Add 3 pounds of a complete fertilizer such as 5-10-5 to each 100 square feet of border area. Work fertilizer into the top 4 inches of soil. After you have prepared the soil and are ready to plant, use limestone to mark the various planting areas. You can mark them with a hoe handle, but the limestone will show up better during planting. You may not be able to plant the entire border at one time or even during one season. Use annuals as temporary fillers for these places.

Flower Identification

The identification and growing of flowers are closely related. You should be able to recognize young plants by their leaves so you can distinguish them from weeds. You should also be able to identify plants by their flowers so you will be prepared for exhibits at fairs and flower shows and for questions your friends may have when they come to see your garden.

Care of the Garden

Fertilize your flower border at least once a year. If the soil is sandy, do it twice. Use a complete fertilizer such as a 5-10-5 at a rate of 2 pounds per 100 square feet. Apply it in April and again in August if needed. Wash the fertilizer from plant foliage so foliage will not be burned. Your perennial garden will not need watering except in extremely dry weather. When you apply water, soak soil to a depth of at least 4 inches. Check penetration with a trowel.

Some of your tall perennials may need staking. Bamboo and wire stakes are nice, but branches from brush will do just as well.

Some bugs and diseases attack almost all perennial plants. Learn to recognize those that attack your plants and plan a spray or dust program to take care of them. If you give your border a good cleaning in the fall after the tops of most perennials die, you will have less trouble with pests and diseases.

Mulches

Mulches are useful in keeping down weeds, conserving moisture in summer, and preventing winter injury. Peat moss and buckwheat hulls are excellent mulches. You can use hay, straw, evergreen boughs, or leaves from hardwood trees for a winter mulch. Don't apply winter mulch until after the ground is well-frozen. Remove it when tulips begin to grow.

Preparing Flowers for Exhibits

There will be many opportunities during the summer to enter your flowers in fairs and flower shows. Learn how to prepare your flowers for such exhibits. Here is what you should do:

1. Several days before the show, check the schedule or premium list to determine what classes you can enter.
2. Cut your flowers the evening before the show. The food supply within a plant is greatest at this time of day. Use a knife to cut the flowers—scissors will crush the stems.
3. To prevent wilting, place the flowers in water as you cut them. Cut a few extra flowers in case some are damaged in handling.



When you must ship flowers to an exhibit or flower show, pack them carefully.

4. Keep containers of flowers in a cool basement overnight. Revive wilted flowers by placing them in water that is 110° F. (just warm to the touch).
5. When shipping flowers to a fair, pack them carefully. Wrap the stems with moist paper and then with wax paper. Place layers of tissue paper between rows of flowers. Label the boxes so your flowers are not misplaced.

Records

Keep your project record up-to-date and give it to your leader when you complete your project. Good records will help you plan next year's garden and will help others follow your completed project.

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