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Grass Varieties for Central Oregon



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GRASS VARIETIES FOR CENTRAL OREGON

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SUMMARY

Various grasses are suitable for pastures and hay crops in Central Oregon. Choice of which grass to use depends on specific farm needs, growth habits of the grasses that affect management, and potential forage-yield levels. This report describes characteristics related to management and use of orchardgrass, timothy, bromegrass, meadow foxtail, intermediate wheatgrass, tall fescue, and Kentucky bluegrass. It also presents results of a 5-year study that measured forage yields of 33 grass varieties at the Central Oregon Experiment Station. Average annual hay yields during the study ranged from 3.47 to 4.94 tons per acre. Orchardgrasses as a group yielded the most forage, followed in order of productivity by timothies, bromegrasses, meadow foxtails, intermediate wheatgrasses, tall fescues, and Kentucky bluegrass.

INTRODUCTION

Several grasses and many of their varieties are potentially useful for pastures and hay crops in Central Oregon. Besides differences in forage-yielding ability, each kind of grass has unique features that make it more suitable than others to meet a specific need. In choosing a grass for a particular use, one should consider its characteristics that affect management and its probable yield level in this area.

This report describes characteristics related to management and use of seven grasses. It also presents results of a 5-year study that compared forage yields of 33 grass varieties at the Central Oregon Experiment Station.

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PLANT DESCRIPTIONS

ORCHARDGRASS

Orchardgrass is a long-lived, perennial bunchgrass that develops an open sod of tufted shoots held together by short rhizomes. It tends to form large tussocks, especially if grazed improperly. Careful grazing management and seeding with a legume lessen this tendency. It is weakened by frequent and close grazing.

Although orchardgrass is less winterhardy than bromegrass, timothy, or Kentucky bluegrass, it grows more rapidly in cool spring weather than these grasses. It also grows later into fall than these grasses, but not as late as tall fescue. The main advantage that orchardgrass has over other pasture grasses for use in Central Oregon is that it tolerates more heat. This characteristic, plus its ability to recover rapidly after grazing or mowing, enables it to produce abundant, high-quality forage during hot summer months, when other grasses are dormant. This distributes production more uniformly over the season.

Orchardgrass resists dry soil conditions better than timothy, but not as well as bromegrass. Although it persists longer and produces more than these grasses when grown on shallow, infertile soils, it responds well to high soil fertility levels, especially nitrogen.

Orchardgrass growing on a fertile soil is highly nutritious and palatable at immature growth stages. Since orchardgrass grows more rapidly in spring than other pasture grasses, it matures before others do. It must be grazed heavily or mowed early in the season to maintain a continuous supply of immature forage that is palatable and nutritious. Its best use is for pasture in association with clover or alfalfa (6,7,9,11).

TIMOTHY

Timothy is a long-lived, perennial bunchgrass with a shallow, fibrous root system that develops an open sod. It grows better on heavy moist soils than on light-textured sandy soils. Having a shallow root system,

timothy grows poorly under dry soil conditions or during hot periods, unless irrigated properly.

Because of its upright growth habit, timothy performs best for hay production, but it also can be used for pasture. When grown with clover or alfalfa, the first growth can be cut for hay, and the aftermath pastured. It establishes rapidly, producing high yields in the first year after planting, and competes very little with legumes in the mixture. Frequent cutting or grazing easily weakens timothy (4,6,9,11).

BROMEGRASS

Bromegrass is a long-lived, upright-growing perennial that develops a loose sod filled with many roots and rhizomes. It grows on many kinds of soils, but does best on deep, well-drained, fertile soils. It tolerates temperature extremes and dry soil conditions. It establishes slowly; full production may not be reached until the third year.

Bromegrass requires careful management with close attention to growth stages. Cutting or grazing bromegrass at wrong times in its development can weaken and eliminate it from the stand. It should be cut or grazed only when it is in the young, leafy, rosette stage or at a later, more mature, headed stage. Its need for careful management is the main disadvantage for its use in Central Oregon.

Immature bromegrass forage has excellent quality, with protein concentration ranging from 12 to 30 percent on fertile soils having plenty of available nitrogen. Large amounts of green leaves remain after the seed heads mature, and palatability consequently remains high.

Bromegrass may be used alone or in mixture with other grasses or legumes for hay and pasture. It continues to produce during midsummer when other grasses, such as Kentucky bluegrass, become dormant (6,8,9,11).

MEADOW FOXTAIL

Meadow foxtail is a long-lived perennial that develops a medium-dense sod in old, heavy stands. It begins growing in early spring, and produces

a succession of flowering stems until early summer. It resists temperature extremes, and continues to grow during hot summer months with adequate soil moisture. It grows best on moist or even swampy fertile soils and tolerates saline soils, if moist.

Its long grazing season, winter hardiness, and succulent, palatable forage make meadow foxtail a grass worth considering for use in Central Oregon on soils that meet its moisture requirements. It is used mainly for pastures, but can also be cut for hay (5,6,9).

INTERMEDIATE WHEATGRASS

Intermediate wheatgrass is a vigorous, perennial bunchgrass that forms a loose sod. It grows best on well-drained, fertile soils receiving at least 15 inches of precipitation or equivalent irrigation.

Its main advantage for use in Central Oregon is its ability to produce well under both non-irrigated and irrigated conditions.

Intermediate wheatgrass begins growth late in the spring; grazing too early eliminates it. Good pasture stands do not last as long as with other grasses, even with the best management (6,9,10).

TALL FESCUE

Tall fescue is a deeply rooted, tufted, long-lived perennial with creeping rootstocks that develop a uniform, thick sod in older stands. It has a long growing season and remains green during much of the year if soil moisture and nitrogen levels are adequate. Its seedling establishment is slow and its palatability is less than that of brome grass, orchardgrass, and timothy. Close grazing and clipping of established stands prevent accumulation of old leaves and improve its palatability. When it is grown with a legume to improve pasture quality, livestock tend to overgraze and eliminate the legume, while ignoring the less palatable tall fescue. New stands are weak and easily damaged by heavy or too early grazing. Its slow establishment and low palatability are the main disadvantages of tall fescue for use in Central Oregon.

It is one of the best grasses for use on poorly drained areas of irrigated pastures; it tolerates both alkalinity and salinity of wet soils. Under fertile, wet soil conditions, however, tall fescue produces rapid, rank growth that smothers out legumes growing with it (2,6,9).

KENTUCKY BLUEGRASS

Kentucky bluegrass is a long-lived perennial that spreads by rhizomes and forms a dense sod. It becomes dormant during hot midsummer periods. Proper irrigation and use of nitrogen fertilizer can reduce this tendency, but do not prevent it from becoming semidormant. This growth habit is its main disadvantage for use in Central Oregon, since the midsummer yield reduction affects the number of animals that can be supported. Animal numbers per acre must be adjusted throughout the summer and, consequently, management is more difficult.

Kentucky bluegrass grows on many different soils, but produces best on well-drained, fertile soils of limestone origin. For good pasture production, it must be maintained at a height of 2 to 6 inches by proper grazing or mowing management. If kept too short, weak roots and rhizomes develop; if allowed to grow too high, legumes disappear and weeds enter the sod. Kentucky bluegrass can withstand closer grazing than other grasses without serious injury (3,6,9).

YIELD PERFORMANCES

EXPERIMENTAL PROCEDURE

Thirty-three grass varieties were seeded on Deschutes loamy sand at the Central Oregon Experiment Station, Redmond, in August, 1967, in 5 by 20 foot plots, replicated four times. Varieties of orchardgrass, timothy, bromegrass, meadow foxtail, intermediate wheatgrass, tall fescue, and Kentucky bluegrass were used. Plots were fertilized annually with 500 pounds per acre of 16-20 in March, and 380 pounds per acre of ammonium sulfate in June. They were irrigated with $1\frac{1}{2}$ inches of water every 5 to 7 days during summer months. Grasses were cut in June and August (also September 1970) between 1968 and 1972.

RESULTS AND DISCUSSION

Average annual hay yields during the study were highest for orchard-grasses as a group (4.51 ton/acre), followed in order of productivity by timothies (4.34 ton/acre), bromegrasses (4.22 ton/acre), meadow foxtails (4.14 ton/acre), intermediate wheatgrasses (4.05 ton/acre), tall fescues (3.97 ton/acre), and Kentucky bluegrass (3.60 ton/acre) (Table 1).

Just as groups of grasses produced differently, varieties within the groups varied in their yields of forage. Sterling not only was the highest yielding orchardgrass variety, but produced more forage than any other grass variety. Clair was the highest yielding timothy variety. All bromegrasses yielded similar amounts of forage. All improved meadow foxtails produced more than Common meadow foxtail, which yielded less than all other grass varieties. All intermediate wheatgrasses produced similar amounts of forage. Alta and Kenwell yielded less than any other tall fescue varieties tested, producing at a level similar to Kentucky bluegrass, slightly above Common meadow foxtail.

In using these results, one should be aware that yield estimates, obtained by cutting grasses used mainly for pastures, tend to be 25 to 70 percent higher than those obtained by grazing with livestock. This is because cutting treatments fail to account for unrecovered forage rejected by animals, and the depressing effects of trampling and animal excrements on grazed forage yields (1).

CONCLUSIONS

Considering plant characteristics and yield levels under local conditions, Sterling orchardgrass probably would perform better than other grasses for irrigated pastures in Central Oregon. Clair timothy, if properly irrigated, would be best suited for hay production. With careful management, bromegrass would perform well for either pasture or hay production, under drier soil conditions than suitable for orchardgrass or timothy. Under wet soil conditions, improved meadow foxtails and Kenmont or Fawn fescues would be the best choices for pastures. Meadow foxtails can also be used for hay under wet soil conditions. Intermediate wheatgrasses are useful where irri-

Table 1. Yields of grass varieties grown at the Central Oregon Experiment Station, Redmond, 1968-1972.

Variety	Air-dry hay, tons/acre*					Avg.
	1968	1969	1970	1971	1972	
<u>Orchardgrass</u>						
Common	3.46	4.96	5.79	4.61	3.89	4.54
Latar	3.04	3.87	5.16	4.13	4.04	4.05
Chinook	3.10	4.44	5.02	5.15	3.92	4.33
Masshardy	3.29	4.64	5.19	4.23	4.18	4.31
Wisc F52A	4.15	4.82	6.39	4.63	4.23	4.84
Pennlate	3.67	4.68	5.32	4.74	4.03	4.49
Sterling	3.92	5.44	5.89	5.07	4.38	4.94
Penmead	3.50	4.79	6.10	4.45	3.84	4.54
<u>Timothy</u>						
Clair	3.87	3.85	5.92	5.65	4.71	4.80
Climax	3.55	3.22	5.30	4.52	4.52	4.22
Essex	3.14	3.09	4.96	3.84	4.18	3.84
Wisc. T-1	3.57	3.45	4.82	4.68	4.21	4.15
Common	3.91	4.33	6.07	4.43	4.72	4.69
<u>Bromegrass</u>						
Manchar	3.90	4.46	5.14	4.52	4.03	4.41
Sask S 6325	3.98	4.33	4.21	3.62	4.15	4.06
Canadian Common	3.82	4.46	4.16	4.52	3.95	4.18
<u>Meadow foxtail</u>						
Common	3.22	2.95	4.63	3.21	3.31	3.47
Pill Creeping	3.83	3.67	5.48	4.28	4.12	4.28
Garrison's Creeping	3.63	3.86	5.00	3.96	4.40	4.17
Mich. Syn. Creeping	4.18	3.44	5.47	3.89	4.73	4.34
Mich. Syn.	3.60	3.59	5.80	4.97	4.34	4.46
<u>Intermediate wheatgrass</u>						
Greenar	3.99	3.47	4.32	4.14	3.83	3.95
Nebraska 50	3.69	3.65	4.61	4.62	3.86	4.09
Oahe	3.84	3.66	4.22	4.16	4.07	3.99
Chief	3.60	3.73	4.80	4.76	4.03	4.18
<u>Tall fescue</u>						
Alta	2.25	4.23	4.89	3.58	3.81	3.75
Kenwell	2.20	4.23	4.15	3.81	4.06	3.69
Kenmont	2.41	4.75	4.75	4.76	4.06	4.15
Fawn	2.33	4.09	5.24	3.91	4.70	4.06
240x241	2.68	4.17	5.69	4.22	4.36	4.22
Syn L	2.12	4.07	4.73	3.97	4.16	3.81
Syn I	2.53	4.43	5.36	4.04	4.20	4.11
<u>Kentucky bluegrass</u>						
Common	3.45	2.39	4.33	2.89	4.04	3.60
L.S.D. 0.05	0.69	0.93	0.96	1.10	0.91	0.93

*Totals of two harvests in all years except 1970, when three harvests were made.

gation water may be inadequate some years or under dryland conditions receiving at least 15 inches of annual precipitation. Kentucky bluegrass, although less productive than the other grasses studied, is well suited for horse pastures because it withstands close grazing of horses. Supplemental pasture or feed need to be provided during midsummer when bluegrass becomes dormant.

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