

Plants that weren't tough enough

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Any researcher working in the far north is well aware of the beneficial attributes of snow as an insulating blanket for both plants and small animals. We learned in graphic detail just how important snow is in Alaska during the winter of 1995–96. The total accumulation of snow through late January 1996 was only 6 inches (15.2cm). During that time the minimum winter air temperature recorded at the Fairbanks Experiment Farm reached -43°F (-42°C) in December and -48°F (-44°C) in January. Thirty-three percent of the experimental plants in the Georgeson Botanical Garden research test plots were killed by this combination of low temperatures and little snow (Table 1).

Damage could have been caused by extreme desiccation of plant crowns and roots, frost heaving or direct freezing damage to the plant cells. Many Asiatic hybrid lilies were killed by voles tunneling into the soil and munching on the bulbs. Plants either were killed outright or showed severe damage. Some columbines, crabapples, grape hyacinths and lilies leafed out or emerged in midsummer, but subsequent survival is doubtful. Some mountain ash and crabapple trees leafed out in spring, then died in midsummer, an indication of severe root damage. Some damage may not become apparent for years. For instance, cells killed by winter injury can be open wounds for entry of pathogens. A tree branch that rots and falls off 10 years from now may have begun dying during the winter of 95–96.

Damage from the winter of 95–96 was not limited to the Experiment Farm. Gardeners and horticulturists throughout Interior and Southcentral Alaska reported significant losses. Like our experience at the Garden, losses were unpredictable and varied. Nearly everyone reported losses of shasta daisies and maltese cross. However, we experienced total loss of many cultivars of peonies, while other gardeners had no losses. One Fairbanksan reported total loss of a wide variety of shrub roses, whereas roses at the Botanical Garden were not killed. The Alaska Botanical Garden in Anchorage, reported 43% loss of herbaceous perennials in their Perennial and Demonstration Gardens.

Even more interesting than the tremendous death toll, was the incredible diversity of plants that died. Plant losses included species from as far south as latitude 41°N (Nebraska) as well as Alaska native plants. Introduced species that had survived for more than 50 years at the Experiment Farm died, whereas species native to such places as Turkestan, Iowa, Austria, New York and Italy survived without damage. No patterns of survival emerged from this “test winter.” Latitude of origin was meaningless as was taxonomic associations, plant form (woody, herbaceous, etc.) and traditional cold hardiness zone designations.

This winter served to emphasize just how little we know about plant hardiness in Interior Alaska's landscapes. One thing is certain: The plants listed below will now come with a warning—needs snow cover to survive!

Table 1. Perennials in the GBG research test plots that survived at least one winter but were killed during the winter of 1995–96 because of inadequate snow cover.

<i>Achillea borealis</i> – native yarrow	<i>Arabis caucasica</i> – wall rock cress
<i>Achillea Ptarmica</i> – sneezewort	<i>Arnica alpina</i> – alpine arnica
<i>Achillea taygetea</i> ‘Debutante’ – yarrow	<i>Asplenium scolopendrium</i> – Hart’s tongue fern
<i>Ampelopsis glandulosa</i> var. <i>brevipedunculata</i> – porcelain vine	<i>Aster ptarmicoides</i> – white upland aster
<i>Amsonia Tabernaemontana</i> var. <i>salififolia</i>	<i>Berberis koreana</i> x <i>Thunbergii</i> ‘Emerald Carousel’– hybrid
<i>Anemone Halleri</i> – Haller anemone	<i>Calamagrostis acutiflora</i> var. <i>stricta</i> – feather reed grass
<i>Aquilegia</i> ‘Mckana Giant Hybrids’– columbine	<i>Calamagrostis arundinacea</i> ‘Karl Foerster’
<i>Aquilegia</i> ‘Nora Barlow’ – columbine	<i>Campanula alliariifolia</i>
<i>Aquilegia atrata</i> – columbine	<i>Campanula glomerata superba</i>
<i>Aquilegia Buergerana</i> – columbine	<i>Carex Grayi</i>
<i>Aquilegia canadensis</i> – wild columbine	<i>Chelone Lyonii</i>
<i>Aquilegia formosa</i> – Sitka columbine	<i>Chrysanthemum coccineum</i> – ‘Robinson’s Dark Crimson’
<i>Aquilegia glandulosa</i>	<i>Chrysanthemum leucanthemum</i> – ox-eye daisy
<i>Aquilegia pyrenaica</i> – Pyrenees columbine	<i>Cimicifuga racemosa</i> – black cohosh
<i>Aquilegia</i> sp. – Berdsk columbine	<i>Crocus chrysanthus</i> ‘Princess Beatrix’
<i>Aquilegia</i> ‘Dynasty’ – columbine	<i>Crocus chrysanthus</i> ‘Snow Bunting’
<i>Aquilegia vulgaris</i> – garden columbine	<i>Crocus Tomasinianus</i> ‘Ruby Giant’
<i>Aquilegia vulgaris</i> ‘Michael Stromminger’ – garden columbine	<i>Crocus versicolor</i> ‘Picturatus’



Activities and food were plentiful at the Alaska Ag Appreciation Day held in Palmer recently. Tubs of coleslaw (above) made with Alaska grown cabbage, were just part of the day's menu. Gene Williams (top right) gives fun day participants a close-up view of a reindeer. Noelle Williams (below) demonstrates sheepdog herding techniques and Janet McCullough takes two young people on a horse drawn wagon ride around the farm grounds. Ted Pyrah (right) demonstrates mulch layering in a corn field.

—Photos by Jay McKendrick and Fred Husby—

