HORTICULTURAL
MU Guide
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Drying Flowers and Foliage for Arrangements

Why dry flowers?

- Dried plant materials provide distinctive indoor decoration.
- Arrangements made from dried materials are long-lasting and require little care.
- Drying flowers and foliage expands gardening activities without elaborate equipment or previous experience.
- Drying flowers is inexpensive.

Collecting flowers for drying

Flowers and other plant materials for drying should be picked close to their prime. Flowers to be air-dried continue to open as they dry, so they should not be fully open when picked. Never place wilted flowers into drying mixtures.

Flowers or leaves for drying may be collected anytime during the growing season, from early spring until late fall. Always collect more material than is needed, to allow for damage. Use only the most perfect forms. Poor shapes dry as poor shapes. Use only plants and flowers free of insect and disease damage. Damage becomes only more obvious after drying. Pick flowers when they are free of dew or rain. Place stems promptly in a container of water to prevent wilting while gathering.

Developing graceful lines when making dried flower arrangements can be difficult sometimes. Therefore, while collecting, look for branches and stems with sweeping curves or lines that will add distinctiveness to the arrangement. If none can be found, curves or other lines can be made by shaping the branches or stems into the desired positions while they dry.

In addition to flowers, stems and leaves that may be dried indoors, many materials can be collected in the fall and used almost directly in arrangements after gathering. These include many seedpods, cones, grain, grasses and berries found in the garden as well as in fields and roadsides.

Credits

Revised by **David H. Trinklein**, Associate Professor and State Floricultural Extension Specialist, Division of Plant Sciences

Table 1. Plant materials suitable for air-drying.

Flowers	Grasses	Seed heads
Acroclinium	Bristly foxtail	Cattail
Baby's breath	Eulalia grass	Dock
Bachelor's button	Fountain grass	Honesty (money plant)
Bells of Ireland	Hare's tail-grass	Iris
Cockscomb	Northern sea oats	Lily
Globe amaranth	Pampas grass	Lotus
Larkspur	Plume grass	Milkweed
Scarlet sage and blue sage	Quaking grass	Mullein
Sea lavender	Spike grass	Poppy
Statice	Squirrel-tail grass	Queen Anne's lace
Strawflower		Teasel
Yarrow (yellow varieties best)		

Air-drying

Many garden flowers, as well as wild plants, can be dried simply by hanging them upside down in a warm, dry place for several weeks (Table 1). Flowers best suited to this treatment are the "everlastings" and a few others that do not wilt readily. Some, such as globe amaranth, can be dried in bunches on their natural stems. Others, such as strawflower, should have a wire substituted for stems before drying.

Steps for air-drying

- Cut flowers of good quality in prime condition or slightly immature.
- Remove foliage from stems. If stems are weak or become brittle after drying, remove them and wire the flowers.
- Group the stems into small bunches and tie with a rubber band. The bunches will pull tighter as the stems shrink during drying.
- Hang upside down in a warm, dry, dark area such as an attic, closet or furnace room. Avoid damp rooms or direct sun on the flowers, but provide good air circulation.

- Allow to hang until thoroughly dried, which normally takes two to three weeks.

Natural stems dried in this process will generally be fairly straight. These may be bent for arranging by submerging the stems in warm water until they have softened, bending them to the desired position and weighting them in that position until they have dried. Some may be laid on curved cardboard to conform to the desired curvature as they dry.

In addition to the garden flowers and everlastings that may be air-dried, many seed heads of grasses and other plants can be hung to dry. Even a few large flowers, such as peony and hydrangea, are sometimes dried in this way. However, because they are quite large, they should be hung individually rather than in bunches.

Pressing

Pressed flowers are especially suitable for flower pictures, as well as decoration on notepaper, place cards and many other items.

Collecting for pressing

Use flowers for pressing that are in prime condition. Also, use flowers at different stages of development up to full maturity for more variety in design. Avoid plants with fleshy stems and leaves, as well as flowers with very thin petals. Do not try to press wilted materials. Flowers that are flat, such as pansies, press best.

Methods for pressing

The faster flowers dry, the better they retain color. On the other hand, flowers cannot be exposed to excessively high temperatures; although they may dry quickly, they will turn brown.

Pressing requires sandwiching flowers and foliage between layers of an absorbent material. The material should be clean and hold the flowers firmly and flat during the drying process. Porous materials that allow some air movement are also beneficial.

Flowers are generally placed between sheets of nonglossy paper, such as newspapers, old telephone directories or catalogs. Absorbent facial tissues can be placed on the pages to aid rapid moisture absorption. Position the flowers and tissues in the folded newspapers or books, and then stack them several layers deep. Place boards beneath and on top of the stack. Put the stack in a warm, dry place with a heavy weight on top. At the end of the first week, remove the tissues and papers, and place the flowers or foliage between fresh, dry tissues and papers.

Another system for drying flowers uses cardboard, newspaper and desk-sized blotter pads. Cut corrugated cardboard into sheets slightly larger than the sheets of folded newspaper. Position flowers on one side of the open newspaper, close the newspaper and place a sheet of blotter paper and cardboard on each side. After all flowers have been placed between newspaper, blotter paper and cardboard, stack the layers and tie or tape them together. Put the stack in a warm, well-ventilated place and weight it.

If large numbers of flowers are being pressed, write the date on the stacks to keep track of drying time. Special presses can be purchased or built for drying large quantities of materials.

The flowers in the following list produce good results when pressed. However, many other flowers may be used, so experiment with those available.

Flowers for pressing	
Ageratum	Golden red
Alyssum	Heath
Anemone	Heather
Azalea	Hydrangea
Bleeding heart	Johnny-jump-up
Buttercup	Larkspur
Butterfly weed	Lily-of-the-valley
Candytuft	Marigold
Celosia, cockscomb	Nemesia
Chrysanthemum	Pansy
Columbine	Phlox
Cornflower, bachelor's button	Primula
Cosmos	Queen Anne's lace
Crocus	Rose
Daffodil	Salvia
Daisy	Statice
Delphinium	Sweet pea
Dutchman's breeches	Verbena
Geranium	Zinnia

Drying flowers using desiccants

At times, flowers that are air-dried become misshapen during the drying process. This is especially true with flowers that have a high moisture content or a flat, open shape. These types of flowers may be dried in their natural form by being buried in one of several desiccants that remove water from the flowers more quickly than air-drying while at the same time holding the flower in its natural form.

Types of flowers that may be dried in a desiccant are almost limitless. However, some are more satisfactory than others and are best for the beginner. Flowers that readily shed their petals, such as poppies, are unsuitable. Table 2 lists some flowers worth trying. As most of these flowers dry, colors will darken. Therefore, extremely dark flowers, especially in the red, purple and blue ranges, may appear almost black after drying. Whites generally develop a cream or tan color.

The following materials or blends can be used as desiccants for drying flowers.

Borax combined with sand or cornmeal

One of the least expensive mixes for drying flowers is made from sand and borax. The sand must be

fine, clean and dry. Sand is relatively heavy to work with and tends to flatten flowers unless used very carefully.

A more popular mixture for drying is made of equal parts of borax and white cornmeal. Cornmeal is lightweight and has less tendency to flatten flowers, plus it makes filled boxes easier to handle and move.

The main function of these materials is to hold the petals in place while they dry naturally. Good aeration is important for rapid drying. Some people feel that the addition of about three tablespoons of noniodized salt per quart of mix helps petals retain color during drying.

Table 2. Flowers for drying using a desiccant.

Flower	Approximate drying time using silica gel (days)
Anemone	2–3
Baby's breath	2–3
Bachelor's button	2
Black-eyed Susan	2
Camelia	2
Canterbury bells	3–4
Cosmos	2–3
Crocus	2
Daffodil	2–3
Dahlia	2–3
Daylily	1
Daisy	2
Delphinium	2–3
Foxglove	3
Gladiolus	2–3
Hyacinth	4–5
Iris	2–3
Larkspur	2
Lilac	2
Lily-of-the-valley	2
Marigold	3–4
Pansy	2–3
Peony	2–3
Queen Anne's lace	2
Rose	2–3
Salvia	2
Scarlet sage	2
Snapdragon	2–3
Stock	3–4
Sunflower	2
Sweet pea	2
Tulip	2
Verbena	2
Yarrow	1
Zinnia	2–3

The ratio of borax to sand or cornmeal varies widely, but the quality of drying does not seem to differ greatly between them. Ratios varying from 1:1 to 1:6 have been used (first number refers to borax).

Silica gel

In general, the most satisfactory material for drying flowers at home is silica gel. Its initial cost is greater than that of borax-sand or borax-cornmeal combinations, but silica gel can be used over and over for many years. Plus, it dries flowers quickly, so it can be used to dry more flowers during a single season than the same quantity of a borax mixture. Table 2 shows approximate drying time for some of the more popular flowers when using silica gel.

Silica gel is available under a number of trade names. It is white, but some types contain blue crystals that act as an indicator of the amount of moisture that has been absorbed. When these crystals are clear blue, the material is dry. As moisture is absorbed from the flowers, the crystals gradually turn pink. At that point, it is time to redry the crystals before using them again.

To dry the material, spread the silica gel on open pans or cookie sheets in a layer ½ to ¾ inch thick. Bake in an oven at 250 degrees F for about an hour, or until the moisture-indicating crystals, if present, are blue again. Stir the material several times while drying. Store silica gel in airtight containers.

Method

The method for burying flowers in any of these materials is essentially the same. However, differences exist in the types of containers required and the ability to dry with natural or wire stems.

Containers

Borax mixture. Flowers dried in a borax mixture should be left uncovered during the drying process. Therefore, low cardboard boxes with tight, strong bottoms are ideal. These containers allow good air movement through the mixture and, if desired, allow stems to be left attached, sticking out of the mix to air-dry.

Silica gel. Flowers dried in silica gel must be placed in airtight containers. If a container is not sealed tightly, the silica gel absorbs moisture from the air, and flowers dry too slowly or not at all. A candy tin, plastic container, coffee can, large-mouth jar or any other container with a tight-fitting lid may be used. If no containers with tight lids are available, seal loose tops with tape.

Use shallow containers to make maximum use of the drying material. For most flowers, the natural stem should be removed before drying in silica gel. Wiring those flowers before drying will make them easier to arrange later.

Wiring

The two techniques for wiring flowers are hook wiring and cross wiring. Hook wiring may be used for daisies, marigolds, zinnias, or other flowers with soft centers. Flowers with a harder base or center, such as roses, should be cross wired. With either technique, use about a 20- to 24-gauge wire.

Hook wiring. To hook wire a flower (Figure 1), push the wire upward through the center of the stem, if hollow, or through about the center of the flower. Push it out the top of the flower, bend a small hook in the end of the wire and pull it back into the flower, hooking the center. Make sure the small hook is well-hidden in the flower's center, or as the flower dries, it will become visible.

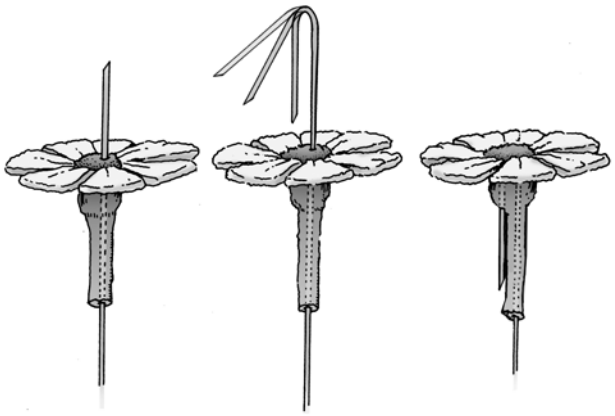

Figure 1. Hide the hook well when hook wiring a flower before drying.

Cross wiring. To cross wire a flower (Figure 2), push the wire through the base of the flower at right angles to the stem. Center the wire in the flower base, and then bend both ends down to form a short stem.

In shallow containers, the wires may be bent several times or simply bent out of the way for drying. After the flowers have dried, the wires can be straightened and other wires added to prepare them for arranging.

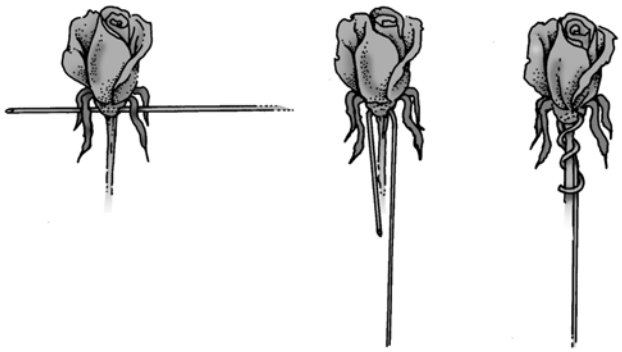

Figure 2. Cross wire flowers with a hard base, such as roses.

Burying the flowers

Flowers with wire stems are dried facing upward, and the stems are bent or curled to lie parallel to the bottom and out of the way. Flowers on natural stems may be dried on their sides (Figure 3), as in the case of spike flowers such as larkspur or snapdragon, or upside down with stems protruding upward. Working the drying agent between the petals is difficult when flowers are placed facing downward. When placing flowers on their side, a brace is necessary to hold the stems so flowers on one side are not flattened.

Figure 3. Provide support to dry spike flowers in a horizontal position.

To dry flowers facing upward

- Place a layer of drying material in the bottom of the container 1 to 2 inches deep.
- Bend the wire stems to the side or curl up.
- Place the flower on the layer of material in the bottom of the container. Push wire stem down into material.
- Gently work the base of the flower into the material so it is well-situated, with petals supported and in a normal position.
- Gently sift the material over the petals, making sure that all petals remain in place as the material is added.
- If any petals are bent, use a toothpick or similar item to reposition them.
- Continue to add material until each flower is entirely covered.
- After all flowers have been added and covered, lift the container and tap it gently on the base to help settle the material.
- After tapping, make sure all petals are still covered. If any have been exposed, add more drying material.
- Prepare for storage.
  - Borax combinations can be placed directly in a warm, dry place without covering. Drying will normally take two to three weeks.
  - Silica gel should be tightly covered or sealed if the lid is not airtight. Flowers should dry in three to eight days. Drying time varies with the thickness of the flower. If removed too soon, petals will droop. If removed too late, petals become brittle and break easily.

Removing flowers from the mixtures

Because petals become fairly brittle after drying, be very careful when removing flowers from the mixture. Pour off or gently brush to one side some of the mixture on the surface of the container. As petals become visible, gently lift the flowers upward by placing your fingers beneath them. Turn each flower upside down after removal and tap out any remaining residue. If a white dust remains, remove it by carefully brushing with a soft, dry artist's brush or gentle stream of air.

Some flowers, such as chrysanthemum, drop petals easily. These can be reinforced by dripping glue on the bottom at the base of the petals. Use a glue that becomes clear after drying.

Adding stems for arranging

Flowers often need wire in the stem for arranging. A heavier wire, such as 18-gauge, may be used. Simply twist the short wire that was placed in the flower around the stem wire and wrap them together with floral tape.

Microwave oven-drying

Microwave-drying takes only a few minutes and provides dried flowers that look fresher and more colorful than those obtained by other methods. Support material such as silica gel must surround and support the flowers during heating and drying. Use heat-tolerant glass or microwave containers. Do not cover the containers. Place a cup of water in the oven before starting to help prevent excessive drying.

Ovens and flowers vary, so experimentation will be required. Drying times vary from about 3 minutes for dense flowers with many petals to about 1 minute for smaller or thinner-petaled flowers. Microwave drying does not work well on flowers with thick petals.

After treatment is complete, leave flowers in the silica gel for 12 to 24 hours to make sure they are cooled and dried. Since microwave-dried flowers tend to absorb air moisture, spray the petals with hair spray or lacquer. For long-term storage, keep the flowers in an airtight container.

Freeze-drying

Perhaps the most effective, or realistic, method of flower preservation involves freeze-drying. In this process, the flowers are placed into a refrigerated chamber and the temperature is lowered to below freezing. A vacuum is then created in the chamber, causing the moisture in the flowers to sublimate, or change from solid to gaseous form. The water vapor is then collected in a separate chamber and the dried flowers are allowed to slowly warm to room temperature. This process takes several days, requires expensive equipment and is best left to professionals.

Storing dried material

Dried materials in storage may occasionally be attacked by one or more household insects, such as museum beetles, silverfish, roaches or others closely related to them. As the insects chew on the soft tissue of the plant centers, flowers may shatter and fall apart. These insects are not necessarily on the flowers as they come from the garden but move into the boxes in the home during storage.

Tightly sealed containers prevent insect invasion. Occasionally check boxes, and if insects are present, destroy the infected materials and thoroughly clean the container before using it again. Naphthalene flakes may repel insects, or some general insecticides may help control them, but once an area is infested, complete eradication is difficult. Cleanliness and persistence are the best means of remedying the situation.

Do not consider dried flowers everlasting. Preferably, they should be replaced yearly, but with good care they often last longer. Even the best dried flowers gradually fade and should be discarded when they no longer produce the desired effect. Flowers that tend to fade may be lightly tinted with aerosol paints or dyes for more durable color. With care, the natural look can be preserved.

Preserving foliage with glycerin

A dried flower arrangement without foliage may seem stiff and unnatural. Leaves add much to an arrangement and can easily be preserved by a process known as "glycerinizing." This technique makes the leaves and stems soft, pliable and long-lasting so they may be used over and over.

- Select branches with the desired curves and with foliage undamaged by insects or disease. In general, branches up to about 18 inches long are best for glycerinizing.
- Remove lower leaves, and crush or split the stem end of wood materials to increase absorption.
- Make a mixture of one part glycerin and two parts warm water. Stir well and pour into containers so the liquid is about 4 to 5 inches deep. Glass containers are best.
- Mark the level of the mixture on a container and place the stem end of branches into it.
- As the branches absorb the mixture, add a reserve mixture of one part glycerin and four parts water to the original marked level.

Foliage color will gradually change as the glycerin is absorbed. Most branches take from one to three weeks to glycerinize.

Some leaves, especially thick and waxy ones, may not glycerinize well by this method. Individual leaves of plants such as ivy or southern magnolia may be glycerinized by totally submerging the leaves in the mixture. They should be placed in a single layer and weighted to keep them beneath the liquid. After the

leaves become soft and pliable, in about 2 to 6 days, they should be removed, drained and wiped clean with a soft cloth.

In addition to glycerinizing, leaves may be dried with the same techniques used for drying flowers. However, they become brittle and must be handled very carefully.

The following list includes some of the plants most easily glycerinized. Houseplants, trees, shrubs, florist's foliage and garden flowers are included.

Plants for glycerinizing	
Anthurium	Myrtle
Aspidistra	Oaks
Beech	Orange holly-grape
Bells of Ireland	Peony
Cotoneaster	Periwinkle
Crabapple	Purple-leaf plum
Dracaena	Poplar, white or silver
English ivy	Quince, flowering
Eucalyptus	Russian olive
Galax	Salal
Juniper	Spirea
Lemon	Statice
Magnolia	Sweet gum
Mountain ash	Ti plant
Maples	Weigela

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