4H Flower Gardening – Member Guide
Michigan State University Cooperative Extension Service
4-H Club Bulletin
Sarah H. Emino, Everett R. Emino, J. Lee Taylor, Horticulture
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4-H FLOWER GARDENING

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FLOWER GARDENING

Sarah J. Emino and Everett R. Emino[1]
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FOREWORD

This bulletin is for boys and girls who are interested in growing and using flowers. Most flower gardeners start out growing *annuals* such as zinnias and marigolds because annuals are easy to grow, and they flower in just a few weeks after sowing the seeds in the garden.

After growing annuals for two or three years, many gardeners decide to grow additional flowers such as peonies and oriental poppies. Peonies, daylilies, and oriental poppies are examples of *perennial* plants – plants that live for two or more years. Tulips, daffodils, and crocus are examples of hardy bulbs which are also very popular perennials.

Planning a garden or border which includes annuals, perennials, and bulbs can be a very interesting experience if you start out with a simple plan (one using only a few kinds of flowers).

Many flower gardeners like to use the flowers they grow in flower arrangements. Arranging flowers is fun and can be a very interesting hobby.

INTRODUCTION

Flower gardening is interesting and a popular pastime. It is fun to sow seeds, set out plants, watch plants grow, and enjoy the flowers that bloom. Cutting and using flowers that you grew yourself gives you a real feeling of accomplishment. Learning how plants grow and how to take care of them is also rewarding.

[1]Formerly with the Department of Horticulture.

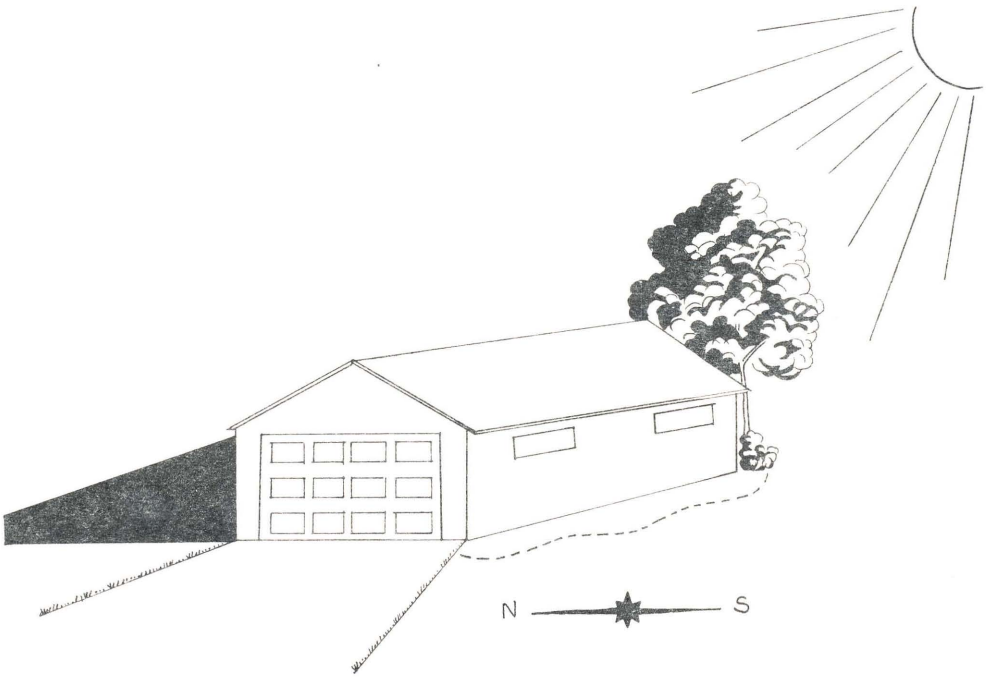
[2]Most drawings were done by Cheryl H. Anderson, formerly a graduate student, Department of Horticulture.

PLANNING THE GARDEN

Organization is the key to success in growing a beautiful flower garden. Plan the garden in your mind, carry out the finished plan, harvest the crop, and use it in a meaningful way.

Decide the best place to have a flower garden. This will depend on how you want to use your garden. It may be used to give a nice view from the living room window or to add to the beauty of a picket fence. Maybe you'll want to plant it beside your vegetable garden.

Remembering that flowers need good soil . . . light . . . water, you can choose a place for your flower garden. Consider how you are going to use the flowers that you will grow. Are they for use in the overall landscape, cut flowers, or both?



A good location is on the south side of buildings, fences, or shrubs.

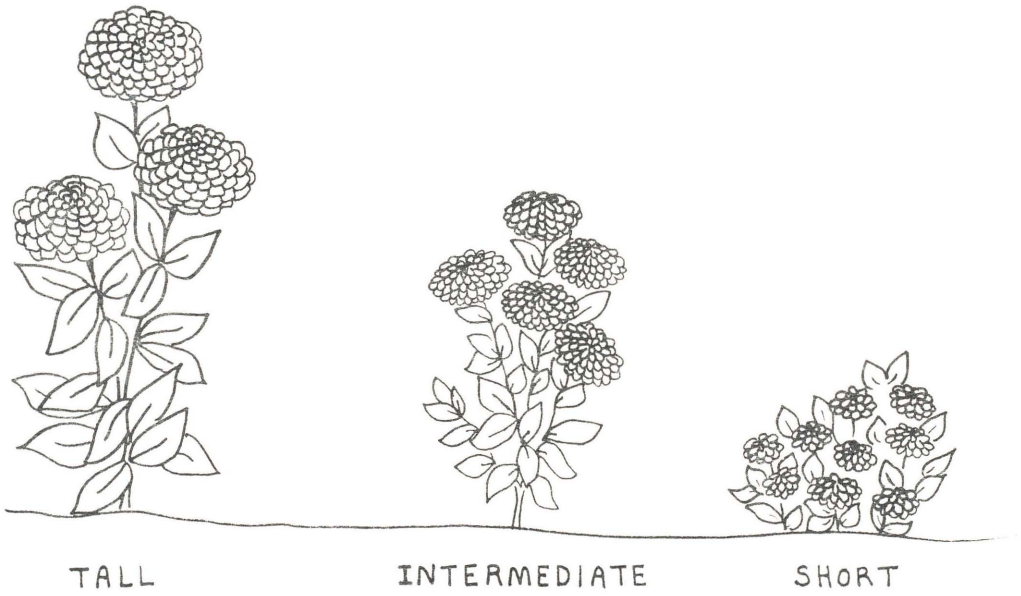
Most flowers need sunshine for at least one-half to three-fourths of the day. They like early morning sun so they will usually do better when planted on the east or south side of buildings, fences, or shrubs. Trees and shrubs take moisture and nutrients from the soil so you should not plant too near them.

Flowers can be planted in rows like a vegetable garden. Flowers grown just for cut flowers are best grown this way. Flowers used in the landscape can be planted in borders.

Except for formal gardens, try not to plant your garden in the center of the yard. Formal flower beds are difficult to keep up, and they can spoil the effect of a spacious lawn.

After you decide where your garden will be, draw a picture of the garden showing the length and width. You can plan the placement of your plants on paper. If you are interested in color planning, choose colors that go well together. Plan the garden according to the height of the plants so the tallest will be in the background and not shading the shorter plants. You may plan a garden using various heights of just one flower like zinnias, snapdragons, or marigolds.

Plan the garden according to the height of the plants so the tallest will be in the background.

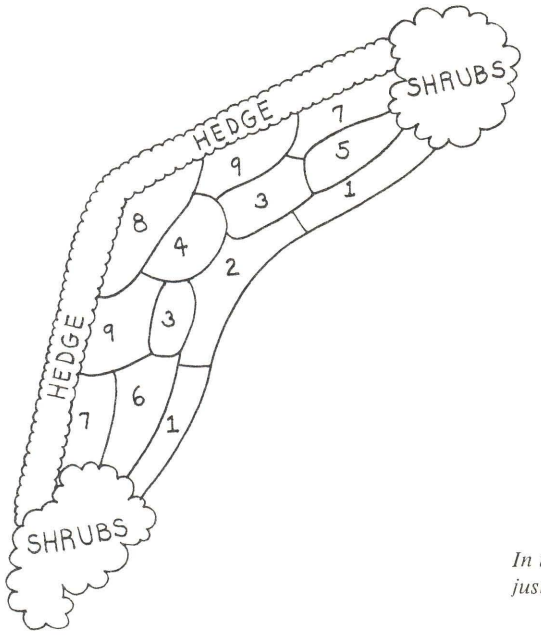


It is possible to plan a flower bed using various heights and colors of just one flower, such as zinnias or snapdragons

Flower Colors That Go Well Together

Yellow and orange
Blue and yellow
Blue and white
Blue and orange
Violet and yellow
Yellow, bronze, and orange
Pink, rose, and crimson
Red, pink, and white
Red, yellow, and blue
Pink, yellow, and blue

Here is a sample design of a flower garden. This is just to get you started. You may want to use a scale of ½ inch to stand for 1 foot of actual length and width in your garden.



1. *Dwarf Ageratum (Purple)*
2. *Dwarf Marigold (Yellow or Orange)*
3. *Petunia (White)*
4. *Lobelia Tall (Blue)*
5. *Petunia (Red)*
6. *Calliopsis (Yellow)*
7. *Asters (Mixed)*
8. *Cleome (White or Pink) or Cosmos (Mixed)*
9. *Zinnias (Mixed)*

Border flower beds like this one should be at least three feet wide. You may use other flower varieties and other arrangements.

In the space below try planning a flower bed of your own. Use many flowers or just one kind. Use a scale to figure the length and width of the bed.

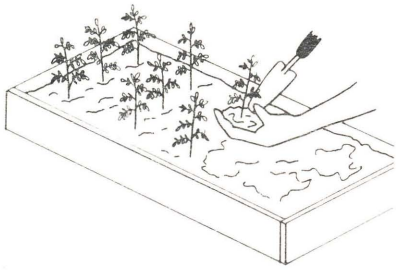
THE PLAN IN ACTION

Soil Preparation

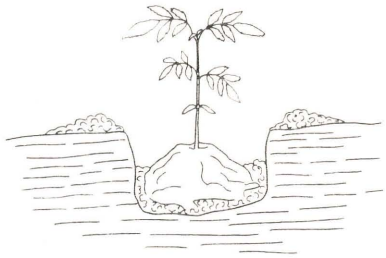
Most flowers will grow in many kinds of soil. It helps if you mix in some humus such as peat moss, decayed leaves, or old manure with the top few inches of soil. Break up the lumps of soil with your hands or a hoe and smooth the surface of the soil, picking out the stones and old roots. Perhaps you can get someone to use a rototiller or tractor to prepare the soil in your garden. Apply two pounds of a complete fertilizer such as 6-12-12 per 100 square feet and work it into the soil.

Planting

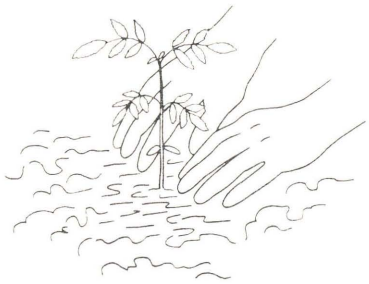
You can either plant seeds early in March indoors, or directly in your garden, or purchase plants from nurseries, florists, or garden centers to transplant into your garden when the weather becomes warm. Transplant plants on a cloudy day or early in the evening and leave as much soil as possible around the roots so they won't dry out. Be sure to water them in after transplanting and try to use a starter solution (fertilizer added to the water).



Move as much soil as possible with each plant.



Set the plants slightly deeper than they were before.

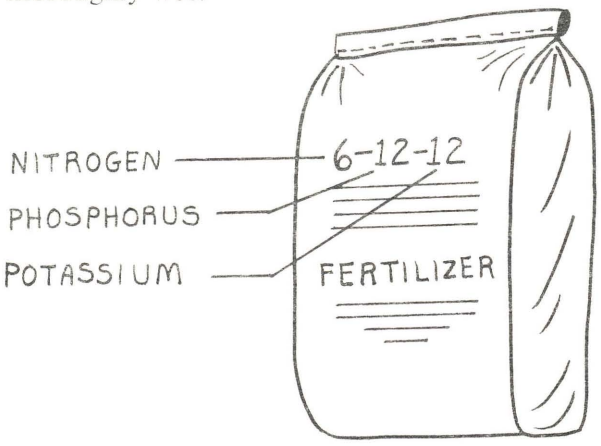


Firm the soil around the roots after transplanting.

Care of the Garden

Give your garden a chance to grow by keeping it free of weeds. If possible, water during dry spells (once a week is often enough).

Cultivate carefully – not too deep and never close enough to the plants to damage their roots. The purpose of cultivation is to get rid of weeds and to allow air to travel to the roots of the plants. After removing weeds it is good to cover the soil with mulch such as black plastic, leaves, straw, sawdust, etc., to keep the soil from drying out. Watering is best done with a soaker hose to get the soil thoroughly wet.



6-12-12 is a good flower garden fertilizer.

It is a good practice to add a complete fertilizer such as 6-12-12 in early June, applying 4 pounds per 100 square feet. Try to remove dead plant material to lessen the chance of insects and diseases.

It is interesting to watch for the All-America Selections each year. All-America Selections are varieties of flowers and vegetables that perform well at several different locations around the country. The varieties which are the most outstanding are given gold and silver ratings.

ANNUALS

Among the most popular annuals are zinnias, petunias, and marigolds. In selecting plants, decide if you want bedding plants to provide masses of color or annuals as sources of cut flowers or dried material. Annuals may be used alone in a garden, in window boxes, in portable containers, or combined with bulbs or perennials. After working with annuals you may wish to expand into a full-scale landscape project.

If you decide to start seeds indoors, the dates for starting annuals differ, depending on the rate of seed germination and growth. Used milk cartons cut lengthwise to give two equal-sized boxes make good containers in which to start seeds.

When To Start Annuals Indoors

March 1	Browallia, petunia, red salvia, verbena
March 15	Anchusa, annual chrysanthemum, annual delphinium, blue salvia, china aster, dusty miller, flowering tobacco, forget-me-not, french marigold, portulaca, sweet alyssum
March 21	Annual phlox, cleome, gaillardia
April 1	Cockscomb
April 15	African marigold, bachelor button, calendula, cosmos, zinnia

Be careful when watering seeds started indoors. Overwatering is just as bad as not watering at all. As soon as the seedlings develop three sets of true leaves, they are ready for transplanting. Plant them in small pots filled with porous soil. Compressed peat pots are good to use when starting plants indoors. The whole plant with the undisturbed root system can be planted outside, pot and all.

Do not wait for rain to water your garden. Plan to water once a week during dry spells. To maintain vigorous growth, remove mature flowers and seed pods so that new flower buds will form.

PERENNIALS

A perennial is a plant that lives for two or more years with new growth appearing each spring and summer. Perennials may be propagated by division of the clumps or by seed. Some perennials, such as chrysanthemums, should be divided each year to keep the plants vigorous.

Most perennials do best in a well-drained soil high in organic matter. Perennials should be watered thoroughly once a week during the summer if it is dry and should also be watered when they are first planted. Perennials should be mulched the first winter to prevent the roots from heaving out of the ground.

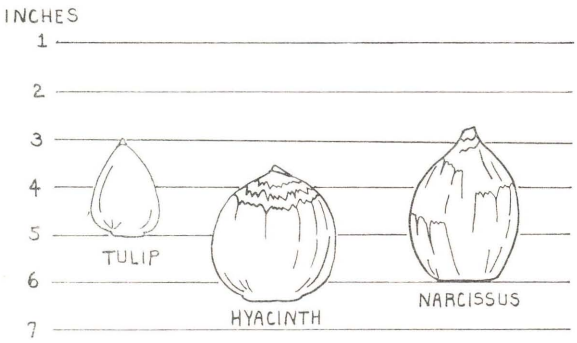
Some of the most common perennials are peonies, iris, daylilies, asters, and chrysanthemums.

A good idea is to prepare a calendar of bloom for your perennials and locate them in your garden so that you will have some of them in flower at different times throughout the summer.

Perennial	Height	Month of Bloom
Alyssum	6"	June - July
Aster	2'-5'	August - September
Chrysanthemum	10"-2'	August - September
Coreopsis	2'	June - September
Daylily	2'-3'	June - July
Delphinium	2'-6'	June - August
Gaillardia	2'	June - September
Garden Phlox	2'-4'	July - September
Iris	6"-4'	May, June, July
Lupine	1'-4'	June - July
Peony	2'-3'	May - June
Primula	6"-12"	April - May
Rudbeckia	2'-4'	July - August
Scabiosa	18"	June - July
Sedum	12"	September
Veronica	2'	July - September
Viola	6"-8"	June - September

BULBS

Plant bulbs where you will get the most attractive results. Consult directions to see when, how deep, and how far apart to plant them. Try to plant hardy bulbs before the first heavy frost in the fall. Bulbs must be planted where they will receive a lot of sunlight. Otherwise they will grow weaker and weaker and will quit flowering.



The correct depths for planting three common bulbs.

Bulbs can be grown for mass effects, in natural plantings, with ground covers, as cut flowers, and in mixed borders with annuals and perennials. Bulbs should be fertilized in early June. Summer mulches conserve moisture and keep temperatures cool. Tops should be cut off after they dry up and turn brown. Bulbs are often grouped according to their season of bloom.

Growing spring-flowering bulbs in the house is an interesting project but be sure they have been given a cold period.

GROUND COVERS

There are some places around every home where grass refuses to grow. This is a special challenge to the gardener who should find a proper ground cover for the area. In shady places lily-of-the-valley is a good cover. In sunny places phlox and candytuft are good. In moist places try forget-me-not.

NATIVE PLANTS AND FERNS

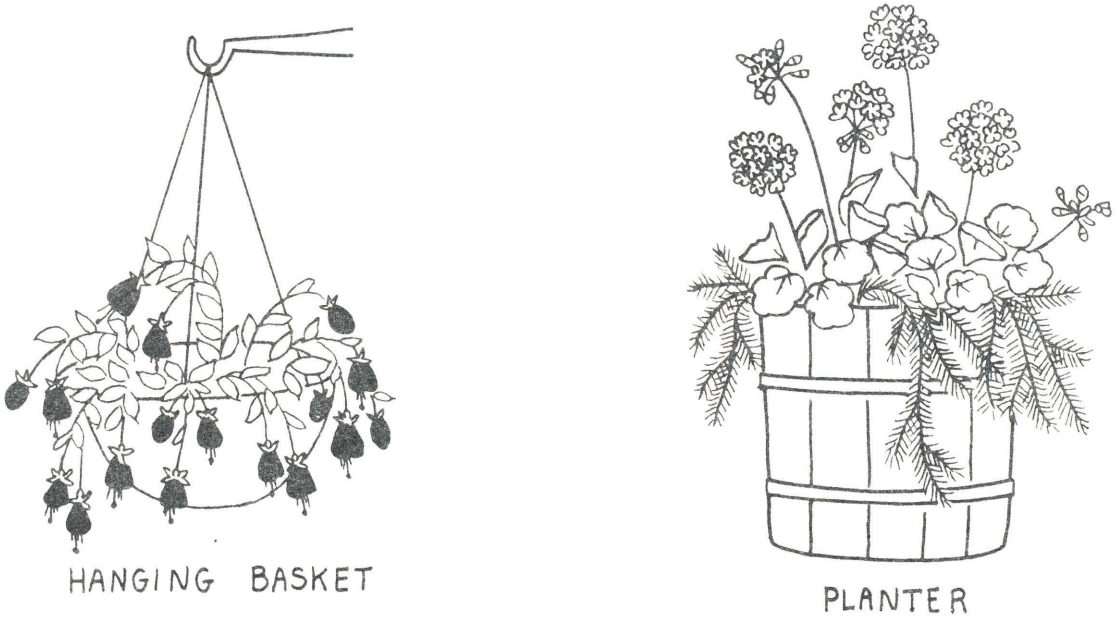
Long before man populated the earth, gigantic ferns formed forests. Now many ferns are extinct. Wildflowers and ferns are attractive in a flower garden and are quite simple to grow. You may be interested in transplanting ferns and wildflowers from your woods to your lawn. To do this you should first check to find out what plants are protected so as not to disturb them. Try to give plants from the woods a similar environment in your lawn. Ferns require a moist, shady spot and will give an intersting look to the over-all landscape. For more information on native plants, consult *Michigan Wildflowers,* by Helen V. Smith.

PORTABLE GARDENING

This is a term used for growing plants in containers because of limited space or because you have a gardening project going at the wrong time of year to grow plants outside. Plants in containers provide instant beauty.

You can accomplish wonders with very few materials if you practice container gardening. You can control the environment in which your plants grow. You can take the best plants (such as wax begonia) from your garden in the fall and keep them inside in containers. These plants will give continued enjoyment far beyond the regular gardening season with little cost involved. You mix the soil to suit the plants and give them the right amounts of water and fertilizer. Probably the

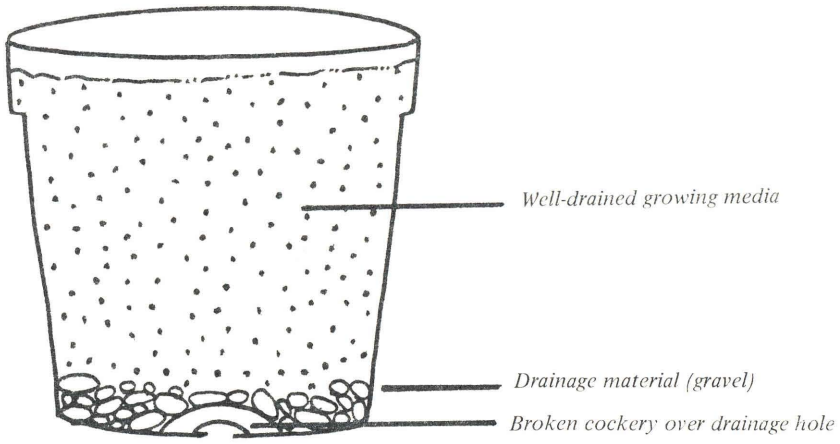
plants that grow best in containers are annuals and herbs. The most popular flower to grow in a container is probably the cascade-type petunia. Other good choices are dwarf marigolds, ageratum, nasturtiums, coleus, begonias, and herbs.



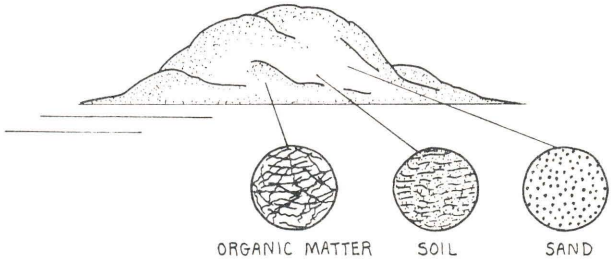
Plants in containers provide instant beauty.

You may use many types of containers. Hollowed-out coconuts are good for small hanging baskets. If you can obtain boards or barn siding, you can build a container—or you might be lucky enough to find an old wooden pail or a pottery crock.

The most important thing to consider when making a soil mixture for use in a container is that you need good drainage. Next, consider the requirements of the plant you're going to put in the container—does it do best in sun or shade? How tall does it grow? Etc.



Container for protable gardening.



Ingredients for a well-drained growing media for indoor gardening: 1/3 soil, 1/3 sand, and 1/3 organic matter (peat moss or humus).

Window boxes are popular containers and add decoration to a house. Also, a wooden tub of geraniums on a patio is attractive.

A hanging basket can add beauty to a porch or patio. Most plants grown in containers outdoors will require frequent watering during hot, dry, breezy wather. Some hanging baskets may even have to be watered two or three times a day. Small containers which hold little soil will need to be watered more often than large containers. Plants having lots of leaves will have to be watered more often than plants that have less foliage. It is usually wise to line the inside of a container with plastic in order to reduce the amount of water lost by evaporation. Punch some holes in the bottom, however, so excess water can escape.

Annuals for Container Gardening

Coleus
Fuchsia
Herbs
Impatiens
Pansy
Petunia
Wax begonia

FLOWER ARRANGING

Arranging flowers is not a new custom. It dates back nearly three thousand years to the Egyptians. In Japan, flower arranging began about 600 A.D. In the early settlement of America, our ancestors were too busy establishing a new life and facing hardships to have time for flowers. But in the 18th century, when life became a little easier, flowers began to take on importance as decorations. Now flower arranging is a nationally popular hobby.

Using flowers indoors is another way of improving your environment. Being able to look at beautiful flowers in your home makes relaxing or working a little bit easier and more enjoyable.

If you want to learn how to arrange flowers, you must understand what an arrangement is. Picking a bunch of lowers at random without regard to their sizes, shapes, or colors and then sticking them haphazardly into a vase might result in something pleasing because of the beauty of the individual flowers. This is the method our great, great grandmothers used and the results are called bouquets. They could not be called an arrangement, however, as we understand the term today.

A flower arrangement is a three-dimensional picture—having height, width, and depth—made from living plant materials.

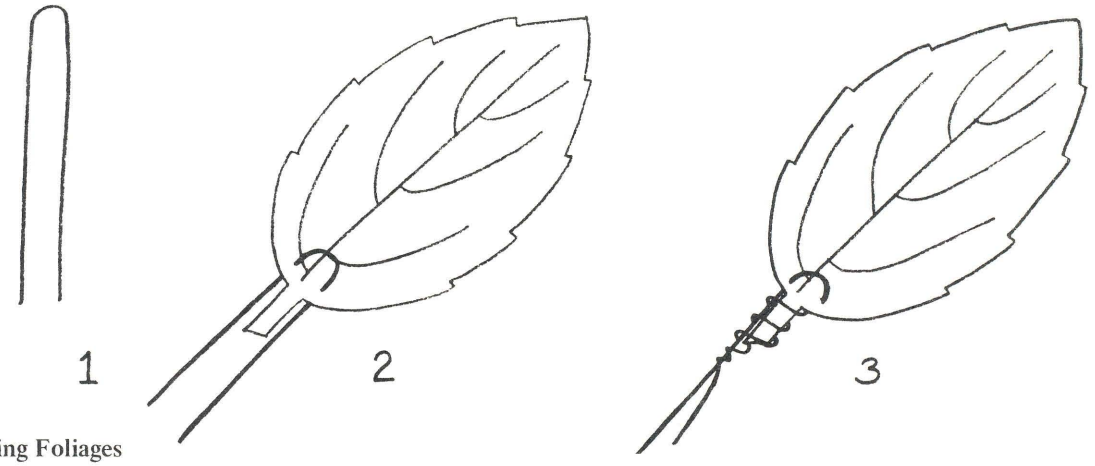
Arranging flowers need not be an expensive hobby. You can grow many of your own flowers. You can also collect plants from the wayside for use in flower arrangements (if they are not on the protected list). Many weeds can be used in dried arrangements.

Think in terms of seasonal flower arrangements. Tulips, daffodils, and forced branches can be used in early spring; peonies and poppies in early summer; roses in June and July; mums in fall; and dried material in winter.

You could put a small flower arrangement in a guest's room to make her feel at home. You might even make an arrangement for church or other organization.

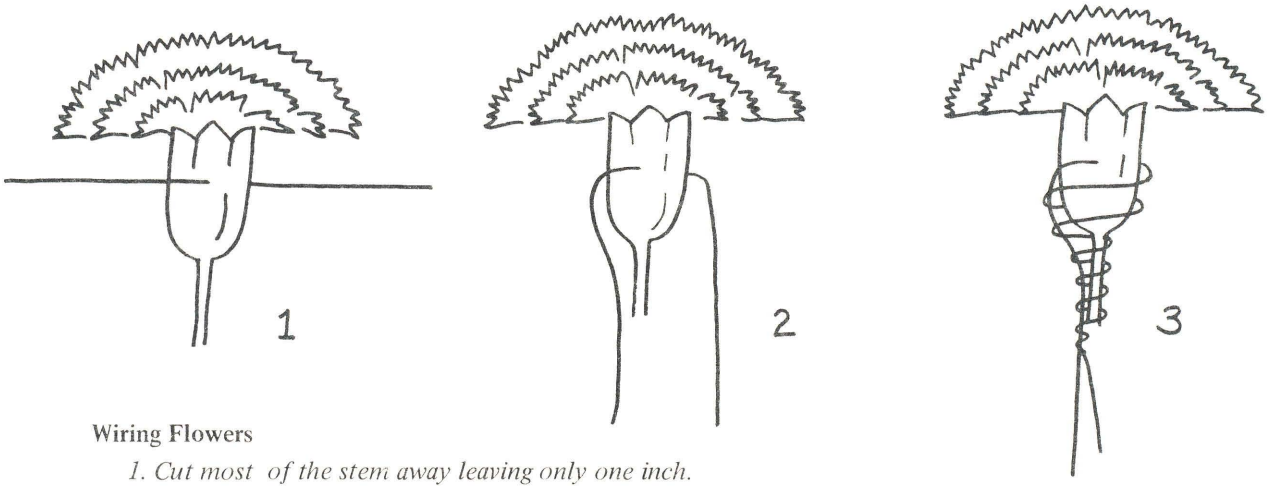
Your mother would be happy with a corsage on Mother's Day. Every flower garden provides some flowers that can be made into a corsage to wear. You may use just one flower or several. Some flowers that are good to use are marigolds, zinnias, gladiolus, sweet peas, shasta daisies, chrysanthemums, and iris. If you are just using one flower in a corsage, use a larger one. Corsages, using more

than one flower, are made according to the same basic principles of design used in making any flower arrangement.



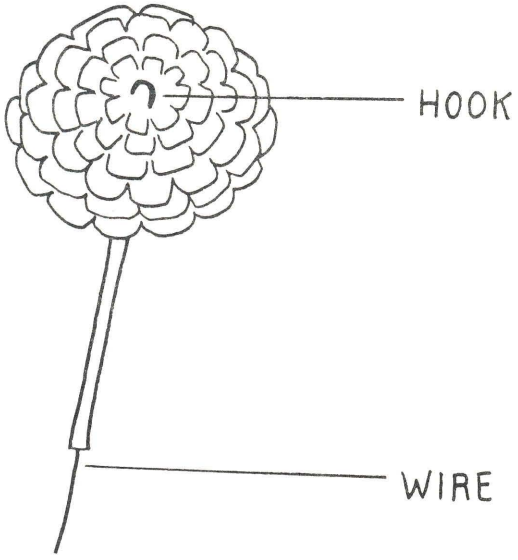
Wiring Foliages

1. *Bend your wire into the shape of a hairpin.*
2. *Push it through the leaf near the lower edge. Extend one of the ends of wire along the stem.*
3. *Wind the wire around the base of the leaf and other wire.*

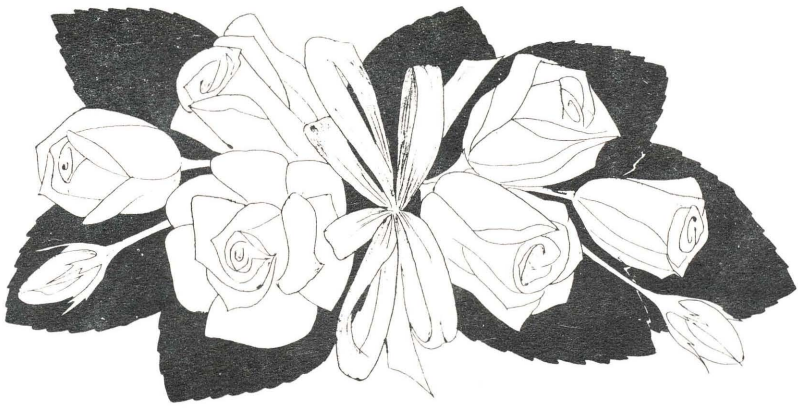


Wiring Flowers

1. *Cut most of the stem away leaving only one inch.*
2. *Push a wire through the green part of the flower below the petals.*
3. *Bend the wire down and extend one wire along the stem. Wind the wire around the other wire and the short stem. (Carnations and roses are commonly wired this way.)*
4. *Wrap the wire with floral tape.*



Small flowers with weak stems can be wired by running the wire up the center of the stem carefully making a hook in the wire and drawing it back into the flower. Zinnias and chrysanthemums can be wired this way.



Spray Corsage

Spray corsages are several flowers arranged in a small group. Each flower must be wired and taped separately as you make the corsage. Add foliage to give the corsage backing and add the finishing touches with a ribbon. Single flower corsages use only one flower. Wire and tape a flower then place several leaves behind the flower to set off its beauty.

Basic Principles and Elements of Design

Design: Is the plan of a composition in color, of various shapes and sizes, arranged in an orderly and rhythmic manner to achieve a balanced, stable, and harmonious picture.

Principle: Is a basic law, a fundamental truth, a method of operation that has been tested and proven by master artists for many centuries. **Rules** are guidelines that have been established from time to time as the art of flower arranging developed. Rules may be broken, **principles never**.

Balance: The equal distribution of visual weight on the opposite sides of a central axis, real or imaginary, in a *horizontal* plane.

Stability: The equal distribution of visual weight on the opposite sides of a central axis, real or imaginary, in a *vertical* plane.

Orientation: The third dimension of a composition – *depth*.

Proportion: The size relationships of all parts of a composition–the flowers, foliages, container, accessories.

Scale: The size relationships of a composition to its surrounding area.

Rhythm: The feeling or appearance of movement within the composition.

Symmetry: Beauty of form, achieved by the orderly, precise, and rhythmical placement of like units along or around a central axis.

Harmony: The aesthetic quality (the beauty) of a composition, in which there are no discordant, disagreeable, or jarring elements.

Elements: The visual qualities or attributes of a composition, the intangible factors that can be seen but not handled. Elements are *not* the concrete or physical materials–the flowers, foliages, branches, but elements are the factors needed to construct an arrangement.

Line: The framework or skeleton of a composition.

Form: The shape or outline or contour of a composition, which includes the height, width, and depth. All design forms are based on one or more (or parts of) three geometric figures–the pyramid, the sphere, and the cube.

Silhouette: Sometimes called the *pattern*–is the arrangement of solids and spaces within and around the composition, as seen against its background.

Texture: The surface quality–rough, smooth, glossy, dull, fine, course, downy, hairy, etc.

Space: The open or unfilled areas (voids) within and around the composition.

Color: The most powerful and vital of all of the elements.

Color Schemes in Arranging Flowers

Color: Is a visual sensation–seen by the eye, interpreted by the brain, and creates an emotional response.

Color Wheel: Hue is the identification, or specific name of a color.

1. Primary hues – red, yellow, blue
2. Secondary hues – orange, green, blue
3. Tertiary hues – red-orange, red-violet; yellow-orange, yellow-green; blue-green, blue-violet
4. Intermediate hues – combination of secondary and tertiary hues
5. Black, white, and gray as colors

Attributes or Qualities of Hues

1. Value: the degrees of lightness or darkness
   a. Tint – white added
   b. Shade – black added
2. Chroma: The degrees of brightness or dullness
   a. Tone – gray added

Color Schemes or Harmonies

1. Monochromatic – one hue with its varying values and chromas.
2. Contrasting or Complementary – opposite on the color wheel.
   a. Direct complement – two colors exactly opposite (red and green).
   b. Split complement – three colors–two lying on each side of the direct opposite of a third (red, yellow-green, and blue-green).
3. Analagous: Neighboring, adjacent, or close together on the color wheel.
4. Triad – three colors equally distant on the color wheel.

Common Faults in a Flower Arrangement

1. Too many different kinds of flowers and/or colors. Three should be the maximum except in certain types of mass arrangements.
2. Flowers and/or foliages massed, crowded, overlapping, lacking in voids.
3. Poor balance–seems to tip sideways, forward, or backward.
4. Lacks stability–top-heavy, largest flowers at top, or "ice cream cone" design–broader at the top than at the base.
5. Looks flat–flowers all in the same plane; tilts forward or backward.
6. Focal point poorly placed–too high, off-side, recessed, or pushed in.
7. Arrangement too small or too large for size of container.
8. Jerky rhythm–too much distance between flowers; too big a jump in sizes; too abrupt a change in colors; discordant crossed lines; wide angles; large voids that form "windows."
9. Colors not grouped–spotty, scattered, unrelated.
10. Container too dominant–elaborate, decorated, brilliantly colored, shiny.
11. Lacks unity with container–break the rim of the container with a flower or a leaf to tie them together.
12. Flowers poorly placed–all facing forward; "layered"–one row on top or beside another; "sandwiched" – two rows of one kind with another in between. Flowers and/or foliages touching table. Not enough contrasts in foliage size, shape, color, texture. Leaves "plastered"–broad side faced forward.
13. Marching stems–do not meet at focal point. Too much "filler" material–baby's breath, love-in-a-mist, plume fern. Poor use of accessory–too large, too small, wrong color or texture.
14. Poor workmanship–artificial supports, wiring, mechanics apparent.
15. Poor grooming, poor conditioning, poor quality of plant materials.

All designs fall into one of three types – line, mass, and line-mass as illustrated below.

MASS

LINE

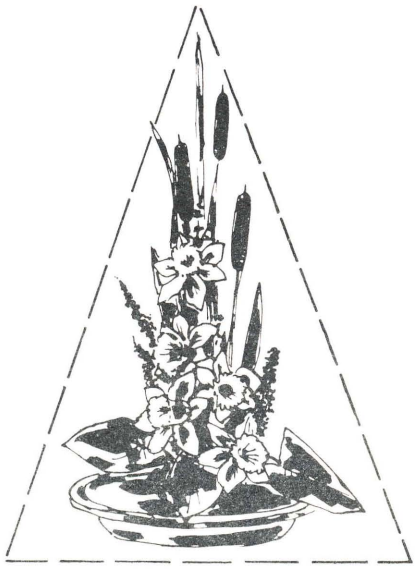
LINE-MASS

FORM

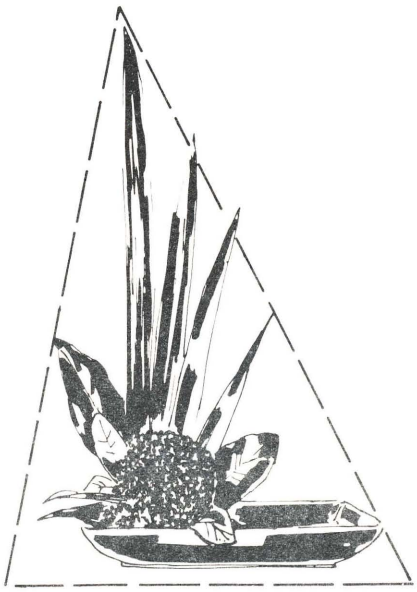
All designs are based on one or more of three geometric forms – the pyramid, the cube, and the globe.

Pyramid

From this form come the various kinds of triangles – equilateral, isosceles, scalene, and right.



ISOSCELES TRIANGLE



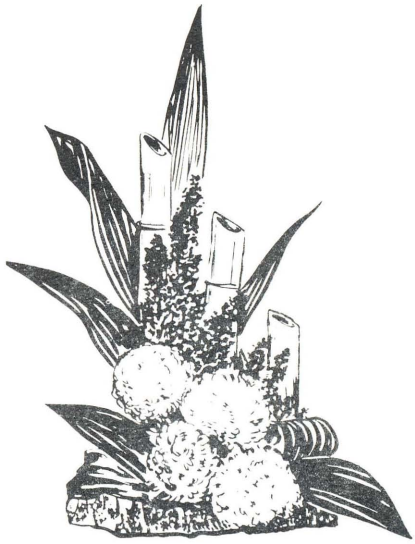
SCALENE TRIANGLE

RIGHT-ANGLE TRIANGLE

All designs fall into one of three types – line, mass, and line-mass as illustrated below.

MASS

LINE



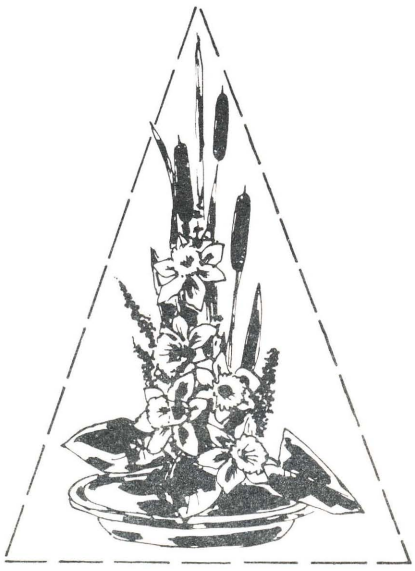
LINE-MASS

FORM

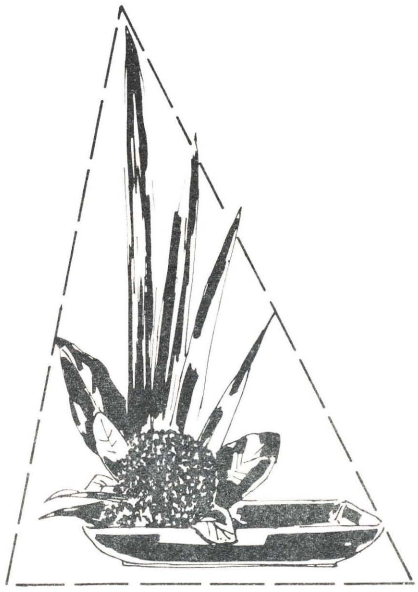
All designs are based on one or more of three geometric forms – the pyramid, the cube, and the globe.

Pyramid

From this form come the various kinds of triangles – equilateral, isosceles, scalene, and right.



ISOSCELES TRIANGLE



SCALENE TRIANGLE

RIGHT-ANGLE TRIANGLE

EXHIBITING SPECIMENS

Flowers are best judged in the setting of your own garden as on a garden tour, but you may be interested in showing them at fairs.

Suggestions for Selecting and Showing Flowers

1. Follow the flower show rules
2. Plan ahead so you will know what you will have to exhibit.
3. Choose colors that go together and select flowers of the right size for the variety you're showing.
4. Protect your flowers on the way to the show. If the flowers will bruise easily, carry them upright. Snapdragons and gladiolus should either be carried upright or tightly wrapped in newspapers to prevent the tips from bending.
5. Be sure the flowers have enough water and change the water daily.
6. Remove wilted flowers and cut the stems of the ones that still look fresh to make them last even longer.
7. The leaves that are above water in the vase should be left on the stems to make a more attractive display and to meet the rules of most shows.

Conditioning and Care*

The life span of plant materials depends on three things: their age when cut, conditioning or hardening, and keeping them in water to reduce evaporation. Conditioning or hardening means filling the stems, leaves, and flowers with water until all parts are firm and crisp (turgid). This should be done as soon as the flowers are cut. Conditioning and care is important for flowers used in specimen exhibits and in flower arranging.

Cutting

Choose flowers that are not quite fully developed for they will continue to open after they are cut. Flowers that open quickly, such as roses and poppies, should be cut when the buds are just showing color.

Cut several hours before they are to be used. In early morning the plant contains more moisture and there is less danger of sun scorch and quick wilting. In late afternoon the plant has more food for it has had the daylight hours for manufacturing it. So, it makes very little difference when they are cut.

Use a sharp knife or pruning shears. Make a clean cut and do not mash. It makes *no* difference whether stems are cut on a slant or straight across. Plant stems are made up of thousands of tiny tubes that carry food and water. The number of these tubes and the amount of water they carry cannot be increased by a slant cut any more than an angle cut on a garden hose results in a greater flow of water. But mashing will close off many of these tubes.

Cut stems longer than you will need and strip off the lower leaves in the garden. This avoids having to dispose of them later. You don't need these lower leaves in arranging or in exhibiting, and they add humus to the soil.

Conditioning or Hardening

It is *not* necessary to carry a bucket of water to the garden but it is most important to cut off the lower inch of stem *immediately* before placing in the hardening container. This removes the air bubble that begins to form when the stem is severed and which prevents the easy flow of water to the flower head.

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* This section is adapted from Extension Bulletin 410, *Flower Arranging.*

Put stems in *hot* but not boiling water. The temperature should be about the same as for washing dishes—around 110 degrees. Immerse the stem up to the flower head but do not let the petals touch the water and do not crowd. Warm water moves faster than cold and will reach the flower in a shorter time. Some wilted flowers can be revived by re-conditioning.

Leave stems in deep water for hardening until the leaves and flowers are crisp and firm. This takes from one to ten hours, depending on the kind of flower. Then pour off the water to just below the lowest leaves. Cover with a wax paper or a plastic bag to reduce evaporation and store in a cool, dark place until needed. Most garden flowers can be hardened in from two to three hours but storing them overnight is beneficial.

Some Exceptions

Some plants—such as poppies, dahlias, and poinsettias "bleed" or "leak," and it is important to seal off the stem quickly to prevent the loss of fluid. This may be done in several ways: plunging into ice water (this time you carry a can of ice cubes with you) for a few minutes; putting the stems in boiling water for 30 seconds: or by searing the ends with a lighted match. Stems are then placed in warm (not hot) water and treated as other garden flowers.

For flowers with soft, pulpy stems (tulips), use only from two to three inches of warm (not hot) water for the stems soften quickly.

Foliages like the peony, canna, or bergenia (any leaf with a shiny or leathery surface), can be hardened quickly by total immersion. But do not try this with leaves having a soft, fuzzy surface such as violet, geranium, or lambs-ears.

Some flowers such as the lilac can also be totally immersed, but they must not be left under water for longer than a half-hour or they will begin to decay.

Care

Cleanliness and sanitation are most important to prevent the growth of bacteria that causes stem decay. Before you put them away, wash the vases, the hardening cans, and the holders thoroughly in soap and water to which a little laundry bleach (or any good disinfectant) has been added.

Clean flowers and foliage before using. Remove all dust, sand, and spray residue to improve their appearance.

A very small pinch of a good germicide (hydrazine sulphate) in both the vase and the hardening can will help destroy the bacteria.

Keep the flowers away from direct sunlight, heat, and drafts to help reduce the evaporation.

A small amount of plant food added after hardening will lengthen the life of the flowers. A little sugar (one teaspoonful to a quart of water), a pinch of fertilizer, or the commercial flower preservatives are all good. Since bacteria feed on sugar, it is best also to add a little weak germicide. You can make your own of hydrazine sulphate by dissolving one ounce in one quart of water. Add solution to the container at the rate of two teaspoonfuls to each quart of water.

Novice: 9-12 years old

1. Learn how to grow annuals and a few gardening principles
   a. Soil preparation
   b. Fertilizing
   c. Planting – starting seeds indoors
   d. Thinning
   e. Transplanting
2. Identify 20 common annuals the first year. Identify 10 more each year you repeat the project.
3. Learn plant parts and their role in the life of the plant.

Things To Do

1. Make a simple plan of a flower garden.
2. Grow 4 to 7 different kinds of annual flowers.
3. Tour your friends' gardens.
4. Collect pictures or specimens of common garden flowers.

In your second and third year of gardening, you should grow more annuals and some perennials and bulbs. Use annuals in flower beds and in portable containers.

Intermediate: 12-14 years old

1. Learn how to grow perennials and bulbs.
2. Learn propagation of perennials and bulbs.
3. Learn additional gardening fundamentals.
   a. irrigation
   b. weed control
4. Learn some of the basic principles of plant growth.
5. Learn to identify 20 additional perennials and 8 bulbs, some weeds, insects, and diseases.

Things To Do

1. Plan a garden using annuals, perennials, and bulbs.
2. Grow 2 or more perennials and at least one bulb (corm, rhizome, or bulb) in addition to 7 or more annuals. Plants may be purchased or transplanted. Keep records of all flowers grown.
3. Exchange plants with other gardeners.
4. Tour other peoples' gardens.
5. Collect and mount specimens of flowers, weeds, insects, and disease.
6. Participate in the horticulture contest.

Advanced: 14-18 years old

1. Learn how to plan a combination garden and flower bed using annuals, bulbs, and perennials.
2. Continue learning about the principles of plant growth.
3. Learn attractive ways of using flowers.
4. Learn about careers in horticulture.

Things To Do:

1. Plant a combination garden using annuals, bulbs, and perennials.
2. Plant and care for a combination garden, adding new flowers each year. This garden should include at least 7 annuals, 3 bulbs, and 6 perennials. Keep a record of all flowers grown.
3. Build and use a cold frame, hotbed, or greenhouse in order to start plants early.
4. Use flowers in planters, window boxes, or hanging baskets.
5. Enter a contest and display your plants.
6. Continue activities started in previous years.

DEFINITIONS

Annual – Plants that grow from seed, flower, and die in one year such as petunias.

Bedding Plants – Plants commonly grouped together for mass effect such as petunias, coleus, geranium, etc.

Biennial – Plants that grow vegetatively (make leaves) the first year and flower the next such as Sweet William.

Bulb – A short, underground stem surrounded by fleshy leaves for storing food.

Hardy bulbs – bulbs that survive our winters such as tulips, daffodils, and hyacinths.

Tender bulbs – bulbs that are killed by freezing temperatures such as amaryllis and paper-white narcissus.

Corm – Underground stem for storing food: (gladiolus and crocus).

Fertilizer – A source of nutrients for your plants.

Fertilizer analysis – Fertilizer contains (1) nitrogen, (2) phosphorus, and (3) potassium. The numbers on the bag represent the % amount in the bag.

Humus – Organic portion of soil formed by partial decomposition of plant or animal matter.

Perennial – Plants that live 2 or more years and usually produce flowers and seeds every year such as peonies.

Rhizome – A horizontal, underground stem which grows parallel to the ground such as iris.

PLANT LISTS

Annuals for Beginners

Common Name
Ageratum
Annual Phlox
Calliopsis
Cockscomb
Cosmos
Marigold
Nasturtium
Petunia
Portulaca
Spider Flower
Sweet Alyssum
Zinnia

Perennials for Beginners

Common Name
Aster
Chrysanthemum
Daylily
Garden Phlox
Iris

Perennials That Will Flower the First Year from Seed

Common Name
Chinese Larkspur
Garden Chrysanthemum
Iceland Poppy
Mealycup Sage

BULBS FOR SPECIFIC CONDITIONS

Bulbs for Beginners

Colchicum	Crocus
Daffodil	Dahlia
Gladiolus	Grape Hyacinth
Siberian Squill	Tulip

Bulbs for Shade

Calla	Siberian Squill
Grape Hyacinth	Tuberous-rooted Begonia

Bulbs for Cut Flowers

Calla	Grape Hyacinth
Canna	Iris
Daffodil	Lily
Dahlia	Siberian Squill
Gladiolus	Tulip

COMMON ANNUALS

The most common annuals are:

Bachelor Button
Coleus
Cosmos
Geranium
Marigold
Petunia
Snapdragon
Sun Flower
Sweet Alyssum
Wax Begonia
Zinnia

Other frequently grown annuals include:

Ageratum
Annual Phlox
Balsam
Browallia
Calendula
California Poppy
China Aster
Cockscomb
Dianthus
Flowering Tobacco
Morning Glory
Nasturtium
Pansy
Portulaca
Spider Flower
Sweet Pea

On this page and the back, attach pictures or pressed flowers of at least 20 common annuals.

COMMON PERENNIALS

The most common perennials are:

Balloon Flower
Chrysanthemum
Columbine
Daylily
Delphinium
Garden Phlox
Hollyhock
Lupine
Oriental Poppy
Peony

Other frequently grown perennials include:

Astilbe
Baby's Breath
Bleedingheart
Catnip
Coral Bells
Coreopsis
Evening Primrose
Evergreen Candytuft
Globe Thistle
Lavender
Lythrum
Primrose
Shasta Daisy
Veronica
Viola

On this page and the back, attach pictures or pressed flowers of at least 20 common perennial flowers.

COMMON BULBS

The most common hardy bulbs are:

Colchicum
Crocus
Daffodil
Grape Hyacinth
Hyacinth
Iris
Siberian Squill
Snowdrop
Tulip

The most common tender bulbs are:

Canna
Dahlia
Gladiolus
Tuberous-rooted Begonia

On this page and the back, attach pictures or pressed flowers of at least 8 common bulbs.

FLOWER GARDEN TOURS

Many counties and clubs are using garden tours to evaluate the members' projects. If your club uses a garden tour, you may find the following check list helpful in preparing for the tour.

Garden Location

1. Best site available

Garden or Flower Bed Plan

1. Plan well organized
2. Correct spacings used between plants
3. Tall-growing plants located on the north or west side of garden

Garden Practices

1. A good garden fertilizer such as 6-12-12 applied to garden and worked in before planting.
2. Seeds planted at recommended *times*, *depths*, and *rates*.
3. Plants thinned if necessary.
4. Starter solution used when transplanting plants.
5. Garden kept free of weeds.
6. Garden watered (if possible) during dry spells.
7. Plants free of insects and diseases.
8. Plants healthy and vigorous.

Garden Knowledge

1. Kinds and varieties of flowers, All-America Selections.
2. Sources of seeds and plants.
3. Kind of soil.
4. Fertilizers – analysis, amounts, date applied.
5. Pesticides and herbicides – kinds, frequency used, purpose.
6. Planting dates (from garden record).
7. Amount of time spent in garden.
8. Name of club and leader.

Other

1. Garden size satisfactory – not too large or small.
2. Has member been on a garden tour or does he plan to go on one?
3. Is member's garden record up-to-date?
4. Does the member grow at least one new kind or variety of flower each year?
5. Does the member sell any surplus flowers?
6. Do older members conduct simple experiments in their garden?
7. Are garden tools in good condition?
8. Have member's parents been interested in the project?

FLOWER GARDEN RECORD

You will want to keep track of your garden project in this record or on a similar sheet. Keeping a good record this year will help you plan for a better garden next year. Be sure to write down the varieties that you grow so that you will know next year what varieties did best under your conditions.

Kind of Flower	Variety	Date planted outdoors	Number of plants, area covered, or feet of row	Annual, Perennial or Bulb	Color	Average height (inches)	Date of Flowering (months)
Example: Zinnia	*Red Man*	*5/15*	*80 ft.*	*A.*	*Red*	*24 ins.*	*July-Oct.*

How many different flowers did you grow?

Type	Kinds	Varieties
Annuals		
Perennials		
Bulbs		

How large was your garden? _____ square feet