

Ornamental Grasses Cold Weather Tolerance

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INTRODUCTION

Ornamental grasses are a group of plants from the grass (Graminae) family and from closely related families including sedges (Cyperaceae), rushes (Juncaceae) and others. The general nature of the term 'ornamental grass' allows some non-grass plants to be included in the group because they have grass-like appearance. The term 'ornamental' characterizes these plants as being showy in the landscape. The showiness may feature the plant's foliage, flowers, texture, shape, growth habit form, or seasonal color. Those decorative features allow them to be used in flowerbeds, mass plantings, and as unique specimen plants by themselves.

An investigation of cold weather hardiness of ornamental grasses was initiated at the Noer Facility in 1995. This study keeps records and reports on how well the ornamental grasses in our study survive our climate. The Noer facility and all but the northern fifth of Wisconsin are in the USDA Hardiness Zone 4, so this information may be applicable to the majority of the state.

Some ornamental grasses are invasive which may be a good or bad feature. The invasive ones in our study are identified in this report. Invasiveness can be a positive feature when trying to stabilize a hillside or stream bank, fill a large flowerbed, provide a backdrop for a putting green, or soften the appearance of a large wall. However it can be a detriment if the invasive plant is placed in a flowerbed that is too small, planted too close to a sidewalk, or spreads seed to an unwanted landscape area.

A recent six-year winter hardiness study of ornamental grasses was completed at the Minnesota Landscape Arboretum. They found 85 out of the 165 ornamental grasses studied there could be grown successfully in USDA Zone 4. You may get a copy of their publication by calling 608-262-3346 and asking for North Central Regional Publication #573, Ornamental Grasses for Cold Climates. Their publication has many useful pictures and descriptions to help you choose ornamental grasses. A visit to the Noer facility can also familiarize you with many different ornamental grasses and their characteristics. In addition, the Noer study can verify the hardiness data from the Minnesota study.

MATERIALS AND METHODS

We began planting ornamental grasses at the Noer facility in July 1995. We are adding to the collection of plants every year as more plants become available. The current status of the study is described here.

- We added 18 new plants in 2001.
- This brings the total number of different plants that have been included in the study to 103 types from 39 different genera.
- Fourteen of the 103 types have not survived.
- Presently 89 types are in the study for the 2001 season.

The strategy we used in the design of the Noer demonstration was to place the plants in their natural settings: Shade loving plants were placed in the shade, moisture-loving plants were irrigated, etc. The majority of the plants naturally grow in groups so we placed most varieties in groups of three. All of the plants were mulched with 3” of shredded hardwood bark.

OBSERVATIONS

This study is in its sixth year and will continue indefinitely. We will have more confidence in recommending different species by continuing the study for many years. The long timeframe will allow us to observe survival under different climatic extremes giving the ratings of winter temperature tolerance more validity. During the six years of the study, the winters have had different extremes.

- The winter of 95/96 set records for cold and severity.
- The winters of 96/97 and 98/99 were more average.
- The winters of 97/98 and 99/00 set records for mild temperatures.
- The winter of 00/01 was extremely cold but record snowfall protected the crowns of the plants.

The ratings of plant hardiness are done by visually observing plant health and survival rate. Those observations are done in early June at which time all the plants have put on new growth. The rating given to each species is as follows for our climatic region:

- Group 1 (The most winter hardy and recommended as perennials)
- Group 2 (Some of the plants die or show extensive winter injury.)
- Group 3 (Most or all plants died thus are not recommended as perennials)
- Group 4 (These plants are newly planted and have not been observed over-winter in our study.)

Of the 105 grasses studied these six years, the following results of winter hardiness have been concluded:

- Sixty-five of the types can be recommended winter hardy for Zone 4.
- Six of the types may survive in mild winters or protected environments.
- Fourteen types are not recommended as perennials for Zone 4
- Eighteen types are newly planted in 2001 and have not been tested through a winter yet.

The following list also notes those plants that are considered invasive. Invasiveness occurs through seeding, or by the spread of either above or belowground stem called stolons or rhizomes respectively. The means of invasiveness is in parenthesis shown after the common name.

NOER FACILITY ORNAMENTAL GRASSES

<u>Botanical Name</u>	Group 1 (The most winter hardy)	<u>Common Name</u>	<u>Invasive Location</u>	
			<u>Means</u>	<u>Key</u>
<i>Alopecurus pratensis</i> ‘Aureus’		yellow foxtail grass		3
<i>Andropogon gerardii</i>		big bluestem, turkey foot	(Seed)	11,70
<i>Arrhenatherum elatius bulbosum</i>		‘Variegatum’ bulbous oat grass		31
<i>Arrhenatherum elatius</i> ssp.		bulbosum variegatum		53

<i>Bouteloua curtipendula</i>	side oats gramma	(Seed)	1
<i>Briza media</i>	quacking grass, rattle grass		55
<i>Calamagrostis acutiflora</i> ‘Stricta’	feather reed grass		21
<i>Calamagrostis arundinacea</i> ‘Karl Foerster’	Foerster’s feather reed grass		18
<i>Calamagrostis arundinacea</i> ‘Overdam’	feather reed grass		20
<i>Calamagrostis brachytricha</i>	Korean feather reed grass		19
<i>Carex</i> ‘The Beatles’	‘The Beatles’ sedge, mop-headed sedge		91
<i>Carex muskingumensis</i> ‘Little Midge’	dwarf palm leaf sedge		56
<i>Carex muskingumensis</i> ‘Wachtposten’	‘Wachtposten’ palm leaf sedge		49
<i>Carex muskingumensis</i>	palm leaf sedge		64
<i>Chasmanthium latifolium</i>	northern sea oats, wild oats		65
<i>Deschampsia caespitosa</i> ‘Fairy’s Joke’	fairy’s joke tufted hairgrass		40
<i>Deschampsia caespitosa</i> ‘Schottland’	‘Scotland’ tufted hairgrass		57
<i>Deschampsia cespitosa</i> ‘Goldschleier’	‘Goldschleier’ tufted hair grass		41
<i>Deschampsia cespitosa</i> ‘Tardiflora’	‘Tardiflora’ tufted hair grass		59
<i>Deschampsia cespitosa</i> ‘Tautraeger’	‘Tautraeger’ tufted hair grass		42
<i>Elymus racemosus</i> ‘Glaucus’	volga wild rye, giant dune grass	(Rhiz)	63
<i>Erianthus ravennae</i>	ravenna grass, hardy pampas grass		81
<i>Fargesia nitida</i> ‘Ems River’	fountain bamboo		48
<i>Festuca cinerea</i> ‘Elija blue’	blue fescue, blue sheeps fescue		29,66
<i>Festuca glauca</i> ‘Blauglut’	blue glow blue fescue		52
<i>Festuca glauca</i> ‘Seeigel’	sea urchin blue fescue		51
<i>Glyceria maxima</i> ‘Variegata’	variegated manna grass	(Rhiz)	100
<i>Helictotrichon sempervirens</i>	blue oat grass		34
<i>Hystrix patula</i>	bottlebrush grass	(Seed)	68
<i>Juncus effusus</i>	soft rush		97
<i>Juncus inflexus</i> (glaucus)	rush		78
<i>Koeleria glauca</i> ‘Large Blue Hair Grass’	large blue hair grass		10
<i>Miscanthus</i> ‘Giganteus’	giant miscanthus		82
<i>Miscanthus sinensis</i> ‘Autumn Light’	‘Autumn Light’ Japanese silver grass		98
<i>Miscanthus sinensis</i> ‘Blondo’	Japanese silver grass		92
<i>Miscanthus sinensis</i> ‘Gracillimus’	maiden grass		16,87
<i>Miscanthus sinensis</i> ‘Graziella’	‘Graziella’ Japanese silver grass		80
<i>Miscanthus sinensis</i> ‘Morning Light’	‘Morning Light’ Japanese silver grass		77
<i>Miscanthus sinensis</i> ‘Purpurascen’s’	flame grass, purple silver grass		85
<i>Miscanthus sinensis</i> var. <i>strictus</i>	porcupine grass, banded miscanthus		2,84
<i>Molinia caerulea</i> ‘Skyracer’	‘Skyracer’ tall moor grass	(Seed)	93
<i>Molinia caerulea</i> ‘Variegata’	variegated moor grass		88
<i>Molinia caerulea arundinacea</i>	tall purple moor grass(Seed)		75
<i>Panicum virgatum</i> ‘Cloud Nine’	‘Cloud Nine’ switch grass	(Seed)	24
<i>Panicum virgatum</i> ‘Haense Herms’	red switch grass		36
<i>Panicum virgatum</i> ‘Heavy Metal’	‘Heavy Metal’ switch grass	(Seed)	32,67
<i>Panicum virgatum</i> ‘Prairie Sky’	blue switch grass	(Seed)	54
<i>Panicum virgatum</i> ‘Rehbraun’	dear red-brown switch grass		33
<i>Panicum virgatum</i> ‘Rotstrahlbusch’	red rays switch grass		35
<i>Panicum virgatum</i> ‘Warrior’	switch grass		?
<i>Pennisetum alepecuroides</i> ‘Hameln’	‘Hameln’ fountain grass		25
<i>Pennisetum alopecuroides</i>	fountain grass	(Seed)	26,76
<i>Phalaris arundinacea</i> ‘Dwarf Garters’	reed canary grass		45
<i>Phalaris arundinacea</i> ‘Feese Form’	‘Feesey’s Form’ ribbon grass	(Rhiz)	23,60,69
<i>Phalaris arundinacea picta</i>	ribbon grass, gardener’s-garters	(Rhiz)	22,61,71
<i>Phragmites Australis</i> ‘Variegatus’	striped common reed		73
<i>Schizachyrium scoparium</i>	little bluestem, prairie beard grass	(Seed)	17
<i>Scirpus lacustris</i> ‘Albescens’	‘Albescens’ bulrush	(Rhiz)	79
<i>Sesleria caerulea</i>	blue moor grass		7
<i>Sorghastrum nutans</i>	Indian grass, gold beard grass	(Seed)	38

<i>Sorghastrum nutans</i> ‘Sioux Blue’	‘Sioux Blue’ Indian grass	(Seed)	37
<i>Spartina pectinata</i> ‘Aureomarginata’	‘Golden-edged’ prairie cord grass	(Rhiz)	27
<i>Sporobolus heterolepis</i>	prairie dropseed, northern dropseed	(Seed)	4
<i>Stipa viridula</i>	green needle grass	(Seed)	14
<i>Typha minima</i>	dwarf Japanese cattail	(Rhiz)	83

<u>Botanical Name</u>	Group 2 Doubtful hardiness	<u>Common Name</u>	<u>Invasive Location</u>	
			<u>Means</u>	<u>Key</u>
<i>Deschampsia caespitosa</i> ‘Bronzeschleier’		bronze veil tufted hairgrass		50
<i>Deschampsia caespitosa</i> ‘Goldstaub’		‘Goldstaub’ tufted hairgrass		43
<i>Eragrostis trichoides</i>		sand love grass	(Seed)	13
<i>Festuca glauca</i> ‘Silberreither’		silver egret blue fescue		-
<i>Imperata cylindrica rubra</i>		Japanese blood grass, cranberry grass		5
<i>Juncus effusus</i> ‘Spiralis’		corkscrew rush, spiral rush		96

<u>Botanical Name</u>	Group 3 Most plants died	<u>Common Name</u>	<u>Invasive Location</u>	
			<u>Means</u>	<u>Key</u>
<i>Acorus gramineus</i> ‘Variegatus’		white-striped Japanese sweet flag		-
<i>Bouteloua gracilis</i>		blue grama, mosquito grass		44
<i>Dactylis glomerata</i> ‘Variegata’		cocks-foot orchard grass		58
<i>Fargesia nitida</i>		fountain bamboo		-
<i>Hakonechloa macra</i> ‘Aureola’		golden-variegated hakone grass		28
<i>Holcus lanatus</i> ‘Albovariegatus’		‘Albovariegatus’ velvet grass		15
<i>Luzula sylvatica</i>		greater woodrush		-
<i>Luzula luzuloides</i>		woodrush		-
<i>Luzula nivea</i>		snowy woodrush		-
<i>Miscanthus sinensis</i> ‘Gracillimus Nana’		dwarf Japanese silver grass		-
<i>Miscanthus sinensis</i> ‘Variegatus’		variegatus Japanese silver grass		-
<i>Miscanthus sinensis</i> ‘Yaku Jima’		‘Yaku Jima’ Japanese silver grass		95
<i>Pennisetum alepecurioides</i> ‘Moudry’		black flowering pennisetum		-
<i>Pennisetum alopecuroides</i> ‘Little Bunny’		little bunny fountain grass		-

<u>Botanical Name</u>	Group 4 New to our study & not tested through a winter yet	<u>Common Name</u>	<u>Invasive Location</u>	
			<u>Means</u>	<u>Key</u>
<i>Andropogon scoparius</i> ‘The Blues’		little bluestem		13
<i>Carex acuta</i>		sedge		9
<i>Carex glauca</i> ‘Blue Sedge’		blue sedge		8
<i>Deschampsia caespitosa</i> ‘Goldgehaenge’		gold pendant tufted hairgrass		47
<i>Deschampsia flexuosa</i>		crinkled hair grass		46
<i>Eragrostis spectabilis</i> ‘Purple Love Grass’		purple love grass		39
<i>Hakonechloa macra</i>		hakone grass		30
<i>Helictotrichon sempervirens</i> ‘Saphirsprudel’		blue oat grass		6
<i>Miscanthus purpurascens</i> ‘Herkules’		Japanese silver grass		89
<i>Miscanthus sinensis</i> ‘Zebrinus’		zebra grass		?
<i>Miscanthus sinensis</i> ‘Arabesque’		Japanese silver grass		86
<i>Miscanthus sinensis</i> ‘Gold and Silber’		Japanese silver grass		101
<i>Miscanthus sinensis</i> ‘Goliath’		Japanese silver grass		72
<i>Miscanthus sinensis</i> ‘Grosse Fontane’		large fontaine		99
<i>Molinia litorialis</i> ‘Bergfreund’		tall purple moor grass		94
<i>Molinia litorialis</i> ‘Windspiel’		tall purple moor grass		90
<i>Phalaris arundinacea</i> ‘Luteopicta’		golden variegated ribbon grass		62
<i>Phragmites australis</i> ‘Pseudodonax’		giant common reed		74