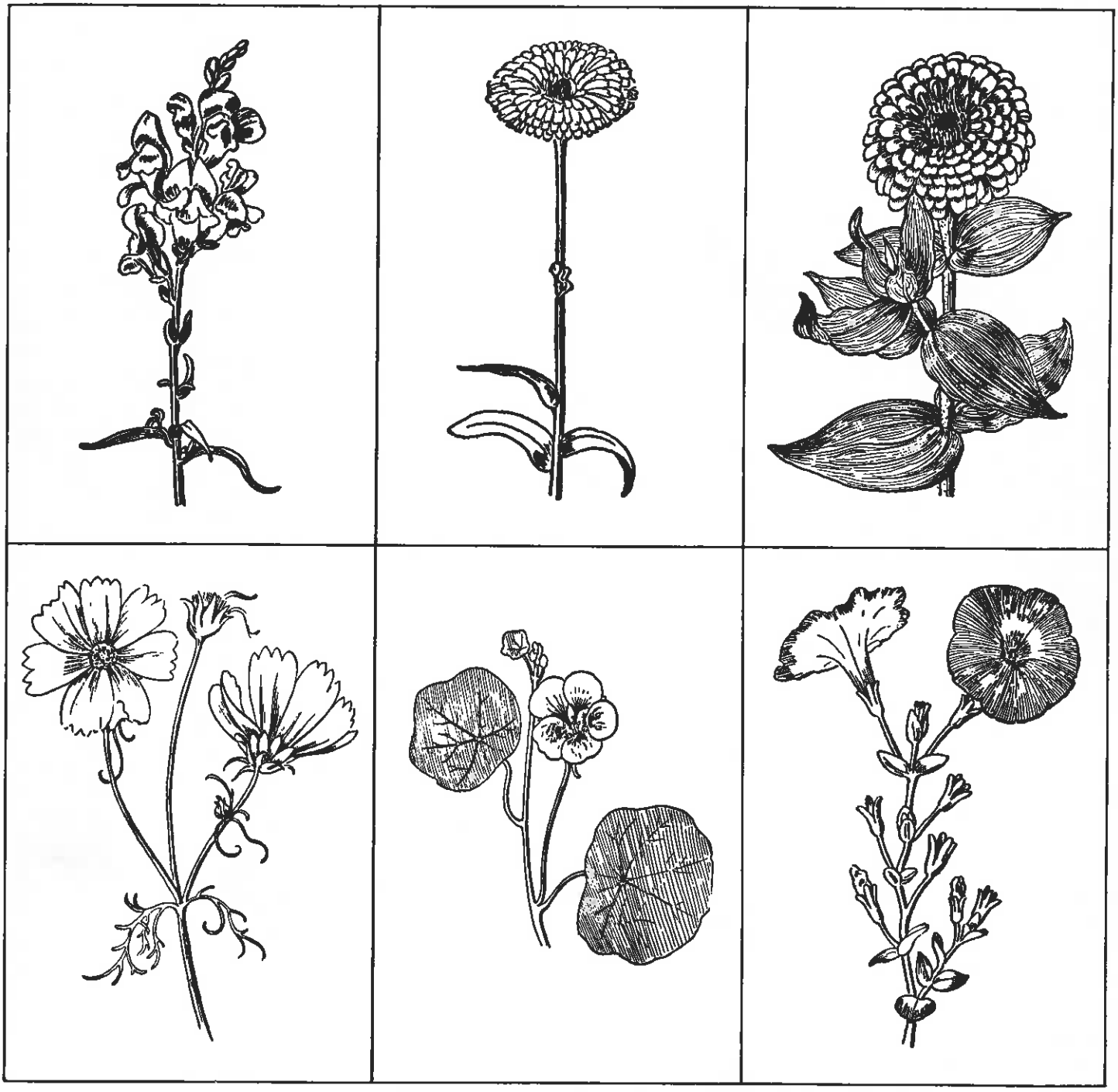
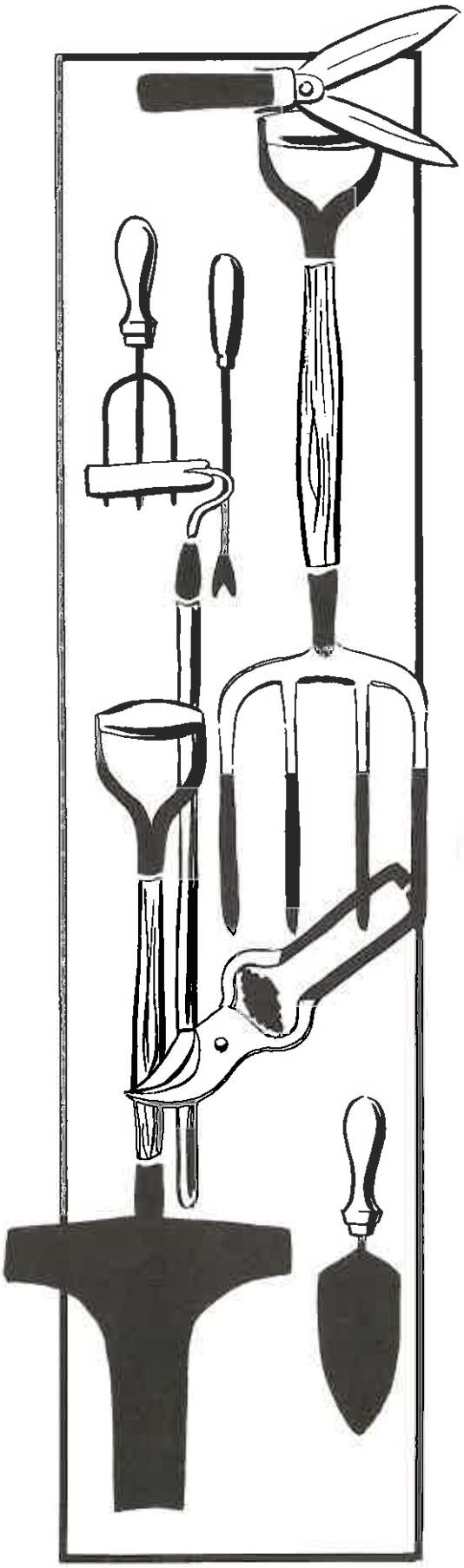
New York State College of Agriculture and Life Sciences,
A Statutory College of the State University, Cornell University

4-H Ornamental Horticulture
Leaflet H-7-1

Annual Flowers for your Garden

BY E. F. SCHAUFLER





Requirements
of the
4-H Annual Flower Gardening Project

1. Grow at least three different annuals, starting them indoors and/or outdoors.
2. Have one or more annual flower gardens totaling 75 square feet, or grow at least 25 plants in different areas. Pictures of your annual flowers are very useful in your record.
3. Fill in record sheet R-7-1.

Snapdragon

Some of the most popular garden flowers are the annuals, those plants which live for only one year. Many varieties of annuals are colorful and easy to grow, and they can be used in many different areas around your home.

Annuals may be planted along driveways, walks, terraces, and fences, or in front of permanent foundation plantings. They add color to your garden if planted among perennial flowers and spring flowering bulbs or in rock gardens. Started plants grow well in window boxes, hanging baskets, urns, containers, and movable tubs. If you have no outdoor gardening space, you can grow flowers on window sills and in window boxes using a "pillow pak." Annual flowers can be used indoors in fresh and dried arrangements and in corsages.

The most common annuals are zinnia, marigold, petunia, and ageratum. Others which are easy to grow are sweet alyssum, cornflower, aster, portulaca, calendula, and cosmos.

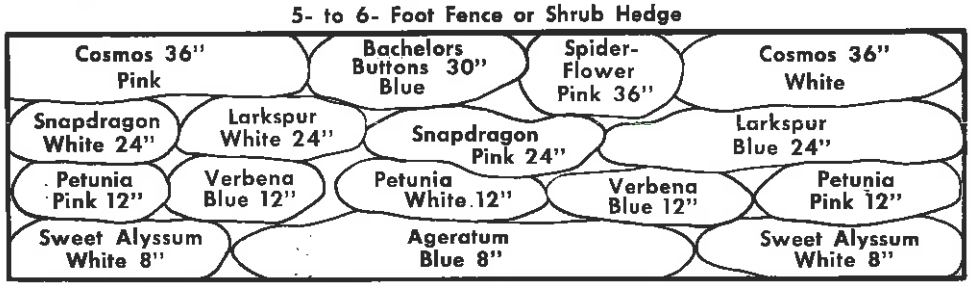
OUTDOOR GARDENING

Planning Your Garden. To choose the kinds of plants you want for your garden, study the colored pictures and descriptions in annual flower seed catalogs and Cornell Extension Bulletin 1070, *Recommended Annual Flowers for New York State.* Different varieties of annuals are of varying heights and colors. Low growing varieties of zinnias, for example, are only 4 to 6 inches tall. Other varieties grow up to 5 feet in height. The flowers vary in size from 1 to 8 inches across.

Make a plan on paper to show where you will plant each variety. Put the tallest plants at the back, the next tallest in front of these, and so on, with the lowest at the front edge. Study the color of each kind of flower you select, and place the plants so the colors look well together.

If all your annuals are to be in one location, choose an unshaded corner of your lawn or the south side of your home. Most annuals need full sun for best growth. If you have more than one garden, try different combinations of plants for height and color, but do not raise too many flowers the first year.

Plan for a large flower border, 20 feet by 5 feet



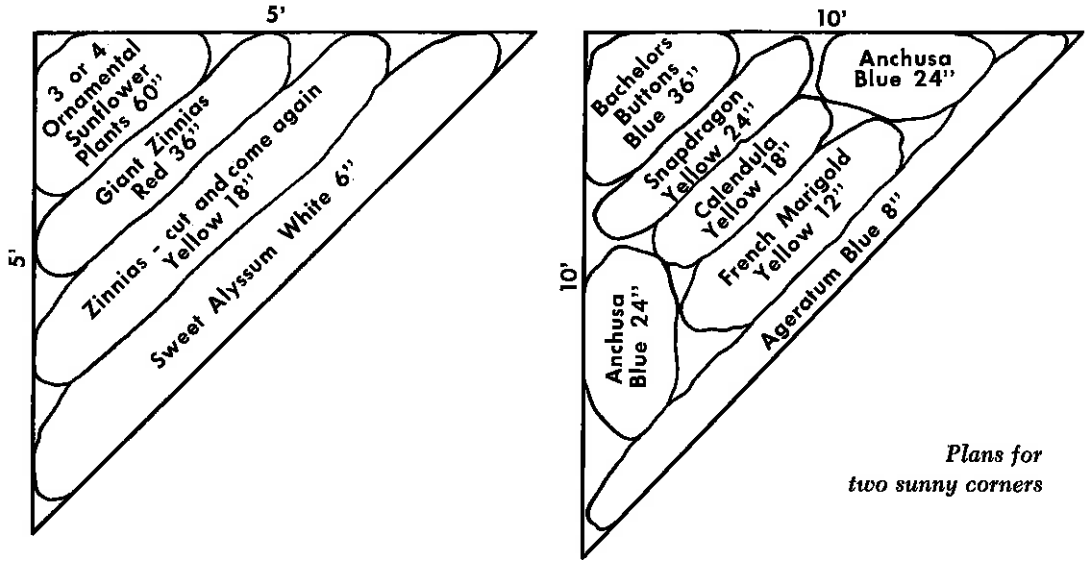
Buying Seed. Be sure to buy seed which has been packed recently. Old seed may have lost vitality, will germinate slowly, and may produce poor seedlings. Look for new varieties listed as F_1 hybrids which are superior to the usual inbred varieties. Keep all seed cool and dry until you are ready to plant it.

Preparing the Soil. Take the time to prepare your outdoor annual flower area thoroughly. It is better to grow a small bed of flowers in well prepared soil than to try to grow many in a poorly prepared area.

In the fall, work on areas to be used for your garden. Prepare the planting area by rototilling or spading as deep as you can – to a depth of 8 inches if possible. Remove all trash, large stones, roots, and other troublesome materials. Spread 1 to 2 inches of organic matter over the area – peat moss, compost, sawdust, cocoa hull, or any such material that is readily available. Mix these materials with the soil by spading or rototilling. During the winter this organic material will begin to decompose and will improve the soil.

In the spring when the ground has dried enough to work without sticking to your spade or other tools, spread plant food or nutrients over the area. Use 2 pounds of 5–10–5 or 5–10–10 fertilizer for each 100 square feet. A pint jar is a handy measure – it holds a pound of fertilizer. Dig or rototill these nutrients into the soil. Rake 2 more pounds of fertilizer into the soil surface for each 100 square feet.

You are now ready to seed or set transplants into your annual flower garden.



Plans for two sunny corners

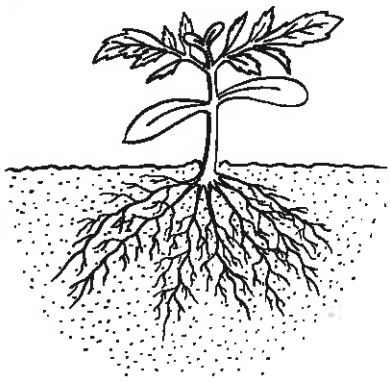
Seeding. Annuals that can be seeded outdoors as soon as your soil is workable are:

Babysbreath	Salpiglossis
Cornflower	Spider flower
Gaillardia	Stock
Globe amaranth	Strawflower
Annual phlox	Sweet alyssum
Poppy	Sweet peas

Wait until frost danger is past before seeding other annuals outdoors or setting out started plants.

Record the date of seeding or planting and the variety name on your record sheet.

Some annuals have very tiny seeds – over 200,000 in one ounce. If you're growing an annual flower garden for the first time, select large-seeded annuals or use started plants.



Seedling with one set of true leaves, ready for transplanting

Make an inch-deep furrow in the soil and fill the furrow with vermiculite. The vermiculite will prevent the soil from caking and keeping out water. Moisten the vermiculite using a fine spray from the garden hose or your house plant watering can. Make a small furrow in the vermiculite and seed into this small furrow, trying to space seeds as directed on the packet. Cover the seed with ¼ to ½ inch of vermiculite from the furrow edges.

You need not transplant any of the plants listed in Table 1. Merely sow the seed where the plants are to bloom. Those starred (*) produce good flowers for cutting.

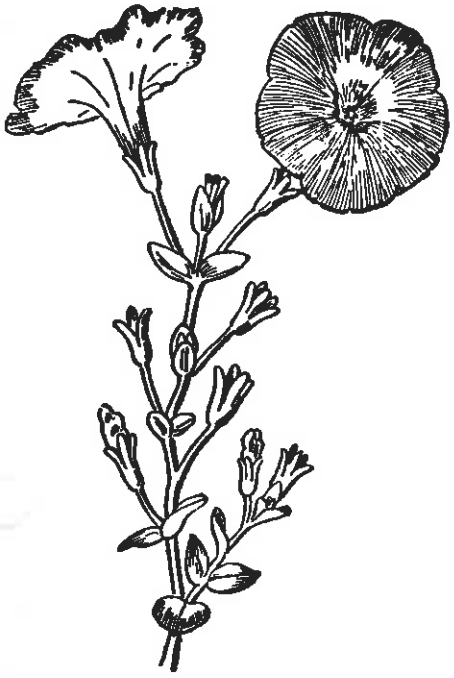
Thinning and Transplanting. All growing plants need elbow room to be healthy and support large blooms. When your annual plants have developed two true leaves (see drawing), they must be thinned to the recommended spacing in order to receive enough light, water, and nutrients to develop fully. If you sowed your seeds in vermiculite-filled furrows, the extra seedlings can easily be transplanted.

Watering. There may not be enough rainfall to keep your plants growing as fast as they can. The best way to put water where it is most helpful – in the soil – is to use a canvas soaker hose. The water seeps into the soil without waste and does not wet foliage or compact the soil as using a sprinkler does. Do not water using a hand-held nozzle on the garden hose.

Table 1. Seed Outdoors but Do Not Transplant

Common Name	Height	Color	Time to sow
	Inches		
Sweet alyssum	4 to 6	White, violet, pink	When the ground can be worked
California poppy	12	Orange, yellow	When the ground can be worked
*Annual candytuft	12	Crimson, lavender, white	When the ground can be worked
Forget-me-not	18	Blue	When the ground can be worked
*Annual phlox	12	Red, white, lilac	When the ground can be worked
Ornamental sunflower	60	Yellow	After the last spring frost

* Good flowers for cutting.



Petunia

Mulching. Mulches are any material used to cover the soil between rows and among plants. Mulches of organic materials keep the soil surface from crusting, prevent many weeds from growing, reduce moisture evaporation from the soil, and add organic matter to the soil.

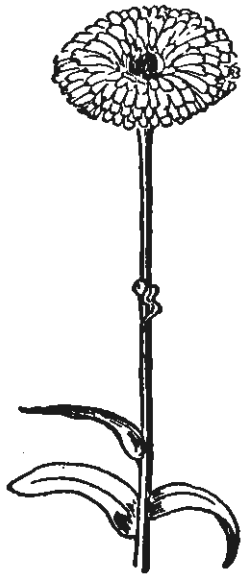
Lawn clippings are a good mulch for annuals. Check with gardeners near you for other possible organic mulches. Sheet plastic and aluminum foil can also be used as mulches, but some people do not like the way they look in flower gardens.

Cultivating. After your plants have been thinned and transplanted, work the soil only enough to keep the soil crust broken up. Shallow cultivation using a push type hand cultivator or a sharp hoe is all that is necessary. A hand hoe with a triangular blade is easy to use among plants.

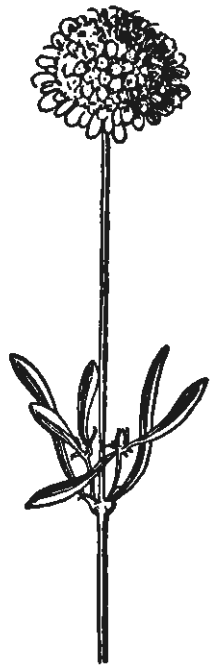
Removing Old Flowers. Annual flowers will grow more vigorously if you remove mature flowers and forming seed pods. This is most necessary on ageratum, calendula, cosmos, marigold, rudbeckia, scabiosa, and zinnia.

STARTING PLANTS INDOORS

Plants you start in your home seldom are as satisfactory as those purchased from growers. Home-grown plants seldom grow as well or bloom as prolifically as those seeded or planted directly in the garden. Home-started seedlings are frequently attacked by a fungus disease called damping-off, and favorable light, temperature, and humidity are often not available in the home.



Calendula



Scabiosa

Try growing a few plants of your own anyway. The experience of starting some annuals indoors will teach you much about plants. You can overcome most of the problems of starting annuals in the home by using a "Peat-Lite" mix and fluorescent lights.

Seeding. Perhaps you recall the "bad luck" you have had with the "dirt" out of the garden. Garden soils are not the best medium for sowing seeds indoors because they lack necessary organic matter or are infested with diseases and weeds.

Recent research at Cornell has shown that a very simple formula can be used to produce a superior mix for your plant growing needs. This "instant soil" is referred to as the "Peat-Lite" mixes by Professors R. Sheldrake and J. Boodley, researchers in the Departments of Vegetable Crops and Floriculture.

The Cornell "Peat-Lite Mix A" is suggested for use in starting seeds in the home. A small quantity can be made up in a hurry. The basic ingredients are Vermiculite #2 size (sold as Terralite in garden stores) and sphagnum peat moss. Listed below is the "recipe" for a one-peck mix:

Vermiculite #2 size	4 quarts
Shredded Sphagnum Peat Moss	4 quarts
Limestone	1 tablespoon (level)
Superphosphate (20%)	1 tablespoon (level)
5–10–5	2 tablespoons

If the peat moss is slightly moistened prior to mixing, the mixing process is less dusty. Mix the materials thoroughly on a clean surface. The resultant mix can be used immediately or can be stored moist in a plastic bag until you are ready for it.

Plants may be started in small wooden flats or in one of the newer starting containers made of plastic, styrofoam, or fiber. The container must have holes in the bottom for drainage. When sowing seeds, fill the flat or container with mix and firm the mix well at the edges and corners. Make rows by pressing the edge of a ½-inch board to a depth of ¼ inch. Do not cover very fine seeds such as petunia, snapdragon, and begonia. Cover most other seed with about ¼ inch of mix.

Slip the container in a plastic bag and put it in a warm (70–75° F.) place with good light, but not direct sunlight. Remove the bag when green sprouts appear. Move the plants into sunlight, and keep the medium moist. Transplant the seedlings as soon as one or two sets of true leaves appear.

When plants will remain in the mix for long periods of time, a feeding will be necessary about every two weeks. Use a completely soluble fertilizer at 1 to 2 tablespoons per gallon.

Using Fluorescent Lights. To get satisfactory seedlings ready for transplanting, place the container under fluorescent lights in a basement or other room where uniform temperatures of 65 to 70° F. can be maintained. Use four 40-watt warm white fluorescent tubes in a reflecting fixture, and keep them lighted for 18 hours daily. Immediately after sowing the seed, place the seed pan, flat, or other container under the lights with the surface of the germination medium 6 inches below the tubes.

Much more detail in starting plants indoors is found in Cornell Information Bulletin 20, *Flowers from Seed.* A timetable for indoor seeding is included.

PILLOW-PAK GARDENING

The use of a plastic tube filled with a lightweight media is a novel concept for growing plants. The growing media is Cornell "Peat-Lite Mix A" described above under "Seeding."

The plastic tubing that is used to make the pillow-paks can be made any convenient length. Fold a piece of tubing over at the end and staple it shut. After filling the tube with medium, fold and staple the other end. Cut holes for the plants at an appropriate spacing in the top of the tube.

Left. Red salvia growing in a pillow-pak

Below left. Two tomato plants in a pillow-pak 1½ feet long

Below right. Closeup of fruit cluster; note string to hold up plant.

To wet the medium thoroughly, use ¼ teaspoon of detergent added to 1½ quarts of water for a 36 inch long, 4 inch diameter tube. One pint of water per foot is a good rule of thumb for initial wetting.

Record the weight of the tube plus added water.

Since there are no drain holes, too much water may result in waterlogging of the medium and death of the plants. Therefore, you should water only when necessary. The deciding factor is the weight of the tube with plants. When the pak has lost approximately 1½ pounds, 1½ pints of water may be added. Add needed water slowly, using a small funnel to facilitate pouring.

After the initial watering, a second application of water may not be needed for 2 weeks or more. This will vary with the location of the pillow pak. Paks placed outdoors will need water more often than those inside the home.

The amount of fertilizer given in the "Peat-Lite Mix A" recipe will feed a plant for about 12 weeks. If plants are grown longer than this, additional feeding may be needed. This can be done by applying a completely soluble fertilizer (such as 20–20–20 or similar analysis) at each watering at the rate of 2 level teaspoons per gallon of water.

Pillow paks may be placed on a window sill, in a porch box, or on a patio. If planted in the ground, the bottom of the pak should be slit with a knife to allow the root system to penetrate the soil and thus obtain moisture. For tall plants, use a thin bamboo cane to add support. Push the cane into the pillow pak and tie the plant stem to the cane.

Bachelors button

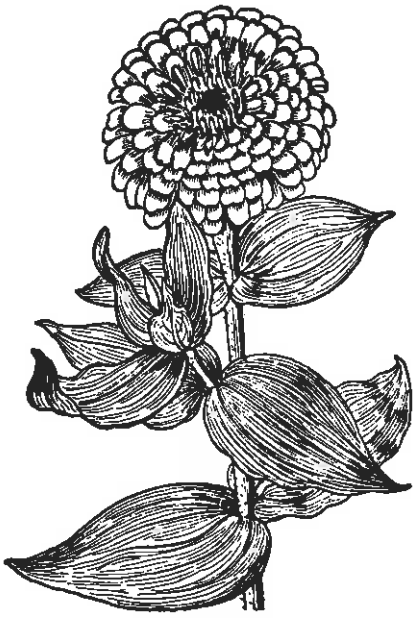
EXHIBITING GROWING PLANTS AND CUT FLOWERS

Your accomplishments as a gardener and plant grower show up in your exhibits at the fair – be it school, club, county, or state. By exhibiting and noting other exhibits, you gain ideas and information. You actually "grow" yourself by involvement in friendly competition.

Getting Ready to Exhibit — Winter. Get yourself ready for an exhibit during the winter. Look through last year's fair premium book to see how much exhibiting you may do. Some fairs allow 10 entries for each participant.

When selecting seeds and started annual plants for your garden, choose those that will last as cut flowers – not portulacas, four-o-clocks, and many poppies. The following annuals have classes listed for them at the New York State Exposition:

Aster	Nasturtium
Bachelors Buttons	Petunia
Calendulas	Phlox, annual
Cosmos	Rose, Hybrid Tea
Dahlias	Rose, Floribunda
Gladiolus	Snapdragon
Larkspur	Sweet Peas
Marigold, French	Zinnia, baby – under 2″
Marigold, African	Zinnia, medium – 2″ to 4″
Marigold, hybrid	Zinnia, giant – over 4″



Zinnia

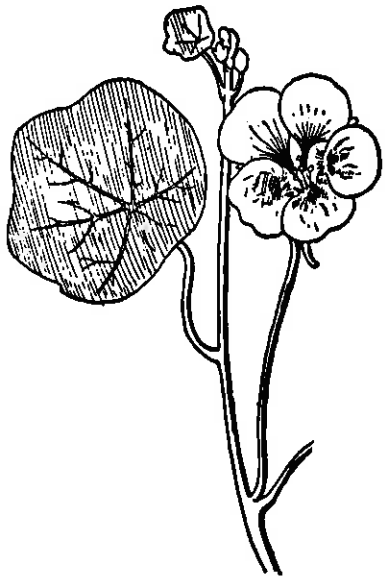
Find out when your county fair will be held from your county office early in the year. Fair dates in New York State range from July 5 to September 21. The dates of the fair will determine if you can seed annuals outdoors or if you will need to use started plants. Some annuals come into bloom about two months from the time of seeding. Others take nearly three months.

For each variety you decide to plant, buy seeds that produce flowers of all one color rather than a mixture. A large number of plants with the same color blooms will give you a wider selection for a blue ribbon exhibit. Buy from a well-known mail order house or reputable seed concern. Many gardening failures are caused by poor seed, not the mistakes of the grower.

Winter is also the time to draw up a garden plan. Then you will know the space requirements for your exhibition materials.

If your family doesn't own a garden duster or sprayer, plan to buy one. Ask your 4-H or Agricultural Division agent to help you select the right size for your garden and home grounds.

Keep a record of annual flower variety names. Many shows require the correct name as part of the entry.



Nasturtium

Getting Ready to Exhibit — Spring. Always have exhibiting in mind when seeding or planting annual flowers. Be sure your gardening area has the light and nutrients needed to grow good, healthy plants. Follow recommended procedures on preparing soil, seeding, thinning, watering, mulching, and cultivating.

Getting Ready to Exhibit — Summer. Keep close watch on the annuals you plan to exhibit as fair time draws near. Spray or dust lightly so blooms and leaves will not have residues on them. You may wish to build "cages" of cheesecloth over your prime flowers as showtime nears to reduce damage from rain, insects, and hail. If you have not used a mulch material, cover the soil around the plants at least a week before the fair opens. This is most important with low growing annuals which are easily splashed by heavy rains. Stake tall growing plants, especially gladiolus spikes, for a crooked stem is not considered a good specimen. If your garden area may be wind-whipped, put up a windbreak of scrap lumber or old snowfence to protect blooms opening the week of the fair.

Obtain a copy of the premium list of your fair as far in advance as possible. Read over the instructions to be sure you understand them. Get entry tags for this year's fair – entry cards are changed from year to year. Use the correct en-

try card for each show or fair you enter. Print all the information on the card so everyone can read it. Most fairs call for entry cards to be filled out in pencil as ink runs if water is spilled on it. Fill out double entry cards completely – it takes time to track down an omitted address or an unreadable last name.

Getting Ready for a Blue Ribbon. Know what the judge will look for.

Before cutting:

1. Plan to "condition" or "harden" all flowers to be exhibited, be they cut specimens, flower arrangements, or corsages.
2. Know the time entries are due at the fair and plan to cut the day before.
3. Know the number of *blooms* or *stems* required in each class. Gladioli usually are exhibited as one spike per class, with at least 14 to 18 inches of stem below the lowest floret. The lower 3 or 4 florets should be open. Dahlias usually call for 3 blooms. Shows vary as to requiring 3 or 5 *stems* per entry.
4. Know the stem length called for.
   Glads – 18 inches below florets if possible. Annuals growing as cut flowers – 8 inches for tall growing zinnias, snapdragons, calendulas, cosmos, bachelor buttons, gloriosa daisies, etc. Low growing annuals – 2½ inches for phlox, alyssum, low growing petunias, French marigolds, etc.

Type: Materials exhibited must be like the ideal. A tapered flower spike for tall growing snapdragons. A full sized round flower for asters, zinnias, and marigolds. A long tapered spike for gladiolus, etc.

Uniformity: All specimens in a class must be as near alike as possible for age, color, size, stem length, number of petals, openness, etc.

Prime Condition: Round-type flowers should be fully open, but the petals should not be faded or brown at the tips. Spike types should have at least 3 or 4 florets open. Points are lost for each floret removed from mature spikes.

Freedom from Damage: No broken or bruised petals, leaves, or stems. No insect or disease damage on blooms, leaves, or stems. No pesticide residue evident. No soil or dirt on any portion of exhibited material.

Cutting Your Flowers. Cut blooms the day *before* the fair opens. Use a kitchen knife and cut and collect twice as many flowers as the entry requires. Take a pail of water with you so blooms go into water *immediately* upon being cut.

The following steps are suggested for getting blooms ready for exhibit:

1. Cut the flowers in early morning or evening.
2. Cut the flower stems with a sharp knife; make a slanting cut.
3. Remove foliage from the bottom 2 to 3 inches of a long stem. Do not strip off all foliage.
4. After bringing your flowers indoors, put them in very warm water (110° F) immediately, so from 5 to 6 inches of the stems are covered. Keep the flower petals dry. Do not crowd too many flowers into one pail or container because petals bruise easily.
5. Let the flowers stand in water overnight in a cool room, such as the basement.

Sear the cut stems of flowers with milky sap, such as summer poinsettias, in a match or candle flame for 1 to 15 seconds. Dahlias also last longer if the cut stem end is seared immediately after cutting.

Setting Up Your Exhibit. Fill out your entry cards *before* you start for the fair. If you are carrying your exhibits in containers, set the containers close to each other or pack wadded paper around them so they do not fall over. Old milk crates make handy carriers. Put extra blooms in each entry. Wrap tissue paper around blooms to prevent tangling. If you provide containers you want returned, tape or print your name on the bottom of the container.

Specimen gladiolus spike for exhibiting

If you are sending your flowers a long way, you may have to ship them out of water. Be sure these flowers are hardened or conditioned. If you have only a few blooms, you may be able to get florist picks which keep water on the cut stem ends. You can also place the cut stem in a small block of water-soaked oasis or snowpac. Put a small plastic bag over the water-holding material. Wet vermiculite or snowpac in small plastic bags held by rubber bands around the cut ends also keep flowers fresh.

You may have to pack flowers flat in boxes so the boxes can be stacked. Flowers are laid with the blooms beside each other. *Never enclose flower heads in plastic bags, as they mold very quickly.* Wrap the stems in wet tissues or rags and put a small plastic bag around these materials so they do not dry out rapidly.

Put entry cards in each box for the flowers in that box. A piece of masking tape will hold stems in place if they are handled a bit roughly. Cut small holes in the boxes – no larger than ½ inch – so air gets in to the bloom.

When sending entries a long way, it's your responsibility to make sure they can stand the trip. Always put in extra specimen blooms.

Your club may want to have a practice session on getting cut flowers and plants ready for a fair exhibit. Your club leader has information on setting up such a meeting. Make sure your leader has the materials for this – L-7-1 and L-7-1e.

On the next page is one type of exhibit score card.

Sunflower

Flower Judging Score Sheet

A. Faults in Entry:

_____ Too many specimens
_____ Too few specimens
_____ Variety name incorrect

B. Uniformity is lacking:

_____ Age
_____ Color
_____ Shape
_____ Size

C. Flowers are injured by:

_____ Diseases
_____ Insects
_____ Handling

D. Other Faults:

_____ Imperfect
_____ Too old
_____ Short stemmed
_____ Small
_____ Weak stemmed
_____ Wilted
_____ Too young

A. **Faults in entry:**

1. **Too many specimens.** Check for kind of flower and show. Gladioli are usually exhibited one spike per class. Some shows have dahlias and other flowers listed for 3 or 5 BLOOMS *or* STEMS per class. Make sure you have the number listed for each class.
2. **Too few specimens.** Again check the exact number called for.
3. **Variety name incorrect.** It's your responsibility to have the right entry card with each entry. Variety, strain, or mixture name must be written in.

B. **Uniformity is lacking:**

1. **Age.** All flowers must be in prime condition. Don't mix buds, half open, and fully opened flowers.
2. **Color.** Select *all* one color for an entry.
3. **Shape.** Misshapen flowers count against an entry.
4. **Size.** Flowers must be about the same size.

C. **Flowers injured by:**

1. **Diseases.** Any sign of mildew on zinnia foliage, botrytis on petals, etc., counts against the entry.
2. **Insects.** Holes chewed in flowers or foliage are a sign of inadequate care for the flowers you are exhibiting.
3. **Handling.** Broken necks, crushed blooms, broken foliage, torn leaves – all are looked for. Handle materials carefully after you have chosen them.

D. **Other faults:**

1. **Imperfect.** Misformed due to insect stings, poor petal development, flowers not true to type.
2. **Too old.** Noted by color bleaching out of petals, petals falling, dark colored stamens.
3. **Short stemmed.** Gladiolus calls for up to 20 inches of stem. Shows specify length. In 4-H, stems 8 inches long, where possible, are specified on stems other than glads.
4. **Small.** Flowers small because of crowded growing conditions, weed competition, no thinning, lack of water – these are marked down.
5. **Weak stemmed.** Not enough light, too much competition, too much fertilizer, etc.
6. **Wilted.** Flowers should be hardened or conditioned so they are not wilted if judged within the first half day the show opens.
7. **Too young.** Buds or flowers not fully opened will be marked down in comparison to blooms in the proper stage of openness.

SHOWING AND EXHIBITING GLADIOLUS

If you are exhibiting gladiolus for the first time, here are some basic rules.

Read the entry rules before cutting spikes for exhibit. If your exhibit is to be in a gladiolus show, have a member of the society explain the rules to you.

Every gladiolus variety is in a class. This class number determines what a perfect spike should have as far as floret size, open florets, number of buds, and buds showing color.

Class Number	*Diameter of Floret (Inches)*	*Number of Florets Open*	*Number of Buds*	*Buds Showing Color*
100	2½	5	15	4
200	2½–3½	6	18	5
300	3½–4½	7	19	5
400	4½–5½	8	20	6
500	5½–up	7	19	5

When selecting spikes, look for straight stems. All florets should face one direction. Florets should be clear in color with very little stem showing thru open florets.

When cutting, get as much stem length as possible — up to 20 inches below the first floret. Run a sharp knife down along the stem until you get the 20 inches. Then turn the blade into the stem and cut through the stem. Leave lower leaves on the plant so the corm can develop.

Remove all side shoots from the main stem.

A spike is ready to cut when one floret or flower is open. A spike with one flower will be in perfect condition for showing two days later. Keeping the spike in slightly warm water will hasten development. Flowers in good condition can be kept in a florists refrigerator for a week, if they develop too soon.

Containers should hold the spike upright. Large soft drink bottles will hold the miniature classes. Old quart milk bottles with wedges will hold large spikes. Some narrow necked detergent containers can also be used. Always keep spikes standing straight up or the spike tips will crook.

REMEMBER

Straight stems
Up to 20 inches of stem
Five to 8 open florets depending on class
Remove side shoots
Display so spikes stand straight up
If spikes must be laid flat to ship, tie spike to board or stick,
keeping cut stem in moist material.

Exhibit spikes even if they are not perfect — even experienced growers have difficulty in always obtaining a perfect spike.

Single copies 15 cents each; no free distribution

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