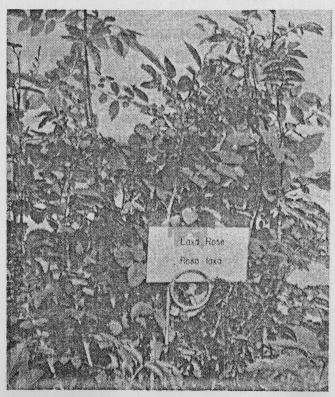
PROPAGATION OF WOODY PLANTS BY SEED M. F. BABB

with notes on other methods of reproduction



Rose seedlings in a nursery bed at Palmer. After soaking for an hour in sulfuric acid, the seed were stratified for 90 days at 41° F and then sowed in rows. Seedlings were protected during the winter by straw and snow fencing. A rodent poison recommended by the Fish and Wildlife Service kept out mice and shrews.

SKNR

University of Alaska

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Stratification table	

The stratification table printed on the insert has been widely used in Alaska for several years. Soil conservationists, foresters, military personnel in charge of post landscaping problems, nurserymen, and amateur horticulturists have found it a convenient guide to methods of inducing quicker and better germination in seeds of woody plants. It is being published, together with supplementary material, for all who may have need for such information.

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PROPAGATION OF WOODY PLANTS BY SEED

A MAJORITY of the plants discussed in this publication are usually propagated by seed sown in the fall, or stratified in preparation for spring sowing. However, the seed of some may be planted without special treatment and still others are normally propagated by vegetative means. Table 1 indicates the general methods by which the species of each genera may be propagated.

No attempt has been made to make this table all-inclusive. Some genera are of limited usefulness in Alaska. The table actually represents materials acquired by the Alaska Agricultural Experiment Station, or

sent to the Station for evaluation during the past eight years.

For each genera the Latin name and the accepted common name are given, together with general propagation methods. In some genera such methods apply with almost equal merit to all of its species. In others, individual species vary in their requirements for germination, or in the methods by which they are most satisfactorily propagated.

Some genera, such as Acer, Betula and Ulmus, include species that ripen their seed in the spring and others that are fall ripening. For best results the spring-ripened seed should be sown at once. Fall-ripened seed may be sown immediately, or it may be stored for stratification at a later date and sown in the spring.

In the genera Alnus, Picea, Pinus and Rhamnus, at least, the seed of some species appears to be non-dormant. It germinates at once without special treatment. In such cases, spring sowing is usually preferred. Seed of other species in the

same genera is dormant. Dormant seed may either be sown in the fall or stored for stratification at a later date, anticipating spring sowing.

Seed of *Populus* and *Salix* remain viable only a short time under natural conditions. It must be sown as soon as collected or special storage precautions must be taken.

Andromedia, Diapensia, Kalmia, Ledum, Loiseleuria and Rhododendron are usually seeded in early spring in flats on peat moss, or on a compost of peat moss, leaf mold and sand. They are kept in a greenhouse until the seedlings are large enough to transplant.

VEGETATIVE PROPAGATION

Many woody plants seldom reproduce perfectly true to type from seed. For this reason, and also for the purpose of increasing stocks, horticultural varieties or select strains are often propagated by vegetative means. In vegetative propagation a portion of the parent plant is either induced to form roots of its own and grow independently, or it is united to a related or compatible plant on whose root system it grows to form a new individual identical, in most cases, with the parent plant.

Methods of reproducing a plant on its own roots include the use of cuttings, divisions and layers, or such natural plant parts as suckers, runners, rhizomes and stolons which may already have their root systems established before separation from the parent plant.

Establishing a variety on the roots of a related or compatible species is accomplished by budding or grafting. These methods are

useful for such purposes as increasing stocks of desirable plants or to take advantage of the root system of another plant to secure greater winter-hardiness, insect resistance, tolerance to adverse soil conditions or other superior characteristics and yet retain the essential characteristics of the parent plant. With fruit trees, especially, and for some ornamental plants, budding or grafting can be used to dwarf or otherwise modify top growth for special purposes.

Information on the collection, extraction and cleaning of seed, the management of nurseries, and methods of vegetative propagation may be found in the publications listed as "Reference Literature."

PROPAGATION BY SEED

Commercial seed of woody plants may be from collections made during the current year or, in the case of those species which do not produce a crop each year, it may have been held in storage for a considerable period of time.

In either case commercial seed has already been processed by the seedsman. The purchaser probably should not attempt to change its condition but should store it in a dry, cool place until it is needed. Sealed, airtight containers provide

ideal storage conditions for most seeds. Temperatures between 33° and 50° F are usually recommended. Seedsmen usually furnish instructions if special storage conditions are necessary.

Fall sowing is recommended for the seed of most woody plants. When this is possible, the overwintering of the seed in cold, moist soil provides the most nearly normal conditions for breaking the dormancy of the seed embryo and stimulating germination. Where dependence is placed on commercial sources of seed, it is often impossible to obtain it in time for fall sowing.

With certain species, too — as with some species of pine — the seeds are favored foods of mice and other predators which are difficult to control during the winter months. There is also danger of injury to the seed from alternate freezing and thawing or from excessive drying during the winter unless the seed beds are well mulched. The difficulty of weed control in the spring is another disadvantage of fall sowing.

To avoid difficulties encountered in fall planting and to provide proper conditions for breaking embryo dormancy, the seed is usually stored for a period of time after it is purchased or collected. It is later removed for stratification or other pretreatment before sowing in the spring.

STRATIFICATION

As the name suggests, stratification consists of placing alternate layers of sand, or other suitable material, and seed in a container and placing fit under conditions suitable for seed germination. A No. 10 tinned food can may be used for small lots.

Clean sand, free from all organic matter, is most commonly used. Peat and chopped sphagnum moss are sometimes used, and even preferred for certain types of seed The sand or moss should be moistened. It must not contain free water as this interferes with the entrance of air and creates conditions favorable for rotting or spoilage. To avoid this latter possibility, the bottom of the container is perforated, or a false bottom is inserted to keep the seeds well above any excess water.

In practice, a layer of sand (or other medium) from 1 to 3 inches thick is placed in the bottom of the container, followed by a similar layer of seed. The process is repeated until the container is filled. Small lots of seed, or seed difficult to separate from the medium at planting time, are often enclosed in loose cheesecloth sacks and flattened out to form layers. Wire screening, folded to form a flat package or finely perforated plastic bags are also satisfactory. They have the merit of not rotting as the cheesecloth frequently does during long periods of stratification.

Sometimes — especially for larger seeds — the seeds are simply mixed with 2 to 3 times their volume of the medium and placed in containers, observing the same precautions as to moisture and drainage as are used in true stratification. In this method, or whenever the seed must be separated from the sand at planting time, pre-screening the sand to a diameter smaller than that of the seed furnishes an easy method of later separation by a combination of screening and washing.

Stratified seed is never tightly covered. A thin layer of moistened peat or sphagnum moss over the top of container reduces evaporation and helps keep the seed moist. The container is held for the required length of time in a suitable storage at the proper temperature. (See Table 1).

Storage places for stratified seed may be a refrigerator, cold room, cold storage, potato or root cellar or any such place where proper conditions of temperature and moisture can be maintained. Seed kept at the higher temperatures (68° to 86° F but usually 77° F) may be placed near a heating plant, in the living quarters, or where there is a constant source of heat for the necessary period of time. Special attention must be given to maintain proper moisture in the container.

Table 2 (hard paper insert) has been prepared with the assumption that seed will be sown on or about May 1. For a species such as Abies amabilis, the table shows that it is placed under stratification at a temperature of 41° F on February 15, giving a stratification period of 75 days before May 1.

Adjustments can be made for other planting times if it is known that local conditions are usually more favorable for seeding at an earlier or later date. Thus, if the desired planting date should be May 15, rather than May 1, the seed should be placed under stratification on March 1 to give the re-

quired 90 days of stratification. In this connection it should be noted that the periods recommended in the table are usually nearer the minimum, rather than the maximum, number of days given for a species or genera as listed in Table 2. This precaution seems desirable since experience has shown that it is better to sow slightly before full germination rather than after a majority of the seeds show a well developed hypocotyl.

Table 2 also indicates the temperature at which various seeds must be held during stratification. In most cases this is given as either 41° or 77° F. These two temperatures have been chosen because they represent rather well the requirements for a low and a high temperature range. Should other temperatures be used, it is best to make a corresponding change in the duration of the stratification period. Thus, it has been fairly well established that Prunus besseyi germinates almost equally well after 100 days at 41° F as at 120 days at 33° F. In other words, preplanting treatment is shortened by increasing the temperature at which the seed is stratified. Such adjustments should not exceed 5° or 6° because some species have a very narrow range of adjustment to temperature changes.

Some species need only a single stratification period for satisfactory germination. Other species need different treatment. For example, seed of *Crataegus*, *Juniperus*, *Rubus*,

Sambucus, Taxus and Viburnum require two stratification periods. Table 2 shows that Cratacgus oxyacantha needs 60 days at 77°, followed by a period of 90 days at 41° F. Failure to provide both periods gives poor or no germination.

Species of several genera, for example, *Prunus*, *Sorbus* and *Symphoricarpos*, are variable in their requirements. Some seem to need two stratification periods at different temperatures, whereas others germinate well with a single treatment.

PRETREATMENT

Most seeds can be removed from storage and immediately stratified with no preliminary treatment. Some genera, such as Amorpha, Arctostaphylos, Rhus, Rosa, Symphoricarpos and at least one species of Pinus need additional pretreatment before they are placed under stratification.

In these genera certain species have either very thick or impermeable seed coats which must be made thinner or softened to permit moisture and oxygen to reach the seed embryo.

The most common treatments are (1) hot water, (2) soaking in concentrated sulfuric acid, and (3) scarifying with abrasives.

Hot water.—Seeds are placed in bags made of cheesecloth or some such porous material, and plunged into water heated 180° to 200° F, in

which they are allowed to stand for about 12 hours as the water gradually cools. The volume of the water should be four to five times that of the seed.

A variation of this method is to plunge the seed into boiling water for a half to 2 or more minutes, and then into cold water, in which they are left to soak for several hours. This is more likely to injure the seed if the exact duration of the period of boiling is not carefully controlled. With some species, such as *Caragana*, good germination has been obtained by simply soaking the seed overnight in water at room temperature. Longer soaking may reduce germination.

Mechanical scarification. — This method is very commonly used by seedsmen, nurserymen and others who handle large quantities of seed, or who have frequent need of some method of treating seeds having thick or impermeable seed coats. It is not as satisfactory as the sulfuric acid treatment for small lots or for infrequent usage. This is because considerable equipment is needed if undue manual labor is to be avoided. Greater skill and experience are required to obtain uniform results.

For small lots of large-sized seed, scarification is sometimes accomplished by use of a hand file. This is a slow and costly method and the danger of injuring the seed embryo is high.

For larger quantities or for small seeds, scarification is accomplished by such means as tumbling or churning the seeds in drums lined with sandpaper. Seed may be mixed with clean, sharp sand or small gravel and rotated or churned in such containers until the seedcoats are sufficiently thin. Other devices involve passing the seed between rotating sandpaper disks, or grinding wheels, and stationary rubber pads. Several commercial machines of varying merit are available. None of these scarification methods are satisfactory for seeds containing resin or pulpy remains of fleshy seed coats. These soon destroy the cutting action of the abrasive.

Second year stand of wild apple seedlings at Palmer. This good stand was the result of stratifying for 60 days at 41° F. and spring sowing. If even one of these thousands survives, it might become the progenitor of an adapted apple variety for Alaska.

Sulfuric acid. — This is generally the most satisfactory method of pretreating seed before stratification. The seed is put into a glass, earthenware, or some nonmetallic container and covered with concentrated sulfuric acid for the desired period of time. Commercial grade acid with a specific gravity of 1.84 is satisfactory. The seed is gently stirred occasionally during the treatment.

Acid, seeds and equipment containing or covered with acid must be handled with great care. In particular, never pour water into acid, for the violent reaction may splash acid on the worker causing destruction of clothing or serious burns.

The seed is removed by pouring into a wire mesh strainer. It is then thoroughly rinsed in a large volume of water, or in running water to remove all traces of the acid. The seed is partially dried for ease in handling and either sown or placed under stratification as indicated in Table 2.



Table 1. - GENERAL METHODS OF PROPAGATION

TREES AND SHRUBS

- ABIES Fir Fall sow, or stratify 60 to 90 days at 41° F and sow in spring. Variable. Also by cuttings.
- ACER Maple Spring sow spring ripening seed. Fall sow fall ripening seed, or stratify from 30 to 150 days at 41°F and sow in spring. Highly variable. Also by softwood cuttings, layering, budding and grafting.
- ALNUS Alder Spring sow non-dormant seed. Fall sow dormant seed, or stratify 60 to 90 days at 41°F, then sow in spring. Variable. Also by 1-foot hardwood cuttings.
- AMELANCHIER Serviceberry Fall sow, or stratify 120 to 180 days at 41° and sow in spring. Variable. Also by grafting, cuttings, layering and division.
- AMORPHA Amorpha, false indigo Fall sow, or use H₂SO₄, 5 to 8 minutes and stratify 30 days at 41°F, or by hot water treatment plus 30-day stratification. Also by hardwood cuttings, layering and suckers.
- and a sow in greenhouse as for rhododendron. Also by layering or division.
- Fall sow some species after soaking in H₂SO₄ 3 to 6 hours. Stratify others 60 days at 77° F plus 60 days at 41° F. Variable. Also by cuttings.
- bETULA Birch Spring sow spring ripening seed. Fall sow fall ripening seed, or stratify 60 to 75 days at 41° F. Also by layering, cuttings, budding and grafting.

- CARAGANA Peashrub Sow in late summer, or spring sow stored seed after soaking in warm water 10 to 12 hours. Also by July cuttings, hardwood cuttings, root cuttings and layering.
- CHAMAECYPARIS White Cedar Stratify 60 to 90 days at 41° and spring sow. Also by cuto tings in summer or fail.
- cornus Dogwood Fall sow, or stratify 90 to 120 days at 41° F and spring sow. Full germination takes two years. Also by hardwood cuttings, root cuttings, layering, division, budding and grafting.
- cotoneaster Cotoneaster Fall sow, or pretreat with H₂SO₄ for 1½ hours, then stratify for 120 days at 41° F. Full germination takes two years. Also by cuttings, mound layering and grafting.
- crataegus Hawthorn Early fall sow, or stratify 60 days at 77°F plus 90 days at 41°F. Full germination takes two to three years. Also by budding, grafting or layering.
- DIAPENSIA Arctic diapensia Spring sow in greenhouse as for rhododendron.
- sow, or stratify 90 days at 41° F. Also by hardwood cuttings, root cuttings, layering and grafting.
- EMPETRUM Crowberry Fall sow, or by hardwood cuttings in August.
- **EUONYMUS** Euonymus Stratify 90 to 120 days at 41°F and spring sow. Also by hardwood cuttings and layering.

F or soak in water 10 to 21 days at 70°F; changing daily.

- JUNIPERUS Juniper Stratify 90 to 120 days at 77° F followed by 90 to 120 days at 41° F. Highly variable. Most species also from cuttings; some from layering.
- KALMIA Mountain laurel Spring sow in greenhouse as for rhododendron. Also by layering.
- LARIX Larch Fall sow, or stratify 30 to 60 days at 41° F and spring sow.
- L E D U M Labrador tea Spring sow in greenhouse as for rhododendron. Also by layering and division.
- LOISELEURIA Alpine azalea
 Spring sow in greenhouse as
 for rhododendron. Also by cuttings of half-ripened wood.
- LONICERA Honeysuckle Fall sow, or stratify 60 to 75 days at 41° F. Also by hardwood and softwood cuttings.
- MALUS Apple Spring sow seed stratified for 30 to 60 days at 41° F. Variable. Also by budding and grafting.
- PHYSOCARPUS Ninebark Spring sow seed. Also by hardwood cuttings.
- PICEA Spruce Spring sow nondormant seed. Fall sow seed of species bearing dormant seed, or stratify it for 30 to 60 days at 41° F. Highly variable. Also by cuttings and grafting.
- PINUS Pine Spring sow nondormant seed. Fall sow dormant seed or stratify 30 to 90 days at 41° F. Highly variable. Also rarely by grafting and cuttings.
- populus Poplar Sow seed as soon as ripe. Also by stem (except aspens) and root cuttings.

- POTENTILLA Cinquefoil Sow seeds as soon as ripe. Also by division.
- PRUNUS Plum and cherry Fall sow or stratify. Some species 90 to 150 days at 41° F, others 60 to 90 days at 77° F, plus 60 to 90 days at 41° F. Highly variable. Also by budding, grafting, suckers and root cuttings.
- PSEUDOTSUGA Douglas fir Fall sow, or stratify 30 to 60 days at 41°F and spring sow. Also by cuttings.
- RHAMNUS Buckthorn Spring sow non-dormant seed. Fall sow seed of species bearing dormant seed, or stratify it for 60 to 90 days at 41°F and spring sow. Also by layering, hardwood cuttings or grafting.
- RHODODENDRON Rhododendron
 Sow seed in early spring in
 greenhouse on peat moss-sand,
 mixture. Keep covered and
 moist. Water from below. Also
 by cuttings, layering and grafting.
- RHUS Sumac Fall sow, or treat with H₂SO₄ for 60 to 80 minutes and stratify for 30 days at 41° to 50° F. Pretreatment with H₂SO₄ for 20 minutes before fall sowing also beneficial. Also by root cuttings and suckers.
- RIBES Currant, gooseberry Sow as soon as ripe, or fall sow. For spring sowing, stratify 90 to 120 days. Also by suckers and hardwood cuttings.
- ROSA Rose Treat with H₂SO₄ for 1 to 2 hours plus stratification for 90 to 120 days at 41° F. Also by hardwood and root cuttings, budding, suckers, layering, and grafting.
- RUBUS Raspberry, blackberry Sow as soon as ripe, or treat

- with H₂SO₄ for two hours followed by stratification for 90 days at 68° to 86° F plus 90 days at 41° F. Also by layering, suckers, stem and root cuttings.
- SALIX Willow Sow seeds as soon as collected. Keep moist. Hardwood cuttings best.
- stratify 60 days at 77° F plus 90 days at 41° F. Also by hardwood cuttings and division.
- sow, or stratify 60 to 90 days at 41° F. Also by suckers.
- SORBARIA False spirea Sow seeds as soon as ripe, or stratify 30 days and spring sow. Also by softwood cuttings, root cuttings and suckers.
- SORBUS Mountain ash Fall sow, or stratify 90 days at 77° F plus 90 days at 41° F. Some stratify 90 days at 33° F. Highly variable. Full germination takes two to three years.
- SPIRAEA Spirea Spring sow seed as soon as ripe. Also by hardwood or softwood cuttings and divisions.
- SYMPHORICARPOS Snowberry
 Spring sow and mulch for germination the following spring, or treat with H₂SO₄ for 30 to 75 minutes, followed by stratification for 180 days at 41° F, or by stratification at 77° F for 30 days plus 180 days at 50° F. Highly variable. Also by softwood and hardwood cuttings and division.
- SYRINGA Lilac Fall sow, or stratify 60 days at 41°F and spring sow. Also by stem cuttings, root cuttings, budding, grafting and suckers.
- TAMARIX Tamarisk Spring sow seed. Also by hardwood cuttings and layering.

- TAXUS Yew Fall sown seed germinates in two to three years, or stratify 60 days at 77°F, plus 60 days at 41°F and spring sow. Also by cuttings and grafting.
- THUJA Thuja, arborvitae Fall sow T. occidentalis. Spring sow T. plicata, or stratify 30 to 60 days and spring sow. Also by cuttings.
- TSUGA Hemlock Fall sow, or stratify 90 days at 41° F. Also by cuttings.
- ripening seed. Fall sow fall ripening seed, or stratify 30 to 60 days at 41°F and spring sow. Some species also by softwood cuttings.
- VACCINIUM Blueberry, cranberry
 Fall sow, or stratify 150 days
 at 41° F. Divisions and cuttings
 preferred.
- VIBURNUM Viburnum Sow in spring or early summer for good germination the following spring, or stratify 120 days at 77°F plus 60 days at 41°F and spring sow for germination the following spring. Also by greenwood or hardwood cuttings and layering.

VINES

- CELASTRUS Bittersweet Fall sow, or stratify 90 days at 41° F. Also by softwood, hardwood and root cuttings, layering and suckers.
- CLEMATIS Clematis Fall sow, or stratify at 41°F for 60 to 90 days and spring sow. Also by softwood cuttings and grafting.
- VITIS Grape Fall sow, or stratify 60 days at 41° F. Also by layering, cuttings and grafting.

DAYS BEFORE PLANTING	************	189 150	Jan 1-20 129 100	90 75	60 30	May
Trees	and Shru	bs				200111E
bies amabilis Pacific silver fir				416		
Abies balsamea Balsam fir Abies concolor White fir				41*	41°	0
Abies lasiocarpa Corkbark firAcer ginnala Amur maple					41°	
Acer glabrum var. douglasii Douglas maple				41°		
Acer negundo BoxelderAcer platanoides Norway maple		<u> </u>	410-	_41"		
Acer saccharinum Silver maple		1			41°	······································
Alnus rubra Red alder				 	_ 61°	
Alnus sinuata Sitka alder					41°-	-61
Amelanchier alnifolia Saskatoon serviceberry			41.		_ 41°	
Amelanchier florida Pacific serviceberry			41.			
Amelanchier oblongifolia Thicket shadbush Amelanchier ovalis Garden shadblow		41*	41°			_6
Amorpha canescens Lead plant Ho	ot water &				41°	
Amorpha fruticosa Indigobush amorpha H ₂ SO ₄ Arctostaphylos uva-ursi Bearberry H ₂ SO ₄	3-5 hrs. or		77*		41°	
Betula glandulosa Bog birch Betula nana Dwarf arctic birch				41	900000000000000000000000000000000000000	
Betula papyrifera					*1	
var. commutata Western paper birch var. humilis Alaska paper birch					41°	
var. kenaica Kenai birch					410-	
Betula pendula European white birch Chamaecyparis nootkatensis Alaska cedar	*****				41°	_ •
Cornus alba var. sibirica Coral dogwood			_ 41°	41° —		
Cornus stolonifera Redosier dogwood H2SO	1½ hrs. &			41*-		
Cotoneaster apiculata	1½ hrs. &			41°		
Cotoneaster integerrima European cotoneaster H2SO	1½ hrs. &			41°		-47
Cotoneaster melanocarpa var. laxiflora H.SO	1½ hrs. &			41°		
Cotoneaster racemiflora soongarica H ₂ SO Crataegus oxyacantha English hawthorn	1½ hrs. &			41°		
Elaeagnus commutata Silverberry				41° —		
Fraxinus pennsylvanica var. lanceolata Green ash			41°		43.5	
Juniperus communis var. depressa Common juniper		_77°		- 41°	41°	
Juniperus scopulorum Rocky mountain juniper Larix decidua European larch			-41°		41°	
Larix laricina Tamarack					41°	
Larix sibirica Siberian larch Lonicera caerulea					410	-
Lonicera korolkovii Blue-leaf honeysuckle					41°	
Lonicera maacki var. podocarpa Late honeysuckle Lonicera morrowi Morrow honeysuckle				41	41.	
Lonicera tatarica Tatarian honeysuckle				}	41°	
Lonicera fatarica rosea					41.	
Lonicera tatarica wheeleri				1	41°	
Lonicera xylosteum European fly honeysuckle Malus baccata Siberian crab apple	····			<u></u>	41°	
Malus coronaria Sweet crab apple			_41°		419	
					41*	
Malus ioensis var. plena Prairie crab apple					41	20000000 %
Malus theifera hupehensis Tea crab apple Picea abies Norway spruce					41	
Picea engelmanni Engelmann spruce Picea glauca White spruce	···	. 		****	41°	- 1
Picea glauca var. albertiana Western white spruce	200000000000000000000000000000000000000	***************************************		1	41	
Picea mariana Black spruce					41	
Picea omorika Servian spruce Picea pungens Blue spruce					141° —	二。
Pinus aristata Bristlecone pine					_41° _41°	
		,				-
Pinus banksiana Jack pine Pinus cembra Swiss stone pine H ₂ SO ₄ 3	·			41°	41	
Pinus contorta var. latifolia Lodgepole pine					413	
Pinus flexilis Limber pine Pinus griffithii Himalayan pine					41	********
Pinus mugo Swiss mountain pine					41	***
Pinus nigra Austrian pine Pinus ponderosa Ponderosa pine					41	•
Pinus resinosa Red pine					41	· mar@
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3								Cotonesster integerrima European cotonesster. H.SC. Cotonesster melanocarpa var. laxiflora H.SD. Cotonesster racemillura soongarica
4								Cotonesster Integersima European cotonesster, H.SC. Cotonesster melanocarpa var. laxiflora
*								Cotonesster integerrima European cotonesster. H.SC. Cotonesster melanocarpa var. lexiflora
*			- 10 . - 18 . - 18 . - 18 . - 18 .					Cotonesster integerrima European cotonesster. H.SC. Cotonesster melanocarpa var. lexiflora H.SC. Cotonesster racemiliora somessica H.SC. Craisegus exyacanthe English hawthorn Elseagnus commutata Silverberry Elseagnus commutata Silverberry
		976	- 10 . - 18 . - 18 . - 18 . - 18 .	ę.				Cotonesster integerrima European cotonesster. H.SC. Cotonesster melanocarpa var. lexiflora
			- 10 . - 18 . - 18 . - 18 . - 18 .	ę.				Cotonesster integerrima European cotonesster. H.SC. Cotonesster melanocarpa var. lexiflora
			- 10 . - 18 . - 18 . - 18 . - 18 .					Cotonesster integerrima European cotonesster. H.SC. Cotonesster melanocarpa var. lexiflora
		P19	- 10 . - 18 . - 18 . - 18 . - 18 .					Cotoneaster integerrima European cotoneaster. H.SC. Cotoneaster melanocarpa var. lexiflora H.SC. Cotoneaster racemiliora somearica H.SC. Craisegus expacantha English hawthorn Elseagnus commutata Silverberry Europymus alatus compactus Winged europymus Fraxinus penneylvanica var. lancsolata Green ash Juniperus communia var. depressa Common juniper Juniperus communia var. depressa Common juniper Juniperus scopularum Rocky mountain juniper Larix decidus European larch
	41*	P19	- 10 . - 18 . - 18 . - 18 . - 18 .					Cotonesster integerrima European cotonesster. H.SC. Cotonesster melanocarpa var. lexiflora
		916	- 10 . - 18 . - 18 . - 18 . - 18 .					Cotoneaster integerrima European cotoneaster. H.SC. Cotoneaster melanocarpa var. lexiflora H.SC. Cotoneaster racemiliora someastea H.SC. Cotoneaster racemiliora someastea H.SC. Cratasegus expacanthe English hawthorn Elseagnus commutata Silverberry Europymus alatus compactus Winged evonymus Fraxinus pennsylvanica var. lenceolata Green ash- Juniperus communia var. depressa Common juniper Juniperus communia var. depressa Common juniper Juniperus scopularum Rocky mountain juniper Larix decidus furropean tarch Larix decidus Tamarack
	41*	916	- 10 . - 18 . - 18 . - 18 . - 18 .					Cotoneaster integerrima European cotoneaster. H.SC. Cotoneaster melanocarpa var. lexiflora. H.SC. Cotoneaster racemiliora souncarica. H.SC. Craisegus oxyacanthe English hawthorn Etseagnus commutera Silverberry. Etseagnus commutera Silverberry. Fraxinus pennsylvanica var. lancsolata Green ash. Itraxinus pennsylvanica var. lancsolata Green ash. Juniperus communia var. depressa Common juniper Juniperus acopularum Rocky maustain juniper Larix decidus European tarch Larix decidus European tarch Larix laricina Tamarack
		916	- 10 . - 18 . - 18 . - 18 . - 18 .					Cotoneaster integerrima European cotoneaster. H.SC. Cotoneaster melanocarpa var. lexiflora. H.SC. Cotoneaster racemiliora souncarica. H.SC. Craisegus oxyacanthe inglish hawthorn Elseagnus commutata Silverberry. Erazinus commutata Silverberry. Frazinus penseylvanica var. lanccolata Green ash- Juniperus communia var. depressa Common juniper Juniperus communia var. depressa Common juniper Juniperus acopularum Rocky maustain juniper Larix decidus European tarch Larix laricina Tamarack Larix sibiriqa Siberian larch Lonicora eastulea
		P15	- 10 - 1k: - 1k: - 1b - 1b - 1b					Cotoneaster integerrima European cotoneaster. H.SC. Cotoneaster melanocarpa var. lexiflora. H.SC. Cotoneaster racemiliora souncarica. H.SC. Craisegus oxyacanthe inglish hawthorn. Elseagnus commuteta Silverberry. Essagnus commuteta Silverberry. Fraxinus pennsylvanica var. lanccolata Green ash. Inaligerus communia var. depressa Common juniper Juniperus acopularum Rocky maustain juniper Jamarack. Larix decidus European tarch. Carix sibiriga Siberian larch. Comicora castrulea. Lonicora castrulea. Lonicora karolkovii Plue-leaf honeveuckie.
		916	- 10 - 1k: - 1k: - 1b - 1b - 1b					Cotoneaster integerrima European cotoneaster. H.SC. Cotoneaster melanocarpa var. lexiflora. H.SC. Cotoneaster racemiliora souncarica. H.SC. Craisegus oxyacantha English hawthorn Etseagnus commuteta Silverberry. Etseagnus alatus compactus Winged cuonymus. Fraxinus pennsylvanica var. lancsolata Green ash. Inniperus communia var. depressa Common juniper Juniperus communia var. depressa Common juniper Juniperus acopularum Rocky moustain juniper Larix decidus European tarch Larix decidus European tarch Larix laricina Tamarack Larix sibiriga Siberian larch Lonicera karolicovii Blue-leaf honeysuckie
		41° 41°	- 10 - 1k: - 1k: - 1b - 1b - 1b					Cotonesster integerrima European cotonesster. H.SC. Cotonesster melanocarpa var. lexiflora. H.SC. Cotonesster racemiliora souncarica. H.SC. Cotonesster racemiliora souncarica. H.SC. Craisegus expacanthe English hawthorn Elseagnus commutata Silverberry. Erazinus commutata Silverberry. Frazinus penneyivanica var. iancaolata Green ash. Juniperus communia var. depressa Common juniper Juniperus communia var. depressa Common juniper Juniperus acopularum Rocky mountain juniper Larix decidus European tarch Larix laricina Tamarack Larix sibitics Siberian larch Lonicera korolicovii Blue-leaf honeyeuckie Lonicera masacki var. podocarpa Late honeysuckie Lonicera masacki var. podocarpa Late honeysuckie
		P15	- 10 - 1k: - 1k: - 1b - 1b - 1b					Cotoneaster integerrima European cotoneaster. H.SC. Cotoneaster melanocarpa var. lexiflora. H.SC. Cotoneaster racemiliora souncarica. H.SC. Craisegus oxyacantha English hawthorn Etseagnus commuteta Silverberry. Etseagnus alatus compactus Winged cuonymus. Fraxinus pennsylvanica var. lancsolata Green ash. Inniperus communia var. depressa Common juniper Juniperus communia var. depressa Common juniper Juniperus acopularum Rocky moustain juniper Larix decidus European tarch Larix decidus European tarch Larix laricina Tamarack Larix sibiriga Siberian larch Lonicera karolicovii Blue-leaf honeysuckie
		41° 41°	- 10 - 1k: - 1k: - 1b - 1b - 1b					Cotoneaster integerrima European cotoneaster. H.SC. Cotoneaster melanocarpa var. laxiflora
		41° 41°	- 10 - 1k: - 1k: - 1b - 1b - 1b					Cotonesster integerrima European cotonesster. H.SC. Cotonesster melanocarpa var. lexiflora. H.SC. Cotonesster recemillora sonnessica. H.SC. Cratacque expacantha English hawthorn Etacaque commutata Silverberry. Europymus alatus compactus Winged europymus. Fractus communia var. depressa Common juniper Juniperus communia var. depressa Common juniper Juniperus communia var. depressa Common juniper Jariporus scopularum Rocky mountain juniper Lexix decidus European tarch Lexix alaticus Tamatack Lonicera karoikovii Plue-leaf honeveuckie Lonicera maacki var. podocarpa Lata honeysuckie Lonicera maacki var. podocarpa Lata honeysuckie Lonicera tatarica Tatarian honeysuckie
		41° 41°	- 10 - 1k: - 1k: - 1b - 1b - 1b					Cotonesster integerrima European cotonesster. H.SC. Cotonesster melanocarpa var. lexiflora. H.SC. Cotonesster recemillora sonnessica. H.SC. Craiseque expanantha English hawthorn Etasequus commutata Silverberry. Euonymus alatus compactus Winged euonymus. Fractuus conmunis var. depressa Common juniper Juniperus conmunis var. depressa Common juniper Jarik eedige European larch Larik iaricina Tamarack Lonicera katoikovii Plue-leaf honeveuckie Lonicera maacki var. podocarpa Laus honeysuckie Lonicera mateki var. podocarpa Laus honeysuckie Lonicera talarica Tatarian honeysuckie Lonicera ialarica rasea. Lonicera ialarica rasea. Lonicera ialarica rasea.
		41° 41°	- 10 - 1k: - 1k: - 1b - 1b - 1b					Cotonesster integerrima European cotonesster. H.SC. Cotonesster melanocarpa var. lexiflora. H.SC. Cotonesster recemillora sonnessica. H.SC. Craiseque expanantha English hawthorn Etasequus commutata Silverberry. Euonymus alatus compactus Winged euonymus. Fractuus conmunis var. depressa Common juniper Juniperus conmunis var. depressa Common juniper Jarik eedige European tarch Latik iaricina Tamarack Lonicara katoikovii Plue-leaf honeveuckie Lonicara maacki var. podocarpa Laus honeysuckie Lonicara matrica Tatarian honeysuckie Lonicara ialarica Tatarian honeysuckie Lonicara ialarica rasea. Lonicara sajarica vasea.
		41° 41°	- 10 - 1k: - 1k: - 1b - 1b - 1b					Cotonesster integerrima European cotonesster. H.S.C. Cotonesster melanocarpa var. lexiflora. H.S.C. Cotonesster recemillora sonnessica. H.S.C. Cotonesster recemillora sonnessica. H.S.C. Craiseque expanantha English hawthorn Etasagnus commutata Silverberry. Europymus alatus compactus Winged euonymus. Fractuus penneylvanica var. lanccolata Green ash Juniperus communis var. dapressa Common juniper Juniperus communis var. dapressa Common juniper Juniperus communis var. dapressa Common juniper Jariporus acopularum Rocky mountain juniper Lexix decidus European tarch Lexix alaticus Tamarack Lonicera katolikovii Plue-leaf honeveuckie Lonicera maacki var. podocarpa Laus honeysuckie Lonicera morrowi Morrow honeysuckie Lonicera talatica Tatarian honeysuckie Lonicera talatica rasea. Lexicera talatica rasea.
		41° 41°	- 10 - 1k: - 1k: - 1b - 1b - 1b					Cotonesster integerrima European cotonesster. H.S.C. Cotonesster melanocarpa var. lexiflora. H.S.C. Cotonesster recemillora sonnessica. H.S.C. Cratacque expacantha English hawthorn Etacaque commutata Silverberry. Euonymus alatus compactus Winged euonymus. Fractuus penneylvanica var. lencsolata Green ash Juniperus communia var. depressa Common juniper Juniperus communia var. depressa Common juniper Juniperus acopularum Rocky mountain juniper Learly escidus European tarch Learly sibrius Tamarack Learly sibrius Siberian larch Lonicera maacki var. podocarpa Late honeysuckie Lonicera maacki var. podocarpa Late honeysuckie Lonicera materia Morrow honeysuckie Lonicera talarica rasea. Lonicera talarica rasea. Learly besceta Siberian drab apple Lonicera sylosteum European fly honeysuckie
		41° 41°	- 10 - 1k: - 1k: - 1b - 1b - 1b		- 12 -			Cotonesster integerrima European cotonesster. H.SC. Cotonesster melanocarpa var. lexiflora. H.SC. Cotonesster recemillora sonnessica. H.SC. Craiseque expanantha English hawthorn Etasequus commutata Silverberry. Euonymus alatus compactus Winged euonymus. Fractuus conmunis var. depressa Common juniper Juniperus conmunis var. depressa Common juniper Jarik eedige European tarch Latik iaricina Tamarack Lonicara katoikovii Plue-leaf honeveuckie Lonicara maacki var. podocarpa Laus honeysuckie Lonicara matrica Tatarian honeysuckie Lonicara ialarica Tatarian honeysuckie Lonicara ialarica rasea. Lonicara sajarica vasea.
	15	919	- 10 - 1k: - 1k: - 1b - 1b - 1b		- 12 -			Cotonesster integerrima European cotonesster. H. S.C. Cotonesster melanocarpa var. lexiflora
		*15	- 10 - 1k: - 1k: - 1b - 1b - 1b		- 12 -			Cotonesster integerrima European cotonesster. H. S.C. Cotonesster melanocarpa var. lexiflora
	- 415	*15	- 10 - 1k: - 1k: - 1b - 1b - 1b		- 12 -			Cotonesater integerrima European cotonesater. H. S.C. Cotonesater melanocarpa var. lexiflora. H. S.C. Cotonesater recemiflora somegarica. H. S.C. Cotonesater recemiflora somegarica. H. S.C. Craisegus cayacantha English hawthorn. Etaseguus commutera Silverberry. Europymus alatus compactus Winged eucopymus l'amperus communia var. depressa Common juniper Juniperus communia var. depressa Common juniper Juniperus scopularum Hocky mountain juniper Larix decidus iuropean tarch. Cerix silvira Tamarack. Cerix silvira Siberian larch. Conicera karoiskovii Blue-leaf honevsuckie. Conicera maacki var. podocarpa Late honeysuckie. Conicera taiarica Tatarian honeysuckie. Conicera taiarica Tatarian honeysuckie. Conicera taiarica Tatarian drab apple. Conicera taiarica wheeleri. Conicera taiarica wheeleri. Conicera taiarica rosea. Conicera taiarica wheeleri. Conicera taiarica wheeleri. Conicera taiarica rosea.
		*15	- 10 - 1k: - 1k: - 1b - 1b - 1b		- 12 -			Cotonesater integerrima European cotonesater. H. S.C. Cotonesater melanocarpa var. lexiflora. H. S.C. Cotonesater recemiflora somegarica. H. S.C. Cotonesater recemiflora somegarica. H. S.C. Craisegus cayacantha English hawthorn. Etaseguus commutera Silverberry. Europymus alatus compactus Winged euonymus Irracinus penneylvanica var. lenccolata Green ash Janiporus communia var. depressa Common juniper Janiporus scopularum Hocky mountain juniper Larix decidus iuropean tarch. Carix laricina Tamarack. Carix silvina Tamarack. Conicera koroikovii Blue-leaf honevsuckie. Conicera koroikovii Blue-leaf honevsuckie. Conicera maacki var. podocarpa Laue honeysuckie. Conicera taiarica Tatarian honeysuckie. Conicera taiarica Tatarian honeysuckie. Conicera taiarica Tatarian drab apple. Conicera taiarica rosea.
	- 415	*15	- 10 - 1k: - 1k: - 1b - 1b - 1b		- 12 -			Cotonesater integerrima European cotonesater. H. S.C. Cotonesater melanocarpa var. lexiflora Cotonesater recemiflora sonnearica Craisegus expacantha English hawthorn Etseeguus commutera Silverberry Europymus alatus compactus Winged euonymus Tracinus penneylvanica var. isnosolata Green ash Janiporus communis var. depressa Common juniper Janiporus communis var. depressa Common juniper Janiporus acopularum Hocky mountain juniper Jarix decidus intropean tarch Larix laricina Tamarack Lonicara karolicovii Blue-leaf honeysuckie Lonicara maacki var. podocarpa Late honeysuckie Lonicara materia Morrow honeysuckie Lonicara talarica Tatarian honeysuckie Lonicara talarica Tatarian honeysuckie Lonicara talarica rosea
	- *18 - *18	110	- 10 - 1k: - 1k: - 1b - 1b - 1b		- 12 -			Cotoneaster integerrima European cotoneaster. H.SC. Cotoneaster melanocarpa var. lexiflora H.SC. Cotoneaster racemillura sonngarica H.SC. Craisegus oxyactanina English hawthorn Etaseguus commutata Silverberry Euonymus alatus compactus Winged euonymus Fraxinus penacylvanica var. ismosolata Green ash Juniperus communis var. depressa Common juniper Juniperus communis var. depressa Common juniper Larix decidus European harch Larix lariama Tamarack Larix lariama Tamarack Confera harolkovii Blue-leaf honeysuckie Lonicara maacki var. podocarpa Late honeysuckie Lonicara morrowi Morrow honeysuckie Lonicara anorrowi Morrow honeysuckie Lonicara ialarica rases Lonicara haisrica hupehensis Tea crab apple Latis theifera hupehensis Tea crab apple Lingua ahaise Norway spruse
	- *18 - *18	*15	- 10 - 1k: - 1k: - 1b - 1b - 1b		- 12 -			Cotoneaster integerima European cotoneaster. H.SC. Cotoneaster metamorarpa var. lexiflora H.SC. Cotoneaster racemillura soongarica H.SC. Craisegus oxyacantha English hawthorn Elseaguus commutata Silverberry Fraxmus pennsylvamica var. lanccalata Green ash Juniperus communia var. dapressa Common juniper Juniperus communia var. dapressa Common juniper Juniperus acopulorum Rocky mountain juniper Larix derkina Tamarack Larix sibirte Siberian larch Lonicera harchicanicera fastilian larch Lonicera maacki var. pedocarpa Lata honeysuckie Lonicera maacki var. pedocarpa Lata honeysuckie Lonicera taiarica Tatarian honeysuckie Lonicera taiarica Tatarian honeysuckie Lonicera taiarica Tatarian moreysuckie Lonicera taiarica rasea Lonicera taiarica rasea Lonicera taiarica vinegen tily honeysuckie Lonicera taiarica rasea
	- *18 - *18	110	- 10 - 1k: - 1k: - 1b - 1b - 1b		- 12 -			Cotoneaster integerima European cotoneaster. H.SC Cotoneaster melanocarpa var. lexiflora. H.SC Cotoneaster recemifiars somegazica. H.SC Cotaneaster recemifiars somegazica. H.SC Cratecous coxymus experantia English hawthorn. Eleacymus commutata Silverberry Europymus alatus compactus Winged europymus. Fraxinus penneyivanica var. ienccolata Green ashianiperus communis var. depressa Common juniper tamporus acopularum Rocky mountain juniper tamporus scopularum Rocky mountain juniper Larix decidus European harch Larix latvina Tamarack Conferta maacki var. pedocarpa Laus honeysuckie Lonicera maacki var. pedocarpa Laus honeysuckie Lonicera mourowii Blue-leaf honeysuckie Lonicera mourowii Alorrow honeysuckie Lonicera istarica Tatarian honeysuckie Lonicera istarica wheeleri Lonicera istarica wheeleri Lonicera istarica wheeleri Lonicera istarica rases Lonic
	- 418 418 418 418 418 418	415 416	- 10 - 1k: - 1k: - 1b - 1b - 1b		- 12 -			Cotoneaster integerima European cotoneaster. H.SC Cotoneaster melanocarpa var. lexiflora. H.SC Cotoneaster melanocarpa var. lexiflora. H.SC Cotoneaster recemifiars somegazica. H.SC Craisegus expacantina English hawthorn. Elseaguus commutata Silverberry Euorymus alatus compactus Winged euonymus fraxinus penneyivanica var. lenccolata Green ash. Fraxinus penneyivanica var. lenccolata Green ash. Larix decidus European larch. Larix larivina Tamarack. Conferta maachi var pedocarpa Laus honeysuckle. Lonicera maachi var pedocarpa Laus honeysuckle. Lonicera morrowi Morrow honeysuckle. Lonicera isdarica Tatarian honeysuckle. Lonicera isdarica rasea. Lonicera isdarica vinegen fly honeysuckle. Lonicera isdarica rasea. Lonicera isdarica vinegen crab apple. Lonicera in hore penne penne. Lonicera hupehensis Toa orab apple. Lonicera in hora hupehensis Toa orab apple. Lonicera in hora hupehensis Toa orab apple. Lonicera in hupehensis Toa orab apple. Lonicera sargentii Engelmann spruce. Lonicera glauca White spruce. Lonicera glauca var albertiana Western white spruce. Lonicera mariana Black spruce. Lonicera mariana Black spruce.
	- 418 418 418 418 418	415 416	- 10 - 1k: - 1k: - 1b - 1b - 1b		- 12 -			Cotoneaster integerrima European cotoneaster. H.SC. Cotoneaster racemiliars comparies. H.SC. Cotoneaster racemiliars comparies. H.SC. Crafacque exyacantha longish hawthorn Etacapus commutata Silverberry. Etacapus commutata Silverberry. Everymus alatus compactus Winged evonymus. Fraxinus pennsylvanius var. lancaolata Green ash Juniperus communis var. depressa Common juniper Juniperus communis var. depressa Common juniper Jarky ecidus Luropean larch Larix larkuna Tamarack Larix salvina Tamarack Lonicera sazulca Lonicera maacki var. podocarpa Lau honeysuckie Lonicera morrowi Morrow honeysuckie Lonicera morrowi Morrow honeysuckie Lonicera talarica Tatarian honeysuckie Lonicera talarica races Lonicera talarica popole Lonicera talarica proces Lonicera talarica procesa proc
	**************************************	415 416	- 10 - 1k: - 1k: - 1b - 1b - 1b		- 12 -			Cotoneaster integerrima European cotoneaster. H.SC. Cotoneaster racemitiars comparies. H.SC. Cotoneaster racemitiars comparies. H.SC. Crafacque exyacantha longish hawthorn Etacapus commutata Silverberry. Etacapus commutata Silverberry. Examine penneylvanics var. lanceolata Green ash furtherus communis var. depressa Common juniper fastix decidus European tarch Larix decidus European tarch Larix siphirus Siberian larch Lonicera maacki var. podocarpa Lau honeysuckie Lonicera maacki var. podocarpa Lau honeysuckie Lonicera morrowi Morrow honeysuckie Lonicera tatarica Tatarian honeysuckie Lonicera tatarica Tatarian honeysuckie Lonicera tatarica Tatarian honeysuckie Lonicera tatarica races Lonicera tatarica piena Prairie crab apple Lonicera constità Sargent crab apple Lonicera diauca var. albertiana Western white spruce Loca constita Silver spruce
	*15 -*15 -*15 -*15 -*15 -*15 -*15 -*15 -	*15	- 10 - 1k: - 1k: - 1b - 1b - 1b		- 12 -			Cotoneaster integerrima Buropean cotoneaster H.S.C. Cotoneaster melanocarpa var laxiflora Cotoneaster racemificra sonogarica Cotoneaster racemificra sonogarica Elasagnus exyscantha English hawthorn Elasagnus commutata Silvenberry Fraxinus pennsylvanius var lanocolata Green ash Janiperus communie var dapressa Common juniper Janiperus scopularum Rocky mountain juniper Larix decidua European larch Larix laricina Tamarack Larix laricina Tamarack Lonicera morrowi Biue-leaf honevsuckie Lonicera morrowi Morrow honeysuckie Lonicera istarica Tatarian honeysuckie Lonicera tatarica Tatarian honeysuckie Lonicera tatarica Tatarian honeysuckie Lonicera tatarica Totarian praise crab apple Lonicera sylosteum kinepent fly honeysuckie Lonicera sylosteum kinepent fly honeysuck
	*15 -*15 -*15 -*15 -*15 -*15 -*15 -*15 -	015	- 10 - 1k: - 1k: - 1b - 1b - 1b		- 12 -			Cotoneaster integerrima Buropean cotoneaster H.S.C. Cotoneaster melanocarpa var laxiflora Cotoneaster racemificra sonogarica Cotoneaster racemificra sonogarica Elasagnus exyscantha English hawthorn Elasagnus commutata Silvenberry Fraxinus pennsylvanius var lanocolata Green ash Janiperus communie var dapressa Common juniper Janiperus scopularum Rocky mountain juniper Larix decidua European larch Larix laricina Tamarack Larix laricina Tamarack Lonicera morrowi Biue-leaf honevsuckie Lonicera morrowi Morrow honeysuckie Lonicera istarica Tatarian honeysuckie Lonicera tatarica Tatarian honeysuckie Lonicera tatarica Tatarian honeysuckie Lonicera tatarica Totarian praise crab apple Lonicera sylosteum kinepent fly honeysuckie Lonicera sylosteum kinepent fly honeysuck
	*15 -*15 -*15 -*15 -*15 -*15 -*15 -*15 -	*15 *15	- 10 - 1k: - 1k: - 1b - 1b - 1b		- 12 -			Cotoneaster integerrima European cotoneaster. H.SC. Cotoneaster racemitiars comparies. H.SC. Cotoneaster racemitiars comparies. H.SC. Crafacque exyacantha longish hawthorn Etacapus commutata Silverberry. Etacapus commutata Silverberry. Examine penneylvanics var. lanceolata Green ash furtherus communis var. depressa Common juniper fastix decidus European tarch Larix decidus European tarch Larix siphirus Siberian larch Lonicera maacki var. podocarpa Lau honeysuckie Lonicera maacki var. podocarpa Lau honeysuckie Lonicera morrowi Morrow honeysuckie Lonicera tatarica Tatarian honeysuckie Lonicera tatarica Tatarian honeysuckie Lonicera tatarica Tatarian honeysuckie Lonicera tatarica races Lonicera tatarica piena Prairie crab apple Lonicera constità Sargent crab apple Lonicera diauca var. albertiana Western white spruce Loca constita Silver spruce

Plaus beniesiana Jack pine

Plaus control Swiss stone pinie

Plaus control Swiss stone pinie

Plaus control Swiss stone pinie

Plaus flexills Limber pine

Plaus griffithal Himalayan pine

Plaus mugo Swiss mountain pine

Plaus nigra Austrian pine

Plaus penderosa Panderosa pine

DAYS BEFORE PLANTING 210	180	150	120	100	390	75 50	30
Pinus sylvestris Scotch pine		ļ				41°	
Prunus americana American plum Prunus besseyi Western sandcherry		41°		410			
		L					
Prunus cerasifera Cherry plum, Myrobalan plum Prunus maacki Amur cherry				. 41° ·			
Prunus nana Russian almond Prunus nigra Canada plum		 -			41*-		
Prunus padus European birdcherry	****	_ 77° ·				41	
Prunus pennsylvanica Pin cherry	+	_ 77°		-	— 41°-		
Prunus sargentii Japanese cherry Prunus serotina Black cherry			000000000000000000000000000000000000000	41°-			
Prunus serrulata Japanese flowering cherry		L		41°-			
Prunus tenella Dwarf Russian almond Prunus tomentosa Nanking cherry	1			41°-		41°	
Prunus triloba Rose tree of China					41°-		
Prunus virginiana Common chokecherry		 -		41°			-
Pseudotsuga taxifolia Douglas fir Rhamnus cathartica European buckthorn	.					41°	
Rhamnus davurica Dahurian buckthorn Rhamnus frangula Glossy buckthorn					41°-	41°	
Rhus aromatica Fragrant sumac H ₂ SO ₄ 1 hr. &							410
Rhus glabra Smooth sumac H ₂ SO ₄ 1 hr .&	200000000000000000000000000000000000000						_ 41°
Rhus trilobata Western sumac H ₂ SO ₄ I hr. & Ribes alpinum Alpine currant	\$0000000000000000000000000000000000000				41*-	41°	
Ribes sativum Garden currant	.				41°-		
Rosa acicularis Prickly rose H ₂ SO ₄ 1 to 2 hrs. & Rosa altaica Altaica rose H ₂ SO ₄ 1 to 2 hrs. &					41°-		
Rosa lheritierana Boursault rose	************				41° •	43.0	
Rosa multiflora Japanese rose H ₂ SO ₄ 1 to 2 hrs. & Rosa pendulina ozydon H ₂ SO ₄ 1 to 2 hrs. &		<u></u>			410-	41°	
Rosa pimpinellifolia H ₂ SO ₄ 1 to 2 hrs. & Rosa platyacantha H ₂ SO ₄ 1 to 2 hrs. & Rosa platyacantha			. .		41°- 41°-		
Rosa rubrifolia Redleaf rose H ₂ SO, 1 to 2 hrs. &.			410				
Rosa rugosa Rugosa rose H ₂ SO ₄ 1 to 2 hrs. &			. .		41°=		
Rosa setigera Prairie rose H ₂ SO ₄ 1 to 2 hrs. & Rubus Raspberry, blackberry H ₂ SO ₄ 1 to 2 hrs. &			Populari de la companya de la compa		41°-		
Sambucus canadensis American elder		_ 77° •		MATERIAL PROPERTY.	- 41°-	9000000000	
Shepherdia argentea Silver buffaloberry Shepherdia canadensis Russet buffaloberry						41°	
Sorbaria sorbifolia False spirea							41°
Sorbus americana American mountain ash	77**				- 41°		
Sorbus aucuparia European mountain ash Sorbus decora Showy mountain ash					_ 33	41°	
Sorbus sambucifolia Siberian mountain ash Sorbus scopulina Western mountain ash					41°-	41°	
S-1 -it of Side And Advantage	. ,,				410-	31	
Symphoricarpos albus Common snowberry H ₂ SO ₁ 75 min. &							•
Symphoricarpos orbiculatus Indian currant _ H ₂ SO, 30 min 77°° Syringa amurensis Amur lilac	* 50°					41°	
Syringa henryi	L					41°	S SSSS
Syringa josikaea Hungarian lilac						41°	
Syringa pekinensis Syringa villosa Late lilac						41°	0. 4000#000 3
Syringa vulgaris Common lilac			770-			41°	· · · · · · · · · · · · · · · · · · ·
Taxus cuspidata Japanese yew			. 77°•			 41°	
Taxus brevifolia Pacific yew			770.			413	
Thuja occidentalis Northern white cedar Thuja plicata Western redcedar						41°	× *********
Tsuga heterophylla Western hemlock Tsuga mertensiana Mountain hemlock					41°-	419	
Ulmus americana American elm					1	71,	9 2000 mg
Ulmus pumila Siberian elm						41'	
Vaccinium angustifolium Lowbush blueberry Vaccinium canadense Canadian blueberry		_ 41°•					
Vaccinium myrtillus Whortleberry		_ 41°•					
Vaccinium vitis-idaea var. minus Mountain cranberry, lingenberry		_41°					-
Viburnum dentatum Arrowwood	_ 77°					419	· • • • • • • • • • • • • • • • • • • •
Viburnum lantana Wayfaring tree	77" 77"					419	O
Viburnum pauciflorum Native high bush cranberry	77^					419	· •
Viburnum tomentosum Japanese snowball Viburnum trilobum American cranberrybush	77° 77 <i>°</i>	8				41	000 2 000000000000000000000000000000000
Vines							
Celastrus orbiculatus Japanese bittersweet	ļ 			. 41*			
Celastrus scandens American bittersweet	- 		410			41°	
Vitis riparia Riverbank grape			<u>,</u>			41	-
		and the second second			F. C. C. C.	18,000	

- 15 TEST		sgivestria Scotch pine
		americana American plum
		rena Ensien almond
		Buropean birdcherry
2 11 -		ylvenica Pin cherry
		ell Japanese cherry
		an Black charge contract the second second
		ale Japanese flowering cherry
		atosa Wanking cherry
		a liuse tree of China
		dana Common chokecherry
		Sanilalia Douglas fir
		Partice European buckthorn
		agula Glossy buckthorn
		te Fregrant sumac H.SO, I hr. &
Date: 016		Smooth sumac Nest, 1 br .8c
		Western sumac H.SO, I be &
		Alpine current
		is Prickly rose H.SO; I to 2 hrs. &
		Alkaica rose
		ana Boursault rose H.5O, I to 2 hrs. &
17		os Japanese rose H.SO, I to 2 his. &
		Da ozydon H.SO, 1 to 2 hrs. & U.SO, 1 to 2 hrs. &
		antha H.50, 1 to 2 hrs. &.
		He is Hedleaf rose H-SO, 1 to 2 hrs. &
		Rugosa rose
		Prairie rose
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		Discourse American elder
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100 mm		Forms European mountain esh
		Ta Showy mountain ash unifelia Sherian mountain ash
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Commence of the comment		msiana Mountain hemlock
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