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**DAHLIAS
IN THE
GARDEN**

**BY STAFF MEMBERS
OF THE
DEPARTMENT OF HORTICULTURE**

**MICHIGAN STATE COLLEGE
COOPERATIVE EXTENSION SERVICE
EAST LANSING**

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Dahlias In the Garden

The dahlia is one of the most popular of garden flowers. The wide range of color, size and flower form, together with its free flowering habit, makes it a valuable addition to the garden. The cut flowers of most varieties are excellent for house and table decoration.

Moderate temperatures with frequent showers and a long growing season are most favorable for dahlias. Most varieties produce flowers best during the cool weather of late summer and fall. They are less satisfactory in hot dry weather unless considerable attention is given to watering.

Localities where early fall frosts regularly occur are not entirely satisfactory. Frosts occurring in September destroy plants when they are blooming most abundantly. Land with sufficient slope and elevation to insure good air drainage should be selected whenever possible. Avoid low places where "frost pockets" may occur. A sunny location with good air circulation, but not wind-swept, is ideal.

Propagation

Dahlias are usually propagated by division of the tuberous roots. They also are propagated from seeds, cuttings and, rarely, by grafting.

BY SEEDS—The plants are easily grown from seed, but they do not come true to variety when grown in this way. The method is chiefly used for developing new varieties.

Sow the seed in March or April in hotbeds or indoors in shallow pots or boxes. When the seedlings are large enough to handle, transplant them into pots and transfer from these into the garden in early June. With good culture the plants should flower the same season, and form a good clump of roots for the next year. Seed may be sown directly in the garden when the soil is warm and danger of frost is past, but the plants may produce few, if any, flowers the same season.

DIVISION — Established varieties are most easily propagated by dividing the clumps of tuberous roots. A pair of pruning shears or a small sharp stiff bladed knife is the best implement for the purpose.

The dahlia produces buds or "eyes," not on the tubers, but at the crown or juncture of the stem and root. For that reason, it is necessary when dividing a clump to have a portion of the stem bearing at least one strong bud with each division of the tuberous roots. Each division should have not more than one or two tubers attached. When the fleshy roots are large and exceptionally thick, the lower half of the root is usually cut off. This will cause the plant to produce a larger clump.

Divide the clumps any time after they are dug. This is best done in February or March before the buds start to grow. If the dormant buds are not easily recognized, put the clump in a warm moist place for a few days until the buds begin to swell; then the location of all the buds can be seen. If the roots are to be waxed before storing, the clumps should be divided before waxing (see "storing").

CUTTINGS are used by commercial growers for producing "green" or growing plants of new and outstanding varieties and for more rapid reproduction of standard varieties. More plants may be propagated from a clump by this method than by division. With care the method may be used by gardeners who have facilities for growing cuttings and potted plants.

The roots from which the cuttings are to be taken are usually planted in January or February in sand, soil, peat, sphagnum moss or mixtures of these materials, with the crowns just at the surface. When the shoots which grow from the buds are 3-6 inches tall they are cut off close to the root and used for preparing cuttings. The cuttings may be rooted in shallow pots or boxes of clean sand or vermiculite. If properly cared for, they will become rooted in 2-3 weeks. After they are rooted, plant the cuttings in pots of soil and

grow in a cool place (50° - 60° F.), transplanting to larger pots as needed until it is safe to set them out.

Soils and Fertilizers

Dahlias can be grown in any soil that is deep, fertile, friable in texture and well drained. They do not grow well in light or impoverished soils unless heavily fertilized, or in heavy soils deficient in organic matter.

Unless a soil is very fertile, liberal amounts of peat, leaf mold or well rotted manure should be turned under several weeks before planting time. Spread the material to a depth of 2-4 inches in the fall and plow or dig in deeply in early spring. If the soil is strongly acid (less than pH 5.0), add lime at the rate of 1 to 2 pounds per hundred square feet. Broadcast 4-16-4 fertilizer or one of similar analysis at the rate of 3 pounds per 100 square feet of surface or 600 pounds per acre, and mix thoroughly with the soil just previous to planting. It is important for good root growth that the soil be mellow and well pulverized to a considerable depth.

If no broadcast application of fertilizer is made, a small amount thoroughly mixed with the soil at planting time will aid in the growth of the young plants. In rich soil no fertilizer should be used at planting time. When the plants are about 12 inches tall, top dress with a handful of ammonium nitrate (1-2 teaspoonfuls per plant) and repeat every 3 or 4 weeks until September. Do not allow fertilizers to come closer to the plant than 4-5 inches. Work fertilizer into the soil at once with a rake or cultivator.

Planting and Care

Dormant roots may be planted as soon as danger of frost is past (May 15 to June 1); growing plants are planted somewhat later. Set the plants deep to insure good root formation and to avoid injury from drought. In light soils they should be planted 6 inches deep; in heavy soils not over 4

inches deep. In heavier soils, holes should be prepared about 12 inches deep and 12 inches wide and then filled up to the required depth with well pulverized topsoil. Set a painted wooden stake 5 feet long and 1 or 1½ inches square in each hole. Place the division on its side on the bottom of the hole with the stem end nearest the stake. Cover with 2 inches of soil. As the plants grow, draw soil into the holes around the stems until the hole is filled. Rooted cuttings or green plants are planted so that the roots will be at the same depth as that used for divisions. Shade for a week or more until well established. Entire clumps should never be planted, as the result is too much vegetative growth and unsatisfactory flower production.

The spacing used depends on the space available and the variety grown. Tall-growing varieties should be planted at least 3 feet and preferably 4 or 5 feet apart.

PRUNING AND DISBUDDING—When the plants are 10-12 inches tall, they should be cut off above the second node or second set of leaves so that they will produce four strong branches. These may be allowed to grow, or each one may be “pinched” above its first node, thus producing six or eight branches per plant.

As the flower buds begin to appear at the ends of the stems, laterals will start to grow in the axils of the leaves. All of these except the lowest pair should be “rubbed out” as they appear. In this way, large, long-stemmed flowers will be obtained and a sequence of bloom assured.

Pompons and other small-flowered varieties are pinched as described above and allowed to grow without further pruning. Late-flowering varieties should not be pinched, as this delays flowering.

Cultivation should be fairly deep and often enough to destroy weeds while the plants are small. After the buds begin to appear, cultivation should be shallow and less frequent or discontinued.

MULCHING—After the plants have come into bloom a mulch of rotted manure, straw or similar material may be spread between the plants. This will smother weeds, keep the soil cool and moist and eliminate the necessity of further cultivation.

WATERING—Dahlias grow best in moist, well drained soil. Some means of irrigation and a supply of water should be available so that the plants may be watered when necessary. An overhead system of irrigation is ideal.

Cut Flowers

Flowers should be cut during the cool hours of the day—in the early morning or late evening. Cut large flowering sorts before they are fully open and before the outer florets turn brown. Cut with as long stems as possible. Use a sharp knife. Plunge flowers immediately into cold water and remove to a cool place. Remove lower leaves and cut off 1-2 inches of the stem while it is under water. This will often prevent wilting. Keep flowers in cold water in a cool place for a few hours before they are used for decorative purposes.

Digging and Storing the Roots

A few days after frost has killed the plants, cut them off close to the ground. Dig carefully to avoid cutting, bruising or breaking the slender necks of the tuberous roots. They are best dug on a sunny day. After digging, place the roots upside down on the ground and allow to dry for several hours before placing in storage. Unless storage conditions are ideal it is best to store the roots in dry peat, sand or sawdust in crates or boxes. A temperature of 40 to 45° F. is recommended. A high relative humidity is desirable, but do not store the roots in moist material.

Waxing the tubers is the best method of keeping them under dry storage conditions. First, divide the clumps of roots, then thoroughly clean and dry the tubers. Melt paraffin wax, fill a pail partly full of boiling water and pour the melted wax on

this water. The wax will float on the water. With the temperature maintained at 170° - 180° F., quickly dip the tubers into the melted paraffin until they are completely submerged and withdraw quickly. The roots will be found to have a coating of wax which will prevent them from drying out. The tubers will keep well when treated in this manner when no other method succeeds.

Diseases and Insects

DISEASES

The most serious diseases of the dahlia in Michigan are:

CROWN GALL—Swellings or gall-like growths on the roots, tubers, or crown of the plant. Remove and destroy affected plants when seen. Destroy plants showing galls at digging time in the fall. Change location of bed each year.

FUNGOUS WILT—A single branch or the entire plant wilts gradually from the top downward and eventually dies. Remove and destroy wilting plants as soon as noticed.

RING SPOT—Foliage shows a conspicuous concentric-ring pattern. Remove and destroy affected plants.

MOSAIC—Plant stunted, leaves mottled or yellowish in color. Remove and destroy affected plants.

POWDERY MILDEW—Powdery white coating on the leaves in summer. Dust with finely pulverized sulfur.

STEM ROT—Plants wilt and die suddenly. Affected tissues covered with a mat or snow-white mold. Plant on well drained soil. Space plants widely. Keep mulches away from stems. Remove and destroy diseased plants.

TUBER ROTS—Either moist or dry rots may occur in storage. Handle tubers carefully to avoid wounds and bruises. Dry thoroughly before storing. Store in a cool dry place.

INSECTS

APHIDS (Plant Lice)—Small, soft-bodied insects on undersides of leaves. Spray with 40 percent nicotine sulfate, 1 teaspoonful in 1 gallon of soapy water.

LEAF HOPPERS—Leaves first turn pale along the edges, then brown and gradually curl in and die. Control with 3-5 percent DDT dust or spray with 50 percent DDT wettable powder, 2-3 tablespoonfuls per gallon of water.

RED SPIDER—Small mites on under sides of leaves. Causes leaves to turn pale. Water and syringe plants freely during dry weather. Spray with rotenone (in form NNOR) as directed by manufacturer.

STEM BORERS—Tunnel up and down the stem, pushing chewings from entrance of burrow. Stem withers and dies above the attacked portion. DDT will control, if used before borers enter stems. Clean up and burn thick-stalked weeds in vicinity before warm weather in spring.

TARNISHED PLANT BUG—Most destructive just as buds open. Feeds on unopened buds either causing a lop-sided growth or blighting them entirely. Control with DDT dust or spray.

THRIPS—Feeds on leaves. Injured surface turns white and finally withers. Often collects in open flowers. Control with DDT dust or spray.