

Perennial Ornamental Trials at the Georgeson Botanical Garden

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Introduction

In 1989, a systematic evaluation of woody ornamentals, grasses, herbaceous perennials, and ferns was begun at the University of Alaska Fairbanks, Georgeson Botanical Garden (64°51'N, 47°52'W). 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. Evaluations are conducted in cooperation with the All America Selections Program, the Hardy Fern Foundation and the US Department of Agriculture North Central Plant Introduction Station.



Georgeson Botanical Trial Gardens

Methods

Both native and introduced species and cultivars are obtained from wild stands, botanical gardens, plant materials centers, commercial nurseries and seed companies in North America and throughout the circumpolar north.

- *Plants are grown on a south-facing slope, elevation 145–148 meters.
- *Soils are Fairbanks silt-loam and have been cultivated since about 1910.
- *All plants, except ferns receive full sun.
- *Plants are watered with overhead sprinkler irrigation.
- *Plots are fertilized annually with 10–20–20S.
- *Weather data are compiled annually from a US Weather Service station approximately 107m west of the Garden.
- *Herbaceous perennials are evaluated for five years, and woody ornamentals for ten years.
- *Quality data are collected such as flowering period, bloom color, height and spread. In addition, plants are rated for winter hardiness and autumn frost tolerance.
- *Plants receive no special winter protection such as mulching or screening.
- *The winter hardiness scale is:
 - 0 = no visible injury
 - 1 = slight winter injury
 - 2 = moderate wintery injury, recovery likely
 - 3 = severe setback from winter injury, recovery, questionable
 - 4 = winter killed



Hawthorn – *Crataegus succulenta*



Siberian columbine – *Aquilegia sibirica*



Alaska Fleabane – *Erigeron glabellus*

Weather Records 1993–1997

Season	1993	1994	1995	1996	1997
Maximum temp. (°C)	32	32	29	28	31
Minimum temp. (°C)	-46	-38	-44	-44	-48
Last spring frost	1 May	6 May	22 May	5 June	25 May
First Fall Frost	1 Sept	23 Aug	4 Sept	27 Aug	19 Aug
Frost-free days	123	109	105	83	86
Rainfall (cm)	16.9	18.3	25.8	22.2	14.9
Snowfall (cm)	334.5	92.9	175.2	121.4	148.3

Siberian rocket (*Hesperis sibirica*)
is no longer recommended.



Siberian Rocket – *Hesperis sibirica*

Results

The winter of 1995–96 caused significant losses to perennials, especially herbaceous perennials because of an extremely low accumulation of snowfall. The total accumulation through January 1996 was only 15 cm. During that time the minimum winter temperature reached -42°C in December and -44°C in January. Plants that had survived very well until that year, but died because of lack of insulating snow are listed below.

<i>Achillea borealis</i>	<i>Heuchera</i> 'Purple Palace'
<i>A. ptarmica</i>	<i>Heuchera x brizoides</i> 'Firefly'
<i>A. taygetea</i> 'Debutante'	<i>Iris missouriensis</i>
<i>Anemone Halleri</i>	<i>I. pseudacoris</i>
<i>Aquilegia atrata</i>	<i>Leontopodium alpinum</i>
<i>A. buergeriana</i>	<i>Liatris aspera</i>
<i>A. canadensis</i>	<i>L. borealis</i>
<i>A. formosa</i>	<i>L. punctata</i>
<i>A. glandulosa</i>	<i>Lychnis chalcidonica</i>
<i>A. pyramidalis</i>	<i>L. Flos-cuculi</i>
<i>A. vulgaris</i>	<i>L. Flos-jovi</i>
<i>Aquilegia</i> 'Mckana Giant Hybrids'	<i>L. viscaria</i>
<i>Aquilegia</i> 'Nora Barlow'	<i>Muscari</i> 'Early Giant'
<i>Aquilegia</i> 'Dynasty'	<i>M. armeniacum</i>
<i>Aquilegia vulgaris</i> 'Michael Strohmayer'	<i>M. botryoides</i>
<i>Arnica alpina</i>	<i>Myrrhis odorata</i>
<i>Calamagrostis acutiflora</i> var. <i>stricta</i>	<i>Penstemon digitalis</i>
<i>Calamagrostis arundinacea</i> 'Karl Forester'	<i>Phacelia sericea</i> (native)
<i>Chrysanthemum leucanthemum</i>	<i>Polemonium caeruleum</i>
<i>Crocus chrysanthus</i> 'Snow Bunting'	<i>P. reptans</i>
<i>C. tomasinianus</i> 'Ruby Giant'	<i>Polystichum acrostichoides</i>
<i>C. versicolor</i> 'Picturatus'	<i>Silphium perfoliatum</i>
<i>Delphinium x Belladonna Improved</i>	<i>Stachys grandiflora</i>
<i>Dianthus</i> 'Ipswich Pinks Mix'	<i>S. officinalis</i>
<i>D. carthusianorum</i>	<i>Tulipa Batalinii</i>
<i>D. deltoideus</i>	<i>T. clusiana</i>
<i>Dryopteris felix-mas</i>	<i>Veronica alpina</i>
<i>Galium odoratum</i>	



Greene's mountain ash – *Sorbus scopulina*

Recommended perennials

- Trees:**
- Crataegus succulenta*– hawthorn
 - Larix sibirica*– Siberian Larch
 - Picea glauca* var. *albertiana*– Black Hills Spruce
 - Ulmus pumila*– Siberian elm
- Shrubs**
- Betula micheauxii*
 - Juniperus horizontalis* 'Bar Harbor'
 - Rosa* 'Lac Majeau'
 - Rosa* 'Lac LaNonne'
 - Physocarpus monogynus*– ninebark
 - Sorbaria sorbifolia*– false spiraea
 - Sorbus scopulina*– native mountain ash
 - Spiraea chamaedryfolia*
 - S. salicifolia*
- Ferns**
- Matteuccia strethiopteris*– Ostrich Fern
 - Dryopteris expansa*– native wood fern
 - Polystichum Braunii*– Braun's shield-fern
- Herbaceous perennials**
- Aquilegia sibirica*– Siberian columbine
 - Achillea ptarmica* 'The Pearl'–yarrow
 - Asparagus officinalis* var. *pseudoscaber*
 - Aster sibiricus*– native Siberian aster
 - Dianthus plumarius* 'Smokey'
 - Draba densifolia*– native draba
 - Erigeron glabellus*– native fleabane
 - Galium boreale*– native bedstraw
 - Galium verum*– yellow bedstraw
 - Hesperis sibirica*– Siberian rocket
 - Lilium tigrinum*– tiger lily
 - Lilium sp.* – many cvs. Asiatic hybrids
 - Phlomis tuberosa*– Russian sage
 - Sanguisorba officinalis*– native burnet
 - Thalictrum sparsiflorum*– native
 - Trollius laxus*– pale globeflower
 - T. europaeus*– European globeflower
 - T. chinensis*– Chines globeflower

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