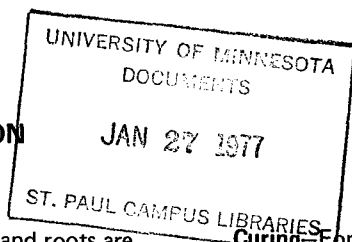


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Storing Tender Bulbs and Bulblike Structures

Plants with tender bulbs, corms, tubers, and roots are valuable additions for the home gardener to use in the perennial border, cutting garden, or for bedding plant usage. Because of their tender nature these plants require special attention, but will be rewarding if given the special treatment they deserve and require. What is a tender bulb? The term "tender bulb" refers to plants which have fleshy storage structures (bulbs, corms, tubers, and roots) which are killed by the cold Minnesota winters if the plants are not brought indoors during the winter. Because of their "tender" nature they must be given special protection, usually by digging and bringing the fleshy storage structure into a warmer area for storage through the winter months.

Harvest—Harvest techniques for these plants are as important as careful harvesting of any vegetable crop. Just as the keeping quality of potatoes or squash may be impaired by rough handling and crude digging and harvesting techniques, the fleshy root of the dahlia or the corm of the gladiolus may also be damaged and its storage life reduced.

When to dig—For most tender materials the plant should be dug after the foliage dries up or is killed by frost. An exception to this is *Hymenocallis* (Ismene or Peruvian Daffodil), which should be dug before frost damages the plant. Another exception is the tuberous begonia. These should be harvested before the first killing frost occurs in the fall and usually after the leaves have started to turn yellow or become unattractive in late summer or early fall. **Note:** If inconvenient to wait until frost has occurred, those materials which are recommended for digging after frost has killed their foliage can usually be dug in late summer and successfully stored if they have stored enough food in the bulb, corm, or root.

Dig Carefully—For all structures such as dahlias, cannas, and other materials, it is important to loosen the root gently with a fork or spade, digging several inches back from the base of the plants so that the roots are not cut off unnecessarily. With dahlias or other large plants, loosen the soil on all sides of the plant before lifting the clump of roots and soil. In all cases, avoid cutting, breaking, or "skinning" the fleshy structure involved. Diseases enter through cuts and bruises very readily and this leads to rotting and losses in storage.

Cleaning—Some of these plant materials are best washed gently with a hose (e.g. dahlias). One technique that is used by some growers is to put hardware cloth (or a large mesh screen) across the top of a large garbage can and set the clump of dahlias or cannas on the hardware cloth or screen and wash the soil into the garbage can. This eliminates mess and loss of soil and the soil and water can be returned to the garden so it is not completely wasted. Another technique to reuse the soil is to place it on the compost pile. Materials like gladiolus corms are probably best left unwashed and allowed to dry. After drying, the soil may be gently removed.

Curing—For most species listed, the curing period should be relatively short (e.g. dahlias, cannas, calla, caladium). This short-term curing period or drying period should be 1 to 3 days, depending somewhat on temperature. It should be done in a room or area away from direct sunlight or drying winds. For long term curing, as with gladiolus, tigridia, montbretia, and oxalis, the curing period should be approximately 3 weeks. Then, in the case of gladiolus, the old corm and cormels should be removed. Drying and curing temperatures for such materials should be 60-70° in a dry, well-ventilated area. See Fig. 1.

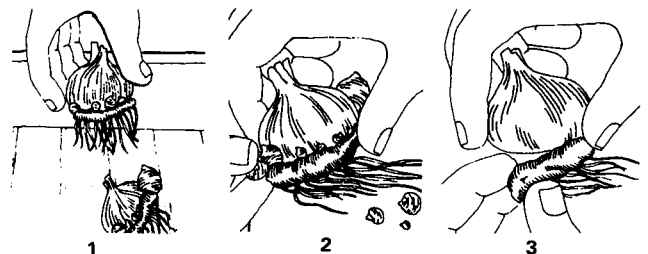
Pest Control—Before storing corms, dust them with a fungicide-insecticide mixture. Use one part 10 percent chlordane (diazinon, methoxychlor, or sevin may also be used) to one part of a fungicide dust or wettable powder, such as thiram, captan, folpet, maneb, or zineb. This will control thrips and protect small cuts from rot.

Storing—One of the most important items to remember before placing the bulbs in storage is to label the plant material carefully. In the case of gladiolus and similar materials, this is easily handled by placing the corm in a small paper bag which has been properly labeled. Larger materials, like the fleshy roots of dahlias or the fleshy rhizome of canna, can be handled in several ways. One technique that works quite well is to write directly on the fleshy root with a permanent felt marking pen. If this is done on large clumps the variety name should be written on several roots rather than on just one, because in storage occasionally a root is broken off of the main clump. "Tree labels" of the wood-and-wire type work very well for labeling this type of plant materials also. In all cases, variety name and/or other important identifying characteristics should be written on the label and also recorded in a notebook or in some other way. Labeling is not emphasized adequately in many cases and many a prized plant has been lost because of poor labeling.

The following fact sheets are available for more information on specific crops:

Horticulture No. 5—Tuberous Begonias
Horticulture No. 31—Growing Dahlias
Plant Pathology No. 11—Gladiolus Diseases

Fig. 1—Storing gladiolus and similar corms.



1. Dry for 2-3 weeks after digging. 2. Remove cormels. 3. Remove old corm and discard.

Plant Material	Structure involved	Storage temperature	Additional considerations
Achimenes	rhizome	45-50° F.	Store cool and dry. Dig when leaves turn yellow and let dry after digging.
Acidanthera	corm	35-40° F.	Dig 6 to 8 weeks after bloom. Store as gladiolus.
Anemone or Windflower (<u>A. Coronaria</u>)	tuber	40-45° F.	Store like dahlias. Frequently sold as an autumn-planted bulb, but not winter-hardy in Minnesota.
Tuberous begonia (<u>B. Tuberhybida</u>)	tuberous root	50-55° F.	Dig when foliage turns yellow and cure with foliage. Remove foliage and store in sphagnum peat or vermiculite.
Caladium	tuber	50-55° F.	Dig when foliage turns yellow or after frost has killed foliage. Cure with remaining foliage and store in sphagnum peat or vermiculite.
Calla (<u>Zantedeschia</u>)	rhizome	50-55° F.	Dig when foliage turns yellow or when foliage is damaged by frost. Store in sphagnum peat or vermiculite.
Canna	tuberous rootstock	40-50° F.	Dig after frost has damaged foliage and allow foliage to dry a few days before digging. Dig carefully to avoid damage which will cause rotting. Store in sphagnum peat, vermiculite, or sand.
Dahlia	tuberous root	40-50° F.	Dig after frost has killed foliage or damaged foliage. Dig carefully to avoid damage. Cure carefully to avoid desiccation. Pack roots in vermiculite or sphagnum peat. One recommended technique is to place the roots in plastic bags with small perforations and enclose an equal volume of vermiculite or peat to absorb the moisture which is given off by the roots.
Freesia	corm	35-40° F.	Treat as gladiolus.
Gladiolus	corm	35-40° F.	Dig 6 to 8 weeks after bloom or when frost kills foliage. Cure 2 to 3 weeks, then remove old corm and cormels. Cure in a dry, well-ventilated area at about 60-70° F. Store in labeled paper bags with a light dusting of 10 percent chlordan.
Gloriosa Lily (<u>G. Rothschildiana</u>)	tuberous roots	40-50° F.	May be stored in the pot or dig the tuberous roots and store like dahlias. May be started indoors again after 2 months storage.
Hymenocallis (Ismene, Peruvian Daffodil, <u>H. Calathina</u>)	bulb	60-65° F.	Should be dug before frost. Avoid breaking the heavy roots attached to the bulb. Store upside down in vermiculite or dry sand.
Montbretia (Tritonia)	corm	35-40° F.	Dig before freezing. Otherwise store and handle as gladiolus. Do not break corm cluster apart until spring.
Oxalis	bulb	35-40° F.	Dig after tops freeze and store in paper bags or in vermiculite.
Tigridia	corm	35-40° F.	Dig 6 to 8 weeks after bloom or after frost. Cure and store like gladiolus.
Tuberose (Polianthes)	tuber	55-65° F.	Dig after tops die or are killed by frost. Store in plastic bags with sand or vermiculite.

Remember to periodically check your stored bulbs, tubers, and roots during the storage season. Remove any damaged or rotting material and in cases where tuberous roots like dahlias have some rot occurring, cut back until you reach clean white, fleshy tissue again. Remember that these structures are living plants and as such need attention and care even during their dormant period.

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