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## G88-873 Growing Shrubs From Seed

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# Growing Shrubs From Seed

**This NebGuide is about gathering and growing seeds for shrubs.**

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Growing shrubs from seed is educational and fun. Many shrub species are not available commercially, so gathering seed and growing your own plants may be the only way to get them. Interesting or unusual shrubs from a neighbor's yard or from the wild can be propagated from seed. Shrubs started from seed also may be less expensive than commercially produced seedlings.

## Explanation of Terms

*Table I* presents information on seed collection and treatment for a number of native and non-native shrub species. Several terms and techniques are mentioned in the table or elsewhere that need further explanation.

Germination is the emergence of the embryo or seedling from the seed. Seeds must be mature and kept under proper conditions for germination to occur. If seeds do not germinate soon after planting, they probably are dormant.

Dormancy is an embryo condition that keeps a seed from germinating before it is ready. Internal dormancy occurs because the seed is not chemically ready to germinate. Seed-coat dormancy or external dormancy is caused by a hard seed coat that does not allow water or oxygen to reach the embryo.

Seeds must often be stratified and/or scarified to break dormancy and germinate. Stratification is used to break internal dormancy in seeds by exposing them to cold, moist conditions. This simulates natural conditions when seeds fall to the ground and overwinter in moist litter and soil. Stratification protects plants by preventing seed germination during cold winter months. When warm weather arrives, stratification requirements have been satisfied and the seeds germinate safely.

Some species need long periods of stratification and others need none. In some cases, stratification is not necessary but will greatly reduce the time needed for seeds to break dormancy.

External or seed-coat dormancy is broken by a process known as scarification. In scarification, hard seed coats are weakened by mechanical abrasion and other forces. Natural scarification occurs as seeds pass

through animals' digestive systems, fungi slowly break down the seed coat, and the seeds freeze and thaw.

Some species exhibit double dormancy, and stratification and scarification are both needed to ensure good germination.

### **Seed Collection, Processing and Storage**

Seeds can be collected according to the dates shown in *Table I*. These dates are important since seeds collected too early may not be mature, and seed may have dropped or been eaten if you are too late. Collect seeds by stripping fruits from branches, shaking seed heads into a bag or pan, or bagging flowers or entire plants until seeds are released.

In many cases, seeds do not need to be separated from the fruit. If separation is necessary, as indicated in *Table I*, be gentle so seeds are not damaged. Separate seeds from dry fruits by rubbing them between your hands or on a screen. Chaff can then be blown away. Pods that forcibly eject seeds can be placed in mesh bags so the seeds will not be lost. Seeds can be separated from berries and other wet fruits by rubbing them under water.

If seeds are to be stored after collection, make sure that they are clean and dry on the surface. Then seal them in jars or plastic bags and store at 35 to 40°F in a refrigerator. Seeds can be stored for months to years depending on the species and moisture content.

### **Scarification and Stratification**

Scarification usually can be done by rubbing seeds on a file or sandpaper. Some species have especially hard coats, however, and must be soaked in hot water (about 190°F) or concentrated sulfuric acid (battery acid).

Be careful when using acids for scarification. Use only enough acid to cover the seeds, and process small quantities at one time. Soak for about 20 minutes unless noted otherwise in *Table I*. Be sure to thoroughly wash seeds afterward to remove all traces of acid.

Seeds that need both scarification and stratification should be scarified first and then immediately stratified.

Cold stratification can be done by refrigerating seeds in plastic bags with moist peat moss, sand or vermiculite. Temperatures given in *Table I* are approximate and can vary a couple of degrees. Refrigerator temperatures should work although you may need to use a thermometer to decide what shelf to use. Sometimes warm stratification is necessary, alone or in combination with cold. Follow the directions for these treatments in *Table I*.

### **Planting**

Stratified seeds should be planted right away to keep them from drying out. These seeds should be planted in the spring after the last frost. Many seeds can be stratified naturally by planting them in the fall and letting them overwinter in the soil. You may lose some to animals or insects this way, however.

Seeds can be planted indoors in pots or outdoors in a nursery bed. Any well-drained, slightly acidic, average-to-good-fertility soil will do for a home nursery bed. A sandy-loam is best.

Fertilizer is not generally needed. If used, fertilizer should be applied before planting and incorporated into the soil. A typical rate is one pound of a balanced fertilizer per 64 feet<sup>2</sup> (8 feet by 8 feet) of planting area. A balanced fertilizer will have approximately equal percentages of nitrogen, potassium and phosphorus (N-P-K).

If rainfall is not adequate, seedlings planted outdoors may need to be watered. Water seedlings twice a week for the first month or two, and once a week for the rest of the first growing season. Do not saturate the soil for any length of time.

Seedlings kept in the bed for a second year may not need watering, but additional water may increase growth. Only apply extra water if rainfall has not been adequate.

If seeds are planted in pots or other containers like milk cartons, a commercial potting mixture or garden soil mixed with peat moss should be used. Plant a few seeds in each container. If more than one seed germinates, cut off all but the strongest seedling. Don't pull extra seedlings, as this weakens the roots of the remaining plant. A liquid fertilizer solution should be used regularly with potted plants.

Bedded and potted seedlings should be transferred to their final location before they become too large. Move seedlings when they are about eight to 12 inches tall and dormant. Keep the root system intact as much as possible when transplanting.

### **For More Information**

A number of good publications are available to help you learn more about growing your own shrubs. These include:

- **Collecting, Processing and Germinating Seeds of Wildland Plants;** by James A. and Cheryl G. Young; published in 1986 by Timber Press, Portland, OR.
- **Manual of Woody Landscape Plants: Their Identification, Ornamental Characteristics, Culture, Propagation, and Uses;** by Michael A. Dirr; published in 1983 by Stipes Publ. Co., 10-12 Chester St., Champaign, IL 61820.
- **North American Range Plants;** by Jim Stubbendieck, Stephan L. Hatch, and Kathie J. Kjar; published in 1986 by the University of Nebraska Press, Lincoln, NE 68588.
- **Seeds of Woody Plants in the United States;** USDA Handbook 450; order from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. If unavailable, you may find this book in a library.
- **Growing Conifers From Seed;** by Constance Harrington; NebGuide G77-380.

Table 1.

<i>Latin Name</i>	<i>Common Name</i>	<i>Flowering Dates</i>	<i>Fruit Collection Dates</i>	<i>Separating Seed from Fruit</i>	<i>Seed/lb (x1000)</i>	<i>Scarification</i>	<i>Stratification (°F)</i>	<i>Comments</i>
<i>Amorpha canescens</i>	leadplant	June-August	August-September	difficult, notneeded	296	yes	Hotwater (170°-212°) soak, 10 min.	Scarification not necessary if fall-sown. Pods can be sown directly in fall (without seed removal) and covered with 1/4 inch of soil.
<i>Amorpha fruticosa</i>	false indigo	May-June	August	notneeded	77	yes	Hot water (170°-212°) soak, 10 min.	Pods turn light brown when ripe. Several seeds/pod. Plant as above.
<i>Artemisia tridentata</i>	big sagebrush	July-September	September-November	hammermill and screen	2,466	no	10 days, 36°	Achene (a small, dry, one-seeded fruit) turns dark brown or black when ripe. Several seeds or achenes per flower head.
<i>Berberis repens</i>	Oregon grape	May-June	June-July	notneeded	62	no	196 days, 36° and 1 day, 70°*	Berry is purple when ripe. One to several seeds per fruit. *Best germination is attained with alternating 30, 60 and 100 days of cold with brief (1 day) warm periods separating the cold periods.
<i>Caragana arborescens</i>	Siberian peashrub	April-June	June-July	seeds may eject with force	18	no	40 days, 40	Pod contains up to 6 seeds and is amber or brown when ripe.

Latin Name	Common Name	Flowering Dates	Fruit Collection Dates	Separating Seed from Fruit	Seed/lb (x1000)	Scarification	Stratification (F)	Comments
<i>Ceanothus americanus</i>	New Jersey tea	May-July	August-early October	seeds may eject with force*	112	no	90 days, 36° or hot water (170°-212° soak, 10 min.	*Pods should be covered with cloth bags before ripe to collect ejected seeds.
<i>Cornus amomum</i>	silky dogwood	May-July	August-September	notneeded	12.2	no	90-120 days, 38°-41°	Drapes (fleshy, one-seeded fruits) are pale blue to bluish-white when ripe. Sow immediately after collection or stratify for spring use.
<i>Cornus drummondii</i>	rough-leaved dogwood	May-June	August-October	notneeded	15.7	no	30 days, 38°-41°	Drapes are white when ripe. Sow immediately after collection or stratify for spring use.
<i>Cornus racemosa</i>	gray dogwood	May-July	July-October	notneeded	13	no	60 days, 38°-41°	Drapes are white when ripe. Sow after collection or stratify for spring use.
<i>Cornus stolonifera</i>	red-osier dogwood	May-July	July-October	notneeded	18.5	no	60-90 days, 38°-41°	Drapes are white when ripe. Sow after collection or stratify for spring use.
<i>Corylus americana</i>	American hazel	March-May	July-September	when husk opens and nut visible	0.5	no	60-180 days, 38°	To avoid losses to wildlife, nut can be picked as soon as the edges of the husk begin to turn brown.
<i>Cotoneaster acutifolia</i>	Peking cotoneaster	May-June	Sept.-Oct. after leaf fall	byabrasion	24	yes*	30-90 days, 40°	Three seeds per pome (a pome is a fleshy fruit common in the rose family). Pome is black when ripe. *Needs acid scarification.
<i>Cotoneaster apiculatus</i>	cranberry cotoneaster	May-June	Aug.-Sept., after leaf fall	byabrasion	64	yes*	90 days, 40°	Two seeds per pome. Pome is red when ripe. *Needs acid scarification.
<i>Cotoneaster horizontalis</i>	rock cotoneaster	June	Sept.-Oct. after leaf fall	byabrasion	23.5	yes*	90-120 days, 40°	Two seeds per pome. Pome is bright red when ripe. *Needs acid scarification.
<i>Cotoneaster lucidus</i>	hedge cotoneaster	May-June	September, after leaf fall	byabrasion	22.7	yes*	30-90 days, 40°	Three seeds per pome. Pome is black when ripe. *Needs acid scarification.
<i>Cotoneaster melanocarpa</i>	black cotoneaster	May-June	September, after leaf fall	byabrasion		yes* 40°	30-90 days,	Three seeds per pome. Pome is black when ripe. *Needs acid scarification.
<i>Elaeagnus umbellata</i>	autumn olive	May-June	August-October	notneeded	5	no	60-90 days, 40°	Drupe is red-pink when ripe.
<i>Euonymus alatus</i>	winged euonymus	May-June	September-October	notneeded	25	no	90-100 days, 40°	Capsule is divided at base into 4 (sometimes 1-3) lobes. Ripe fruit is red-purple and seed coat is orange-red.
<i>Euonymus atropurpureus</i>	eastern wahoo	May-June	September-October	notneeded	17	no	60-90 days, 75°; 60-180 days, 40°	Four-lobed; four-celled capsule with pink-purple color and scarlet seed cover. *Warm stratification followed by cool.
<i>Euonymus europaeus</i>	European euonymus	May-June	August-October	notneeded	13.3	no	60-90 days, 75°; 60-129 days, 40°*	Four-lobed, three- to five-celled capsule with rose to pink color when ripe. Orange seed coat. *Warm stratification followed by cool.
<i>Euonymus fortunei</i>	wintercreeper euonymus	June-July	October-November	notneeded		no	90 days, 41°	Pink-scarlet capsule and red-orange seed coat.
<i>Ligustrum vulgare</i>	European privet	June-July	August-November	yes	18.6	no	60-90 days, 34°*	Drupe is lustrous-black when ripe. *Seeds will germinate without stratification if not allowed to dry.
<i>Prunus americana</i>	American plum	March-April	July-September	abrasion under water	0.9	no	90-150 days, 40°	Drupe is red to yellow when ripe.
<i>Prunus virginiana</i>	common chokecherry	April-May	July-September	abrasion under water	4.8	no	120-160 days, 40°	Drupe is red-purple to dark purple when ripe.
<i>Rhus trilobata</i>	skunkbush sumac	March-May	July-August	notneeded	20.3	yes*	30-90 days, 40°	Drupe is red when ripe. *Needs acid or hotwater scarification.

Latin Name	Common Name	Flowering Dates	Fruit Collection Dates	Separating Seed from Fruit	Seed/lb (x1000)	Scarification	Stratification (F)	Comments
<i>Rhus glabra</i>	smooth sumac	June-August	September-October	notneeded	49	yes*	30-90 days, 40*	Drupe is bright-red to dark-red when ripe. *Needs acid or hot water scarification.
<i>Ribes missouriense</i>	Missouri gooseberry	April-May	June-September	abrasion under water	162	no	90 + days, 32**	Berry is purple-black when ripe. *More than one stratification period may be needed.
<i>Rosa setigera</i>	prairie rose	May-July	August	abrasion under water	50	yes*	30-120 days, 38*	Fruit (hip) is red when ripe. *Best germination occurs when seeds are scarified but is difficult to accomplish on loose seeds.
<i>Sambucus canadensis</i>	American elder	June-July	July-September	notneeded	232	yes*	60 days, 70°; 90-150 days, 41**	Drupe is purplish-black when ripe. *Needs acid scarification for 1-15 minutes. **Warm stratification followed by cool.
<i>Shepherdia argentea</i>	silver buffaloberry	April-May	June-August	notneeded	40	no	60-90 days, 41*	Berry is red when ripe.
<i>Symphoricarpos occidentalis</i>	western snowberry	June-July	September-October	notneeded	74	yes*	90-120 days, 70°; 180 + days, 41**	White drupe that blackens after frost. *Needs acid scarification for 40-60 minutes. **Warm stratification followed by cool.
<i>Symphoricarpos orbiculatus</i>	coral-berry	June-August	September-frost	notneeded	140	yes*	120 days, 70°; 180+ days, 41**	Drupe is pinkish-red when ripe. *Needs acid scarification. **Warm stratification followed by cool.
<i>Syringa vulgaris</i>	common lilac	April-May	August-October	yes	86	no	30-90 days, 38**	Collect fruit (capsule) when it begins to turn light brown. *May not be needed.
<i>Viburnum dentatum</i>	arrowwood viburnum	May-August	September-November	yes; or dry & plant whole	20.4	no	180-150 days, 70°; 15-60 days, 45**	Seed is mature when drupe is red; though drupe will turn black. *Warm stratification followed by cool. Let temperature fluctuate.
<i>Viburnum lentago</i>	nannyberry viburnum	April-June	July-October	yes; or dry & plant whole	5.9	no	150-270 days, 68°; 60-120 days, 41**	Seed is mature when drupe is red, though will turn black. *Warm stratification followed by cool.
<i>Viburnum opulus</i>	American highbush cranberry	May-July	August-October	yes; or dry & plant whole	13.6	no	60-90 days, 68°; 30-60 days, 41**	Drupe remains red when ripe. *Warm stratification followed by cool.

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