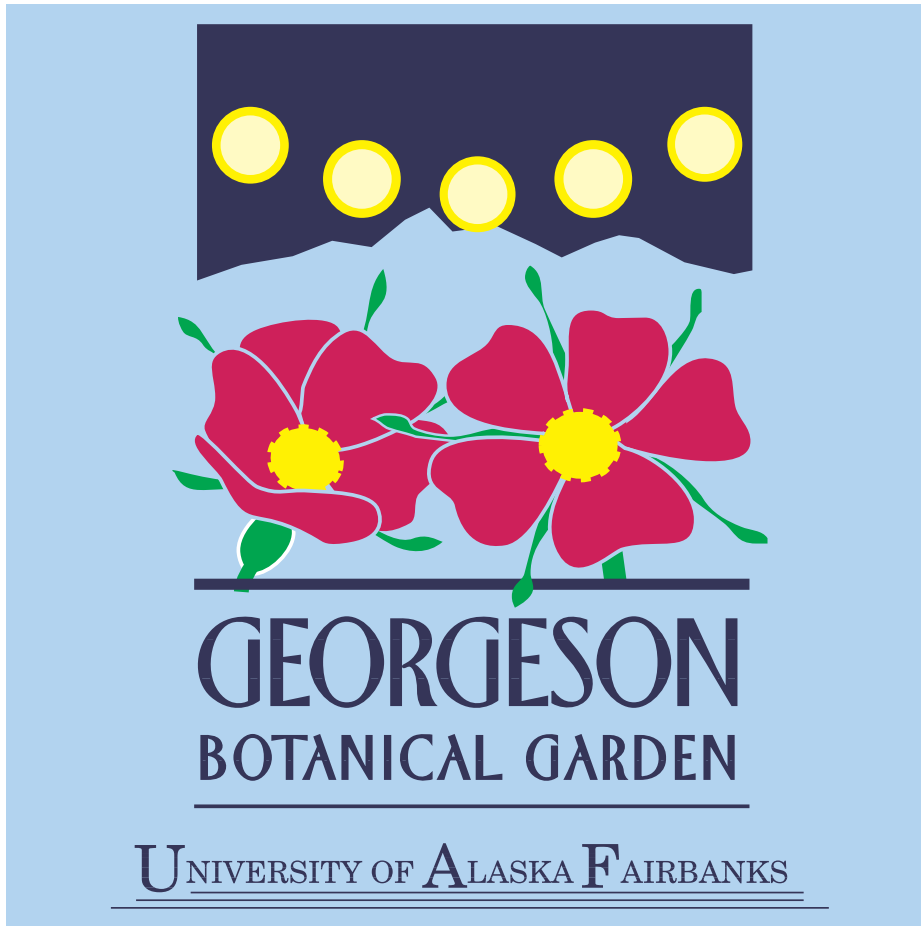


Annual Flower and Perennial Landscape Plant Evaluations 1996



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Table of Contents

Introduction	3
Explanation of Plant Evaluation Tables	4
Table 1. Weather records for the test years.	5
Table 2. All plant materials evaluated in 1996	6
Herbaceous perennials	6
Ferns	18
Ornamental grasses	18
Woody perennials	20
Table 3. All plants that have been evaluated but did not survive the minimum number of test years	28
Herbaceous perennials	28
Ferns	34
Ornamental grasses	36
Woody perennials	36
Table 4. Plantings from 1996 that have not yet been evaluated for winter survival	38
Herbaceous perennials	38
Ferns	39
Woody perennials	40
Table 5. Annual flowers evaluated in 1996	42
Appendix 1. Commercial Sources and Organizations	56
Map of GBG	57

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INTRODUCTION

In 1989, a systematic evaluation of woody and herbaceous perennial landscape plants was begun at the University of Alaska Fairbanks Georgeson Botanical Garden (64°51'N, 147°52'W). These evaluations were expanded to include annual flowers in 1992 and ferns in 1993. The purpose of this research is to identify hardy perennials capable of surviving in subarctic environments; to evaluate the ornamental potential of perennials and annuals; and to fulfill a growing demand for information on landscape plant materials by homeowners, commercial growers, and landscapers.

The collection includes both indigenous and non-indigenous species that were obtained as plants or propagules from wild stands, botanical gardens, plant materials centers, commercial nurseries and seed companies in North America and the circumpolar North (Appendix 1). Plants are grown on a south-facing slope, elevation 475 to 487 feet (145 - 148 meters). Soils are classified as Fairbanks silt-loam and have been cultivated since about 1910. All plants receive full sun except those located in the shade house (Plot No 1). Plants are watered with overhead irrigation as needed. Weed control is primarily by hand and rototiller.

The perennials are grown in the Herbaceous Perennial and Woody Ornamental Test Garden (see map on page 53). When available, ten plants of each herbaceous perennial ornamental are evaluated for a minimum of five years, and five plants of each woody landscape plant are evaluated for ten years. Subsequently, hardy perennials will be propagated and tested at other locations throughout the Interior and released for commercial propagation. Soils in the perennial test garden were amended with 1-2

inches of Lemeta peat in 1988. The perennial beds received no fertilizer in 1996. Unless otherwise noted, plants received no special winter protection such as mulching or screening.

The annual flowers were grown in the Perennial Landscape and All America Selections Display Garden. Plants were grown in unreplicated beds and varied in number according to bed size. Soils were fertilized with 1500 lb per acre 10-20-20S prior to tilling. Planting occurred on May 30 and June 3-7, 1996.

Weather data are compiled annually from a U.S. Weather Service station (elevation 475 ft [145 m]) located approximately 350 ft (107 m) west of the test garden. A summary of pertinent weather statistics for 1992 through 1996 is shown in Table 1.

THE 1996 SEASON

Following a killing frost on Sept. 4, 1995 Interior residents were treated to a wonderfully balmy Indian Summer. Warm weather persisted into October, and many native plants began blooming. Winter arrived in mid October, and the succeeding months brought an extremely low accumulation of snowfall. The total accumulation through late January 1996 was only 6 inches (15.2 cm). During that time the minimum winter air temperature at the Garden reached -43°F (-42°C) in December and -48°F (-44°C) in January. As a result of the warm autumn and lack of snowfall, 33 percent of the experimental plants in the Garden were killed.

Damage could have been caused by failure of plants to fully acclimate, extreme winter desiccation or an inability to tolerate low temperature extremes in the absence of snow cover. Throughout the Interior, and as far south as Anchorage, businesses and homeowners had similar stories of extensive winterkill. Lawns were especially vulnerable, but many perennials did not survive. Even reliable species that had been cultivated in the Fairbanks area for more than 50 years were winterkilled.

Many perennials were killed outright, but others such as peony, grape hyacinth and some ferns showed significant root damage. In some instances, they did not begin to grow until mid July. Some species never recovered fully, and probably will not reappear in 1997.

Spring planting date for tender annual flowers and vegetable transplants is after June 1, the normal date of last spring frost. In 1996, temperatures on June 5 were 30.5°F (-0.5°C). Throughout the Interior, damage to annual flower and vegetable crops was extensive. Early summer was very dry, exacerbating recovery of injured plants. On the contrary, the latter half of the summer was cold and wet. The accumulated growing degree days rivaled the very short and cold 1992-93 season. Sweet corn did not mature and yield of warm season vegetables was reduced. Most flowers performed well despite the rains. Application of the fungicide Topsin M® mitigated the damage from soil-borne diseases such as *Sclerotinia* stem rot.

The low snowfall, late spring frost, and cold, wet summer combined to make the 1996 season one that most people would rather forget. Gardeners are facing thousands of dollars in replacement costs for brown lawns and dead or injured landscape plant materials. We will repeat the evaluation of hundreds of perennials that did not receive adequate testing. Our list of comments on the possible reasons for plant losses (Table 3) now includes lack of snow cover.

PLANT EVALUATION TABLES

The information is summarized in four tables. Table 2 lists all the perennial plant materials currently being evaluated. Table 3 lists all perennials that have been evaluated but did not survive the minimum five-year evaluation period for herbaceous perennials and grasses or the minimum ten-year evaluation period for woody perennials. Table 4 lists current year's plantings of perennials that have not yet been evaluated for winter survival. Each of the three tables on perennials is further divided into four sections: herbaceous perennials, ornamental grasses, woody perennials, and ferns. Table 5 lists all annual flowers that were evaluated in 1996

EXPLANATION OF TABLES 2 THROUGH 4 (PERENNIALS)

NAME AND COMMON NAME: The following references, listed in order, were consulted for scientific and common names.

Flora of North America editorial committee, eds. 1993 *Flora of North America*

Vol. 2, *Pteridophytes and Gymnosperms*. Oxford University Press, NY.

L.H. Bailey Hortorium. 1976. *Hortus III*. MacMillan Publishing Co., NY.

Fernald, M.L. 1970. *Gray's Manual of Botany*. 8th ed. D. Van Nostrand Company.

Hulten, N.Y. E. 1974. *Flora of Alaska and Neighboring Territories*. Stanford University Press, CA.

Harkness, M.G. and D. D'Angelo, eds. 1986. *Bernard E. Harkness Seedlist Handbook*. Timber Press, Portland.

Bluebird Nursery, Inc. 1990. Catalog. Clarkson, NE.

SOURCE: This column lists the private individual, botanical garden, agency, organization or commercial business that provided the plants or propagules. Complete names and addresses for the commercial sources and organizations are listed in Appendix 1.

NUMBER OF PLANTS: The total number of plants evaluated.

WINTER INJURY: A visual rating of winter injury was recorded each spring beginning in 1990. Data represent an average rating for the total number of plants evaluated using the scale listed below. Data are cumulative over all the years plants were evaluated.

0 = no visible injury

1 = slight winter injury

2 = moderate winter injury, recovery likely

3 = severe setback from winter injury, recovery questionable

4 = winterkilled

HEIGHT AND SPREAD: The maximum height and spread of herbaceous perennials and ornamental grasses and the average height and spread of woody landscape plants were recorded each summer. Some plants showed a significant difference in height between foliage and flowers/seed pods. For these plants, the first number listed is the foliage height, and the number in parentheses is the flower/seed pod height.

FLOWERING PERIOD: The flower symbol in each column denotes the weeks in each month when plants were flowering. For ornamental grasses, only the first observation of flowering is noted because the flowers are insignificant and the seed heads are usually present until snowfall. The fruit symbol in the woody landscape plants section indicates the weeks when ornamental fruits are present.

FROST TOLERANT: A plus sign in each column indicates that the foliage or flowers of a particular plant showed no obvious damage after several nights of below-freezing temperatures (data recorded on Aug. 28 following minimum temperatures of 28°F and 27°F on the previous two days). A negative sign means frost damage.

PLOT LOCATION: The number in this column indicates the plot in the test garden where the specific test plants are located. Refer to the map on the back page of this publication for the physical location of each plot.

NUMBER OF YEARS SURVIVED: The total number of years that one or more of the evaluated plants survived. Causes of plant death could be winterkill, improper site conditions, inadequate or improper field management practices, or mechanical injury. Suspected cause for a particular species or cultivar, if known, is listed by code in the comments section. Codes are defined in a footnote at the bottom of each page.

EXPLANATION OF TABLE 5 (ANNUALS)

PLANT HEIGHT: The average (most common) height of plants including flowers to the nearest inch was recorded in late August 1996. If height of individual plants or flowers differed by more than 2 inches, the range in heights from shortest to tallest was recorded.

SPACING: The recommended spacing is the distance between plants which provides good coverage but does not promote disease.

BLOOM DATE: Data on flowering were collected weekly beginning June 7, 1996. The * symbol indicates first bloom, whereas the ☼ symbol indicates full bloom.

BLOOM SIZE: The maximum diameter to the nearest ¼ inch of individual blossoms was recorded for flowers with single blossoms such as daisies, asters and pansies. Spike-type flowers such as snapdragons, lupine and salvia were recorded as length x width (i.e. 12 x 3*) of the entire spike. The maximum diameter to the nearest ¼ inch was recorded for all clustered flowers such as sweet alyssum and verbena. The measurements of spike and clustered flowers are identified by an “*” notation following the measurement (i.e. 3*)

FROST TOLERANT: A plus sign in each column indicates that the foliage or flowers of a particular plant showed no obvious damage after several nights of below-freezing temperatures (data recorded on Aug 28 following minimum temperatures of 28°F and 27°F on the previous two days). A negative sign means frost damage.

CUTTING: A plus sign indicates this variety is suitable as a cut flower.

DRIED: A plus sign indicates this variety is suitable as a dried flower.

COMMENTS: The disease problems noted under comments refer to the fungal disease, Sclerotinia (cottony rot or white mold) unless otherwise noted. Sclerotinia infects many different types of flowers. Petunias and schizanthus are particularly susceptible. Plants eventually wilt due to blockage of the vascular tissue by small, hard, black fungal fruiting bodies. These fruiting bodies overwinter in the soil and re-infect plants in later years. The number of fruiting bodies present in the soil, as well as environmental conditions such as humidity and soil moisture, can affect the spread of the disease. Cultivars that showed no damage in 1996 are not necessarily resistant.

Table 1. Weather records for the test years.

	Season				
	1992	1993	1994	1995	1996
Average temperature °F					
May	40.6	51.9	52.0	52.3	44.1
June	59.1	60.5	57.0	58.5	57.3
July	63.0	64.5	62.0	61.9	61.9
August	55.9	55.5	51.0	55.6	52.1
September	31.4	42.5	43.0	50.6	41.2
Maximum temperature °F					
	90	91	89	85	82
Growing season					
Last spring frost	June 7	May 1	May 6	May 22	June 5
First fall frost	Sept 5	Sept 1	Aug 23	Sept 4	Aug 27
Frost-free days	90	123	109	105	83
Thaw degree days ¹	2568.0	3547.5	3476.3	3676.5	2810.5
Rainfall (inches) ²	8.78	6.67	7.21	10.15	8.73
Previous winter season					
Minimum temperature °F	-35	-52	-37	-48	-48
snowfall (inches)	103.8	131.7	36.3	69	47.8

¹ May through September 32°F base temperature
² May through September

Table 2. All plant materials evaluated in 1996.

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	NO. OF PLANTS	WINTER INJURY*	HEIGHT (IN)	SPREAD (IN)
HERBACEOUS PERENNIALS							
<i>Achillea Ptarmica</i> 'The Pearl'	Sneezewort	Vaughan's	Jul-93	10	0.8	24	34
<i>Actaea rubra</i> subsp. <i>rubra</i>	Baneberry	Fairbanks, AK	Aug-94	9	1.0	18	22
<i>Allium cernuum</i>	Nodding onion	NEWFS	Aug-91	10	2.4	8	4
<i>Allium Schoenoprasum</i>	Chives	Novosibirsk, Russia	Aug-91	10	0.3	24	22
<i>Amsonia tabernaemontana</i>		NEWFS	Aug-93	2	2.3	20	14
<i>Anemone alpina</i> subsp. <i>sulfurea</i>	Sulfur alpine anemone	ANPS	Jun-91	3	3.1	8	12
<i>Anemone Nuttalliana</i>	Pasque-flower	NEWFS	Jul-94	9	2.3		
<i>Anemone</i> sp.		Seeds of AK	Jul-94	9	3.4	3 (11)	5
<i>Anemone virginiana</i>	Thimbleweed	NEWFS	Jun-91	10	1.0	9 (28)	16
<i>Antennaria alpina</i>	Pussy-toes	NEWFS	Aug-95	10	2.3	2	14
<i>Aquilegia sibirica</i>	Siberian columbine	ARGS	Aug-91	10	1.2	18 (29)	22
<i>Aquilegia</i> sp.	Columbine	Novosibirsk, Russia	Aug-92	10	1.9	13 (27)	16
<i>Aquilegia</i> sp. 'Star McKana Mix'		Park	Aug-91	6	3.2	26	9
<i>Aquilegia viridiflora</i>		T&M	Jul-94	10	2.7	12 (19)	18
<i>Arnica alpina</i>		ARGS	Jul-92	10	2.5	20	16
<i>Arnica cordifolia</i>		ARGS	Jul-92	3	1.1	6(19)	19
<i>Arnica latifolia</i>		Seeds of AK	Jul-94	10	1.2	21	
<i>Arnica Lessingii</i>		ARGS	Jun-90	10	0.1	24	
<i>Arnica montana</i>		I. Berger	Aug-93	10	2.1	3	3

*Winter Injury Rating: 0=no visible injury; 2=moderate wither injury, recovery likely; 3=severe setback from winter injury, recovery questionable; 4=winterkilled.

WEEKLY BLOOM PERIOD***					BLOOM COLOR	FROST TOLERANT		COMMENTS	PLOT LOCATION	SCIENTIFIC NAME
MAY	JUN	JUL	AUG	SEP		flowers	foliage			
		?	?	?	white	+	+		7	<i>Achillea Ptarmica</i> 'The Pearl'
	→→→				white, red berries			dark red poisonous berries in August	23	<i>Actaea rubra</i> subsp. <i>rubra</i>
					lavender		+		13	<i>Allium cernuum</i>
	→→	?	?	?	purple		+	reseeds readily	13	<i>Allium Schoenoprasum</i>
	→→				light blue		+		18	<i>Amsonia tabernaemontana</i>
					greenish yellow		+	one plant remaining	15	<i>Anemone alpina</i> subsp. <i>sulfurea</i>
					wine red, purple		+	one plant remaining	20	<i>Anemone Nuttalliana</i>
→					white, pink tips		+	one plant remaining	23	<i>Anemone sp.</i>
		?	?	?	greenish white		+	short-lived flowers; seed heads are showy, thimble-shaped, persist in winter; interesting cottony seeds	15	<i>Anemone virginiana</i>
							+		4	<i>Antennaria alpina</i>
	→→→→				deep purple		+	nodding heads, short incurved spurs, very showy early in season	13	<i>Aquilegia sibirica</i>
		?	?	?	purple or pink		+	purple flowers small and nodding, pink flowers larger, one plant remaining	13	<i>Aquilegia sp.</i>
		?	?	?	rose/cream; scarlet/yellow		+	large blooms, long spurs, one plant remaining	13	<i>Aquilegia sp.</i> 'Star McKana Mix'
	→→→	?	?	?	greenish, yellowish black		+	attractive to aphids, unusual color	23	<i>Aquilegia viridiflora</i>
		?	?	?	bright gold	+	+		11	<i>Arnica alpina</i>
	→→	?	?	?	bright gold		+	larger flowers than <i>A. Lessingii</i>	11	<i>Arnica cordifolia</i>
		?	?	?	yellow	+	+		23	<i>Arnica latifolia</i>
		?	?	?	bright gold	+	+	invasive, spreads from roots and reseeds, attempted (unsuccessfully) to limit spread by digging out roots	11	<i>Arnica Lessingii</i>
					gold		+	one plant remaining	18	<i>Arnica montana</i>

**Weekly bloom periods identified as "?" indicate missing data with our best estimate of total bloom period.

Table 2. (continued)

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	No. OF PLANTS	WINTER INJURY*	HEIGHT (IN)	SPREAD (IN)
<i>Artemesia Dracunculus</i> var. <i>sativa</i>	French tarragon	Richters	Jul-93	3	0.8	21	10
<i>Artemesia campestris</i> subsp. <i>borealis</i>		ARGS	Oct-90	10	3.0	7 (17)	10
<i>Artemesia Tilesii</i> 'Caiggluk'	Tilesy sage	PMC	Jul-92	10	1.2	48	44
<i>Aruncus dioicus</i>	Goatsbeard	Park	Jul-94	10	3.4	12	14
<i>Asparagus officinalis</i> var. <i>pseudoscaber</i>	Lace-veil asparagus fern	Ball Seed	Jul-93	10	0.7	30	20
<i>Aster acuminatus</i>	Whorled aster	NEWFS	Jul-94	10	2.0	45	20
<i>Aster linearifolius</i>		NEWFS	Jul-94	10	3.1	12	16
<i>Aster sibiricus</i>	Siberian aster	Big Dipper	Jul-92	10	0.7	16	34
<i>Campanula rotundifolia</i> var. <i>Marchesettii</i>	Harebell	T&M	Jul-94	10	2.4	21	14
<i>Campanula takisimana</i>		T&M	Jul-93	10	1.9	12(31)	17
<i>Centaurea montana</i>	Mountain bluet	I. Berger	Aug-93	5	1.6	9	14
<i>Cerastium tomentosum</i>	Snow-in-Summer	T&M	Jun-90	10	1.2	9	30
<i>Clematis integrifolia</i>	Solitary clematis	Northern Lights	Oct-91	1	1.0	17	11
<i>Clematis tangutica</i>	Golden clematis	PMC	Aug-95	10	1.7	15	7
<i>Codonopsis mollis</i>		ARGS	Jul-94	6	4.1	17	16
<i>Delphinium glaucum</i>	Sierra larkspur	C. Parker	Oct-91	2	2.5	26 (49)	25
<i>Delphinium grandiflorum</i>	Siberian larkspur	NCRPIS	Jul-91	10	1.2	74	30
<i>Delphinium laxiflorum</i>		NCRPIS	Jul-91	10	1.8	73	34
<i>Dianthus arenarius</i>	Sand pink	ARGS	Jun-90	10	2.8	7 (11)	24
<i>Dianthus arenarius</i> (pink)	Sand pink	ARGS	Jun-90	10	2.2	6 (14)	32

*Winter Injury Rating: 0=no visible injury; 2=moderate wither injury, recovery likely; 3=severe setback from winter injury, recovery questionable; 4=winterkilled.

MAY	WEEKLY BLOOM PERIOD**					BLOOM COLOR	FROST TOLERANT		COMMENTS	PLOT LOCATION	SCIENTIFIC NAME
	JUN	JUL	AUG	SEP	flowers		foliage				
						white		+		10	<i>Artemisia Dracunculus</i> var. <i>sativa</i>
		?	?	?		yellow		+	rangy form, unattractive, one plant remaining	15	<i>Artemisia campestris</i> subsp. <i>borealis</i>
		?	?	?	☼☼☼☼☼☼	yellow	+	+	fragrant, attracts aphids & honey bees, nondescript flowers	16	<i>Artemisia Tilesii</i> 'Caiggluk'
						cream		+	one plant remaining	23	<i>Aruncus dioicus</i>
					→	yellow		+	feathery foliage suitable for flower arrangements	7	<i>Asparagus officinalis</i> var. <i>pseudoscaber</i>
						purple		+	two plants remaining	20	<i>Aster acuminatus</i>
					→→→→→→	pale lavender	+	+	two plants remaining	23	<i>Aster linearifolius</i>
		?	?	?	→→→→	lavender		+	some browning of foliage by end of season	4	<i>Aster sibiricus</i>
		?	?	?	→→→→→→	blue	+	+	one plant remaining	12	<i>Campanula rotundifolia</i> var. <i>Marchesettii</i>
		?	?	?	→→→→→→	white/purple spots	+	+	large bell-shaped flowers, speckled inside, spreads by runners	11	<i>Campanula takisimana</i>
						bright blue		+	attracts bees, one plant remaining	16	<i>Centaurea montana</i>
		?	?	?	?	white		+	evergreen mounds of silvery foliage	7	<i>Cerastium tomentosum</i>
					→ →	violet blue	+	+	nodding flower heads, twisted petals, non-vining	16	<i>Clematis integrifolia</i>
					→ →→	yellow		+	vining habit, feathery seed heads	4	<i>Clematis tangutica</i>
		?	?	?	→→→→→→	pale blue, purple center	+	+	interesting flowers, 2 plants remaining	23	<i>Codonopsis mollis</i>
		?	?	?	?	purple		+		4	<i>Delphinium glaucum</i>
		?	?	?	→→→→→	deep blue		+	attractive to sphids, reseeds readily, needs staking	4	<i>Delphinium grandiflorum</i>
		→?	?	?	→→→→	deep blue		+	needs staking, self seeds	4	<i>Delphinium laxiflorum</i>
		→→→→→→→→→→→→				white		+	fragrant flowers, one plant remaining	7	<i>Dianthus arenarius</i>
		→→→→→→→→→→→→				light pink		+		7	<i>Dianthus arenarius</i> (pink)

**Weekly bloom periods identified as "?" indicate missing data with our best estimate of total bloom period.

Table 2. (continued)

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	No. OF PLANTS	WINTER INJURY*	HEIGHT (IN)	SPREAD (IN)
<i>Dianthus arenarius</i> subsp. <i>borussicus</i>	Sand pink	ARGS	Jun-90	10	1.9	7 (12)	18
<i>Dianthus chinensis</i>	Chinese pink	NCRPIS	Jun-90	10	1.6	17	204
<i>Dianthus</i> 'Orchid Lace'	Cottage pink	T&M	Jun-90	10	2.9	17	16
<i>Dianthus plumarius</i>	Cottage pink	Novosibirsk, Russia	Aug-91	19	3.3	11	10
<i>Dianthus plumarius</i> 'Smokey'	Cottage pink	NCRPIS	Jul-90	9	1.8	9(17)	19
<i>Dianthus repens</i>	Bering pink	ARGS	Jun-90	4	3.4	11	13
<i>Dianthus superbus</i> 'Fantasy Mix'	Lilac pink	T&M	Jun-90	10	1.3	12(34)	22
<i>Dodecatheon Jeffreyi</i>		ARGS	Jul-92	5	2.9	3	6
<i>Dodecatheon Meadia</i>	Shooting star	ARGS	Jul-92	8	1.8	8(19)	15
<i>Draba densifolia</i>		ARGS	Aug-91	3	0.1	3	6
<i>Dracocephalum imberbe</i>		T&M	Aug-95	8	1.4	13	25
<i>Dryas Drummondii</i>		Seeds of AK	Jul-94	8	3.1	3(8)	9
<i>Erigeron glabellus</i>	Smooth fleabane	ANPS	Jun-90	10	1.2	9(24)	18
<i>Erigeron humilis</i>	Fleabane	ANPS	Aug-91	5	2.4	2 (6)	4
<i>Filipendula vulgaris</i>	Dropwort	I. Berger	Aug-93	10	1.5	9	9
<i>Galium boreale</i>	Northern bedstraw	Big Dipper	Jul-92	10	0.7	20	40
<i>Galium verum</i>	Yellow bedstraw	Richters	Jul-94	10	1.3	24	36
<i>Gentiana septemfida</i>		ARGS	Aug-91	15	2.1	15	24
<i>Geranium Regelii</i> (<i>grandiflorum</i> var. <i>alpinum</i>)		VB&S	Jun-90	10	2.3	17	29
<i>Geranium sanguineum</i>	Blood-red geranium	ARGS	Jun-90	10	3.1	11	9

*Winter Injury Rating: 0=no visible injury; 2=moderate wither injury, recovery likely; 3=severe setback from winter injury, recovery questionable; 4=winterkilled.

MAY	WEEKLY BLOOM PERIOD**					BLOOM COLOR	FROST TOLERANT		COMMENTS	PLOT LOCATION	SCIENTIFIC NAME					
	JUN	JUL	AUG	SEP	flowers		foliage									
		?	?	?	?	→→→→→	white		+	lacy flowers, fragrant	7	<i>Dianthus arenarius</i> subsp. <i>borussicus</i>				
		?	?	?	?	→→→→→	bright pink		+	attractive, seed pods not as obvious as on some	11	<i>Dianthus chinensis</i>				
		?	?	?	?	☼☼☼☼	bright orchid	-	+	very attractive in bloom, one plant remaining	7	<i>Dianthus</i> 'Orchid Lace'				
							pink		+	one plant remaining	7	<i>Dianthus plumarius</i>				
		?	?	?	?	☼☼☼☼	light pink	+	+		11	<i>Dianthus plumarius</i> 'Smokey'				
		?	?	?	?	→→→→→	bright pink	+	+	one plant remaining	7	<i>Dianthus repens</i>				
		?	?	?	?	☼☼☼☼	light lavender	+	+	lacy flowers, self seeds	7	<i>Dianthus superbus</i> 'Fantasy Mix'				
							magenta			one plant remaining, dies back later in season	16	<i>Dodecatheon Jeffreyi</i>				
						→→→→	white to light pink			dies back later in season	16	<i>Dodecatheon Meadia</i>				
→→→→→		?	?	?	?	→→→→	yellow		+	forms tiny, dense mound, evergreen foliage, attractive early-season flowers	11	<i>Draba densifolia</i>				
		?	?	?	?	→→→→	pale blue		+		4	<i>Dracocephalum imberbe</i>				
						→	yellow		+	one plant remaining	23	<i>Dryas Drummondii</i>				
		→	?	?	?	?	?	?	?	→→→→→	pale lavender to white	+	+	reseeds readily, good for wildflower meadows	11	<i>Erigeron glabellus</i>
	→→						white			one plant remaining, dies back after bloom	13	<i>Erigeron humilis</i>				
							white		+	one plant remaining	18	<i>Filipendula vulgaris</i>				
		?	?	?	?	→	white		+	very small fragrant flowers, spreads slowly by runners	4	<i>Galium boreale</i>				
		?	?	?	?	→→→→→	yellow	+	+	fragrant, attractive to honey bees, fine-textured foliage	20	<i>Galium verum</i>				
				?	?	→→→→→	deep blue	+	+	beautiful deep blue blooms	13	<i>Gentiana septemfida</i>				
		?	?	?	?		deep lavender		+	two plants remaining	11	<i>Geranium Regelii</i> (<i>grandiflorum</i> var. <i>alpinum</i>)				
		?	?	?	?		violet		+	one plant remaining	11	<i>Geranium sanguineum</i>				

**Weekly bloom periods identified as "?" indicate missing data with our best estimate of total bloom period.

Table 2. (continued)

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	No. OF PLANTS	WINTER INJURY*	HEIGHT (IN)	SPREAD (IN)
<i>Hemerocallis minor</i>	Grass-leaf daylily	NCRPIS	Aug-90	9	2.3	24	15
<i>Hemerocallis sp.</i>	Day lily	CSBG	Aug-91	10	0.8	27	14
<i>Hemerocallis</i> 'Stella d'Oro'	Daylily	Park	Sep-93	6	1.5	1	6
<i>Inula hirta</i>		I. Berger	Aug-93	10	1.3	18	17
<i>Iris Kaempferi</i> (?)	Japanese iris	ANPS	Jun-91	10	0.4	40	34
<i>Iris palustris</i>		SAAS	Aug-92	6	2.0	30	13
<i>Iris setosa</i>	Wild iris	Kodiak, AK	Aug-92	2	0.3	24	18
<i>Iris setosa</i>		ARGS (Germany)	Jul-92	6	3.2	14	10
<i>Iris setosa arctica</i>		ARGS	Jul-92	2	2.4	8	5
<i>Iris setosa nana</i>		ARGS	Jul-92	10	2.2	26	15
<i>Leontopodium stellatum</i>		Magadan, Russia	Aug-93	10	2.5	6 (18)	10
<i>Lilium</i> 'Alaska'	Asiatic hybrid lily	Waushara	Aug-95	10	2.3	19	7
<i>Lilium</i> 'Antarctica'	Asiatic Hybrid Lily	Wayside	Jul-93	10	0.9	33	18
<i>Lilium</i> 'Chinook'	Asiatic Hybrid Lily	Wayside	Jul-93	10	0.5	31	20
<i>Lilium</i> 'Coho'	Asiatic Hybrid Lily	Waushara	Jul-93	10	1.3	25	12
<i>Lilium</i> 'Corina'	Asiatic hybrid lily	VB&S	Aug-90	10	0.4		
<i>Lilium</i> 'Dreamland'	Asiatic hybrid lily	South Slope	Jun-91	10	0.8	17	10
<i>Lilium</i> 'Fireball'	Asiatic hybrid lily	VB&S	Aug-90	10	1.0		
<i>Lilium</i> 'Freckles'	Asiatic hybrid lily	VB&S	Aug-90	10	1.0		
<i>Lilium</i> 'French Vanilla'	Asiatic hybrid lily	VB&S	Aug-90	10	0.6		

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MAY	WEEKLY BLOOM PERIOD**					BLOOM COLOR	FROST TOLERANT		COMMENTS	PLOT LOCATION	SCIENTIFIC NAME
	JUN	JUL	AUG	SEP	flowers		foliage				
	→→					light gold		+		12	<i>Hemerocallis minor</i>
	→ ? ? ? ? ?					bright yellow		+		12	<i>Hemerocallis sp.</i>
					☼	gold	-	+	one plant remaining	12	<i>Hemerocallis 'Stella d'Oro'</i>
		? ? ? ? ?	☼ ☼ ☼ ☼ ☼			yellow	+	+		18	<i>Inula hirta</i>
	→→					deep purple		+		15	<i>Iris Kaempferi (?)</i>
						blue		+	small flowers	13	<i>Iris palustris</i>
		? ?				deep purple		+		13	<i>Iris setosa</i>
		? ?				blue		+	one plant remaining	15	<i>Iris setosa</i>
								+		15	<i>Iris setosa arctica</i>
		? ?				deep blue		+		15	<i>Iris setosa nana</i>
	→→→→→→→→→→					silvery		+		19	<i>Leontopodium stellatum</i>
					? ☼ ☼ ☼	cream	-	+		12	<i>Lilium 'Alaska'</i>
		? ?	☼ ☼ ☼ ☼			white	-	+		6	<i>Lilium 'Antarctica'</i>
		? ? ?	☼ ☼ ☼ ☼			light orange	+	+		6	<i>Lilium 'Chinook'</i>
		? ?	☼ ☼ ☼			pale gold			one plant remaining	6	<i>Lilium 'Coho'</i>
						bright orange				12	<i>Lilium 'Corina'</i>
						brt yellow/gold throat		+		16	<i>Lilium 'Dreamland'</i>
						burgundy				12	<i>Lilium 'Fireball'</i>
						scarlet				12	<i>Lilium 'Freckles'</i>
						light yellow				12	<i>Lilium 'French Vanilla'</i>

**Weekly bloom periods identified as "?" indicate missing data with our best estimate of total bloom period.

Table 2. (continued)

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	No. OF PLANTS	WINTER INJURY*	HEIGHT (IN)	SPREAD (IN)
<i>Lilium 'Geneve'</i>	Asiatic Hybrid Lily	Waushara	Jul-93	8	1.3	23	12
<i>Lilium 'Graceland'</i>	Asiatic Hybrid Lily	Waushara	Jul-93	10	0.9	25	19
<i>Lilium 'Jolanda'</i>	Asiatic hybrid lily	South Slope	Jun-91	10	0.4	39	17
<i>Lilium 'Juliana'</i>	Asiatic hybrid lily	VB&S	Aug-90	10	0.4		
<i>Lilium lanciflorum</i>	Tiger lily	J. Gordon	Aug-92	10	1.0	42	13
<i>Lilium 'Pink Chiffon'</i>	Asiatic hybrid lily	VB&S	Aug-90	10	1.5		
<i>Lilium 'Poet's Dream'</i>	Asiatic hybrid lily	VB&S	Aug-90	10	0.8		
<i>Lilium 'Prince Carnival'</i>	Asiatic hybrid lily	VB&S	Aug-90	10	0.9		
<i>Lilium 'Rainbow'</i>	Asiatic hybrid lily	VB&S	Aug-90	10	1.1		
<i>Lilium 'Red Night'</i>	Asiatic Hybrid Lily	Waushara	Jul-93	10	1.2	18	15
<i>Lilium 'Roma'</i>	Asiatic Hybrid Lily	Waushara	Jul-93	10	0.5	26	14
<i>Lilium 'Rose Fire'</i>	Asiatic hybrid lily	VB&S	Aug-90	10	1.0		
<i>Lilium sp.</i>	Tiger lily	U. Park School	Aug-93	10	1.2	14	4
<i>Lilium 'Sterling Star'</i>	Asiatic hybrid lily	South Slope	Jun-91	9	0.6	24	18
<i>Lilium 'Tribute'</i>	Asiatic hybrid lily	VB&S	Aug-90	10	0.6		
<i>Lilium 'Vanessa'</i>	Asiatic hybrid lily	VB&S	Aug-90	10	0.7		
<i>Mentha sp.</i>	Mint	South Slope	Jun-91	1	0.0	17	
<i>Paeonia sp.</i>	Single peony	J. Gordon	Jul-92	10	0.8	31	32
<i>Polygonatum biflorum?</i>	Solomon's seal	K. Collette	Sep-93	10	1.6	30	30
<i>Potentilla argrophylla</i>		T&M	Aug-93	10	2.1		

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WEEKLY BLOOM PERIOD**					BLOOM COLOR	FROST TOLERANT		COMMENTS	PLOT LOCATION	SCIENTIFIC NAME
MAY	JUN	JUL	AUG	SEP		flowers	foliage			
			☼☼		pale peach	-	-		11	<i>Lilium</i> 'Geneve'
		? ?	☼☼☼		orange	-	-		6	<i>Lilium</i> 'Graceland'
		? ? ?	☼☼☼☼		bright orange	+	+		16	<i>Lilium</i> 'Jolanda'
					cream				12	<i>Lilium</i> 'Juliana'
				→→→	orange /dark spots	+	+		12	<i>Lilium lanciflorum</i>
					pink				12	<i>Lilium</i> 'Pink Chiffon'
					pink, burgundy throat				12	<i>Lilium</i> 'Poet's Dream'
					pink, spotted throat				12	<i>Lilium</i> 'Prince Carnival'
					scarlet				12	<i>Lilium</i> 'Rainbow'
		? ?	☼☼☼		dark red	-	+		6	<i>Lilium</i> 'Red Night'
		? ?	☼☼☼		light yellow	-	+		6	<i>Lilium</i> 'Roma'
					orange/gold				12	<i>Lilium</i> 'Rose Fire'
					red			probably an asiatic hybrid	18	<i>Lilium</i> sp.
		? ?	☼☼☼☼		white/spotted throat	-	-		16	<i>Lilium</i> 'Sterling Star'
					light orange				12	<i>Lilium</i> 'Tribute'
					yellow, orange throat				12	<i>Lilium</i> 'Vanessa'
				→→→	blue (light lavender)	+	+	invasive	16	<i>Mentha</i> sp.
	→→				rose pink		+		11	<i>Paeonia</i> sp.
	→→→				white/green tips		+		4	<i>Polygonatum biflorum?</i>
					gold, orange centers		+	one plant remaining	18	<i>Potentilla argyrophylla</i>

**Weekly bloom periods identified as "?" indicate missing data with our best estimate of total bloom period.

Table 2. (continued)

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	No. OF PLANTS	WINTER INJURY*	HEIGHT (IN)	SPREAD (IN)
<i>Potentilla argrophylla</i> 'Leucochroa'		ARGS	Jul-94	6	1.7	11	20
<i>Potentilla tridentata</i>	Three-toothed cinquefoil	Northern Lights	Jun-91	10	1.9	8 (12)	24
<i>Salvia</i> sp.	Common salvia	Gorno-Altaiisk, Russia	Jun-91	10	0.2	72	24
<i>Sanguisorba menziesii</i>		Baldwin	Jul-94	10	0.7	23 (42)	28
<i>Sanguisorba officinalis</i>	Great burnet	Ft. Yukon, AK	Jul-94	10	0.4	22 (45)	21
<i>Senecio tanguticus</i> (<i>Ligularia tangutica</i>)		Tack's	Aug-95	2	0.5	29	16
<i>Silene</i> sp.		Novosibirsk, Russia	Sep-91	10	0.0	48	48
<i>Solidago mutiradiata</i>	Goldenrod	NEWFS	Aug-94	1	1.5	7	5
<i>Thalictrum sparsiflorum</i>		ANPS	Sep-91	4	0.4	34	20
<i>Trollius europaeus</i>	Globeflower	PSH	Jul-92	4	1.0	16(27)	18
<i>Trollius laxus</i>	Spreading globeflower	NEWSF	Jul-92	10	1.4	12 (21)	13
<i>Tulipa pulchella</i> 'Persian Pearl'		de Jager	Aug-93	10	2.4		
<i>Tulipa tarda</i>		de Jager	Aug-93	9	0.8		
<i>Veronica Allionii</i>		ARGS	Jul-94	10	2.4	4	5
<i>Veronica incana</i>	Wooly speedwell	T&M	Jun-91	10	1.4	24	34
<i>Veronica longifolia</i> 'Pink Shades'	Speedwell	Park	Aug-95	10	1.7	23	14
<i>Veronica spicata</i> 'Sightseeing Mix'		Stokes	Jul-94	10	1.2	26	30
<i>Veronica spicata</i> 'Nana'		ARGS	Jul-94	10	3.0	6	7
<i>Veronicastrum sibiricum</i>	Culver's root	ARGS	Aug-95	4	0.0	12	14

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MAY	WEEKLY BLOOM PERIOD**					BLOOM COLOR	FROST TOLERANT		COMMENTS	PLOT LOCATION	SCIENTIFIC NAME
	JUN	JUL	AUG	SEP	flowers		foliage				
		☼ ? ? ? ? ? ?	☼ ☼ ☼ ☼			yellow/red centers	+	+	silver hairs on leaves	23	<i>Potentilla argrophylla</i> 'Leucochroa'
	→ → → → → → → → → →					white	+	+	mounding habit, spreads slowly	15	<i>Potentilla tridentata</i>
		? ? ? ? → → → → → →				lavender pink	+	+	attractive to bees, ornamental seed heads	16	<i>Salvia</i> sp.
	→ → → → → → → → → →					burgundy red	-	+	powdery mildew on leaves from mid-July on	23	<i>Sanguisorba menziesii</i>
	→ ⊙ → → → → → → → →					dark red	+	+	interesting flower & seed heads, some powdery mildew	23	<i>Sanguisorba officinalis</i>
							+	+		20	<i>Senecio tanguticus</i> (<i>Ligularia tangutica</i>)
		? ? ? ? ? ? → → → → → →				white		-	reseeds readily, could be invasive, needs staking	6	<i>Silene</i> sp.
						golden				15	<i>Solidago mutiradiata</i>
	→ → → →					pale lavender/white		+	tiny flowers, airy foliage	11	<i>Thalictrum sparsiflorum</i>
	→ → → →	? ? ? ? ?		→ →		gold		+	attractive, colorful blooms	11	<i>Trollius europaeus</i>
	→ → → → →					pale yellow			attractive, early-season blooms	15	<i>Trollius laxus</i>
	☼					fuschia, yellow center			dies back by mid-season	19	<i>Tulipa pulchella</i> 'Persian Pearl'
	→ →					bright yellow, white edges			dies back by mid-season	19	<i>Tulipa tarda</i>
						blue		+	one plant remaining	23	<i>Veronica Allionii</i>
		? ? ? ? ? → → → → → →				blue	+	+	silver foliage	15	<i>Veronica incana</i>
		? ? ? ? ? ☼ ☼ ☼ ☼				light rose	+	+		20	<i>Veronica longifolia</i> 'Pink Shades'
		? ? ? ? ? ☼ ☼ ☼ ☼				blue, pink, white	+	+		23	<i>Veronica</i> 'Sightseeing Mix'
		? ? ? ? ? ☼ ☼ ☼ ☼				blue	+	+		23	<i>Veronica spicata</i> 'Nana'
		? ? ? ? ? → → → → → →				deep blue	+	+	evergreen	20	<i>Veronicastrum sibiricum</i>

**Weekly bloom periods identified as "?" indicate missing data with our best estimate of total bloom period.

Table 2. (continued)

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	NO. OF PLANTS	WINTER INJURY*	HEIGHT (IN)	SPREAD (IN)
FERNS							
<i>Adiantum aleuticum</i>		HFF	Jun-95	4	3.5	1	3
<i>Athyrium filix-femina</i>	Lady fern	NEWFS	Jul-93	10	2.1	11	16
<i>Cystopteris bulbifera</i>	Bulblet bladder fern	NEWFS	Jul-93	10	3.3	6	8
<i>Dryopteris campyloptera (austriaca)</i>	Mountain wood fern	NEWFS	Jul-93	10	1.6	3	3
<i>Dryopteris filix-mas</i>	Male fern	NEWFS	Jul-93	10	0.9	12	19
<i>Dryopteris fragrans</i>	Fragrant wood fern	Fish Creek, AK	Jul-93	10	3.5	5	5
<i>Dryopteris marginalis</i>	Marginal wood fern	NEWFS	Jul-93	10	2.4	5	5
<i>Dryopteris sacrosancta</i>	Wood fern	HFF	Jun-95	5	2.8	7	8
<i>Phegopteris connectilis (Thelypteris phegopteris)</i>	Northern beech fern	NEWFS	Jul-93	3	1.6	12	22
<i>Polypodium virginianum</i>	American wall fern	NEWFS	Jul-93	10	3.3	10	10
<i>Polystichum limonii</i>		HFF	Jun-95	9?	3.8	1.5	2.5
<i>Polystichum</i> sp.	Novosibirsk fern		Jul-93	2	0.0	16	18
ORNAMENTAL GRASSES							
<i>Arctagrostis latifolia</i> 'Kenai'	Polar grass	PMC	Jul-92	10	0.4	48(63)	26
<i>Beckmannia syzigachne</i> 'Egan'	American sloughgrass	PMC	Jul-92	10	1.7	42	20
<i>Deschampsia beringensis</i> 'Norcoast'	Bering hair grass	PMC	Jul-92	10	1.6	20(34)	12
<i>Koeleria glauca</i>	Blue hair grass	T&M	Jul-90	10	3.5	4	5
<i>Poa ampla</i> 'Service'	Big bluegrass	PMC	Jul-92	10	1.7	15 (29)	6
<i>Poa glauca</i> 'Tundra'	Greenland bluegrass	PMC	Jul-92	10	2.9	9(20)	15

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MAY	WEEKLY BLOOM PERIOD**					BLOOM COLOR	FROST TOLERANT		COMMENTS	PLOT LOCATION	SCIENTIFIC NAME
	JUN	JUL	AUG	SEP	flowers		foliage				
										1	<i>Adiantum aleuticum</i>
										1	<i>Athyrium filix-femina</i>
										1	<i>Cystopteris bulbifera</i>
										1	<i>Dryopteris campyloptera (austriaca)</i>
										1	<i>Dryopteris filix-mas</i>
									one plant remaining, probably inappropriate growing conditions some plants may be misidentified	1	<i>Dryopteris fragrans</i>
										1	<i>Dryopteris marginalis</i>
										1	<i>Dryopteris sacrosancta</i>
								-		1	<i>Phegopteris connectilis (Thelypteris phegopteris)</i>
										1	<i>Polypodium virginianum</i>
										1	<i>Polystichum limonii</i>
										1	<i>Polystichum sp.</i>
									coarse foliage	8	<i>Arctagrostis latifolia 'Kenai'</i>
									susceptible to disease (powdery mildew)	8	<i>Beckmannia syzigachne 'Egan'</i>
									fine seed head	8	<i>Deschampsia beringensis 'Norcoast'</i>
									one plant remaining	8	<i>Koeleria glauca</i>
									feathery look, reseeds readily	8	<i>Poa ampla 'Service'</i>
										8	<i>Poa glauca 'Tundra'</i>

**Weekly bloom periods identified as "?" indicate missing data with our best estimate of total bloom period.

Table 2. (continued)

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	No. OF PLANTS	WINTER INJURY*	HEIGHT (IN)	SPREAD (IN)
WOODY PERENNIALS							
<i>Acer ginnala</i> 'Bergiana Flame'	Amur maple superior red	Lawyer	Jul-93	5	2.2	50	60
<i>Amelanchier alnifolia</i>		NCRPIS	Jul-92	2	1.8	23	21
<i>Aronia arbutifolia</i>	Chokeberry	NCRPIS	Jul-92	3	2.7	4	2
<i>Aronia melanocarpa</i>		NCRPIS	Jul-92	2	1.5	26	34
<i>Betula alleghaniensis</i> 'Morton No. 10'	Yellow birch	NCRPIS	Jul-94	5	2.9	19	18
<i>Betula lenta</i> 'Morton No. 9'	Cherry birch	NCRPIS	Jul-94	5	3.0	30	22
<i>Betula michauxii</i>		ARGS	Sep-90	5	1.1	27	56
<i>Betula occidentalis</i>	Water birch	NCRPIS	Jun-90	3	2.0	79	110
<i>Betula sp.</i>		NCRPIS	Jun-90	3	2.6	66	102
<i>Buddelia sp.</i>	Butterfly bush	Fairbanks, AK	Aug-93	1	0.3	63	85
<i>Caragana arborescens</i>	Siberian pea tree	PMC	Sep-91	3	0.3	120	54
<i>Caragana arborescens</i>	Siberian pea tree (pyramidal form)	PMC	Jul-94	2	0.0	69	37
<i>Caragana frutex</i>	Russian pea shrub	NCRPIS	Aug-93	3	1.7	25	29
<i>Caragana pygmaea</i>	Pygmy caragana	Washburn	Jul-94	5	1.2	22	19
<i>Crataegus columbiana</i>	Columbia hawthorn	Lawyer	Jul-93	5	1.7	17	12
<i>Forsythia ovata</i> 'Naki'	Early forsythia	NCRPIS	Sep-90	5	3.1	62	58
<i>Juniperus horizontalis</i> 'Bar Harbor'	Creeping juniper	NCSU Arboretum	Aug-94	1	0.0	3	16
<i>Juniperus horizontalis</i> 'Slow Blue'	Creeping juniper	NCSU Arboretum	Aug-94	2	0.8	4	14
<i>Juniperus horizontalis</i> 'Watnong'	Creeping juniper	NCSU Arboretum	Aug-94	1	0.5	3	12

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WEEKLY BLOOM PERIOD**					BLOOM COLOR	FROST TOLERANT		COMMENTS	PLOT LOCATION	SCIENTIFIC NAME
MAY	JUN	JUL	AUG	SEP		flowers	foliage			
							+	comes back from roots, but new shoots break off easily	3	<i>Acer ginnala</i>
					white		+		2	<i>Amelanchier alnifolia</i>
							+	one plant remaining, red fall foliage	5	<i>Aronia arbutifolia</i>
					white		+	one plant remaining	5	<i>Aronia melanocarpa</i>
							+	one plant remaining	17	<i>Betula alleghaniensis</i>
							+		17	<i>Betula lenta</i> 'Morton No. 9'
							+	interesting mounding growth habit	14	<i>Betula michauxii</i>
							+	one plant remaining	3	<i>Betula occidentalis</i>
							+	one plant remaining	3	<i>Betula sp.</i>
			?	?	?	?	+	attractive flowering shrub	5	<i>Buddelia sp.</i>
							+		5	<i>Caragana arborescens</i>
							+		5	<i>Caragana arborescens</i>
							+		5	<i>Caragana frutex</i>
							+		17	<i>Caragana pygmaea</i>
							+	all plants back from roots	3	<i>Crataegus columbiana</i>
							+	one plant remaining	14	<i>Forsythia ovata</i> 'Naki'
							+		9	<i>Juniperus horizontalis</i>
							+		9	<i>Juniperus horizontalis</i>
							+		9	<i>Juniperus horizontalis</i>
							+		9	<i>Juniperus horizontalis</i>

**Weekly bloom periods identified as "?" indicate missing data with our best estimate of total bloom period.

Table 2. (continued)

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	No. OF PLANTS	WINTER INJURY*	HEIGHT (IN)	SPREAD (IN)
<i>Juniperus horizontalis</i> 'Wilms'	Creeping juniper	NCSU Arboretum	Aug-94	2	1.5	3	13
<i>Larix sibirica</i>	Siberian larch	CSBG	Aug-91	5	3.4	84	38
<i>Lonicera tatarica</i> 'Beavermor'	Tatarian honeysuckle	Beaverlodge	Sep-89	5	1.4	66	63
<i>Malus baccata</i> var. <i>mandsurica</i>	Siberian crab	PMC	Sep-91	5	1.5	52	72
<i>Malus pallasiana</i> ssp. <i>himalaica</i>		J. Want	Jul-94	5	0.9	57	52
<i>Malus prunifolia</i> 'Kerr'	Kerr crabapple	Lawyer	Aug-93	5	1.7	44	63
<i>Malus Sargentii</i>		Hudson	Jul-92	5	2.1	4	3
<i>Malus</i> sp.'Almey'	Almey crab	Lawyer	Jul-94	5	3.1	40	36
<i>Malus turkmenoma</i>		Joe Want	Jul-94	5	2.1	5	7
<i>Philadelphus</i> sp.	Mockorange	Washburn	Aug-95	5	1.8	21	34
<i>Physocarpus monogynus</i>	Ninebark	NCRPIS?	Sep-89	5	0.9	62	85
<i>Picea Engelmannii</i>	Engelmann spruce	Schumacher	Sep-89	5	2.3	14	13
<i>Picea glauca</i> var. <i>albertiana</i>	Alberta spruce	GBG	Sep-89	5	0.3	68	47
<i>Picea pungens</i> X <i>glauca</i>	Spartan spruce®	BTI	Aug-91	5	3.1	22	15
<i>Pinus cembra</i>	Swiss stone pine	Schumacher	Sep-89	5	2.1	14	15
<i>Pinus cembra sibirica</i>	Stone pine	SAAS	Aug-93	5	0.9	11	8
<i>Pinus Peuce</i>	Macedonian pine	NCRPIS	Jul-94	3	2.8	15	9
<i>Pinus resinosa</i>	Red pine	Lawyer	Aug-93	3	0.9	37	27
<i>Pinus sibiricus</i>	Siberian pine	SAAS	Aug-93	4	1.3	10	8
<i>Populus tremula</i> 'Erecta'	Upright European ash	KHN	Jun-90	5	1.5	77	33

*Winter Injury Rating: 0=no visible injury; 2=moderate wither injury, recovery likely; 3=severe setback from winter injury, recovery questionable; 4=winterkilled.

MAY	WEEKLY BLOOM PERIOD**				SEP	BLOOM COLOR	FROST TOLERANT		COMMENTS	PLOT LOCATION	SCIENTIFIC NAME
	JUN	JUL	AUG	flowers			foliage				
								+		9	<i>Juniperus horizontalis</i> 'Wilms'
									one plant remaining	9	<i>Larix sibirica</i>
	☼☼☼					white, red fruits		+		2	<i>Lonicera tatarica</i> 'Beavermor'
								+		5	<i>Malus baccata</i> var. <i>mandsurica</i>
								+	good fall color	3	<i>Malus pallasiana</i> ssp. <i>himalaica</i>
								+		2	<i>Malus prunifolia</i> 'Kerr'
								+	one plant remaining	14	<i>Malus Sargentii</i>
								+	came back from roots	2	<i>Malus</i> sp.'Almey'
								+	one plant remaining	17	<i>Malus turkmenoma</i>
			???	?		white		+		3	<i>Philadelphus</i> sp.
	????			→→→→→		white	+	+	a few blooms in September	2	<i>Physocarpus monogynus</i>
								+	one plant remaining	9	<i>Picea Engelmannii</i>
								+	attractive evergreen	9	<i>Picea glauca</i> var. <i>albertiana</i>
								+	one plant remaining	9	<i>Picea pungens</i> X <i>glauca</i>
								+	one plant remaining	9	<i>Pinus cembra</i>
								+		9	<i>Pinus cembra sibirica</i>
								+	one plant remaining	9	<i>Pinus Peuce</i>
								+		9	<i>Pinus resinosa</i>
								+		9	<i>Pinus sibiricus</i>
								+	suckers	3	<i>Populus tremula</i> 'Erecta'

**Weekly bloom periods identified as "?" indicate missing data with our best estimate of total bloom period.

Table 2. (continued)

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	No. OF PLANTS	WINTER INJURY*	HEIGHT (IN)	SPREAD (IN)
<i>Potentilla fruticosa</i> 'Abbotswood'		Lawyer	Aug-95	4	1.0	22	25
<i>Prunus fruticosa</i>	European dwarf cherry	BCN	Sep-89	5	2.7	40	49
<i>Prunus fruticosa</i> 'Scarlet'	European dwarf cherry	NCRPIS	Sep-89	5	1.7	38	49
<i>Prunus pennsylvanica</i> o.p.	Pin cherry	GBG	Jul-94	5	0.6	47	75
<i>Prunus salicina</i> var. <i>mandshurica</i>	Manchurian plum	BCN	Sep-89	5	2.8	57	62
<i>Prunus ussuriensis</i>		Clair's Cultivars	Aug-94	5	0.7	55	45
<i>Prunus X cistena</i>	Purple-leaf sand cherry	Lawyer	Jul-93	5	2.1	28	24
<i>Ribes nigrum</i> 'Ben Lomond'	Black currant	PMC	Jul-94	5	1.5	32	34
<i>Ribes nigrum</i> 'Ben Nevis'	Black currant	PMC	Jul-94	5	1.8	41	62
<i>Ribes nigrum</i> 'Boskoop Giant'	Black currant	PMC	Jul-94	2	1.8	26	26
<i>Ribes nigrum</i> 'Erkheikki VII'	Black currant	PMC	Jul-94	5	0.4	23	35
<i>Ribes nigrum</i> 'Jankis Jarvi'	Black currant	PMC	Jul-94	1	0.5	26	32
<i>Ribes nigrum</i> 'Melalathi'	Black currant	PMC	Jul-94	5	0.4	30	34
<i>Ribes nigrum</i> 'Nikkala XI'	Black currant	PMC	Jul-94	5	0.3	22	40
<i>Ribes nigrum</i> 'Pilot Aleksandr Mamkin'	Black currant	National Clonal Germplasm Rep.	Jul-94	1	1.5	35	33
<i>Ribes nigrum</i> 'Sunderbyn II'	Black currant	PMC	Jul-94	5	0.2	22	31
<i>Ribes</i> sp.	Spineless gooseberry	Fred Dorward, Alberta	Jul-94	1	2.0	13	53
<i>Ribes</i> sp.		National Clonal Germplasm Rep.	Jul-94	2	2.5		
<i>Ribes</i> sp.	Black gooseberry	Fred Dorward, Alberta	Jul-94	5	1.1	30	65
<i>Ribes</i> sp.	Red gooseberry	Fred Dorward, Alberta	Jul-94	4	2.0	31	33

*Winter Injury Rating: 0=no visible injury; 2=moderate wither injury, recovery likely; 3=severe setback from winter injury, recovery questionable; 4=winterkilled.

MAY	WEEKLY BLOOM PERIOD**					BLOOM COLOR	FROST TOLERANT		COMMENTS	PLOT LOCATION	SCIENTIFIC NAME
	JUN	JUL	AUG	SEP	flowers		foliage				
		?	?	?	?			+		5	<i>Potentilla fruticosa</i> 'Abbotswood'
→						white		+	comes back from roots some years	2	<i>Prunus fruticosa</i>
☼						white		+	come back from roots, some suckering	2	<i>Prunus fruticosa</i> 'Scarlet'
	→→							+	open pollinated seedlings from GBG plots	17	<i>Prunus pennsylvanica</i> o.p.
								+	one plant remaining, came back from roots	2	<i>Prunus salicina</i> var. <i>mandshurica</i>
								+		2	<i>Prunus ussuriensis</i>
						pink		+	deep red foliage, came back from roots	3	<i>Prunus X cistena</i>
								+		22	<i>Ribes nigrum</i> 'Ben Lomond'
								+	one plant remaining	22	<i>Ribes nigrum</i> 'Ben Nevis'
								+	one plant remaining	22	<i>Ribes nigrum</i> 'Boskoop Giant'
								+	produced a few berries	22	<i>Ribes nigrum</i> 'Erkheikki VII'
								+		22	<i>Ribes nigrum</i> 'Jankis Jarvi'
								+	produced a few berries	22	<i>Ribes nigrum</i> 'Melalathi'
								+	produced berries low on bushes	22	<i>Ribes nigrum</i> 'Nikkala XI'
								+		22	<i>Ribes nigrum</i> 'Pilot Aleksandr Mamkin'
								+	procuded a few berries	22	<i>Ribes nigrum</i> 'Sunderbyn II'
								+		22	<i>Ribes</i>
								+		22	<i>Ribes</i>
								+	no thorns, red fruit	22	<i>Ribes</i> sp.
								+		22	<i>Ribes</i> sp.

**Weekly bloom periods identified as "?" indicate missing data with our best estimate of total bloom period.

Table 2. (continued)

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	No. OF PLANTS	WINTER INJURY*	HEIGHT (IN)	SPREAD (IN)
<i>Ribes sp.</i>	Yakutsk currant	Yakutsk, Russia	Jul-94	2	0.0	34	60
<i>Ribes sp.</i> 'Nariadnaja'		National Clonal Germplasm Rep	Jul-94	2	2.0	37	33
<i>Ribes triste</i>	Swamp red currant	John Holm	Jul-94	5	0.8	19	22
<i>Rosa canina</i> (?)	Dog rose	Novosibirsk, Russia	Aug-94	2	0.5	35	43
<i>Rosa rugosa</i> PI 277 432	Turkestan rose	PMC	Aug-91	5	3.3	21	48
<i>Rosa sp.</i> 'Lac Majeau'		PMC	Aug-91	4	1.0	36	48
<i>Rosa sp.</i> 'Prairie Wren'		PMC	Aug-91	2	2.2	54	74
<i>Rosa Woodsii</i>	Wood's rose	NCRPIS	Aug-91	5	1.4	46	66
<i>Rubus caesius</i>		Natl Clonal Germplasm Rep.	Jul-94	5	2.9	6	8
<i>Salix sp.</i>		GBG	Aug-91	5	1.9	82	118
<i>Sorbaria sorbifolia</i>	False spiraea	NCRPIS	Jun-90	3	0.9	51	73
<i>Spiraea chamaedryfolia</i>		NCRPIS	Jul-92	5	1.2	60	58
<i>Spiraea sp.</i>	Bridal wreath spirea?	Fairbanks, AK	Jul-94	2	0.0	54	58
<i>Syringa Josikaea</i> (?)	Hungarian lilac	Washburn	Jul-94	5	0.3	57	42
<i>Viburnum Lentago</i>	Sheepberry	NCRPIS	Jun-90	5	2.6	38	48
<i>Viburnum trilobum</i>	Cranberry bush	Schumacher	Sep-91	5	3.0	58	53
→							
**							
**Weekly bloom periods identified as “?” indicate missing data with our best estimate of total bloom period.							

Table 2. (continued)

*Winter Injury Rating: 0=no visible injury; 2=moderate wither injury, recovery likely; 3=severe setback from winter injury, recovery questionable; 4=winterkilled.

MAY	WEEKLY BLOOM PERIOD**					BLOOM COLOR	FROST TOLERANT		COMMENTS	PLOT LOCATION	SCIENTIFIC NAME
	JUN	JUL	AUG	SEP	flowers		foliage				
								+		22	<i>Ribes sp.</i>
								+	one plant remaining	22	<i>Ribes sp.</i> 'Nariadnaja'
								+		22	<i>Ribes triste</i>
								+		14	<i>Rosa canina</i> (?)
			? ? ? ? ?	→ → →		deep rose	+	+	single flowers, large rose hips, one plant remaining	14	<i>Rosa rugosa</i> PI 277 432
			? ? ? ? ?	→ → → → →		white/pink centers	+	+	very showy fragrant, double flowers, dark red, ornamental hips, some suckering	14	<i>Rosa sp.</i> 'Lac Majeau'
			→ →			cream		+	single flowers, one plant remaining	14	<i>Rosa sp.</i> 'Prairie Wren'
			→			light pink		+	single flowers, bright scarlet rose hips, suckers	14	<i>Rosa Woodsii</i>
								+		22	<i>Rubus caesius</i>
								+		2	<i>Salix sp.</i>
			? ? ? ? ?	→ → →		white	+	+	comes back from roots after hard winters, large flower clusters, attractive to bee	2	<i>Sorbaria sorbifolia</i>
			→ → → →	? ? ? ? ?		white		+	nice red and gold fall foliage color	5	<i>Spiraea chamaedryfolia</i>
			→ → →			white		+		17	<i>Spiraea sp.</i>
			→			purple		+	fragrant flowers	17	<i>Syringa Josikaea</i> (?)
								+	one plant remaining	3	<i>Viburnum Lentago</i>
								+	one plant remaining	2	<i>Viburnum trilobum</i>

**Weekly bloom periods identified as "?" indicate missing data with our best estimate of total bloom period.

Table 3. All plants that have been evaluated but did not survive the minimum number of test years.

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	NUMBER OF PLANTS	NUMBER YEARS SURVIVED	COMMENTS
HERBACEOUS PERENNIALS						
<i>Achillea borealis</i>	Yarrow	Nauriaq	Jul-92	10	3	J
<i>Achillea millifolium</i> 'Summer Pastels'	Common yarrow	AAS	Aug-90	10	5	J
<i>Achillea Ptarmica</i>	Sneezewort	Fairbanks, AK	Oct-91	3	4	J
<i>Achillea taygetea</i> 'Debutante'		Park	Jul-92	10	3	J
<i>Aconitum volubile</i>	Monkshood	T&M	Sep-91	2	0	A
<i>Adenophora Bulleyana</i>	Ladybells	T&M	Jul-92	10	1	
<i>Alchemilla alpina mollis</i>	Mountain ladysmantle	Park	Sep-91	10	0	A
<i>Amsonia Tabernaemontana var. salicifolia</i>		NEWFS	Jul-93	10	2	
<i>Anemone Halleri</i>	Haller anemone	ANPS	Jun-91	7	4	
<i>Anemone (Pulsatilla) patens</i>	Pasque flower	M. Earp	Aug-89	10	2	G
<i>Anthemis tinctoria</i>	Golden marguerite	ARGS	Jul-94	1	0	A
<i>Aquilegia atrata</i>		ARGS	Aug-91	7	4	
<i>Aquilegia brevistyla</i>	Yukon columbine	ANPS	Jun-91	10	2	
<i>Aquilegia Buergerana</i>		ARGS	Aug-91	10	4	
<i>Aquilegia canadensis</i>	Wild columbine	NEWFS	Aug-93	10	2	
<i>Aquilegia formosa</i>	Sitka columbine	ANPS	Aug-91	10	4	J
<i>Aquilegia glandulosa</i>		ARGS	Aug-94	2	1	
<i>Aquilegia pyrenaica</i>	Pyrenees columbine	ARGS	Aug-91	7	4	J
<i>Aquilegia sp.</i>	Columbine	Berdsk, Russia	Aug-92	10	3	J
<i>Aquilegia sp.</i> 'Dynasty'		South Slope	Jun-91	10	4	
<i>Aquilegia sp.</i> 'McKana Giant Hybrids'		T&M	Aug-91	10	4	J
<i>Aquilegia sp.</i> 'Nora Barlow'		Park	Aug-91	10	4	J
<i>Aquilegia vulgaris</i>	Garden columbine	T&M	Aug-91	2	4	J
<i>Aquilegia vulgaris</i> 'Michael Stromminger'	Garden columbine	T&M	Aug-93	10	2	J
<i>Arabis caucasica</i>	Wall rock cress	I. Berger	Aug-93	10	2	J
<i>Armeria sp.</i>		South Slope	Jun-91	3	0	A
<i>Arnica alpina</i>		Nauriaq	Jul-92	8	3	D
<i>Arnica frigida</i>		C. Parker	Aug-89	18	2	G
<i>Arnica latifolia</i>	Broadleaf anemone	ANPS	Jun-90	10	1	F
<i>Arnica louiseana</i>		NEWFS	Jun-90	10	1	
<i>Artemisia Absinthium</i>	Common wormwood	Johnny's	Jun-91	10	1	
<i>Artemisia eriantha</i>		ARGS	Oct-90	3	1	
<i>Artemisia frigida</i>	Fringed sagebrush	Ft. Yukon, AK	Jun-91	10	0	A
<i>Artemisia Schmidtiana</i> 'Silver Mound'		Lamb	Jun-91	10	1	
<i>Asparagus</i> 'Greenwich'	Asparagus	Nourse	Aug-91	10	4	J
<i>Asparagus</i> 'Jersey Giant'	Asparagus	Nourse	Aug-91	10	4	J
<i>Asparagus</i> 'Jersey King'	Asparagus	Nourse	May-93	10	2	J
<i>Asparagus</i> 'Jersey Knight'	Asparagus	Nourse	May-93	10	2	J

Key to Comments: A=did not survive first winter; B=mechanical injury caused loss; C=spring drought may have caused mortality; D=weak going into fall; E=very weak after winter; F=late spring snow may have increased disease &/or mortality; G=may require better (faster?) drainage, H=high summer mortality; I = early record snowfall may have increased mortality, J=Inadequate snow cover.

Table 3. (continued)

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	NUMBER OF PLANTS	NUMBER YEARS SURVIVED	COMMENTS
<i>Asparagus</i> 'Jersey Prince'	Asparagus	Nourse	Aug-91	10	4	J
<i>Asparagus</i> 'SYN 4-56'	Asparagus	Nourse	Aug-91	10	4	J
<i>Asparagus</i> 'Viking KB3'	Asparagus	Nourse	May-93	10	2	J
<i>Aster alpinus</i>		I. Berger	Aug-93	1	1	
<i>Aster alpinus</i> var. <i>vierhapperi</i>		NEWFS	Sep-91	4	0	A
<i>Aster ptarmicoides</i>	White upland aster	NEWFS	Jul-94	1	1	J
<i>Babiana nana</i>	Hardy gladiolus	T&M	Aug-93	10	0	A
<i>Calamintha Nepeta</i>		T&M	Jul-92	10	0	A
<i>Campanula alliariifolia</i>		ARGS	Jul-94	10	1	J
<i>Campanula carpatica</i>	Tussock bellflower	I. Berger	Jul-93	10	0	A
<i>Campanula glomerata superba</i>		T&M	Aug-92	10	3	J
<i>Campanula glomerata</i> var. <i>dahurica</i>	Clustered bellflower	ARGS	Aug-92	1	2	B
<i>Campanula rotundifolia</i>	Harebell	ANPS	Aug-89	9	2	G
<i>Campanula sorbata</i>		G. Gauss	Aug-95	10	0	A
<i>Carlina acaulis</i>		ARGS	Aug-94	1	0	A
<i>Centranthus ruber</i> 'Roseus'	Keys of Heaven	Park	Jul-92	10	0	A
<i>Cephalaria gigantea</i>		T&M	Jul-92	2	0	A
<i>Chelone Lyonii</i>		NEWFS	Jul-94	3	1	J
<i>Chrysanthemum arcticum</i> 'Roseum'	Arctic chrysanthemum	NCRPIS	Aug-90	10	4	E
<i>Chrysanthemum arcticum</i> 'Schwefelglanz'	Arctic chrysanthemum	NCRPIS	Aug-90	9	1	F
<i>Chrysanthemum coccineum</i>	'Robinson's Dark Crimson'	Vaughan's	Jul-92	10	3	
<i>Chrysanthemum Leucanthemum</i>	Oxeye daisy	WNS	Jun-91	10	4	J
<i>Cimicifuga racemosa</i>	Black cohosh	NEWFS	Jul-94	10	1	J
<i>Cimicifuga racemosa</i>	Black snakeroot	T&M	Sep-91	4	0	A
<i>Clematis columbiana</i>	Columbian rock clematis	ANPS	Oct-91	1	0	A
<i>Clematis</i> sp.	Clematis	Montana	Jul-92	3	1	
<i>Cornus X unalaschkensis</i>		ARGS	Oct-91	2	0	B
<i>Crepis aurea</i>		ARGS	Jul-94	10	0	A
<i>Crocus chrysanthus</i> 'Princess Beatrix'		de Jager	Aug-93	10	2	
<i>Crocus chrysanthus</i> 'Snow Bunting'		de Jager	Aug-93	10	2	J
<i>Crocus Tomasinianus</i> 'Ruby Giant'		de Jager	Aug-93	4	2	
<i>Crocus versicolor</i> 'Picturatus'		de Jager	Aug-93	10	2	
<i>Delphinium grandiflorum</i> 'Blue Elf'		Harris Moran	Jul-91	10	0	A
<i>Delphinium</i> sp. 'Stand Up'		Park	Jul-91	10	1	
<i>Delphinium X Belladonna</i> (Bellamosum) 'Improved'		Park	Aug-93	10	2	B,J
<i>Delphinium cardinale</i>		Park	Aug-93	10	0	A
<i>Dianthus arenarius</i>	Sand pink	T&M	Jun-90	2	1	
<i>Dianthus armeria</i>	Deptford pink	NCRPIS	Jun-90	10	1	
<i>Dianthus callizonus</i>	Zoned pink	ARGS	Jun-90	6	4	
<i>Dianthus capitatus</i>		NCRPIS	Jun-90	10	0	A

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Table 3. (continued)

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	NUMBER OF PLANTS	NUMBER YEARS SURVIVED	COMMENTS
<i>Dianthus carthusianorum</i>	Carthusian pink	T&M	Jun-90	10	5	J
<i>Dianthus deltoides</i>	Maiden pink	South Slope	Jun-91	10	4	J
<i>Dianthus deltoides</i>	Maiden pink	ARGS	Aug-93	10	2	J
<i>Dianthus Freynii</i>		ARGS	Jun-90	6	2	
<i>Dianthus glacialis</i>	Ice pink	T&M	Jun-90	1	0	A
<i>Dianthus gratianopolitanus</i> 'Elfin's Hat'	Cheddar pink	T&M	Jun-90	9	2	
<i>Dianthus gratianopolitanus</i> 'T&M Hybrid Mix'	Cheddar pink	T&M	Jun-90	9	2	
<i>Dianthus pavonius</i>		ARGS	Jun-90	10	3	
<i>Dianthus plumarius</i>	Cottage pink	Novosibirsk, Russia	Aug-91	31	1	
<i>Dianthus plumarius</i>	Cottage pink	Novosibirsk, Russia	Aug-91	19	1	
<i>Dianthus plumarius</i> 'Ballad Blend'	Cottage pink	Stokes	Jul-91	10	0	A
<i>Dianthus plumarius</i> 'Sonate Double Mix'	Cottage pink	Park	Jul-91	10	0	A
<i>Dianthus</i> sp. 'Ipswich Pinks Mixed'		T&M	Aug-93	10	2	J
<i>Dianthus superbus</i>	Lilac pink	NCRPIS	Jun-90	10	0	A
<i>Digitalis ferruginea</i>	Rusty foxglove	ARGS	Jul-94	10	0	A
<i>Digitalis</i> 'John Innes Tetra'		T&M	Aug-95	10	0	A
<i>Digitalis X mertonensis</i>		ARGS	Jul-94	10	0	A
<i>Digitalis X sibirica</i>		ARGS	Jul-94	10	1	J
<i>Dodecatheon cusickii</i>		ARGS	Jul-92	1	2	B
<i>Dodecatheon dentatum</i>		ARGS	Sep-93	1	1	
<i>Dodecatheon Meadia</i> 'Album'	White shooting-star	ARGS	Jul-92	1	0	A
<i>Draba kamtschatica</i>		ANPS	Jul-91	10	1	H
<i>Dryas Drummondii</i>	Drummond dryad	ANPS	Aug-89	10	1	C
<i>Echinacea purpurea</i>	Purple coneflower	Johnny's	Jul-93	10	0	A
<i>Echinacea purpurea</i> 'Bravado'		Park	Jul-93	10	0	A
<i>Echinacea purpurea</i> 'White Swan'		Park	Jul-93	10	1	
<i>Erigeron compositus</i>	Fernleaf fleabane	ANPS	Jun-90	10	1	
<i>Erigeron eriocephalus</i>	Fleabane	ANPS	Jun-90	10	0	A
<i>Erigeron Karvinskyanus</i> 'Profusion'		Park	Jul-94	10	0	A
<i>Erigeron purpuratus</i>	Fleabane	ANPS	Aug-89	10	1	B,C
<i>Erigeron</i> sp. 'Pink Jewel' (?)		South Slope	Jun-91	10	4	
<i>Eupatorium rugosum</i>	White snakeroot	NEWFS	Jul-94	1	0	A
<i>Eupatorium rugosum</i>	White snakeroot	NEWFS	Sep-91	2	0	A
<i>Galium odoratum</i>	Sweet Woodruff	Richters	Jul-93	4	2	
<i>Gentiana Freyniana</i>		ARGS	Aug-91	10	4	J
<i>Geranium Endressii</i> 'Wargrave'	Endres cranesbill	VB&S	Jun-90	10	1	
<i>Geranium maculatum</i>	Wild geranium	NEWFS	Aug-91	10	0	A
<i>Geranium Renardii</i>		ARGS	Sep-91	4	0	A
<i>Geranium sanguineum</i>	Blood-red geranium	VB&S	Jun-90	6	1	
<i>Geranium sanguineum</i> 'Album'		ARGS	Sep-91	2	0	A

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Table 3. (continued)

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	NUMBER OF PLANTS	NUMBER YEARS SURVIVED	COMMENTS
<i>Gypsophila cerastioides</i>	Mouse ear gypsophila	ARGS	Jun-90	8	0	A
<i>Gypsophila globulosa</i>		NCRPIS	Jun-90	10	0	A
<i>Gypsophila paniculata</i> 'Snow White'	Baby's-breath	Johnny's	Jul-93	10	2	J
<i>Hedysarum coronarium</i>	French honeysuckle	T&M	Jul-94	10	0	A
<i>Hedysarum Mackenzii</i>	Wild sweet pea	ANPS	Aug-89	3	1	B,G
<i>Hedysarum Mackenzii</i>	Wild sweet pea	PMC	Jul-92	10	0	A,D,G
<i>Helenium autumnale</i> 'Red and Gold Hybrids'	Autumn sunspray	Ball Seed	Jul-93	10	2	J
<i>Helianthemum nummularium</i>		I. Berger	Aug-93	10	1	
<i>Heracleum Sphondylium</i> subsp. <i>montanum</i>	Cow parsnip	NEWFS	Oct-90	6	4	
<i>Heuchera americana</i> 'Palace Purple'	Rock geranium	T&M	Jun-91	10	0	A
<i>Heuchera cylindrica</i> 'Greenfinch'		T&M	Aug-95	10	0	A
<i>Heuchera glabra</i>	Alumroot	ANPS	Jun-91	10	0	A
<i>Heuchera micrantha</i> 'Purple Palace'	Coral bells	Park	Jul-94	9	1	J
<i>Heuchera sanguinea</i> 'Bressingham Hybrids'	Coral bells	T&M	Jun-91	10	0	A
<i>Heuchera x brizoides</i> 'Firefly'	Coral bells	Park	Jul-94	10	1	J
<i>Hypericum perforatum</i>	Common St. Johnswort	SBG	Sep-91	1	0	A
<i>Iris Bulleyana</i>	Hollowstem iris	ARGS	Sep-91	1	0	A
<i>Iris missouriensis</i>	Western blue flag	Estes Park, CO	Jul-92	10	3	J
<i>Iris Pseudacorus</i>		White Flower	Aug-93	10	2	
<i>Iris scariosa</i>		Russia	Sep-89	7	2	
<i>Iris setosa</i> var. <i>canadensis</i>	Beachhead iris	ARGS	Jul-92	2	2	
<i>Iris sibirica</i>	Siberian iris	AHS	Aug-91	10	4	
<i>Iris sibirica</i> 'Snow Queen'	Siberian iris	ARGS	Aug-91	8	0	A
<i>Jasione laevis</i>		I. Berger	Aug-93	10	1	
<i>Kitaibela vitifolia</i>		NCRPIS	Jun-90	10	0	A
<i>Lavandula angustifolia</i> 'Lady'	English lavender	AAS	Jul-93	10	0	A
<i>Lavandula angustifolia</i> 'Munstead'	English lavender	Johnny's	Jul-93	10	0	A
<i>Leontopodium alpinum</i>	Edelweiss	T&M	Jul-94	10	1	
<i>Levisticum officinale</i>	Lovage	Vermont Bean	Jul-93	10	1	
<i>Levisticum officinale</i>	Lovage	Vermont Bean	Jun-91	10	1	G
<i>Liatris aspera</i>		NEWFS	Aug-93	5	2	J
<i>Liatris borealis</i>		NEWFS	Aug-93	10	2	
<i>Liatris borealis</i>		NEWFS	Jun-91	10	0	A
<i>Liatris punctata</i>		NEWFS	Aug-93	7	2	
<i>Liatris punctata</i>	Dotted gayfeather	NEWFS	Jun-91	10	0	A
<i>Liatris pycnostachya</i>		NEWFS	Aug-93	10	2	J
<i>Lilium</i> 'America'	Asiatic hybrid lily	Waushara	Jul-93	10	2	J
<i>Lilium canadense</i>	Canada lily	AHS	Jul-92	3	3	
<i>Lilium canadense</i>	Canada lily	NEWFS	Jul-92	3	3	
<i>Lilium</i> 'Corsica'	Asiatic hybrid lily	South Slope	Jun-91	10	4	J

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Table 3. (continued)

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	NUMBER OF PLANTS	NUMBER YEARS SURVIVED	COMMENTS
<i>Lilium</i> 'Crete'	Asiatic Hybrid Lily	Waushara	Aug-93	6	2	J
<i>Lilium</i> 'Crimson Beauty'	Asiatic Hybrid Lily	Waushara	Jul-93	10	2	J
<i>Lilium Henryi</i>		de Jager	Aug-93	1	2	J
<i>Lilium Martagon</i> 'Mix'	Martagon lily	T&M	Jul-92	6	3	J
<i>Lilium</i> 'Pink Perfection'	Asiatic Hybrid Lily	de Jager	Aug-93	3	2	J
<i>Lilium regale</i>		de Jager	Aug-93	3	2	J
<i>Lilium speciosum</i> 'Rubrum'	Showy Japanese lily	de Jager	Aug-93	2	1	
<i>Lilium superbum</i>	Turk's-cap lily	NEWFS	Jul-92	10	3	
<i>Linaria alpina</i>		T&M	Aug-93	10	2	
<i>Linum perenne</i> subsp. <i>Lewisii</i>	Blue flax	Nauriaq	Jul-92	10	0	A
<i>Lupinus</i> sp.		Fairbanks Ck., AK	Aug-92	10	0	A, G
<i>Lychnis chalcedonica</i>	Maltese cross	Applewood	Jul-94	10	1	J
<i>Lychnis Coronaria</i>	Mullein pink	Tack's	Aug-92	10	0	A
<i>Lychnis Flos-cuculi</i>	Cuckoo flower	ARGS	Jul-94	10	1	J
<i>Lychnis Flos-jovi</i>	Flower-of-Jove	ARGS	Jul-94	10	1	J
<i>Lychnis viscaria</i>		Tack's	Aug-92	10	3	J
<i>Lysimachia punctata</i>	Garden loosestrife	T&M	Aug-90	10	3	
<i>Macleaya microcarpa</i>	Plume poppy	T&M	Jul-94	10	1	
<i>Malva churinskaya</i>		PMC	Jul-94	5	1	J
<i>Malva moschata</i>	Musk mallow	T&M	Jun-90	9	1	J
<i>Malva sylvestris</i>	High mallow	T&M	Jun-90	10	0	A
<i>Mentha suaveolens</i>	Applemint	Richters	Jul-94	10	1	
<i>Mentha suaveolens</i> 'Variegata'	Pineapple mint	Richters	Jul-94	10	0	A
<i>Monarda didyma</i>	Bee balm	NEWFS	Jul-94	10	1	
<i>Monarda didyma</i> 'Marshall's Delight'	Bee balm	Richters	Aug-93	2	1	
<i>Monarda didyma</i> 'Panorama Mix'	Bee balm	Johnny's	Jul-92	8	0	A
<i>Monarda punctata</i>	Dotted mint	NEWFS	Jul-94	10	0	A
<i>Muscari armeniacum</i>	Grape hyacinth	J&P	Aug-92	10	3	J
<i>Muscari botryoides</i> 'Album'	Common grape hyacinth	de Jager	Aug-93	10	2	J
<i>Muscari</i> sp. 'Early Giant'		de Jager	Aug-93	10	2	J
<i>Muscari Tubergenianum</i>		de Jager	Aug-93	10	2	J
<i>Myosotis alpestris</i>	Alpine forget-me-not	ANPS	Jun-90	10	1	
<i>Myrrhis odorata</i>	Sweet cicely	Richters	Jul-93	3	2	
<i>Papaver alaskanum</i>	Alaska poppy	ANPS	Jun-90	10	1	
<i>Papaver alboroseum</i>		Baldwin	Jul-94	10	1	J
<i>Papaver kernerii</i>	Poppy	ARGS	Jun-90	7	0	A,D
<i>Patrinia scabiosifolia</i> 'Nagoya'	Dahurian patrinia	Park	Jul-91	10	0	A
<i>Penstemon Digitalis</i>		NEWFS	Jul-94	10	1	
<i>Penstemon heterophyllus</i> 'Blue of Zurich'		Park	Jul-92	10	0	A
<i>Penstemon procerus</i>	Littleflower penstemon	ANPS	Aug-91	2	1	

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Table 3. (continued)

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	NUMBER OF PLANTS	NUMBER YEARS SURVIVED	COMMENTS
<i>Perovskia atriplicifolia</i>	Russian sage	Tack's	Aug-95	1	0	
<i>Phacelia sericea</i>		Upper Yukon R., AK	Jul-94	10	1	H,J
<i>Phuiopsis stylosa</i>		I. Berger	Aug-93	10	0	A
<i>Physalis Alkekengi (Franchetii)</i>	Chinese-lantern plant	Burpee	Jul-92	10	3	J
<i>Physostegia virginiana</i>	Obedience	NEWFS	Jul-93	10	2	J
<i>Physostegia virginiana</i>	Obedience	NEWFS	Sep-91	6	0	A
<i>Platycodon grandiflorus</i> 'Hakone Double Blue'	Balloon flower	T&M	Aug-93	10	1	H
<i>Polemonium caeruleum</i> 'Cashmerianum'		T&M	Jul-92	10	3	
<i>Polemonium caeruleum</i> subsp. <i>villosum</i>	Jacob's-ladder	Eagle Summit, AK	Aug-89	4	2	H
<i>Polemonium caeruleum</i> var. <i>lacteum</i> (album)		T&M	Jul-92	10	3	
<i>Polemonium reptans</i>	Creeping polemonium	NEWFS	Oct-91	4	4	J
<i>Polemonium reptans</i> 'Blue Pearl'		Vaughan's	Jul-92	10	3	
<i>Polemonium reptans</i> var. <i>villosum</i>		NEWFS	Jul-92	1	3	J
<i>Polemonium reptans</i> var. <i>villosum</i>		NEWFS	Aug-94	2	1	J
<i>Polemonium</i> sp. 'Apricot Delight'		T&M	Jul-92	5	0	A
<i>Potentilla megalantha</i>		T&M	Aug-93	10	2	J
<i>Potentilla pensylvanica</i>	Pennsylvania cinquefoil	J. Grant	Sep-89	3	0	A
<i>Potentilla recta</i>		ARGS	Jul-94	10	1	J
<i>Potentilla</i> sp.		ANPS	Aug-89	10	1	
<i>Potentilla villosa</i>	Hairy cinquefoil	NEWFS	Jun-91	10	0	A
<i>Potentilla</i> x 'Melton Fire'		T&M	Aug-93	10	2	J
<i>Primula incana</i>		Fairbanks, AK	Aug-89	10	3	H
<i>Primula scotia</i>	Scotch primrose	ANPS	Jun-91	10	0	A
<i>Primula vulgaris</i> 'Dania Mix'	English primrose	Daehnfeltdt	Sep-89	10	0	A
<i>Prunella vulgaris</i>	Common selfheal	ANPS	Aug-89	10	0	A
<i>Pycnanthemum virginianum</i>		NEWFS	Aug-93	10	1	
<i>Rudbeckia fulgida</i> 'Goldsturm'		T&M	Jul-94	10	0	A
<i>Saponaria officinalis</i>	Bouncing bet	ARGS	Jul-94	10	0	A
<i>Sedum acre</i>	Golden-carpet	I. Berger	Aug-93	10	2	
<i>Sidalcea</i> sp. 'Party Girl'		Burpee	Aug-92	10	0	A
<i>Silene caroliniana</i>	Wild pink	NEWFS	Jun-91	6	0	A
<i>Silene Schafta</i>		I. Berger	Aug-93	10	2	J
<i>Silene</i> (?) sp.		ANPS	Sep-91	6	0	A
<i>Silphium perfoliatum</i>	Cup plant	NEWFS	Aug-92	8	3	J
<i>Silphium terebinthinaceum</i>	Prairie dock	NEWFS	Jul-91	10	0	A
<i>Sisyrinchium littorale</i>	Blue-eyed grass	ANPS	Jun-91	4	0	A
<i>Smelowskia pyriformis</i>		Alaska Range, AK	Aug-89	3	0	A,D,G
<i>Solidago odora</i>	Sweet goldenrod	NEWFS	Jul-92	10	0	A
<i>Solidago puberula</i>	Downy goldenrod	NEWFS	Sep-91	10	0	A
<i>Solidago rigida</i>	Stiff goldenrod	NEWFS	Aug-94	1	0	A

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SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	NUMBER OF PLANTS	NUMBER YEARS SURVIVED	COMMENTS
<i>Stachys grandiflora (macrantha)</i>		ARGS	Jul-94	10	1	
<i>Stachys officinalis</i>	Betony	Richters	Jul-94	10	1	J
<i>Tanacetum vulgare</i>	Common tansy	South Slope	Jun-91	10	4	J
<i>Taraxacum carneocoloratum</i>		Alaska Range, AK	Aug-89	9	1	
<i>Telekia speciosa</i>		T&M	Jun-91	10	0	A
<i>Tellima grandiflora</i>	Alaska fringe-cup	NEWFS	Sep-89	10	0	A
<i>Thalictrum dioicum</i>	Early meadow rue	NEWFS	Aug-92	3	3	
<i>Thermopsis lupinoides</i>		ARGS	Jul-92	9	0	A
<i>Thymus Serphyllum</i>	Lemon variegated thyme	DBG	Jun-91	4	0	A
<i>Thymus Serphyllum 'Pink Chintz'</i>		DBG	Jun-91	4	0	A
<i>Thymus sp.</i>	Lemon thyme	DBG	Jun-91	8	0	A
<i>Thymus X citriodorus</i>	Silver thyme	DBG	Jun-91	3	0	A
<i>Thymus X citriodorus</i>	White thyme	DBG	Jun-91	4	0	A
<i>Thymus X citriodorus 'Lemon'</i>	Lemon thyme	DBG	Jun-91	2	0	A
<i>Tiarella cordifolia</i>	Foamflower	NEWFS	Jul-93	10	2	
<i>Tripleurospermum phaeocephalum</i>		ANPS	Jun-90	10	1	
<i>Tulipa Batalinii</i>		de Jager	Aug-93	6	2	
<i>Tulipa Batalinii 'Bright Gem'</i>		de Jager	Aug-93	10	2	
<i>Tulipa Clusiana</i>	Lady tulip	de Jager	Aug-93	10	2	
<i>Valeriana sitchensis</i>	Sitka valerian	ANPS	Jun-91	2	0	A
<i>Verbena hastata</i>	Blue vervain	NEWFS	Aug-93	10	1	
<i>Veronica alpina</i>		ARGS	Jul-94	6	1	
<i>Veronica fruticulosa</i>		ARGS	Aug-92	10	0	A
<i>Veronica saturejoides</i>		ARGS	Aug-92	2	0	A
<i>Viola labradorica</i>	Labrador violet	NEWFS	Jul-92	4	0	A
<i>Viola pedata</i>	Bird-foot viola	NEWFS	Sep-91	10	0	A
<i>Xerophyllum tenax</i>	Bear grass	Lawyer	Aug-90	10	1	E
<i>Zigadenus glaucus</i>	White camas	NEWFS	Aug-92	3	0	A
FERNS						
<i>Asplenium (Phyllitis) scolopendrium</i>	Hart's-tongue fern	HFF	Jul-94	5	1	
<i>Cystopteris protrusa</i>	Lowland brittle fern	NEWFS	Jul-93	10	0	A
<i>Dennstaedtia punctilobula</i>	Hay-scented fern	NEWFS	Jul-93	2	1	
<i>Dryopteris arguta</i>	Coastal wood fern	HFF	Jul-94	5	1	
<i>Dryopteris bissetiana</i>		HFF	Jul-94	5	0	A
<i>Dryopteris dilatata 'Jimmy Dyce'</i>		HFF	Jul-94	5	1	J
<i>Dryopteris dilatata 'Lepidota cristata'</i>		HFF	Jul-94	5	1	J
<i>Dryopteris filix-mas 'Undulata robusta'</i>		HFF	Jul-94	5	1	J

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<i>Dryopteris sabae</i>	Wood shield fern	HFF	Jun-95	2	0	A
<i>Dryopteris wallichiana</i>	Wood fern	HFF	Jun-95	3	0	A
<i>Osmunda regalis</i>	Royal fern	HFF	Jul-94	4	0	A
<i>Osmunda regalis</i> 'Purpurascens'	Royal fern	HFF	Jul-94	5	0	A
<i>Osmunda regalis</i> 'Undulata'	Royal fern	HFF	Jul-94	1	0	A
<i>Phegopteris (Thelypteris) decursive-pinnata</i>	Beechwood fern	HFF	Jul-94	5	0	A
<i>Polystichum acrostichoides</i>	Christmas fern	NEWFS	Jul-93	6	2	
<i>Polystichum aleuticum</i>	Aleutian shield-fern	Adak, AK	Aug-93	2	0	A
<i>Polystichum lachenense</i>		Nantou Co., Taiwan, China	Aug-93	2	0	A
<i>Polystichum lonchitis</i>	Northern holly fern	Adak, AK	Jul-93	2	0	A
<i>Polystichum setiferum</i>	English shield fern	HFF	Jun-95	5	0	A
<i>Polystichum setiferum</i> 'Divisilobum' ?	Divided soft shield fern	HFF	Jul-94	5	0	A
<i>Pteris excelsa</i>	Dish fern	HFF	Jun-95	2	0	A
<i>Thelypteris viridifrons</i>		HFF	Jun-95	4	0	A
<i>Woodwardia fimbriata</i>	Chain fern	HFF	Jun-95	3	0	A
ORNAMENTAL GRASSES						
<i>Andropogon Gerardii</i> 'Pawnee'	Big bluestem	Bluebird	Aug-90	3	2	
<i>Arrhenatherum elatius</i> 'Variegatum'	Tall oat grass	Bluebird	Aug-90	2	1	
<i>Bouteloua curtipendula</i> 'Trailway'	Sideoats grama	Bluebird	Aug-90	4	0	A
<i>Bouteloua gracilis</i>	Blue grama	Bluebird	Aug-89	7	1	
<i>Calamagrostis acutiflora</i> var. <i>stricta</i>	Feather reed grass	Bluebird	Aug-90	1	5	J
<i>Calamagrostis arundinacea</i> 'Karl Foerster'		Bluebird	Aug-90	2	5	J
<i>Carex Grayi</i>		NEWFS	Aug-94	4	1	J
<i>Carex Morrowii</i> var. <i>aureo-variegata</i> 'Old Gold'	Variiegated Japanese sedge	Bluebird	Aug-89	11	0	A
<i>Carex muskingumensis</i>	Palm sedge	NEWFS	Jul-90	8	1	F
<i>Carex nigra</i>	Black sedge	Bluebird	Jul-90	9	1	F
<i>Carex ornithopoda</i> 'Variegata'		Bluebird	Aug-89	10	1	
<i>Carex pendula</i>	Sedge grass	Bluebird	Aug-89	11	0	A
<i>Chasmanthium latifolium</i>	Sea oats grass	Bluebird	Aug-90	1	0	A
<i>Deschampsia caespitosa</i> 'Bronzeschleier'	Tufted hair grass	Bluebird	Aug-90	2	2	D
<i>Deschampsia caespitosa</i> 'Goldgehaenge'	Tufted hair grass	Bluebird	Aug-90	4	5	J
<i>Deschampsia caespitosa</i> 'Goldschleier'	Tufted hair grass	Bluebird	Aug-90	1	1	
<i>Eragrostis trichodes</i>	Sand love grass	Bluebird	Aug-89	10	0	A
<i>Festuca scoparia</i>	Bearskin grass	Bluebird	Aug-90	1	1	
<i>Festuca valesiaca</i> 'Glauca'	Swiss fescue	Bluebird	Aug-90	3	5	
<i>Helictotrichon sempervirens</i>	Blue oat grass	Bluebird	Aug-90	1	2	
<i>Hystrix patula</i>	Bottle brush grass	Bluebird	Aug-89	12	1	F

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Table 3. (continued)

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	NUMBER OF PLANTS	NUMBER YEARS SURVIVED	COMMENTS
<i>Imperata cylindrica</i> var. <i>rubra</i> 'Red Baron'	Japanese blood grass	Bluebird	Aug-90	4	0	A
<i>Melica ciliata</i>	Silky-spike melic	Bluebird	Aug-89	10	3	D
<i>Panicum virgatum</i> 'Pathfinder'	Switch-grass	Bluebird	Aug-89	12	0	A
<i>Pennisetum alopecuroides</i>	Chinese pennisetum	Bluebird	Aug-89	11	0	A
<i>Pennisetum flaccidum</i>		Bluebird	Aug-89	10	0	A
<i>Poa alpina</i> 'Gruening'	Alpine blue grass	PMC	Jul-92	10	3	J
<i>Schizachyrium scoparium</i> 'Blaze'	Little bluestem	Bluebird	Aug-89	11	1	
<i>Sesleria autumnalis</i>	Autumn moor grass	Bluebird	Aug-90	2	1	
<i>Sorghastrum avenaceum</i>	Indian grass	Bluebird	Aug-89	11	0	A
<i>Sporobolus airoides</i>	Greater dropseed	Bluebird	Aug-90	2	0	A
WOODY PERENNIALS						
<i>Acer saccharum</i>	Sugar maple	NCRPIS	Jul-92	3	2	E
<i>Actinidia kolomikta</i>	Kolomikta kiwi	BCN	Sep-89	5	3	I
<i>Ampelopsis glandulosa</i> var. <i>brevipedunculata</i>	Porcelain vine	NCRPIS	Jul-93	5	2	J
<i>Berberis koreana</i> x <i>Thunbergii</i> 'Emerald Carousel'	Hybrid barberry	NCRPIS	Jul-93	5	2	J
<i>Betula occidentalis</i>	Water birch	ANPS	Sep-89	4	0	A
<i>Betula populifolia</i>	Gray birch	Barnaul, Russia	Aug-91	5	0	A
<i>Caragana arborescens</i>	Siberian pea	Chamal R., Gorno-Altaysk, Russia	Sep-91	5	1	
<i>Caragana manshurica</i>		NCRPIS	Sep-90	5	1	
<i>Ceanothus integerrimus</i>	Deerbush	Schumacher	Sep-89	5	0	A
<i>Cerocarpus montanus</i>	Mountain mahogany	NCRPIS	Sep-89	1	0	A
<i>Cotoneaster horizontalis</i>	Rock cotoneaster	Schumacher	Sep-89	5	1	
<i>Cotoneaster horizontalis</i>	Rock cotoneaster	Schumacher	Sep-91	5	1	
<i>Cotoneaster integerrimus</i> 'Centennial'	European cotoneaster	NCRPIS	Sep-89	5	1	
<i>Cotoneaster nitens</i>	Pinkblush cotoneaster	NCRPIS	Sep-91	5	1	
<i>Crataegus monogyna</i>	Single-seed hawthorn	NCRPIS	Jun-90	3	2	E
<i>Elaeagnus angustifolia</i> 'King's Red'	King's Red Russian Olive	Lawyer	Jul-94	5	1	J
<i>Forsythia ovata</i>	Early forsythia	NCRPIS	Sep-90	5	1	
<i>Jamesia americana</i>		NCRPIS	Jul-92	1	1	
<i>Larix decidua</i>	European larch	PMC	Sep-90	5	2	
<i>Larix Gmelinii</i> var. <i>Gmelinii</i>	Dahurian larch	PMC	Sep-90	4	2	
<i>Larix Gmelinii</i> var. <i>olgensis</i>	Dahurian larch	PMC	Sep-90	5	2	
<i>Larix Gmelinii</i> var. <i>principis</i>	Dahurian larch	PMC	Sep-90	5	2	E
<i>Lonicera hybrida</i> 'Honey Rose'		NCRPIS	Aug-93	4	2	J
<i>Lonicera Maackii</i>	Amur honeysuckle	NCRPIS	Jun-90	5	2	
<i>Lonicera tatarica</i> 'Siberica'	Tatarian honeysuckle	NCRPIS	Jun-90	3	2	

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Table 3. (continued)

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	NUMBER OF PLANTS	NUMBER YEARS SURVIVED	COMMENTS
<i>Mahonia repens</i>		NCRPIS	Jul-94	3	1	J
<i>Myrica Gale</i>	Sweet gale	Fish Creek, AK	Aug-92	2	0	A
<i>Parthenocissus inserta</i>		NCRPIS	Jul-92	3	3	
<i>Physocarpus opulifolius</i> 'Nugget'	Ninebark	NCRPIS	Sep-89	5	3	I
<i>Picea obovata</i> (blue form)	Siberian spruce	SAAS	Jul-92	5	0	A
<i>Pinus Cembra</i> var. <i>sibirica</i>	Swiss stone pine	SAAS	Jul-92	3	0	A
<i>Pinus pumila</i>	Dwarf stone pine	Schumacher	Sep-89	5	3	E
<i>Pinus sibiricus</i>	Siberian pine	SAAS	Jul-92	2	0	A
<i>Populus deltoides</i> X <i>Petrowskiana</i> 'Brooks #6'		NCRPIS	Jun-90	5	2	I
<i>Populus</i> 'Tower'		PMC	Jun-90	2	2	I
<i>Potentilla mandshurica</i>		SAAS	Sep-91	10	1	
<i>Prunus sargentii</i>	Sargent cherry	PMC	Jun-90	5	1	
<i>Prunus</i> sp.	Manchurian apricot	Denver, CO	Jul-94	5	1	
<i>Prunus tenella</i>	Dwarf Russian almond	Lawyer	Aug-93	1	2	J
<i>Prunus tenella</i>	Dwarf Russian almond	Lawyer	Sep-91	1	1	I
<i>Pyrus pashia</i>		Hudson	Jul-92	2	0	A
<i>Rhododendron canadense</i>	Rhodora	NEWFS	Aug-91	5	0	A
<i>Rhododendron dahuricum</i>		Chamal, Russia	Jul-93	5	1	E
<i>Rhus trilobata</i> 'Bighorn'	Skunkbush	NCRPIS	Jul-93	5	0	A
<i>Ribes</i> 'Hinnomaken Keltainen'		NCGR	Jul-94	1	0	A
<i>Ribes nidigrolaria</i>	Jostaberry	BCN	Sep-89	4	2	I
<i>Ribes nigrum</i> 'Ben Moore'	Black currant	PMC	Jul-94	1	1	J
<i>Ribes nigrum</i> 'Kantata 50'	Black currant	NCGR	Jul-94	2	0	A
<i>Rosa Eglanteria</i>	Eglantine rose	NCRPIS	Aug-91	5	0	A
<i>Rosa</i> 'Morden Centennial'		The Roseraie	May-95	5	0	A
<i>Rosa</i> 'Morden Ruby'		The Roseraie	May-95	5	0	A
<i>Rosa multiflora</i>	Baby rose	Seiberling	Aug-91	5	0	A
<i>Rosa multiflora</i>	Baby rose	Hermitage, PA	Aug-91	5	0	A
<i>Rosa</i> sp. 12B		PMC	Aug-91	1	1	I
<i>Rosa</i> sp. 'à Parfum de l' Hay'		PMC	Aug-91	4	1	I
<i>Salix alba</i> 'Argentea'	White willow	NCRPIS	Jul-94	5	1	J
<i>Salix alba</i> 'Vitellina'	Golden willow	BCN	Sep-89	5	3	I
<i>Salix purpurea</i> 'Leicestershire Dicks'	Purple osier	NCRPIS	Jul-94	5	1	J
<i>Securinega suffruticosa</i>		NCRPIS	Jul-94	5	1	J
<i>Sorbus reducta</i>		NCRPIS	Jun-90	2	0	A,D
<i>Spiraea</i> 'Fairy Queen'		Washburn	Jul-94	3	1	J
<i>Spiraea</i> sp.		J. Rockney	Jul-92	5	0	A,I
<i>Staphylea Bumalda</i>	Bladdernut	NCRPIS	Aug-93	4	1	
<i>Syringa pekinensis</i>	Pekin lilac	NCRPIS	Sep-91	3	3	E
<i>Viburnum</i> 'Emerald Triumph'		NCRPIS	Jul-92	3	1	

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Table 4. Plantings from 1996 that have not yet been evaluated for winter survival.

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	NUMBER OF PLANTS
HERBACEOUS PERENNIALS				
<i>Alcea ficifolia</i> 'Country Garden Mix'	Hollyhock	Park	Jul-96	6
<i>Alchemilla mollis</i> 'Thriller'		Johnny's	Jul-96	10
<i>Allium flavum</i>		McClure & Zimmerman	Aug-96	10
<i>Allium oreophilum</i>		McClure & Zimmerman	Aug-96	10
<i>Althea officinalis alba</i>	Marsh mallow	T&M	Jul-96	10
<i>Aquilegia alpina</i>		AHS	Jul-96	10
<i>Aquilegia flabellata</i>		AHS	Jul-96	10
<i>Aquilegia flavescens</i>			Sep-96	8
<i>Aquilegia vulgaris</i> 'Irish Elegance'	Garden columbine	Park	Jul-96	10
<i>Cerastium maximum</i>		Central/Circle, AK	Sep-96	10
<i>Draba incerta</i>			Sep-96	10
<i>Dryopteris eximina</i>		HFF	Jul-96	10
<i>Dryopteris fragrans</i>	Fragrant wood fern	Fairbanks, AK	Jul-96	1
<i>Erigeron eriocephalus</i>		AK	Jul-96	10
<i>Eryngium amethystinum</i>		Magadan, Russia	Jul-96	10
<i>Erysimum linifolium</i> 'Little Kiss'	Wallflower	Park	Jul-96	10
<i>Hesperis sibirica</i>		Magadan, Russia	Jul-96	10
<i>Hypericum calycinum</i>	St. John's wort	Tack's	Aug-96	9
<i>Lilium</i> 'Apollo'	Asiatic hybrid lily	Waushara	Jul-96	6
<i>Lilium</i> 'Apricot Supreme'	Asiatic hybrid lily	B&D	Jul-96	3
<i>Lilium</i> 'Ariadne'	Asiatic hybrid lily	B&D	Jul-96	3
<i>Lilium</i> 'Figaro'	Asiatic hybrid lily		Jul-96	10
<i>Lilium</i> 'Gardenia'	Asiatic hybrid lily	B&D	Jul-96	6
<i>Lilium</i> 'Geneve'	Asiatic hybrid lily	Waushara	Jul-96	6
<i>Lilium</i> 'George Slate'	Asiatic hybrid lily	B&D	Jul-96	3
<i>Lilium</i> 'Gold Eagle'	Trumpet lily clone	B&D	Jul-96	1
<i>Lilium</i> 'Grand Cru'	Asiatic hybrid lily	Waushara	Jul-96	5
<i>Lilium</i> 'Her Grace'	Asiatic hybrid lily	B&D	Jul-96	3
<i>Lilium</i> 'Little White Kiss'	Asiatic hybrid lily	B&D	Jul-96	3
<i>Lilium</i> 'Little Yellow Kiss'	Asiatic hybrid lily	B&D	Jul-96	3
<i>Lilium</i> 'Massa'	Asiatic hybrid lily	Waushara	Jul-96	5
<i>Lilium</i> 'Medallion'	Asiatic hybrid lily	Waushara	Jul-96	6
<i>Lilium</i> 'Menton'	Asiatic hybrid lily	Waushara	Jul-96	4
<i>Lilium</i> 'Monte Rosa'	Asiatic hybrid lily	Waushara	Jul-96	8
<i>Lilium</i> 'Nepal'	Asiatic hybrid lily	B&D	Jul-96	6
<i>Lilium</i> 'Peacock Creation'	Asiatic hybrid lily	Waushara	Jul-96	5
<i>Lilium</i> 'Philos'	Asiatic hybrid lily	B&D	Jul-96	6
<i>Lilium</i> 'Shirley'	Asiatic hybrid lily	B&D	Jul-96	6

Table 4. (continued)

SCIENTIFIC NAME	COMMON NAME	SOURCE	YEAR PLANTED	NUMBER OF PLANTS
<i>Lilium</i> 'Stones'	Asiatic hybrid lily	B&D	Jul-96	3
<i>Lilium</i> 'Tirreno'	Asiatic hybrid lily	Waushara	Jul-96	2
<i>Lilium</i> 'Toscana'	Asiatic hybrid lily	Waushara	Jul-96	9
<i>Lilium</i> 'Tristar'	Asiatic hybrid lily	B&D	Jul-96	3
<i>Lilium</i> 'Tristar'	Asiatic hybrid lily	Waushara	Jul-96	6
<i>Lilium</i> 'Typhoon'	Asiatic hybrid lily	B&D	Jul-96	3
<i>Lilium</i> 'Yellow Ballerina'	Asiatic hybrid lily	B&D	Jul-96	3
<i>Lilium</i> 'Yellow Hornet'	Asiatic hybrid lily	B&D	Jul-96	3
<i>Mentha piperita</i> var. <i>vulgaris</i>	Peppermint	Richters	Jul-96	5
<i>Mentha spicata</i>	Spearmint	Richters	Jul-96	2
<i>Muscari armeniacum</i> var. Early Giant	Grape hyacinth	McClure & Zimmerman	Aug-96	10
<i>Papaver orientalis</i> 'Pizzicato'	Oriental poppy	T&M	Jul-96	10
<i>Penstemon digitalis</i> 'Husker Red'		Park	Jul-96	5
<i>Phlox stolonifera</i> ?	Creeping phlox	Smith Nursery	Jul-96	7
<i>Potentilla Hookeriana</i>		AK	Aug-96	10
<i>Ranunculus</i> sp.	Pt. Hope ranunculus	Fairbanks, AK	Jul-96	10
<i>Rumex Acetosa</i> 'Profusion'	Garden sorrel	Richters	Jul-96	1
<i>Saxifraga Nelsoniana</i> (<i>punctata</i>)			Sep-96	10
<i>Scilla Tubergeniana</i>		McClure & Zimmerman	Aug-96	10
<i>Thalictrum speciosissimum</i>		AHS	Jul-96	10
<i>Tulipa Batalinii</i> 'Bright Gem'		McClure & Zimmerman	Aug-96	4
<i>Tulipa Greigii</i> 'United States'		McClure & Zimmerman	Aug-96	10
<i>Viola</i>	Altai violet	Fairbanks, AK	Aug-96	15
<i>Viola sororia</i> 'Freckles'	Woolly blue violet	Park	Jul-96	8
			Jul-96	6
FERNS				
<i>Adiantum aleuticum</i>	Western maidenhair fern		Jul-96	3
<i>Adiantum venustum</i>		HFF	Sep-96	5
<i>Asplenium trichomanes</i>	Maidenhair spleenwort	HFF	Sep-96	5
<i>Dryopteris affinis</i>		HFF	Sep-96	5
<i>Dryopteris celsa</i>	Log fern	HFF	Sep-96	5
<i>Dryopteris Championii</i>		HFF	Sep-96	5
<i>Dryopteris crassirhizoma</i>		HFF	Sep-96	5
<i>Dryopteris cycadina</i> (<i>atrata</i>)		HFF	Sep-96	5
<i>Dryopteris pseudofilix-mas</i>		HFF	Sep-96	5
<i>Dryopteris sacrosancta</i>		HFF	Sep-96	5
<i>Dryopteris sublacera</i>		HFF	Sep-96	10
<i>Dryopteris wallichiana</i>		HFF	Sep-96	5

Table 4. (continued)

SCIENTIFIC NAME	COMMON NAME	SOURCE	DATE PLANTED	NUMBER OF PLANTS
<i>Lygodium palmatum</i>	Hartford fern	HFF	Sep-96	1
<i>Matteuccia struthiopteris</i>	Ostrich fern	AK Greenhouse	Aug-96	4
<i>Polystichum andersonii</i>	Anderson's sword fern	HFF	Sep-96	5
<i>Polystichum setiferum</i>		HFF	Sep-96	5
<i>Polystichum andersonii</i>	Anderson's sword fern	HFF	Jul-96	6
<i>Polystichum lemmonii</i>	Shasta fern	HFF	Jul-96	5
<i>Woodsia polystichoides</i>		HFF	Sep-96	5
WOODY PERENNIALS				
<i>Betula pendula</i>	European white birch	Arboretum Norr	Sep-96	5
<i>Betula platyphylla</i>		NCRPIS	Jun-96	3
<i>Caragana grandiflora</i> (?)		Arboretum Norr	Sep-96	5
<i>Celtis</i> sp.	Northern hackberry	Smith Nursery	Sep-96	5
<i>Cornus alternifolia</i>	Pagoda dogwood	Smith Nursery	Sep-96	5
<i>Cornus sericea</i> 'Cardinal'		Smith Nursery	Aug-96	5
<i>Cornus sericea</i> forma <i>Baileyi</i>		Smith Nursery	May-96	5
<i>Diervilla x splendens</i>	Bush honeysuckle	NCRPIS	Jun-96	3
<i>Lonicera altaica</i>		Arboretum Norr	Sep-96	5
<i>Lonicera tatarica</i> 'Red Ram'	Red Ram honeysuckle	Smith Nursery	Sep-96	5
<i>Nyssa sylvatica</i>	Sour gum	NCRPIS	Jun-96	5
<i>Physocarpus ribesifolius</i>		NCRPIS	Jun-96	5
<i>Populus nigra</i> 'Thevestina'	Theves poplar	Smith Nursery	Sep-96	5
<i>Potentilla fruticosa</i> 'McKay White'	Shrubby cinquefoil	Smith Nursery	May-96	
<i>Potentilla fruticosa</i> 'Primrose Beauty'	Shrubby cinquefoil	Smith Nursery	May-96	5
<i>Potentilla fruticosa</i> 'Tangerine'	Shrubby cinquefoil	Smith Nursery	May-96	5
<i>Potentilla fruticosa</i> 'Yellow Bird'	Shrubby cinquefoil	Smith Nursery	Aug-96	5
<i>Potentilla fruticosa</i> 'Red Ace'	Shrubby cinquefoil	Smith Nursery	May-96	5
<i>Prunus triloba</i>	Flowering almond	Smith Nursery	Jun-96	5
<i>Rosa</i> 'Morden Blush'		Jackson & Perkins	Jun-96	3
<i>Rosa</i> 'Morden Fire'		Jackson & Perkins	Jun-96	3
<i>Rosa</i> 'The Fairy'		Jackson & Perkins	Jun-96	3
<i>Rosa</i> 'Topaz Jewel'		Jackson & Perkins	Jun-96	3
<i>Spiraea miyabei</i>		NCRPIS	Jun-96	5
<i>Spiraea X Billiardii</i>		Smith Nursery	Sep-96	2
<i>Spiraea X Vanhouttei</i> 'Renaissance'	Renaissance Spirea	Holm Town	Sep-96	3
<i>Spiraea X Bumalda</i> 'Anthony Waterer'		Smith Nursery	Jul-96	5
<i>Spiraea X Vanhouttei</i>		Smith Nursery	Aug-96	5

Table 5. Annual flowers evaluated in 1996.

COMMON NAME	CULTIVAR	SOURCE	WEEKLY BLOOM PERIOD*				HEIGHT (IN)	RECOMMENDED SPACING(IN)
			JUN	JUL	AUG	SEP		
African Daisy	Aurantiaca Hybrids	Stokes		* ? ? ? ?	☼☼☼☼☼☼☼☼☼☼	27	8	
Agastache	Heather Queen	Park Seed	* * * * *	☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	30	8-10	
Ageratum	Blue Horizon	Ball Seed		* ☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	22	10	
Ageratum	Hawaii Royal	Ball Seed	☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	3	6	
Ageratum	Hawaii White	Ball Seed	* * * * *	☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	5	6	
Alyssum	Golf Pastel	Clause	☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	6 1/2	6	
Alyssum	Snow Crystals	Stokes	☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	7 1/2	6	
Aster	Blue Mini-Lady	Stokes			☼☼☼☼☼☼☼☼☼☼	15	8	
Aster	Comet Dark Red	Stokes		☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	11	7	
Aster	Florette Mix	Ball Seed		☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	20	10	
Aster	Milady Mix	Vaughan's		☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	13	8	
Aster	Milady White	Ball Seed			* * * * *	☼☼☼☼☼☼☼☼☼☼	10	8
Aster	Moreketa	Thompson & Morgan		☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	12	8	
Aster	Seastar Mix	Park Seed		* * * * *	☼☼☼☼☼☼☼☼☼☼	24	10	
Bachelor's Button	Americana	Park Seed			☼☼☼☼☼☼☼☼☼☼	52	10	
Brachycome	Purple Splendor	Stokes		* * ? ?	☼☼☼☼☼☼☼☼☼☼	16	8	
Calendula	Bon Bon Apricot	Vaughan's	* ☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	11	8	
Calendula	Bon Bon Orange	Vaughan's	* ☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	7	8	
Calendula	Bon Bon Yellow	Vaughan's	* ☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	16	8	
Calendula	Indian Prince	Stokes		* ? ? ? ?	☼☼☼☼☼☼☼☼☼☼	27	10	
Carnation	Essence of Red	Ball Seed		* * * * *	☼☼☼☼☼☼☼☼☼☼	8	7	
Carnation	Monarch Mix	Harris		☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	9	7	
Carnation	Monarch Orange	Ball Seed		☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	8	7	
Carnation	Monarch Pink	Ball Seed		☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	7	6	
Celosia	Apricot Brandy	Vaughan's		☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	11	8	
Celosia	Castle Pink	Stokes		☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	9	6	
Celosia	Century Mixed	Ball Seed		* * * * *	☼☼☼☼☼☼☼☼☼☼	16	6	
Celosia	Kewpie Red	Stokes			☼☼☼☼☼☼☼☼☼☼	12	6	
Celosia	New Look	Stokes			☼☼☼☼☼☼☼☼☼☼	10	8	
Celosia	Prestige Scarlet	All-America Selections		* * * * *	☼☼☼☼☼☼☼☼☼☼	10 1/2	6	
Chrysanthemum multicaule	Yellow Buttons	Ball Seed	☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	17	10	
Chrysanthemum paludosum	White Buttons	Ball Seed	☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	14	10	
Clarkia	Apple Blossom	Thompson & Morgan	* * ☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	29	10	
Cleome	Helen Campbell	Ball Seed		☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	62	10	
Cleome	Queen Mix	Burpee		☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	45	10	
Coreopsis	Early Sunrise	Ball Seed		* * * * *	☼☼☼☼☼☼☼☼☼☼	21	9	
Cosmos	Sonata Mix	Stokes		* * ☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	32	10	
Cosmos	Sonata White	Ball Seed	* * ? ? ? ?	☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	29	10	
Cosmos	Versailles Blush-Pink	Stokes		☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	40	11	
Cosmos	Versailles Pink Eye	Stokes		☼☼☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼☼☼	45	11	

*Weekly bloom periods identified as "?" indicate missing data with our best estimate of total bloom period.

BLOOM COLOR	BLOOM SIZE (IN)	FROST TOLERANT		FRAGRANT	CUTTING	DRIED	COMMENTS
		FLOWERS	FOLIAGE				
mix-orange,yellow,buff	2	+	+		+		excellent early, a little disease late in season
red violet	5x2 1/2*	-	+		+		excellent, grey-green foliage
lavender blue	2 3/4*	-	-		+		excellent
purple	1 1/4*	-	-				good, needs deadheading, some frost damage in June
white	3/4*	-	-				nice, some rain damage on blooms
mix-pink,purple,white	1*	+	+	+			very nice
white	3/4*	+	+	+			good, some disease
violet	4	-	+				excellent, covered with blooms
deep rose	4 1/2	-	+				very good
mix-rose,pink,white,purple	4	+	+		+		very nice blooms, but disease killed some plants
mix	3 1/2	-	+				excellent
white	3	+	+				excellent, but some rain damage on blooms
light yellow to cream	4	-	+				very nice, lots of blooms, rain damage on blooms in late Aug
mix-cream, rose, pink	5	+	+		+		excellent
pale lilac	5	-	+		+		interesting, but late, needs staking
violet blue/yellow & dark centers	1	+	+				good, spreading habit
pale apricot	2	+	+				nice color, needs deadheading
intense orange	2 1/2	+	+				very nice, needs deadheading
yellow	2	+	+				very nice, needs deadheading
red-orange/red reverse	2 1/2	+	+		+		great color, needs deadheading
bright red	1 1/2	-	+	+			very nice, would benefit from dead heading
mix	2 1/4	+	+	+			very nice, needs deadheading
salmon pink	2	-	+				excellent
deep pink	2	+	+	+			nice, but was damaged when driven over by truck
apricot	4x1/2*	-	-			+	bronze foliage, good, some disease in Aug
pink	2 1/4x1*	-	-			+	good, except damaged by June frost
mix-gold, red, orange	4x1*	-	-			+	good, does better in warmer weather
red-orange	4x2 1/2*	-	-			+	excellent, bronze foliage, frost damage in June
deep red	4 1/2x1 3/4*	-	-			+	very nice
scarlet	3x1*	-	-			+	performs better in warmer weather
yellow	1	+	+				excellent
white/yellow eye	1	+	+				very nice, a little disease late in season
pale pink	1	-	-		+		might perform better if plants were younger at transplant time
white	7x5*	-	+		+		very good, has thorns
mix-purple,white,rose	5x5*	-	+		+		nice, leaves yellowed, has thorns
gold	2	+	+		+		excellent
mix-pink,white,rose	3 1/4	-	-		+		very good, a little disease on blooms in Aug
white	3	+	+		+		nice, some disease on blooms in Aug
pale pink/darker centers	4	-	+		+		very nice
pink with rose centers	4 1/2	-	-		+		very nice

*Weekly bloom periods identified as "?" indicate missing data with our best estimate of total bloom period.

Table 5. (continued)

COMMON NAME	CULTIVAR	SOURCE	WEEKLY BLOOM PERIOD*				HEIGHT (IN)	RECOMMENDED SPACING(IN)
			JUN	JUL	AUG	SEP		
Dahlia	Calico	Clause	* * *	* * *	* * *		17	10
Dahlia	Diablo	Stokes		? ? ? ? ?	* * *		22	10
Dahlia	Mignon Mix	Vaughan's		* * *	* * *		23	10
Dahlia	Rigoletto	Vaughan's		* * *	* * *		20	10
Dianthus	Coral Charm	Stokes		* * *	* * *		7 1/2	8
Dianthus	First Love	Ball Seed		* * *	* * *		19	8-10
Dianthus	Floral Lace Rose Bicolor	Ball Seed	* * *	* * *	* * *		11	8
Dianthus	Ideal Pearl	Park Seed	* * *	* * *	* * *		11	8
Dianthus	Ideal Violet	Stokes	* * *	* * *	* * *		14	8
Dianthus	Parfait Raspberry	Vaughan's		? ? ? ? ?	* * *		9	8
Dianthus	Pink Charm	Vaughan's		* ? ?	* * *		11	8
Dianthus	Princess Crimson	Vaughan's		* * *	* * *		10	8
Dianthus	Princess Mix	Harris	* * *	* * *	* * *		8	8
Dianthus	Princess Salmon	Vaughan's		* * *	* * *		7	8
Dianthus	Telstar Mix	Stokes		* * *	* * *		14	8
Dianthus	Telstar Picotee	Ball Seed		* * *	* * *		10	8
Diascia (Twinspur)	Pink Queen	Ball Seed		* * *	* * *		18	7
Digitalis	Foxy	Ball Seed		? ? ? ? ?	* * *		43	12
Dusty Miller	Silver Dust	Vaughan's					15	8
Dusty Miller	Silver Feather	Harris					12	9
Eschscholtzia californica	Rose Chiffon	Park Seed	* * *	* * *	* * *		10	8
Flowering Cabbage	Dynasty Pink	Ball Seed					19	18
Flowering Cabbage	Pink Beauty	Harris					11	16
Flowering Kale	Coral Prince	Ball Seed					18	20
Gaillardia	Red Plume	Stokes		? ? ? ? ?	* * *		18	9
Gazania	Chansonette Mix	Ball Seed		* ? ? ? ?	* * *		12 1/2	8
Gazania	Chansonette Pink Shades	Vaughan's		* * ? ? ? ?	* * *		12 1/2	8
Gazania	Daybreak Bronze	Vaughan's		* * *	* * *		15	8
Gazania	Ministar Tangerine	Ball Seed		* ? ? ? ?	* * *		12	8
Gazania	Ministar White	Ball Seed		* ? ? ? ?	* * *		14	8
Geranium	Avanti Cherry	Clause	* * *	* * *	* * *		13	12
Geranium	Avanti Lilac Rose	Clause	* * *	* * *	* * *		16	12
Geranium	Avanti Scarlet Red	Clause		* * *	* * *		12	12
Geranium	Freckles	Vaughan's		* * *	* * *		12	12
Geranium	Glamour Light Salmon	Ball Seed		* * *	* * *		15	12
Geranium	Glamour Scarlet	Ball Seed		* ? ? ? ?	* * *		15	12
Geranium	Neon Rose	Ball Seed		? ? ? ? ?	* * *		14	12
Geranium	Orange Appeal	Vaughan's		* ? ? ? ?	* * *		15	12
Geranium	Orbit Violet	Vaughan's		? ? ? ? ?	* * *		14	12
Geranium	Signal Bicolor Red	Clause		* * *	* * *		14	12

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BLOOM COLOR	BLOOM SIZE (IN)	FROST TOLERANT		FRAGRANT	CUTTING	DRIED	COMMENTS
		FLOWERS	FOLIAGE				
mix	3 3/4	-	-		+		excellent
mix	4 1/4	-	-		+		excellent, bronze foliage
	4	-	-		+		excellent, single blooms
mix	4	-	-		+		excellent
coral pink	1 1/2	+	+				excellent
rose fading to light pink	1 1/2	+	+		+		excellent
deep & light rose	2	+	+				excellent
pale lav./deep orchid centers	1 1/4	+	+				excellent
deep red violet	1 1/4	+	+				excellent
rose/burgundy center	1 1/2	-	+				excellent
rose pink	2	+	+				excellent
dark red	1	+	+				excellent, dark foliage
mix	1	+	+				very nice
salmon pink	1	+	+	+			very nice
mix	1	+	+				excellent
purplish red/light center/white edges	1 1/4	+	+				excellent
rose pink	1/2	+	+				very nice
mix-pastels	16x5 1/2*	+	+		+		excellent
			+			+	very good, sprawls a bit, silver-green foliage
			+			+	grey/green feathery foliage
light rose	1 1/2	+	+				very nice, double blooms
			+				nice, green leaves, rose center
			+				excellent, compact, rose pink center
			+				excellent, green/white leaves with pale coral center
burgundy red	2	+	+				excellent, some with gold-edged petals
mix	3	+	+				excellent, nice colors
mix	3	+	+				excellent, yellow & gold as well as pink shades
rusty orange-gold	2 1/2	+	+				excellent
bright orange	3	+	+				excellent, blooms mostly open even on cloudy days
creamy white	3 1/4	+	+				excellent
hot pink	3*	-	+				showy blooms, small plants
bright rose	3*	-	+				very nice, needs deadheading
coral red	3*	-	+				very good
rose with red splotches	3*	-	+				
salmon pink, light edges	2 1/4*	-	+				
scarlet red	3 1/2*	-	+				very good
bright rose	3 1/2*	-	+				very good, large blooms, needs deadheading
hot orange	4*	-	+				very good, nice color, needs deadheading
hot pink	3 3/4*	-	+				very good, needs deadheading
bright coral	4*	+	+				excellent

*Weekly bloom periods identified as "?" indicate missing data with our best estimate of total bloom period.

Table 5. (continued)

COMMON NAME	CULTIVAR	SOURCE	WEEKLY BLOOM PERIOD*				HEIGHT (IN)	RECOMMENDED SPACING(IN)
			JUN	JUL	AUG	SEP		
Godetia	Grace Mix	Ball Seed		? ? ? ?	☼☼☼☼	19	8	
Godetia	Grace Salmon	Ball Seed		* * * *	☼☼☼☼	14	8	
Godetia	Lady in Blue	Thompson & Morgan	* * *	? ? ? ?	☼☼☼☼	8	8	
Godetia	Satin Deep Rose	Vaughan's		* * * *	☼☼☼☼	15	8	
Godetia	Satin Mixed	Stokes		* ? ? ? ? ? ? ?	☼☼☼☼	10	8	
Gypsophila	Garden Bride	Ball Seed	☼	☼☼☼☼☼☼☼☼	10	8		
Gypsophila	Gypsy	All-America Selections	* * *	☼☼☼☼☼☼☼☼	9	8		
Helichrysum	Bright Bikinis Mix	Vaughan's		? ? ? ?	☼☼☼☼☼☼	30	9	
Heliotrope	Blue Wonder	Ball Seed	* * *	☼☼☼☼☼☼☼☼	12	8		
Hollyhock	Zebrina	Stokes	* * *	☼☼☼☼☼☼☼☼	43	10		
Lavatera	Mont Blanc	Park Seed		* ? ? ? ? ? ? ?	23	10		
Lavatera	Mont Rose	Park Seed		* ? ? ? ? ? ? ?	36	10		
Lavatera	Silver Cup	Stokes		? ? ? ?	☼☼☼☼	32	10	
Lisianthus	Heidi Cherry Blossom	Park Seed		? ? ? ?	☼☼☼☼	23	6	
Lisianthus	Heidi Pastel Blue	Park Seed		? ? ? ?	☼☼☼☼	17	8	
Lobelia	Crystal Palace	Vaughan's	* * *	☼☼☼☼☼☼☼☼	7 1/2	6		
Lobelia	Paper Moon	Vaughan's	* * *	☼☼☼☼☼☼☼☼	7	6		
Lobelia	Regatta Midnight	Stokes	* * *	☼☼☼☼☼☼☼☼	9 1/4	7-8		
Lobelia	Riviera Blue Splash	Vaughan's	* * *	☼☼☼☼☼☼☼☼	8	6		
Lupine	Gallery Blue/White	Stokes		* ? ? ? ?	☼☼☼☼	30	12	
Lupine	Gallery Mix	Ball Seed	* * *	* * * *	☼☼☼☼☼☼☼☼	32	12	
Lupine	Russell Mix	Vaughan's		? ? ? ? ? ?	☼☼☼☼☼☼	53	12	
Malope trifida	Pink Queen	Park Seed		? ? ? ?	☼☼☼☼☼☼☼☼	34	10	
Marigold	Doubleloon	Vaughan's		* * *	☼☼☼☼☼☼	31	9	
Marigold	Golden Gate	Ball Seed	* * *	☼☼☼☼☼☼☼☼	8	10		
Marigold	Hero Yellow	Vaughan's	☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼	7	7		
Marigold	Inca Orange	Harris		* ? ? ? ?	☼☼☼☼☼☼	12	8	
Marigold	Inca Yellow	Vaughan's		☼☼☼☼☼☼☼☼	13	8		
Marigold	Janie Gold	Vaughan's	* * *	☼☼☼☼☼☼☼☼	6 1/2	6		
Marigold	Jubilee Mix	Ball Seed		* * *	☼☼☼☼☼☼☼☼	22	9	
Marigold	Little Devil Yellow	Ball Seed	☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼	6	7		
Marigold	Little Giant	Stokes		* * *	☼☼☼☼☼☼☼☼☼☼	16	10	
Marigold	Lulu	Stokes		☼☼☼☼☼☼☼☼☼☼	16	10		
Marigold	Orange Boy	Vaughan's	* * *	☼☼☼☼☼☼☼☼	9	6		
Marigold	Perfection Yellow	Burpee		* * *	☼☼☼☼☼☼	15	8	
Marigold	Primrose Lady	Vaughan's		? ? ? ? ? ?	☼☼☼☼☼☼	15	8	
Marigold	Red Marietta	Stokes	* * *	☼☼☼☼☼☼☼☼	12	8		
Marigold	Safari Scarlet	Vaughan's	* * *	☼☼☼☼☼☼☼☼	10	8		
Marigold	Safari Tangerine	Ball Seed	* * *	☼☼☼☼☼☼☼☼	12	8		
Marigold	Safari Yellow	Stokes	☼☼☼☼☼☼☼☼	☼☼☼☼☼☼☼☼	7	8		

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BLOOM COLOR	BLOOM SIZE (IN)	FROST TOLERANT		FRAGRANT	CUTTING	DRIED	COMMENTS
		FLOWERS	FOLIAGE				
mix	3 1/4	-	-				excellent earlier, some disease in Aug
light salmon pink	2 3/4	-	+				
light purple							died out early in season
deep rose/light center	2 1/4	-	+				excellent, but some plants lost to disease
mix-pinks	2 1/2	-	+				would be nice, but damaged by truck early in season
baby pink	1/4	+	+				very nice, spreading form, airy foliage
pink	1/4	+	-				excellent, compact mounding habit, lots of blooms
mix	2	+	+		+	+	excellent, needs staking
deep blue violet	3*	-	-				excellent
lt pink/dark purple veins	2	+	+		+		excellent
white	3	-	+				many died off by end of season
rose	4	-	+				excellent, but needs staking
rose pink	4	-	+		+		excellent, needs staking
pale pink	2 1/4	-	+		+		not bad
creamy white/blue edges	1 3/4	-	+		+		disappointing
deep blue	3/4	-	+				excellent
white	1/4	-	+				very good
dark blue	1/4	-	+				excellent, mounding habit
white/blue throat & edge	1/2	-	+				very good, a few plants deep blue
violet blue & cream	9x2*	+	+		+		excellent
mix	7 x 2 1/2*	+	+		+		very good
mix	17x2*	+	+		+		excellent, good color mix
pink, dark purple veins/green center	3 1/4	+	+		+		excellent, needs staking
yellow	4 1/2	+	-		+		excellent
gold/red centers	2 1/2	+	+				very nice, a little disease
yellow	2	+	-				very good, small plants, a little disease
orange	4 1/2	-	-				good, huge blooms, but damaged by rain
yellow	4 1/4	-	-				good, but rain damage on blooms
golden orange	1 1/2	+	-				excellent
mix-orange,yellow,gold	3 1/2	-	-		+		nice mix
golden yellow	1 1/2	+	-				good, small plants, a few lost to disease
gold/purple eye	1	-	+				excellent, signet type
yellow	1	+	+				excellent, signet type, lemon scented foliage
orange	2	-	-				excellent, covered with blooms
yellow	3 1/2	+	-				very good, some rain damage on blooms
pale yellow	3 1/2	+	-				great until rain damaged blooms, lots of color impact
red edged in gold	2 1/4	-	-				very nice, single blooms
red petals edged with gold	2 1/2	-	-				very nice, large blooms
light orange	2	-	-				very good
yellow	3	-	-				excellent

*Weekly bloom periods identified as "?" indicate missing data with our best estimate of total bloom period.

Table 5. (continued)

COMMON NAME	CULTIVAR	SOURCE	WEEKLY BLOOM PERIOD*				HEIGHT (IN)	RECOMMENDED SPACING(IN)	
			JUN	JUL	AUG	SEP			
Marigold	Snowdrift	Burpee		*	*	*		17	9
Marigold	Zenith Mix	Clause	*	*	*	*		12	8
Matricaria	Santana	Vaughan's		*	*	*		6 1/2	8
Melampodium	Derby	Park Seed		*	*	*		6	9
Melampodium	Showstar	Vaughan's		*	*	*		14	10
Nasturtium	Alaska Mix	Ball Seed		*	*	*		17 1/2	12
Nasturtium	Empress of India	Stokes		*	*	*		20	12
Nasturtium	Tip Top Mix	Ball Seed		*	*	*		21	12
Nemesia	Carnival Blend	Stokes		*	?	*		15	8
Nemesia foetans pallida		Park Seed	*	*	*	*		16	8
Nicotiana	Domino Purple	Ball Seed		*	*	*		25	10
Nicotiana	Domino Salmon Pink	Ball Seed		*	?	?		28	10
Nicotiana	Domino White	Stokes		*	*	*		22	10
Nicotiana	Havana Appleblossom	Ball Seed		*	?	?		22	10
Nicotiana	Nickie Pink	Burpee		*	*	*		25	10
Nicotiana	Nickie Rose	Burpee		*	*	*		26	10
Ornamental Cabbage	Osaka Pink	Stokes						20	18
Osteospermum	Gaiety Orange	Park Seed	*	*	*	*		27	8
Pansy	Chalon	Clause	*	*	*	?		16	8
Pansy	Jolly Joker	Ball Seed	*	*	*	*		18	8
Pansy	Maxim Marina	Stokes	*	*	*	*		16	8
Pansy	Padparadja	Stokes		*	*	?		15	8
Pansy	Purple Crown	Vaughan's		*	*	*		16	8
Pansy	Springtime Azure Blue	Harris	*	*	*	*		15	8
Pansy	Springtime Mix	Harris	*	*	*	*		12	8
Pansy	Sprite Beaconsfield	Park Seed	*	*	*	*		16	8
Pansy	Ultima Silhouette Mix	Park Seed	*	*	*	*		16	8
Pansy	Universal Plus True Blue	Vaughan's	*	*	*	*		14	8
Pansy	Universal Plus Yellow	Ball Seed	*	*	*	*		11	8
Pansy	Watercolor Mix	Clause	*	*	*	*		16	8
Pansy	Yellow Splash Crown	Ball Seed	*	*	*	*		14	8
Petunia	Buttercream Carpet	Stokes	*	*	*	*		14	9
Petunia	Celebrity Chiffon Morn	Ball Seed	*	*	*	*		12 1/2	9
Petunia	Double Madness Burgundy	Ball Seed	*	*	*	*		16	9
Petunia	Double Madness Rose	Ball Seed	*	*	*	*		12	9
Petunia	Double Madness Salmon	Ball Seed	*	*	*	*		15	9
Petunia	Fantasy Pink Morn	Stokes	*	*	*	*		6	8
Petunia	Heavenly Lavender	Ball Seed		*	*	*		17	9
Petunia	Lavender Storm	Park Seed	*	*	*	*		12	9
Petunia	Midnight Madness	Ball Seed	*	*	*	*		12	9

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BLOOM COLOR	BLOOM SIZE (IN)	FROST TOLERANT		FRAGRANT	CUTTING	DRIED	COMMENTS
		FLOWERS	FOLIAGE				
creamy white	3 1/2	-	-		+		excellent except for a little rain damage
mix-orange,yellow,gold	2 1/2	-	-				very good
white/yellow center	3/4	-	-				excellent
gold	1	+	+				nice, quite petite, frost damage in June
bright yellow	1 3/4	-	-				daisy-like blooms, nice, a little disease on foliage
mix-peach, yellow, tangerine	2 1/2	-	-				nice variegated foliage, pale flower colors
mix-orange, red, scarlet	2	-	-	+			
mix	2 1/2	-	-				very nice, flowers somewhat hidden by leaves
mix	1	-	-				excellent, wonderful colors
	1 1/4 (1/2)	+	+				okay
purple/white center	2	-	+				good
light salmon pink	2	-	+				very nice, attractive color
white	2 1/4	-	+				good
pale pink/dark pink back	2 1/4	-	+				very nice, little rain damage on blooms
pink	2 1/8	-	+				nice, some rain damage
bright rose	2 1/2	-	+				excellent, lots of blooms
			+				very nice, green leaves with pink in center
bright orange	2 1/2	+	+				nice, tall & spreading, but doesn't block weeds
mix	1 3/4	+	+				very good, ruffled flowers, disease on spent blooms late in season
purple/orange	2 1/2	+	+				excellent
light blue, purple/white face	2 1/4	+	+				very nice
intense orange	2	+	+				excellent
purple	2 3/4	+	+				excellent, except for a little rain damage on blooms
deep violet center,lighter to edges	2	+	+				excellent
mix	1 3/4	+	+				good mix
bicolor-deep & pale violet blue	2	+	+				nice, some plants all purple
pastel mix	2 1/4	+	+				excellent, wonderful colors
violet blue	2 1/2	+	+				very nice
deep yellow	2	+	+	+			excellent, uniform
pastel mix	2	+	+				excellent
white with yellow accents	2	+	+				very good
creamy yellow	2 3/4	-	+				very good, some resistance to rain damage
pale pink/yellow throat	2 1/2	+	+				very nice, although some disease
redviolet	2 1/2		+				nice, a little disease, few blooms after rains started
rose	2 1/2	-	+				
coral pink	2 1/2	-	+				nice, but fewer blooms than last year
lt. pink/white & yellow throat	1 1/2	-	+				dainty plants & blooms
pinkish lavender	2 1/2	-	+				excellent, good rain & disease resistance
lavender pink	2 3/4	-	+				very good, excellent weather tolerance, a little disease
deep violet blue	2 1/2	-	+	+			very good

*Weekly bloom periods identified as "?" indicate missing data with our best estimate of total bloom period.

Table 5. (continued)

COMMON NAME	CULTIVAR	SOURCE	WEEKLY BLOOM PERIOD*				HIEGHT (IN)	RECOMMENDED SPACING(IN)
			JUN	JUL	AUG	SEP		
Petunia	Primetime Blues Mix	Ball Seed	* * * * *	* * * * *	* * * * *	12	9	
Petunia	Primetime Burgundy	Vaughan's	* * * * *	* * * * *	* * * * *	19	9	
Petunia	Primetime Plum	Vaughan's	* * * * *	* * * * *	* * * * *	20	9	
Petunia	Primetime Rose	Vaughan's	* * * * *	* * * * *	* * * * *	13	9	
Petunia	Prism Salmon	Clause	* * * * *	* * * * *	* * * * *	16	9	
Petunia	Purple Wave	Stokes	* * * * *	* * * * *	* * * * *	10	9	
Petunia	Rose Madness	Ball Seed	* * * * *	* * * * *	* * * * *	14	9	
Petunia	Spring Madness	Ball Seed	* * * * *	* * * * *	* * * * *	15	9	
Phlox	Coral Reef	Park Seed	* * * * *	? ? * * *	* * * * *	20	6	
Phlox	Dwarf Varieties Finest Mix	Stokes	* * * * *	? ? ? * *	* * * * *	12	8	
Phlox	Grandiflora Choice Finest Mix	Stokes	* * * * *	? ? ? * *	* * * * *	29	9	
Phlox	Palona Deep Rose	Vaughan's	* * * * *	* * * * *	* * * * *	15	8	
Phlox	Palona Deep Salmon	Vaughan's	* * * * *	? ? ? * *	* * * * *	12	8	
Phlox	Palona Light Blue	Vaughan's	* * * * *	* * * * *	* * * * *	11	6	
Phlox	Phlox of Sheep	Thompson & Morgan	* * * * *	? ? ? * *	* * * * *	9	8	
Phlox	Promise Pink	Ball Seed	* * * * *	? ? ? * *	* * * * *	11	8	
Rudbeckia	Becky Mix	Vaughan's	* * * * *	? ? * * *	* * * * *	19	9	
Rudbeckia	Double Gold	Burpee	* * * * *	? ? ? * *	* * * * *	37	10	
Rudbeckia	Goldilocks	Vaughan's	* * * * *	* * * * *	* * * * *	24	10	
Rudbeckia	Indian Summer	Ball Seed	* * * * *	? ? ? * *	* * * * *	36	10	
Rudbeckia	Marmalade	Vaughan's	* * * * *	* * * * *	* * * * *	24	10	
Rudbeckia	Nutmeg	Thompson & Morgan	* * * * *	? ? ? * *	* * * * *	32	10	
Rudbeckia	Toto	Park Seed	* * * * *	? ? ? * *	* * * * *	13	10	
Salpiglossis	Casino	Vaughan's	* * * * *	* * * * *	* * * * *	21	8	
Salvia	Argent	Vaughan's	* * * * *	? ? ? * *	* * * * *	24	8	
Salvia	Empire Lilac	Ball Seed	* * * * *	? ? ? * *	* * * * *	8	8	
Salvia	Lady in Red	Park Seed	* * * * *	? ? ? * *	* * * * *	29	8	
Salvia	Maestro	Clause	* * * * *	* * * * *	* * * * *	14	7	
Salvia	Oxford Blue	Ball Seed	* * * * *	* * * * *	* * * * *	30	10	
Salvia	Primco	Clause	* * * * *	* * * * *	* * * * *	10	7	
Salvia	Rhea	Clause	* * * * *	* * * * *	* * * * *	25	8	
Salvia	Strata	Stokes	* * * * *	* * * * *	* * * * *	19	10	
Salvia	Victoria	Clause	* * * * *	* * * * *	* * * * *	26	8	
Schizanthus	Hit Parade	Ball Seed	* * * * *	? ? ? * *	* * * * *	22	7	
Schizanthus	Royal Pierrot	Vaughan's	* * * * *	* * * ? ?	* * * * *	10	7	
Shasta Daisy	Alaska	Vaughan's	* * * * *	* * * * *	* * * * *	34	10	
Shasta Daisy	Snow Lady	Ball Seed	* * * * *	* * * * *	* * * * *	11	6	
Shasta Daisy	White Knight	Burpee	* * * * *	* * * * *	* * * * *	14	9	
Shoo-Fly Plant	Black Pod	Big Dipper	* * * * *	? ? ? * *	* * * * *	57	12	
Snapdragon	Bells Bronze	Vaughan's	* * * * *	* * * * *	* * * * *	8	8	

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BLOOM COLOR	BLOOM SIZE (IN)	FROST TOLERANT		FRAGRANT	CUTTING	DRIED	COMMENTS
		FLOWERS	FOLIAGE				
mix-white,shades of blue	2-3	-	+				very nice, good rain tolerance
deep red-purple	2 1/4	+	+				very good
deep orchid	2 3/4	-	+				very good, a little disease late in season
bright rose	2 1/4	-	+				very good, many blooms, a little disease
coral pink	3	-	+				hit hard by disease
purple	2 1/2	+	+				excellent, spreading
bright rose	2	-	+				fair amount of disease
veined salmon pink	4	-	+				striking color, disease problems late in season
mix-pale yellow,rose,peach	3*	+	+				excellent, good color mix, slightly uneven heights
mix	2*	+	+				very good, nice color mix
mix	3*	+	+		+		very good, mostly shades of red & pink
deep rose/dark center	2 1/2*	+	+				excellent
deep coral/white eye	3*	+	+				very good
light violet blue/dark center	2*	+	+				very nice
pastel mix-pink,coral,lemon	2*	+	+				very nice
rose pink	2*	+	+				excellent
mix-gold, mahogany	5	-	+		+		excellent
bright gold/brown center	5 1/2	-	+		+		excellent, could use staking
bright gold/brown center	4	+	+		+		excellent, some double blooms, little disease late in season
golden yellow/brown centers	6	-	+		+		excellent, upright
gold/brown center	4 1/4	+	+		+		excellent, single blooms
mix-mahogany,gold	4	-	+		+		excellent, unique color
golden yellow/brown center	3	+	+				very good, a little disease
mix	2 1/2	-	+		+		excellent, showy colors, a little disease on blooms in Aug
silvery white	5x1 1/4*	+	+		+	+	very nice
lilac	3 1/2x2 1/2*	-	-				very good, frost damage in June
scarlet red	5 1/2x2*	-	-		+		excellent, a little disease late in season
bright red	7 1/2x2*	-	-				good
deep violet	3x1 3/4*	+	+		+	+	excellent
red	4x2 1/2*	-	-				good, some plants lost to disease
deep blue	5x1 1/4*	+	+		+	+	excellent
blue/white	4x1*	+	+		+	+	very good
deep violet blue	6 1/2x1*	+	+		+	+	excellent
mix-red,rose,pink,purple	1	-	+				good
mix- pink, purple, rose							early die-off from disease
white	5 1/4	+	+		+		good, long stems for cutting
white	3 1/2	+	+				very good, needs a little deadheading
white	4 1/4	+	+		+		excellent, covered with blooms, attractive foliage
lavender blue	1 1/4	-	-				very good, interesting seed pods
bronze	2x2*	-	+				very nice, open faces, recovered from disease & bloomed again

*Weekly bloom periods identified as "?" indicate missing data with our best estimate of total bloom period.

Table 5. (continued)

COMMON NAME	CULTIVAR	SOURCE	WEEKLY BLOOM PERIOD*				HEIGHT (IN)	RECOMMENDED SPACING(IN)
			JUN	JUL	AUG	SEP		
Snapdragon	Chimes Mix	Park Seed	* * *	* * * * *	* * * * *	6	8	
Snapdragon	Cinderella Mix	Burpee		* * * * *	* * * * *	23	10	
Snapdragon	Floral Carpet Orchid	Vaughan's		* * * * *	* * * * *	10 1/2	8	
Snapdragon	Floral Carpet Yellow	Vaughan's		* * * * *	* * * * *	10 1/2	8	
Snapdragon	Liberty Lavender	Ball Seed		* * * * *	* * * * *	27	10	
Snapdragon	Madame Butterfly Mix	Stokes		* ? ? ? ?	* * * * *	34	9	
Snapdragon	Pink Bells	Ball Seed		* * * * *	* * * * *	7	8	
Snapdragon	Princess White with Purple Eye	Ball Seed		* * * * *	* * * * *	17	8	
Snapdragon	Rocket Gold	Vaughan's		? ? ? ? ?	* * * * *	36	10	
Snapdragon	Rocket Lemon	Ball Seed		? ? ? ? ?	* * * * *	32	10	
Snapdragon	Rocket Light Pink	Harris		* * * * *	* * * * *	34	10	
Snapdragon	Rocket Orchid	Stokes		* * * * *	* * * * *	31 1/2	10	
Snapdragon	Rocket Red	Vaughan's	* * *	? ? ? ? ?	* * * * *	35	10	
Snapdragon	Rocket Rose	Stokes		* ? ? ? ?	* * * * *	43	10	
Snapdragon	Rocket White	Vaughan's		? ? ? ? ?	* * * * *	37	10	
Snapdragon	Sonnet Bronze	Ball Seed		* * * * *	* * * * *	23	8	
Snapdragon	Sonnet Burgundy	Vaughan's		* ? ? ? ?	* * * * *	30	8	
Snapdragon	Sonnet White	Ball Seed		* * * * *	* * * * *	22	8	
Snapdragon	Tahiti Mix	Vaughan's		* * * * *	* * * * *	7	8	
Statice	Excellent Mix	Ball Seed		? ? ? ? ?	* * * * *	30	10	
Statice	Forever Gold	Stokes		* * * * *	* * * * *	30	10	
Statice	Pacific Strain Mix	Johnny's		? ? ? ? ?	* * * * *	30	10	
Stocks	Avalanche	Ball Seed		* ? ? ? ?	* * * * *	45	9	
Stocks	Legacy Rose	Vaughan's		? ? ? ? ?	* * * * *	22	8	
Sunflower	Big Smile	Ball Seed		* * * * *	* * * * *	14	12	
Sunflower	Italian White	Park Seed		* * * * *	* * * * *	60	10	
Sunflower	Moonbright	Ball Seed		* * * * *	* * * * *	66	12	
Sunflower	Park's Velvet Tapestry	Park Seed		* * * * *	* * * * *	72	12	
Sunflower	Sonja	Park Seed		* * * * *	* * * * *	49	10	
Sunflower	Sunbeam	Park Seed		* * * * *	* * * * *	48	12	
Sunflower	Sunbird	Burpee		* * * * *	* * * * *	50	12	
Sunflower	Sunrich Lemon	Harris		* * * * *	* * * * *	54	12	
Sunflower	Teddy Bear	Harris		* * * * *	* * * * *	25	10	
Sunflower	Valentine	Park Seed		* * * * *	* * * * *	50	12	
Verbena	Amour Mix	Ball Seed		* * * * *	* * * * *	11	8	
Verbena	Blue Lagoon	Clause		? ? ? ? ?	* * * * *	14	8	
Verbena	Imagination	Stokes	* * *	* * * * *	* * * * *	19	8	
Verbena	Novalis Deep Blue/White Eye	Park Seed		* * * * *	* * * * *	9	8	
Verbena	Peaches & Cream	Ball Seed		* * * * *	* * * * *	13	8	
Verbena	Romance Silver	Stokes	* * *	? ? ? ? ?	* * * * *	12	8	

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BLOOM COLOR	BLOOM SIZE (IN)	FROST TOLERANT		FRAGRANT	CUTTING	DRIED	COMMENTS
		FLOWERS	FOLIAGE				
mix	2 1/2x1 1/2*	-	+				good early season performer
mix	3 x 1 1/2*	+	+		+		good early season performer
orchid	4 3/4x2 1/4*	-	+				excellent early season performer
yellow	2 1/2 x 2*	+	+				very good, finished blooming by end of Aug
red-purple	5 1/2x3*	+	+		+		excellent
mix	8x3*	+	+		+		excellent, double azalea-type blooms, needs staking
pink	2x2*	-	+				blooms early, "butterfly" type
white/purple edges	5 1/2 x 2*	+	+				very nice
bright yellow	10x3*	+	+		+		excellent
lemon yellow	6 1/2x3 1/2*	-	+		+		very good, needs staking
pink	6x2 1/4*	+	+		+		excellent, needs staking
orchid	8x3*	+	+		+		excellent, needs staking
deep burgundy red	9 1/2x3*	+	+		+		excellent
rose pink	15x3 1/2*	+	+		+		very nice, needs staking
white	8x3*	+	+		+		very nice, needs staking
orange, gold & pink	6x3*	+	+				excellent
deep purple	6x2 3/4*	+	+		+		nice
white	5x2*	+	+				very nice, blooms early
mix	2 1/4x2 1/2*	+	+				excellent, blooming over by Sept
mix	1 1/2*	+	+		+	+	uniform height, mostly rose & blue
yellow	2*	+	+		+	+	very nice
mix-pink,yellow,blue,white	2 1/2*	+	+		+	+	good color mix, height somewhat uneven
white	9 1/2x2*	+	+		+		fewer double blooms than last year
lavender pink	4x 2 1/4*	+	+	+			excellent
yellow/brown center	8	-	+				diseased early
creamy white /brown center	4 1/4	-	-		+		excellent, long blooming
lemon yellow/brown center	9	+	+		+		very nice
mix	6	+	-		+		very nice, some bicolors
bright gold/brown centers	4	+	+		+		very nice, attractive plants
golden yellow/green center	10		-		+		large flower heads
bright yellow	9		+				large heads with edible seeds
bright yellow/brown center	7		-		+		very nice
gold	5	+	-				very nice
lt yellow /brown centers	3 1/2	+	-		+		very nice
mix	2*	+	+				nice mix, could use deadheading
deep violet blue	2 1/4*	+	+				very good
purple	1*	+	+				excellent, ferny foliage, spreading habit
deep blue	2*	+	+				nice
salmon pink,apricot	2*	-	+				excellent, a little rain damage on blooms
pale lavender pink	1 1/2*	-	+				little tolerance for rain

*Weekly bloom periods identified as "?" indicate missing data with our best estimate of total bloom period.

Table 5. (continued)

COMMON NAME	CULTIVAR	SOURCE	WEEKLY BLOOM PERIOD*												HEIGHT (IN)	RECOMMENDED SPACING(IN)		
			JUN			JUL			AUG			SEP						
Verbena	Sandy White	Vaughan's				*	*		*	*	*	*	*	*			10	8
Verbena	Showtime Blaze	Harris				*	*	*	*	*	*	*	*	*			10	8
Viola	Princess Blue	Harris	*	*	*	*	*	*	*	*	*	*	*	*			13	8
Viola	Sorbet Blackberry Cream	Vaughan's	*	*	*	*	*	*	*	*	*	*	*	*			20	8
Viscaria	Blue Angel	Thompson & Morgan				*	*		*	*	*						12	7
Xanthisma		Park Seed							?	?	?	?	?	?	*	*	29	10
Xeranthemum	Lumina Double Rose	Thompson & Morgan				*	*	*	*	*	*						21	8
Zinnia	Border Beauty Rose	Harris	*	*	*	*	*	*	*	*	*	*	*	*			22	10
Zinnia	Border Beauty Scarlet	Burpee	*	*	*	*	*	*	*	*	*	*	*	*			21	10
Zinnia	Burpeeana Giant Mix	Stokes				*	*	*	*	*	*	*	*	*			32	10
Zinnia	Crystal White	All-America Selections							*	*	*	*	*	*			8	8
Zinnia	Scarlet Splendor	Burpee				*	*	*	*	*	*	*	*	*			25	10
Zinnia	Short Stuff Deep Red	Ball Seed	*	*	*	*	*	*	*	*	*	*	*	*			10 1/2	8
Zinnia	Small World Cherry	Vaughan's				*	*	*	*	*	*	*	*	*			21	10
Zinnia	Small World Pink	Vaughan's	*	*	*	*	*	*	*	*	*	*	*	*			21	10
Zinnia	Splendor Orange	Burpee	*	*	*	*	*	*	*	*	*	*	*	*			20	10
Zinnia	Will Rogers	Stokes							?	?	?	*	*	*				10
Zinnia	Yellow Marvel	All-America Selections	*	*	*	*	*	*	*	*	*	*	*	*			22	8

*Weekly bloom periods identified as "?" indicate missing data with our best estimate of total bloom period.

Appendix 1. Commercial sources and organizations.

AAS	ALL-AMERICA SELECTIONS	Lawyer	LAWYER NURSERY INC., 950 HWY 200 W, PLAINS, MT 59859
Agway	AGWAY, INC SEED PLANT, 1225 ZEAGER RD., ELIZABETHTOWN, PA 17022	McClure &	
AHS	THE AMERICAN HORTICULTURAL SOCIETY, PO BOX 6118, 7931 E. BOULEVARD DR, ALEXANDRIA, VA 22308	Zimmerman	MCCLURE & ZIMMERMAN, 108 W. WINNEBAGO, PO BOX 368, FRIESLAND, WI 53935
AK Greenhouse	ALASKA GREENHOUSE, 1301 MULDOON RD., ANCHORAGE, AK 99504	Nauriaq	NAURIAQ GARDENS, PO BOX 82692, FAIRBANKS, AK 99708
ANPS*	ALASKA NATIVE PLANT SOCIETY, PO BOX 141613, ANCHORAGE, AK 99514	NCGR	NATIONAL CLONAL GERMLASM REP., 33447 PENEIA RD, CORVALIS, OR 97333
Applewood	APPLEWOOD SEED CO., 5380 VIVIAN ST, ARVADA, CO 80002	NCRPIS	NORTH CENTRAL REGIONAL PLANT INTRODUCTION STATION, AMES, IA
ARGS*	AMERICAN ROCK GARDEN SOCIETY, PO BOX 67, MILLWOOD, NY 10546	NCSU	NORTH CAROLINA STATE UNIVERSITY ARBORETUM, DEPT OF HORTICULTURAL SCIENCE, BOX 7609, RALEIGH, NC 27695-7609
Arboretum Norr	ARBORETUM NORR, BOX 4097, S-90403, UMEÅ, SWEDEN	NEWFS*	NEW ENGLAND WILD FLOWER SOCIETY, GARDEN IN THE WOODS, HEMENWAY RD, FRAMINGHAM, MA 01701
B & D	B & D LILIES, 330 P. ST., PO BOX 2007, PORT TOWNSEND, WA 98368	Northrup King	SEE VAUGHAN'S
Ball Seed	BALL SEED CO., PO BOX 335, WEST CHICAGO, IL 60185-0335	Nourse	NOURSE FARMS INC., BOX 485 RFD, SOUTH DEERFIELD, MA 01373
Barnaul	THE LISAVENKO RESEARCH INSTITUTE OF HORTICULTURE, BARNAUL, ALTAI REGION, RUSSIA	Park	PARK SEED CO., COKESBURY RD, GREENWOOD, SC 29647-0001
BCN	BEAR CREEK NURSERY, PO BOX 411, NORTHPORT, WA 99157	PMC	PLANT MATERIALS CENTER, HC02 BOX 7440, PALMER AK 99645
Beaverlodge	BEAVERLODGE NURSERY, LTD., BOX 127, BEAVERLODGE, AB, T0H 0C0, CANADA	Richters	RICHTERS, GOODWOOD, ON, LOC 1A0, CANADA
Big Dipper	BIG DIPPER GARDENS, PO BOX 82234, FAIRBANKS, AK 99708	The Roseraie	THE ROSERAIE AT BAYFIELDS, BOX R, WALDOBORO, ME 04572-0919
Bluebird	BLUEBIRD NURSERY, INC., PO BOX 460, CLARKSON, NE 68629	SAAS	DENDROLOGICAL GARDEN - SIBERIAN ACADEMY OF AGRICULTURAL SCIENCES, NOVOSIBIRSK REGION, RUSSIA
BTI	BETTER TREES, INC., 7894 W MAPLE RAPIDS RD, ST JOHNS, MI 48879	SBG	SIBERIAN BOTANICAL GARDEN, NOVOSIBIRSK, RUSSIA
Burpee	W. ATLEE BURPEE & CO., 300 PARK AVE, WARMINSTER, PA 18991-0001	Schumacher	F.W. SCHUMACHER CO., INC., 36 SPRING HILL RD, SANDWICH, MA 02563-1023
Chamal	MOUNTAIN EXPERIMENT STATION, GORNO-ALTAISK REGION, RUSSIA	Seeds of AK	SEEDS OF ALASKA, BOX 3127, KENAI, AK 99611
Clair's	CLAIR'S CULTIVARS, 1364 ESRO RD, FAIRBANKS, AK 99712	Seiberling	SEIBERLING NATUREALM, AKRON, OHIO
Clause	CLAUSE SEED CO., NORTH AMERICAN OFFICE, 100 BREEN RD., SAN JUAN BAUTISTA, CA 95045	Smith Nursery	SMITH NURSERY CO., BOX 515, CHARLES CITY, IOWA 50616
CSBG	CENTRAL SIBERIAN BOTANICAL GARDEN, NOVOSIBIRSK, RUSSIA	South Slope	SOUTH SLOPE GREENHOUSES, FAIRBANKS, AK
Daehnfeldt	DAEHNFELDT, BOX 947, ALBANY, OR 97321	Stokes	STOKES SEEDS INC., PO BOX 548, BUFFALO, NY 14240-0548
DBG	DENVER BOTANIC GARDENS, 909 YORK ST, DENVER, CO 80206	Tack's	TACK'S GENERAL STORE, PO BOX 16004, TWO RIVERS, AK 99716
de Jager	PETER DE JAGER BULB CO., PO BOX 2010, SO HAMILTON, MA 01982	T & M	THOMPSON & MORGAN INC., PO BOX 1308, JACKSON, NJ 08527
GBG	GEORGESON BOTANICAL GARDEN, UNIVERSITY OF ALASKA FAIRBANKS, PO BOX 757200, FAIRBANKS, AK 99775-7200	Vaughan's	VAUGHAN'S SEED CO., 5300 KATRINE AVE, DOWNERS GROVE, IL 60515-4095
Harris Seeds	HARRIS SEEDS, 60 SAGINAW DR., PO BOX 22960, ROCHESTER, NY 14692-2960	VB&S	K. VAN BOURGONDIE & SONS, INC., 245 FARMINGDALE RD, BABYLON, NY 11702
HFF	HARDY FERN FOUNDATION, PO BOX 60034, RICHMOND BEACH, WA 98160	Vermont Bean	VERMONT BEAN SEED CO., GARDEN LANE, FAIR HAVEN, VT 05743
Holmtown Nursery ..	(NORTHERN LIGHTS NURSERY) 1301 30TH AVE, FAIRBANKS, AK 99701	Washburn	WASHBURN FARM NURSERY, PO BOX 823, PALMER, AK 99645
Hudson	J.L. HUDSON, PO BOX 1058H, REDWOOD CITY, CA 94064	Waushara	THE WAUSHARA GARDENS, N 5491 5TH DR, PLAINFIELD, WI 54966
J & P	JACKSON & PERKINS, PO BOX 1028, MEDFORD, OR 97501	Wayside	WAYSIDE GARDENS, 1 GARDEN LN, HODGES, SC 29695-0001
KHN	KNIGHT HOLLOW NURSERY, INC., 236 E SUNSET CT, MADISON, WI 53705	White Flower	WHITE FLOWER FARM, PO BOX 50, LITCHFIELD, CT 06759-0050
Johnny's	JOHNNY'S SELECTED SEEDS, FOSS HILL RD, ALBION, ME 04910	Wildseed	WILDSEED FARMS, INC., PO BOX 308, EAGLE LAKE, TX 77434
Lamb	LAMB NURSERIES, 101 E SHARP AVE, SPOKANE, WA 99202	William Dam	WILLIAM DAM SEEDS, PO BOX 8400, DUNDAS, ON, L9H 6M1, CANADA
		WNS	WILDWOOD NORTHERN SEEDS, WHITEHORSE, UT, CANADA

*seeds available to members

Map of the Georgeson Botanical Garden.

