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°17'N, 47°12'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 Ferns Foundation, and the U.S. Department of Agriculture North Central Plant Introduction Station.

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.
- Soil is 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 10-20-20.
- Weather data are compiled annually from a US Weather Service station approximately 10 km 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. Additional 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 winter injury, recovery likely
  3 = severe setback from winter injury, recovery, questionable
  4 = winter killed

Siberian cumbine – Aquilegia sibirica

Hawthorn – Crataegus susculenta

Siberian cumbine – Aquilegia sibirica

Alaska Fleabane – Erigeron glabellus

Greene’s mountain ash – Sorbus scopuliflora

Recommended perennials

Trees:
- Crataegus susculenta – 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 LeNonne’
- Physocarpus monogynus – ninebark
- Sorbaria sorbifolia – false spirea
- Sorbus scopulina – native mountain ash
- Spiraea chamaedryfolia
- S. salicifolia

Ferns
- Matteuccia struthiopteris – ostrich fern
- Dryopteris expansa – native wood fern
- Polystichum Braunii – Braun’s shield fern

Herbaceous perennials
- Aquilegia sibirica – Siberian cumbine
- Achillea ptarmica ‘The Pearl’ – yarrow
- Asparagus officinalis var. pseudosuber
- 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
- Phlox subulata – Russian sage
- Sanguisorba officinalis – native burnet
- Thalictrum sp. – native trout lilies
- Trollius fasciatus – pale globeflower
- T. europaeus – European globeflower
- T. chinensis – China globeflower


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<tbody>
<tr>
<td>Maximum temp. (°C)</td>
<td>32</td>
<td>32</td>
<td>29</td>
<td>28</td>
<td>31</td>
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<tr>
<td>Minimum temp. (°C)</td>
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<td>-38</td>
<td>-44</td>
<td>-44</td>
<td>-48</td>
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<tr>
<td>Last spring frost</td>
<td>May 1</td>
<td>May 6</td>
<td>May 22</td>
<td>May 25</td>
<td>May 26</td>
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<tr>
<td>First Fall Frost</td>
<td>Sept 1</td>
<td>Sept 23</td>
<td>Aug 4</td>
<td>Sept 27</td>
<td>Aug 19</td>
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<td>109</td>
<td>105</td>
<td>83</td>
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<tr>
<td>Rainfall (cm)</td>
<td>16.9</td>
<td>19.3</td>
<td>25.8</td>
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<td>Snowfall (cm)</td>
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<td>292.9</td>
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<td>121.4</td>
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Introduction

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**Weather Records 1993–1997**

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* 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.
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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.

Achillea borealis  
A. ptarmica  
A. taygetea ‘Debutante’  
Anemone Halleri  
Aquilegia atrata  
A. Buergurana  
A. canadensis  
A formosa  
A. glandulosa  
A. pyranaica  
A. vulgaris  
Aquilegia ‘Mckana Giant Hybrids’  
Aquilegia ‘Nora Barlow’,  
Aquilegia ‘Dynasty’,  
Aquilegia vulgaris ‘Michael Strohmayer’  
Arnica alpina  
Calamagrostis acutiflora var. stricta  
Calamagrostis arundinacea ‘Karl Forester’  
Chrysanthemum leucanthemum  
Crocus chrysanthus ‘Snow Bunting’  
C. Tomasinianus ‘Ruby Giant’  
C. versicolor ‘Picturus’  
Delphinium x Belladonna Improved  
Dianthus ‘Ipswich Pinks Mix’  
D. carthusianorum  
D. deltoides  
Dryopteris felix-mas  
Galium odoratum  
Heuchera ‘Purple Palace’  
Heuchera x brizoides ‘Firefly’  
Iris missouriensis  
I. pseudacorus  
Leontopodium alpinum  
Liatris aspera  
L. borealis  
L. punctata  
Lychnis chalcedonica  
L. Flos-cuculi  
L. Flos-jovi  
L. viscaria  
Muscari ‘Early Giant’  
M. armeniacum  
M. botryoides  
Myrrhis odorata  
Penstemon digitalis  
Phacelia sericea (native)  
Polemonium caeruleum  
P. reptans  
Polystichum acrostichoides  
Silphium perfoliatum  
Stachys grandiflora  
S. officinalis  
Tulipa Batalinii  
T. Clusiana  
Veronica alpina
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Rosa ‘Lac Majeau’
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