Species: Agropyron cristatum
From Fire Effects Species Information Online Database (2/23/2011)

SPECIES: Agropyron cristatum

INTRODUCTORY
SPECIES: Agropyron cristatum

AUTHORSHIP AND CITATION:

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ABBREVIATION:

AGRCRI
SYNONYMS:

No entry
NRCS PLANT CODE:

AGCR
COMMON NAMES:

crested wheatgrass
Fairway crested wheatgrass
Fairway wheatgrass
TAXONOMY:

The scientific name of crested wheatgrass is Agropyron cristatum (L.) Gaertn. (Poaceae) [30,56]. Wheatgrasses (Triticeae), including crested wheatgrass, frequently hybridize and often produce fertile crosses [11,33,115]. Crested wheatgrass readily crosses with desert wheatgrass (A. desertorum) to produce fertile hybrids, the most common of which is called 'Hycrest.' Some systematists do not consider crested and desert wheatgrass to be distinct species [54].
LIFE FORM:

Graminoid
FEDERAL LEGAL STATUS:

No special status
OTHER STATUS:

None

DISTRIBUTION AND OCCURRENCE
SPECIES: Agropyron cristatum

GENERAL DISTRIBUTION:

Crested wheatgrass is an introduced species, originally from Russian and Siberian steppe habitats. It has been planted from Alaska south to California, throughout western Canada, east in the United States to Ohio, and south to Texas. It was first successfully established in the United States between 1907 and 1913 [35]. Crested wheatgrass and desert wheatgrass were considered distinct species upon their first introduction to the United States in 1906, but since, the two species have often been referred to and treated as one [34]. Crested and desert wheatgrass became prevalent in the United States in the 1930s when they were used to seed abandoned cropland. Crested wheatgrass is most common in the northern Great Plains, especially North and South Dakota, eastern Montana and Wyoming, and in southern Saskatchewan and southeastern Alberta. The grass is used throughout the arid and semi-arid regions of the West [105]. Crested and desert wheatgrass seedings have been established on 10 million acres (3.2 million ha) [5] and, by some accounts, as much as 26 million acres (10.4 ha) in North America [78].
ECOSYSTEMS:

FRES21 Ponderosa pine
FRES29 Sagebrush
FRES31 Shinnery
FRES32 Texas savanna
FRES33 Southwestern shrub steppe
FRES34 Chaparral-mountain shrub
FRES35 Pinyon-juniper
FRES36 Mountain grasslands
FRES38 Plains grasslands
FRES39 Prairie
FRES40 Desert grasslands
FRES42 Annual grasslands
STATES:

AK AZ AR CA CO IA ID IL IN KS MO MT
NE NV NM NY ND OH OR SD TX UT WA WY

AB BC SK
BLM PHYSIOGRAPHIC REGIONS:

3 Southern Pacific Border
4 Sierra Mountains
5 Columbia Plateau
6 Upper Basin and Range

 7 Lower Basin and Range
 8 Northern Rocky Mountains
 9 Middle Rocky Mountains
10 Wyoming Basin
11 Southern Rocky Mountains
12 Colorado Plateau
13 Rocky Mountain Piedmont
14 Great Plains
15 Black Hills Uplift
16 Upper Missouri Basin and Broken Lands
KUCHLER PLANT ASSOCIATIONS:

No entry
SAF COVER TYPES:

 42 Bur oak
 68 Mesquite
209 Bristlecone pine
210 Interior Douglas-fir
218 Lodgepole pine
219 Limber pine
220 Rocky Mountain juniper
233 Oregon white oak
236 Bur oak
237 Interior ponderosa pine
238 Western juniper
239 Pinyon-juniper
241 Western live oak
242 Mesquite
243 Sierra Nevada mixed conifer
SRM (RANGELAND) COVER TYPES:

101 Bluebunch wheatgrass
102 Idaho fescue
103 Green fescue
104 Antelope bitterbrush-bluebunch wheatgrass
105 Antelope bitterbrush-Idaho fescue
106 Bluegrass scabland
107 Western juniper/big sagebrush/bluebunch wheatgrass
108 Alpine Idaho fescue
109 Ponderosa pine shrubland
110 Ponderosa pine-grassland
201 Blue oak woodland
206 Chamise chaparral
207 Scrub oak mixed chaparral
209 Montane shrubland
210 Bitterbrush
212 Blackbush
215 Valley grassland
301 Bluebunch wheatgrass-blue grama
302 Bluebunch wheatgrass-Sandberg bluegrass
303 Bluebunch wheatgrass-western wheatgrass
304 Idaho fescue-bluebunch wheatgrass
305 Idaho fescue-Richardson needlegrass
306 Idaho fescue-slender wheatgrass
309 Idaho fescue-western wheatgrass
310 Needle-and-thread-blue grama
311 Rough fescue-bluebunch wheatgrass
312 Rough fescue-Idaho fescue
314 Big sagebrush-bluebunch wheatgrass
315 Big sagebrush-Idaho fescue
316 Big sagebrush-rough fescue
317 Bitterbrush-bluebunch wheatgrass

318 Bitterbrush-Idaho fescue
319 Bitterbrush-rough fescue
320 Black sagebrush-bluebunch wheatgrass
321 Black sagebrush-Idaho fescue
322 Curlleaf mountain-mahogany-bluebunch wheatgrass
324 Threetip sagebrush-Idaho fescue
401 Basin big sagebrush
402 Mountain big sagebrush
403 Wyoming big sagebrush
404 Threetip sagebrush
405 Black sagebrush
406 Low sagebrush
407 Stiff sagebrush
408 Other sagebrush types
412 Juniper-pinyon woodland
413 Gambel oak
503 Arizona chaparral
504 Juniper-pinyon pine woodland
509 Transition between oak-juniper woodland and mahogany-oak association
601 Bluestem prairie
602 Bluestem-prairie sandreed
603 Prairie sandreed-needlegrass
604 Bluestem-grama prairie
605 Sandsage prairie
606 Wheatgrass-bluestem-needlegrass
607 Wheatgrass-needlegrass
608 Wheatgrass-grama-needlegrass
609 Wheatgrass-grama
610 Wheatgrass
611 Blue grama-buffalograss
612 Sagebrush-grass
613 Fescue grassland
614 Crested wheatgrass
703 Black grama-sideoats grama
704 Blue grama-western wheatgrass
705 Blue grama-galleta
707 Blue grama-sideoats grama-black grama
708 Bluestem-dropseed
709 Bluestem-grama
710 Bluestem prairie
711 Bluestem-sacahuista prairie
713 Grama-muhly-threeawn
714 Grama-bluestem
715 Grama-buffalograss
716 Grama-feathergrass
717 Little bluestem-Indiangrass-Texas wintergrass
718 Mesquite-grama
719 Mesquite-liveoak-seacoast bluestem
721 Sand bluestem-little bluestem (plains)
722 Sand sagebrush-mixed prairie
728 Mesquite-granjeno-acacia
733 Juniper-oak
734 Mesquite-oak
735 Sideoats grama-sumac-juniper

HABITAT TYPES AND PLANT COMMUNITIES:

Crested wheatgrass has been planted throughout North America in a variety of ecosystems; the appearance of the species within a specific cover type does not necessarily indicate that crested wheatgrass is particularly well adapted to those climatic conditions.

In the Great Basin in Nevada, crested wheatgrass thrives in mesic communities

with big sagebrush (Artemisia tridentata), basin wildrye (Elymus cinereus), Sandburg bluegrass (Poa secunda), Columbia needlegrass (Achnatherum nelsonii ssp. dorei), and slender wheatgrass (E. trachycaulus) [38].

Vegetation typings describing communities dominated by crested wheatgrass follow.

Phyto-edaphic communities of the Upper Rio Puerco Watershed, New Mexico [43]
Plant associations of the Crooked River National Grassland [61]

MANAGEMENT CONSIDERATIONS
SPECIES: Agropyron cristatum

IMPORTANCE TO LIVESTOCK AND WILDLIFE
PALATABILITY
NUTRITIONAL VALUE
COVER VALUE
VALUE FOR REHABILITATION OF DISTURBED SITES
OTHER USES AND VALUES
OTHER MANAGEMENT CONSIDERATIONS

IMPORTANCE TO LIVESTOCK AND WILDLIFE:

Crested wheatgrass and its close relative, desert wheatgrass, have been planted in millions of acres in the arid and semi-arid West to benefit livestock and wildlife. Native shrub habitats have been replanted with crested wheatgrass to increase range production. Crested wheatgrass has high yields and supplies green forage in both spring and fall [67,85], and can be important to livestock and wildlife when other preferred food sources are unavailable [112].

PALATABILITY:

Crested wheatgrass is highly palatable and a nutritious spring forage. It can be especially useful to ranchers in the Intermountain West, where spring forage shortages are common [13,60,67]. Crested wheatgrass can be grazed 2 or 3 weeks earlier than native grasses in Utah, Montana, and the Great Basin, and 3 to 4 weeks earlier in Colorado [57, 63,66,83]. Crested wheatgrass tends to become fibrous at maturity, and therefore palatability and nutritional quality of the plant decline after June or so [46,76,86]. Crested wheatgrass provides little summer grazing [10]. In some habitat types with sufficient soil moisture, crested wheatgrass continues to grow in fall after summer dormancy [85].

Reports conflict on the importance of crested wheatgrass to wild ungulates. In Oregon and Nevada, mule deer appear to prefer native grasses and cheatgrass (Bromus tectorum) to crested wheatgrass. Grass contributes less to the diets of pronghorn than to deer, and crested wheatgrass is minimally used by pronghorn in the Great Basin and Intermountain West [112].

Wildlife use of crested wheatgrass is detailed in the following table [8,9,13,16,19,39,56,64,65,68,69,71,73,73,79,83,86,104,116]:

	Alberta	Montana	Idaho	Oregon	Utah
Cattle	----	high	high	high	high
Domestic sheep	high	----	----	----	high
Elk	high	spring use	spring use	----	spring use
Mule Deer	low-none	low	medium	medium	low-none
Bighorn sheep	high	medium	----	----	----
Pronghorn	----	low-none	low	low-none	low-none
Moose	medium	----	----	----	----
Small mammals	-----	----	low-none	----	----

Little information is available about the role of crested wheatgrass in the

diets of elk, bighorn sheep, and mountain sheep in the Great Basin, but Urness [112] concludes from anecdotal information that given an abundant supply, these three species would eat crested wheatgrass. A 1983 study in south-central Utah found bison diets to be dominated by Agropyron spp., presumably mostly crested wheatgrass.

Crested wheatgrass is highly palatable to and good cover for black-tailed jackrabbits [47,57]. Reynolds [100] says black-tailed jackrabbits appear to be the only hare species to maintain population levels in southeastern Idaho in crested wheatgrass stands that have replaced native sagebrush habitat.

Mule deer seasonal use of crested wheatgrass in the Great Basin was as follows. Data are means and 1 standard error [9].

time	Percentage of diet
late fall (Nov.)	51.1 (30.3)
early winter (Dec.)	1.9 (2.0)
mid-winter (Jan.-Feb.)	2.5 (0.8)
late winter (1-20 March)	37.9 (16.9)
early spring (21 March-10 April)	89.7 (5.3)
mid-spring (11-30 April)	57.2 (17.6)

Grasshoppers (especially Auloara elliotti) prefer crested wheatgrass stands to native vegetation in Idaho. Grasshopper can compete with cattle for available forage during periodic infestations [41].

NUTRITIONAL VALUE:

Green crested wheatgrass can be a valuable addition to the browse-dominated diets of wild ungulates in winter [9,112]. In Central Oregon, crested wheatgrass consistently contained more than 20% crude protein during the winter and early spring, leading Urness [113] to conclude that it provided better forage value than native grass species for white-tailed deer.

At certain times during the year, crested wheatgrass lacks highly digestible protein [27]. In Alberta, crested wheatgrass was deficient in crude protein for pregnant ewes [83]. By mid-June, the nutritional value of crested wheatgrass can be too low for lactating cattle. By the end of the summer, crested wheatgrass has low total protein values and lacks adequate phosphorus for cattle [8].

Deer mice occupy moderately grazed crested wheatgrass range in Utah. Food in their caches on these sites was predominantly mature desert and crested wheatgrass seedheads. When livestock grazing exceeded 50% use, the deer mice population dropped by at least 20% [44].

Nutritional content (%) of crested wheatgrass in Alberta, Canada, was [85]:

Stage of maturity	Sample date	Crude protein	Crude fiber	Ether extract	N-free extract	Total ash	Ca	P
preflower	5/10	22.7	19.9	2.7	45.8	8.85	0.42	0.27
heading	6/8	13.9	29.2	1.6	48.0	7.45	0.29	0.24
flowering	6/29	11.7	33.1	1.8	46.3	7.12	0.32	0.19
seed ripe	7/30	8.5	32.5	1.9	51.1	5.92	0.33	0.14
seed shed	10/21	4.5	34.7	1.9	52.1	6.85	0.30	0.05

COVER VALUE:

Seeding of historically sagebrush-dominated communities with crested wheatgrass may replace the shrub habitat necessary for many passerine birds [116]. In southeastern Idaho, Reynolds [100] found fewer nesting species and fewer individual birds on crested wheatgrass plantations than in the native sagebrush habitat. However, grassland bird species may respond favorably to seeded stands of crested wheatgrass that replace brush habitats, except when the area is heavily grazed. In Nevada, ground-nesting bird species comprised 91% of nesting

birds in an established crested wheatgrass stand, whereas an unconverted sagebrush habitat with 21% shrub cover supported only 30% ground nesters [87].

In southeastern Idaho, deer mice, montane voles, Ord's kangaroo rats, and Townsend's ground squirrels all frequently use the crested wheatgrass habitat type for food and cover [72]. However, another study in southeastern Idaho reported fewer deer mice, least chipmunks, and northern grasshopper mice in crested wheatgrass stands than in the original sagebrush community. Numbers of western harvest mice were higher in ungrazed crested wheatgrass than in the native sagebrush community but were not increased in the domestic sheep-grazed crested wheatgrass treatment. The authors concluded that conversion to crested wheatgrass and grazing decreased small mammal density and had synergistic negative effects on the mice [101].

VALUE FOR REHABILITATION OF DISTURBED SITES:

Crested wheatgrass has been used extensively to seed unused cropland and to revegetate burns and degraded areas, including mine spoils [3,6,31,99,105,109].

If crested wheatgrass is used to reclaim disturbed sites, a grass monoculture may prohibit the return of predisturbance animal and plant diversity [92,117]. Dusek [37] reviewed a mining reclamation site in southeastern Montana that was seeded with crested wheatgrass. Crested wheatgrass established easily, but the resulting community lacked diversity and sufficient forage quality to support mule deer. As a result, Dusek concluded that managers should not use ease of establishment as the primary characteristic for choosing revegetation species [37].

Crested wheatgrass has lower belowground productivity than native bunchgrass species. Over time, this difference can result in higher soil bulk densities, less organic material in the soil, and poorer nutrient relations in crested wheatgrass than in native grass habitats [36,78].

Crested wheatgrass is used for erosion control [2,22,23]. However, wide row spacing, recommended to increase plant productivity, may persist for years following establishment of the stand. These gaps leave the areas between rows susceptible to erosion, especially if the competitiveness of crested wheatgrass prohibits the establishment of other plants [36,75,78].

Land managers have had some success preventing the spread of exotic weeds like halogeton (Halogeton glomeratus) by seeding unused land with crested wheatgrass [2]. However, heavy grazing appears to neutralize this benefit [45]. Crested wheatgrass' ability to prevent the spread of weeds may also depend on climatic conditions. In northwestern Utah, Cook [29] studied grass seedling competition with halogeton. He concluded that crested wheatgrass is better adapted to low rainfall habitats and competes better with halogeton than do native tall (Elytrigia elongata) and intermediate (E. intermedia) wheatgrasses. Near Cache Creek, British Columbia, established crested wheatgrass stands inhibited the spread of diffuse knapweed (Centaurea diffusa) on arid study plots that received 8 inches (20 cm) annual precipitation. In areas of the study plots with higher soil moisture and in more mesic climatic areas, crested wheatgrass did not exclude diffuse knapweed as successfully, leading the authors to conclude that soil moisture competition during key growth stages caused knapweed failure [15].

Popovich and Pyke [96] concluded that seeding a wildfire-burned area in south-central Idaho to crested wheatgrass did not significantly reduce reproduction potential of Picabo milkvetch (Astragalus oniciformis), a sensitive plant endemic to the north-central Snake River Plain.

OTHER USES AND VALUES:

No entry

OTHER MANAGEMENT CONSIDERATIONS:

The seeds of crested wheatgrass are relatively large and easy to process and

plant, and its seedlings can withstand drought and cold conditions [6,67,105]. Crested wheatgrass is resilient under grazing pressure [67,89,76,102], easy to establish [63], and may compete successfully against exotic weeds.

Cheatgrass competition appears to reduce root growth in crested wheatgrass and thereby to lower long-term survival and competitiveness, most likely due to competition for water [1,42,55,62,71,103,104]. In a laboratory study, Hycrest wheatgrass grown with cheatgrass at planting ratios of 1:1 and 1:4 suffered reductions in leaf area of 46 and 76%, respectively. Researchers concluded, however, that crested wheatgrass competed more successfully with cheatgrass than did bluebunch wheatgrass (Pseudoroegneria spicata) [1]. Francis and Pyke [42] suggest that by seeding crested wheatgrass at lower than recommended densities in cheatgrass areas, crested wheatgrass is favored because greater spacing reduces within-species competition.

Light to moderate grazing (up to 70% utilization) invigorates a crested wheatgrass stand and extends its life [19,110]. Heavy grazing of crested wheatgrass stands may speed up the re-invasion of sagebrush or of weeds such as Russian thistle (Salsola kali). Above 88% use, production decreases, plants die, and stand quality suffers [19].

When crested wheatgrass is planted as part of a seed mix, it may outcompete and crowd out the other species in the mix, including native species [24,83]. Seeding a disturbed site with crested wheatgrass may prohibit the establishment of other species. Crested wheatgrass contributes heavily to the seedbank, and crested wheatgrass seeds may take advantage of openings in the canopy [83].

Crested wheatgrass seed shatters easily. Timing of seed harvest is crucial. Seed harvested too early, before the seed has matured, is far less likely to germinate. Seedling emergence declined in the field from 46% for mature seeds, to 33, 10, and 3% for dough, milk, and premilk stages, respectively. In cold storage (0 to 19° Fahrenheit (-18 to -7°C)), seed viability remained at 80 to 90% after 20 years [67].

Casterline [25] suggests the following conditions to germinate crested wheatgrass seeds:
pre-chill days to break dormancy: 47oF for 7 days
days needed to break dormancy: at least 5
temperature needed for germination: 41-86oF
days allowed for germination test: 14
total days to break dormancy and test germination: 21

Drilling is more successful than broadcasting seed [67]. Clark and McLean [26] found spring sowing resulted in better germination of crested wheatgrass than autumn sowing in interior British Columbia.

Concentration of cattle on seeded crested wheatgrass lower elevation sites may conserve native upland sites for use by wildlife [112].

Crested wheatgrass is a major host of the black grass bug (Labops hesperius), which can severely damage grass stands. Other insect pests of crested wheatgrass are leafhoppers, grubs, and mature click beetles and billbugs [53].

BOTANICAL AND ECOLOGICAL CHARACTERISTICS
SPECIES: Agropyron cristatum

GENERAL BOTANICAL CHARACTERISTICS
RAUNKIAER LIFE FORM
REGENERATION PROCESSES
SITE CHARACTERISTICS

SUCCESSIONAL STATUS
SEASONAL DEVELOPMENT

GENERAL BOTANICAL CHARACTERISTICS:

Crested wheatgrass is a cool-season, medium-height, exotic perennial bunchgrass. The plant is drought- and cold-resistant and long-lived, enabling it to establish in recognizable monocultures [105]. Crested wheatgrass culms are 10 to 40 inches (25-100 cm) tall [30] and widely spaced. The deep, finely branched fibrous roots of crested wheatgrass penetrate to a maximum depth of 8 feet (2.4 m), with most roots extending to a depth of 3.3 feet (1 m) [80]. Crested wheatgrass is common in the Northern Great Plains and in Canada [105], while desert wheatgrass is more common throughout the western United States. Desert wheatgrass is tall and coarse, while crested wheatgrass is smaller, leafier, and has broader seedheads. Crested wheatgrass is a diploid species, which differentiates it genetically from desert wheatgrass, a tetraploid [34].

Crested wheatgrass remains productive for more than 30 years. Stand mortality is virtually unknown, except in cases of extreme drought during critical phenological stages [51].

RAUNKIAER LIFE FORM:

Hemicryptophyte

REGENERATION PROCESSES:

Crested wheatgrass reproduces by seed or vegetatively and is self-sterile [35]. Crested wheatgrass seedlings are very hardy, vigorous, and easily established [67]. The seeds of crested wheatgrass germinate well throughout a range of temperatures [7], allowing the plant to spread rapidly [62]. Crested wheatgrass produces tillers, and its ability to spread vegetatively contributes to its presence at higher elevations, where the growing season may not be long enough each year to produce seed [51]. However, in drier habitats, the ability of rhizomatous native grasses to propagate without setting seed allows them to compete well with crested wheatgrass [85]. Crested wheatgrass is able to emerge from a relatively deep soil depth, which allows it to escape the more extreme environmental soil conditions closer to the surface. Crested wheatgrass shoots have long, numerous, and quick-growing roots, which may explain strong seedling establishment [67].

SITE CHARACTERISTICS:

Crested wheatgrass is tolerant of very cold and very dry conditions, typical of both its native habitat in Russia and some areas of the northern Great Plains [12,24, 66,103]. It grows best on medium-textured soils, from sandy loams to clay loams. Crested wheatgrass does not grow well in loose sandy soils, heavy clays, or saline soils [84,91]. Crusted soils impede crested wheatgrass seedling emergence [67].

Crested wheatgrass thrives at around 12 to 16 inches (305-406 mm) of precipitation and competes poorly with other grasses on moister sites [24,63,105]. In Utah, crested wheatgrass appears on sites with precipitation of at least 12 inches (300 mm) [115].

Crested wheatgrass appears in the following elevations:

State	Elevation, in feet (m)
WY	above 6,000 (1800) [13]
UT	2,730 to 9,040 (910-2740) [115]
CA	1,900 to 5,000 (600-1500) [54]
CO	5,000 (1,500) [52]

Crested wheatgrass is more competitive on mesic sites than desert wheatgrass, and desert wheatgrass competes better on more xeric sites than crested wheatgrass [38].

SUCCESSIONAL STATUS:

Due to the broad range of habitat types in which crested wheatgrass has been planted, reports conflict on the plant's persistence. Crested wheatgrass is persistent and allows little establishment of native species in some habitat types, especially in arid and heavily grazed areas [2]. A crested wheatgrass community in southeastern Alberta was determined to be over 40 years old, and in central North Dakota, northern Arizona, and southern Idaho, stands over 30 years old have been identified [68].

However, shrub re-invasion of crested wheatgrass occurs in the Intermountain West, especially in wet years. Unkilled mature sagebrush in the seeded area is a source of reinvasion [87]. In the arid shadscale (Atriplex spp.) zone of Utah and Nevada, stands of crested wheatgrass appear to be shorter lived, with an estimated 10-year life span [18]. Anderson and Marlette [4] point out that the age of these stands may reflect the available data, and not the potential for stand longevity. They suggest that crested wheatgrass may inhibit or preclude the re-establishment of native species on disturbed sites and may become the dominant species.

In laboratory trials, volatile substances and aqueous extracts from the leaves of big sagebrush exhibited allelopathic, inhibitory effects on germination and shoot and radicle growth of crested wheatgrass seedlings [50]. However, simultaneous establishment of both sagebrush and crested wheatgrass favors the grass [17].

Crested wheatgrass has limited ability to invade undisturbed shortgrass communities in northeastern Colorado and was an unimportant component in the recovery, after 53 years, of old fields [28].

SEASONAL DEVELOPMENT:

Crested wheatgrass greens up 2 to 4 weeks earlier than native bunchgrass species. It goes dormant in the summer, but if soil moisture is available, it will grow again in the fall. In Alberta, at the northern end of the plant's range, seasonal development was as follows [85]:

stage of maturity	sample date
preflower	5/10
heading	6/8
flowering	6/29
seed ripe	7/30
seed shed	10/21

FIRE ECOLOGY
SPECIES: Agropyron cristatum

FIRE ECOLOGY OR ADAPTATIONS
POSTFIRE REGENERATION STRATEGY

FIRE ECOLOGY OR ADAPTATIONS:

Crested wheatgrass burns quickly and is therefore less susceptible to fire damage than some bunchgrass species [32]. In especially thick bunchgrasses, the fire may stay longer in the culms, resulting in heat transfer to the ground and the death of the plant. In crested wheatgrass, there is usually little heat transfer into the soil, so the tillers and root system are usually undamaged [107].

POSTFIRE REGENERATION STRATEGY:

Tussock graminoid

FIRE EFFECTS

SPECIES: Agropyron cristatum

IMMEDIATE FIRE EFFECT ON PLANT
DISCUSSION AND QUALIFICATION OF FIRE EFFECT
PLANT RESPONSE TO FIRE
DISCUSSION AND QUALIFICATION OF PLANT RESPONSE
FIRE MANAGEMENT CONSIDERATIONS

IMMEDIATE FIRE EFFECT ON PLANT:

Fire usually burns crested wheatgrass aboveground but underground parts survive [79].

DISCUSSION AND QUALIFICATION OF FIRE EFFECT:

No entry

PLANT RESPONSE TO FIRE:

Researchers characterize crested wheatgrass as "slightly damaged" [97] or "undamaged" by prescribed fire [93,119], since coarse stems and sparse leafy parts inhibit heat transfer down into the culms or soil. Young [119] says postfire recovery is rapid.

Crested wheatgrass in eastern Idaho and western Wyoming occurs in low flammability growth habitats, and its deep underground tillers help it to survive fire. Crested wheatgrass growth may be favored by late summer fire, but spring fire can decrease yields for several years [21].

Crested wheatgrass can be used as a "greenstrip" or fuelbreak in semi-arid rangelands to help control wildfire [49]. It is moderately flammable, produces moderate litter, has an extensive range, competes well, and is a good sprouter. A mature stand of crested wheatgrass can help control annual grassland fires like those found in sites now invaded by cheatgrass throughout the arid West, particularly in sagebrush-steppe habitats [90,94].

A study at Experimental Farm, Swift Current, Saskatchewan, investigated the effects of spring and fall burns on crested wheatgrass pastures. The spring burn occurred while the grass was growing vigorously, and forage yield and domestic sheep consumption on the pasture were reduced for the following 2 years. The grass was dormant during the fall burn, which took place during November. Although forage yield was reduced in the following year, sheep consumption was not. Lodge [79] concluded the fall burning of crested wheatgrass reinvigorated the stand.

DISCUSSION AND QUALIFICATION OF PLANT RESPONSE:

No entry

FIRE MANAGEMENT CONSIDERATIONS:

Haws and Bohart [53] studied infestation of monoculture crested wheatgrass stands with black grass bugs in Utah. They conclude that the bugs decrease regeneration by eating the grass seed, but that since the grass bug eggs are inserted in the stem of the grass, they can easily be destroyed by burning. Burning in the fall destroyed most eggs and depressed the bug population for several years.

Agropyron cristatum: References

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