

Flowering Bulbs

For North Dakota



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NORTH DAKOTA
STATE UNIVERSITY

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Flowering bulbs provide North Dakotans with a reward for enduring long, cold winters. They bring a multitude of opportunities for brightening up the home landscape. Bulbs offer a range of color, size and bloom types, as well as blooming sequences to take the North Dakota gardener from snowmelts in March up to the initial snowfall in autumn.

Bulbs offer the gardener the opportunity to "add color" in desired areas — annual beds, perennial beds, around woody plantings, under trees, or to simply grace the edge of a patio. When planning beds of bulbs to enhance landscaping, variation in cost, permanence and rate of bulb multiplication should also be considered.

While the term "bulb" in this publication refers to all underground fleshy structures which produce the growth and flowers described, a technical reference must be made that will categorize these structures.

Bulb - specialized underground organ consisting of a short, fleshy, usually vertical stem axis bearing at its apex a growing point or a flower primordium enclosed by thick, fleshy scales. These would include tulips and lilies.

Corm - swollen base of a stem axis enclosed by the dry, scale-like leaves. In contrast to the bulb, which is predominantly leaf scales, a corm is a solid stem structure with distinct nodes and internodes. Examples would be crocus and gladiolus.

Tuberous roots and stems - two types of structures with thickened tuberous growth that functions as storage organs. Dahlia would be an example of the tuberous root, while the tuberous begonia is classed as tuberous stem.

Rhizome - specialized stem structure in which the main axis of the plant grows horizontally at or just below the soil surface. The conspicuous example of this is the iris.

Bulb Hardiness

Bulb hardiness dictates planting time. For example, tulips and crocus are hardy and can safely be planted from September to mid October. Daffodils should be planted about six weeks before the soil freezes. Tender bulbs like tuberous begonias and tuberose should be spring planted when all danger of frost is past, starting them indoors about six weeks prior to moving outside.

Such tender bulbs should be dug in the fall before freezing weather sets in and properly stored. This would involve carefully digging the bulbs, shaking off all the soil that clings to them. Next, cut off all the growth 1 to 2 inches above the tops of the bulbs. Allow the bulbs to dry for two to three days in an airy, shady place. After drying, place gladiolus and other similar corms in paper bags or cardboard boxes and store them in a dry location at about 40 to 50 degrees Fahrenheit. All other tender bulbs should be placed in *slightly* moistened peat moss or vermiculite, then



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stored at the same temperature. Frequent inspection of the bulbs is necessary to be sure that they haven't dried out or become infected with mold or other disease organisms.

Purchasing Bulbs

The best bulbs for a particular area can best be obtained from local sources, such as a garden center or a store selling garden supplies. Mail-order experiences are sometimes satisfactory, but often the bulbs arrive barely in time for planting, may turn out to be undersized, or may not be truly suited for your locale. If the temptation is too great to pass up some of the prices of the catalog bulbs, give them a try with a token purchase to see if deliveries are timely enough and the bulb quality satisfactory. When purchasing locally, select large, firm, plump bulbs or roots. Avoid those with blemishes or tissues that are soft to the touch.

Planning Bulb Plantings

The aesthetic qualities of European flower plantings incorporating bulbous plants is an effect desired by many gardeners. To achieve such an effect, plan the plantings by recording on paper the flowering sequence, choice of colors, flower types and degree of formality. Unless the landscape character is a formal one, bulb plantings usually look their best in massed, informal groups. Avoid planting in small numbers unless working in rock gardens.

Planting Bulbs

Most bulbs do best in light structured, well drained soil. Avoid planting them where water is likely to stand at any time of the year. If the soil needs improvement, generous amounts of peat moss worked into a planting bed about 12 inches deep will

result in good bulb response. To provide a supply of phosphorus, add about a cupful of superphosphate to every 100 square feet of planting area, mixing it into the worked up soil where the bulbs will be placed. An alternative might be to apply some 5-10-5 fertilizer for a more balanced nutrient supply.

All bulbs have specific planting depths, but a general rule of thumb is to plant to a depth equal to two and one-half to three times the diameter of a typical bulb for the species. The spacing of bulbs is also important. The larger the bulb, the more space required between plants. Tulips and narcissus are spaced 4 to 8 inches apart; crocus and Chionodoxa are spaced about 3 inches apart.

Be sure the area to be planted meets the light requirements for the bulbs and that the foliage remaining after blooming can be tolerated as it ages and gradually turns yellow. This generally takes about six to eight weeks after

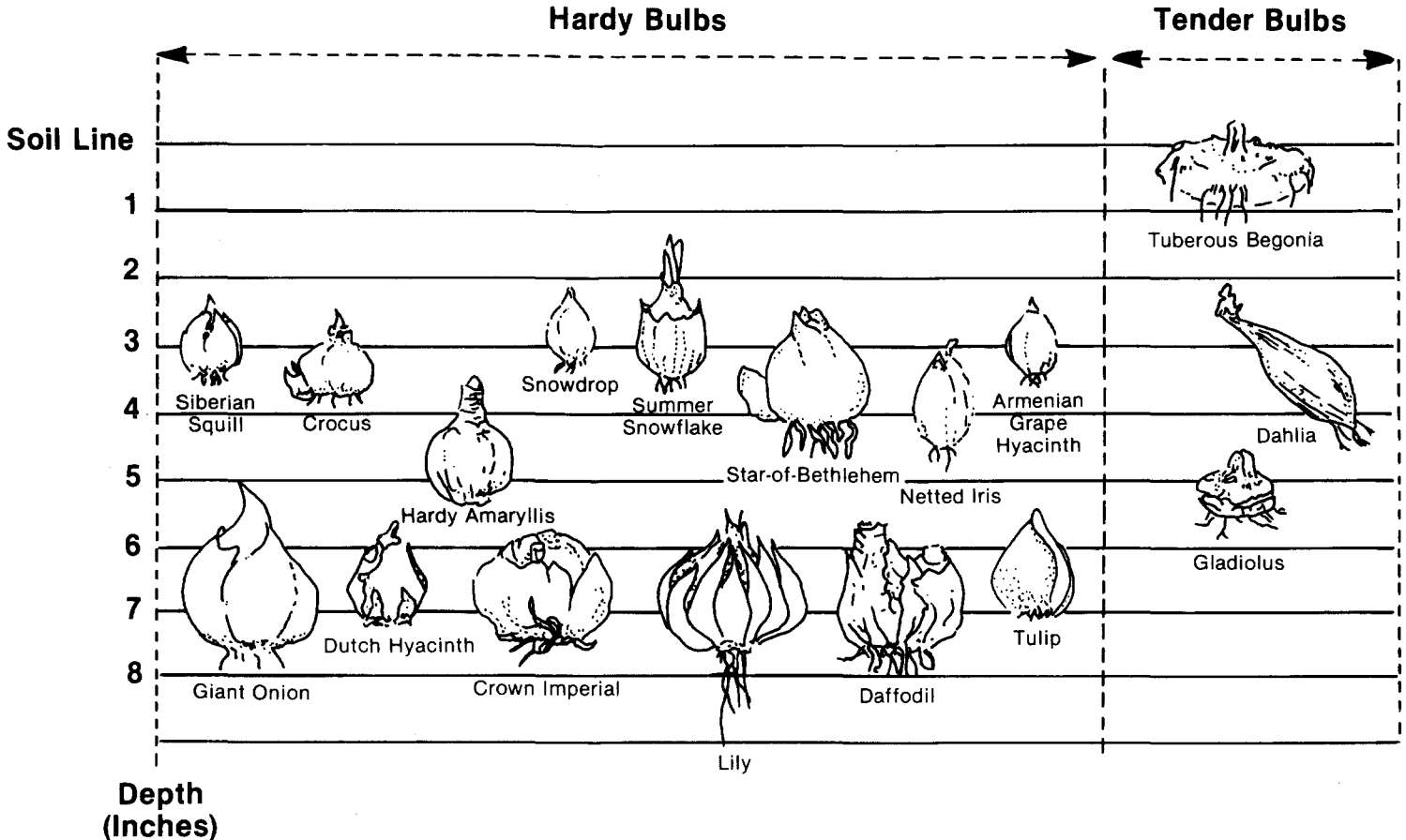


Figure 1. Planting depth chart for some commonly planted bulbs.

bloom. Remove any seed pods which may develop after flowering. This allows for more energy to go back into the bulb for better flower production next year.

Watch Flower and Background Colors

White flowering tulips may look beautiful in their own right, but against a white house backdrop, the effect is lost. If the theme is harmony in color, plan monochromatic plantings. For example, pink tulips and hyacinths provide a sophisticated look, but are equally as effective in yellow and lavender.

If the desire is for bolder, more expressive colors, then reds or yellows will do the job. Be careful to not over-color the planting, or it may result in lack of harmony which could end up confusing the viewer. Don't overlook the color blue for its calming effect and to divide the bolder and brighter colors. Brilliant red and yellow tulips are often enriched by the cool blue of grape hyacinths.

Seasonal and Height Coordination

Most of us want to extend the color season as long as possible. Here, bulb plantings should be coordinated to extend the blooming period. If the desire is to have tulips which will bloom together, be sure they are all early, mid-season or late varieties. If the desire is to have sequential bloom or a long season of blooming, then select varieties that have different blooming times.

Bulbs will bloom at different heights, so be sure they are clustered where their height can be shown to best advantage.

Problems

Perhaps the first problem the novice bulb gardener in North Dakota will notice is the attraction that emerging stems of tulips have to the local rabbit population. To control these and nibbling rodents, a number of tactics

can be used. Hardware cloth, a stiff, fine-mesh fencing material, can be bent over the emerging flower tips. Taste repellents such as nicotine sulfate or hot pepper can also be concocted and used. Commercial preparations include No Nib'l, Bonide Rabbit-Deer Repellent and Bulb Saver, or Ro-Pel. These predators can be voracious feeders in the early spring and left unchecked, will destroy the flowering of several hundred tulips and other bulbs for the coming season.

Bulbs are also subject to attack from insects and diseases. Red spider mites can attack summer blooming bulbs but can be effectively controlled with brisk sprays of water from the hose. If the use of a miticide is necessary, be sure to follow label directions. Thrips commonly attack gladiolus plantings annually. After harvesting and before storage, the corms of the gladiolus can be dusted with Sabadilla powder for a biological treatment or with lindane or malathion for a typical chemical treatment.

Once diseases are established in a flower bed they are very difficult to eradicate, so prevention is the key to maintaining a disease-free planting. The following suggestions help to achieve that goal:

- Plant only disease-free bulbs. Discard any that are soft, showing signs of decay or spotting.
- Rotate the bulbs from one planting site to another. This doesn't have to be done every year, but every third year would be ideal and certainly not any

Notes: Bulb hardiness can be expanded if snow cover can be encouraged over the planting area. Mulching also helps. Bulbs indicated with a T (tender) will not survive freezing and should be brought indoors after the first light frost. Height, spacing and depth are expressed in inches and are approximate, depending on the size of the bulbs being planted. See bulb planting depth chart for further information (Figure 1).

Table 1. Bulbs Suitable For North Dakota Gardens.

Bulb	T/H	Bloom Time	Ht.	Color	Spacing
			in.		(D x W in)
<i>Allium christophii</i>	H	early summer	24	violet	4 x 12
<i>Allium karataviense</i>	H	late spring	10	pink	4 x 12
<i>Allium moly</i>	H	late spring	10	yellow	3 x 6
<i>Anemone coronaria</i>	T	spring	12	many	2 x 8
<i>Anemone sylvestris</i>	H	spring	12	white	2 x 8
<i>Begonia grandis</i>	T	late summer	24	pink	1 x 12
<i>Begonia x tuberhybrida</i>	T	summer	10	many	0 x 12
<i>Camassia scilloides</i>	H	late spring	18	lt. blue	4 x 4
<i>Chionodoxa lucilliae</i>	H	early spring	3	many	2 x 3
<i>Colchicum autumnale</i>	H	fall	4	many	4 x 6
<i>Crocus spp. and hybrids</i>	H	early spring	3	many	2 x 3
<i>Dahlia hybrids</i>	T	summer	12	many	3 x 15
<i>Endymion hispanicus</i>	H	late spring	10	many	2 x 6
<i>Fritillaria meleagris</i>	H	spring	8	purp/white	2 x 4
<i>Fritillaria pudica</i>	H	spring	6	yellow	3 x 3
<i>Galanthus elwesii</i>	H	early spring	6	white	2 x 3
<i>Galanthus nivalis</i>	H	early spring	4	white	2 x 3
<i>Gladiolus x hortulanus</i>	T	mid summer	16	many	4 x 6
<i>Hyacinthus orientalis</i>	H	spring	6	many	4 x 6
<i>Hymenocallis narcissifolia</i>	T	spring	20	white	4 x 6
<i>Iris danfordiae</i>	H	early spring	4	yellow	2 x 3
<i>Leucojum aestivum</i>	H	late spring	12	white	2 x 3
<i>Lillium spp and hybrids</i>	H	summer	24 +	many	4 x 9
<i>Muscari armeniacum</i>	H	early spring	6	blue	2 x 3
<i>Muscari botryoides</i>	H	early spring	6	blue/white	2 x 3
<i>Narcissus spp and hybrids</i>	H	e-m spring	3	many	4 x 4
<i>Ornithogalum umbellatum</i>	H	spring	10	white/grn	2 x 3
<i>Polianthes tuberosa</i>	T	l. summer/fall	15	white	2 x 6
<i>Puschkinia scilloides</i>	H	early spring	6	blue/white	2 x 2
<i>Scilla siberica</i>	H	early spring	4	blue/white	2 x 2
<i>Scilla tubergeniana</i>	H	early spring	4	silv/white	2 x 2
<i>Tulipa spp and hybrids</i>	H	spring	3-24	many	4 x 6
<i>Zantedeschia aethiopica</i>	T	spring/summ.	24 +	white	3 x 12

longer than five years. The longer the bulbs stay in one place and become increasingly crowded, the greater the potential for opportunistic disease organisms.

- Maintain a constant vigil on the developing plant parts during the growing season. If emerging

leaves start to show spots which continue to increase in size, remove them with a sharp cutter. Maintain good sanitation around the planting beds during and after active growth.

Index of Common Names

American Grape Hyacinth — <i>Muscari armeniacum</i>	Guinea-hen Flower — <i>Fritillaria meleagris</i>	Star of Bethlehem — <i>Ornithogalum umbellatum</i>
Arum Lily — <i>Zantedeschia aethopica</i>	Hardy Begonia — <i>Begonia grandis</i>	Stars of Persia — <i>Allium Christophii</i>
Autumn Crocus — <i>Colchicum autumnale</i>	Hyacinth — <i>Hyacinthus orientalis</i>	Summer Snowflake — <i>Leucojum aestivum</i>
Calla Lily — <i>Zantedeschia aethiopica</i>	Jonquil — <i>Narcissus spp. and hybrids</i>	Tubergen Squill — <i>Scilla tubergeniana</i>
Camassia, Eastern — <i>Camassia scilloides</i>	Lebanon Squill — <i>Puschkinia scilloides</i>	Tuberose — <i>Polianthes tuberosa</i>
Canna — <i>Canna x generalis</i>	Lily — <i>Lilium spp. and hybrids</i>	Tulip — <i>Tulip spp. and hybrids</i>
Crocus — <i>Crocus spp. and hybrids</i>	Lily Leek — <i>Allium moly</i>	Turkestan Onion — <i>Allium karataviense</i>
Daffodil — <i>Narcissus spp. and hybrids</i>	Narcissus — <i>Narcissus spp. and hybrids</i>	Wild Hyacinth — <i>Camassia scilloides</i>
Dahlia — <i>Dahlia hybrids</i>	Nodding Star of Bethlehem — <i>Ornithogalum nutans</i>	Wood Hyacinth — <i>Endymion hispanicus</i>
Danford Iris — <i>Iris danfordiae</i>	Persian Onion — <i>Allium Christophii</i>	
Common Hyacinth — <i>Hyacinthus orientalis</i>	Poppy-Anemone — <i>Anemone coronaria</i>	
Gladiolus — <i>Gladiolus x hortulanus</i>	Siberian Squill — <i>Scilla siberica</i>	
Glory of Snow — <i>Chionodoxa lucilae</i>	Snowdrop — <i>Galanthus nivalis</i>	
Golden Garlic — <i>Allium moly</i>	Snowdrop Anemone — <i>Anemone sylvestris</i>	
Grape Hyacinth — <i>Muscari botryoides</i>	Spanish Bluebell — <i>Endymion hispanicus</i>	

Index of Mail Order Sources

Blackthorne Gardens
48 Quincy Street
Holbrook, MA 02343

Busse Gardens
635 East 7th Street
Route 2, Box 13
Cokato, MN 55321

International Growers Exchange
17142 Lahser Road
Detroit, MI 48219

Milaeger's Gardens
4838 Douglas Avenue
Racine, WI 53402

Mission Bell Gardens
2778 West 5600 South
Roy, UT 84067

White Flower Farm
Litchfield, CT 06759

Wayside Gardens
Hodges, SC 29695-0001

Park Seed Co.
Cokesbury Road
Greenwood, SC 29647-0001

Bobbeleta Gardens
15980 Canby Ave.
Faribault, MN 55021

W. Atlee Burpee & Co.
Warminster, PA 18974