

'Paiute' Orchardgrass—Forage Species for Semi-arid Range and Wildland Sites

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A superior strain of orchardgrass was recently released for planting semiarid range and wildland sites within the Intermountain Region. The selection, 'Paiute', is more drought tolerant than other tested varieties yet is highly palatable. Paiute exhibits a wide range of adaptation to sites that receive between 10-25 inches of annual moisture (Plummer et al. 1968). Paiute was selected from seed introduced into the United States in 1934 from Ankara, Turkey. The collection was first tested by the USDA Soil Conservation Service in Arizona and New Mexico. In 1944, A. Perry Plummer planted it in central Utah. From natural selection at the Utah research site, additional plantings were established in semiarid communities in Utah, Idaho, and Montana. Seed was also supplied to the University of Arizona for testing in the Southwest.



Growth habitat of 'Paiute' orchardgrass.

Individual plants are quite uniform in vegetative traits and areas of adaptation. Consequently, screening to eliminate irregular growth forms has not been required. Drought tolerant plants have been selectively perpetuated to provide a cultivar that can persist in semiarid situations.

Paiute is a long-lived bunchgrass that produces an abundance of basal leaves. Plants have persisted for over 30 years at various research sites. Under dryland conditions, Paiute usually develops distinct clumps, with seed stalks growing to

a height of 15 to 18 inches and leaves between 12 to 14 inches. When grown under irrigation or in moist situations Paiute attains a much larger stature.

Paiute has exhibited the ability to establish and persist on rangelands in southern and northern Arizona, New Mexico, Utah, southern Idaho, and Wyoming. Principal areas of adaptation are the big sagebrush, pinyon-juniper, and mountain brush communities (Hassell et al. 1983). Paiute has also performed well as an understory to ponderosa pine, aspen, and Douglas-fir.

In comparison to fairway or standard crested wheatgrass, Paiute greens up about 1 week earlier in the spring and remains green about 2 weeks later in the summer. Plants provide excellent fall green up if moisture becomes available. Game animals seek this forage during the spring and fall periods (Plummer et al. 1970). Plants are not as drought tolerant as standard crested wheatgrass but compare favorably with fairway crested wheatgrass. Paiute is equally productive as most forms of crested wheatgrass when grown on rangelands that receive 10 or more inches of annual precipitation. Paiute is not recommended for ranges that receive less than 10-12 inches of moisture. However, plants that become established during favorable years will persist on sites receiving 8-10 inches of moisture. Paiute is important to the improvement of semiarid sites as few equally palatable plants are adapted to these extensive rangelands.

As most orchardgrass cultivars (Hafenrichter et al. 1968), Paiute is palatable to all classes of livestock and big game animals. It is a preferred forage that is useful on spring-fall ranges and is particularly important for increasing diversity to the sagebrush-bunchgrass and pinyon-juniper communities.

Throughout the Intermountain Region, Paiute is recommended for well-drained sites including basic and acidic soils. It performs satisfactorily on coarse and fine textured soils. It does not grow well on saline sites, but will do well in moist but not flooded areas. Plants have established when planted on sandy soils, including unstable situations. Paiute does well on infertile soils and can be planted on both exposed and shaded disturbances associated with mining. Paiute is also useful for planting roadways and logging disturbances where exposed dry sites are intermixed with more mesic areas.

Paiute performs well in open and shaded areas, and will withstand high summer temperatures. It is a useful understory with big sagebrush, antelope bitterbrush, bittercherry, and with dense stands of mountain brush. Paiute has not persisted as well as other cultivars when planted as an understory in dense stands of aspen. The grass is well suited to planting with range-type varieties of alfalfa. It produces well in mixed plantings and recovers well from clipping.

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The authors wish to thank A. Perry Plummer, Kent R. Jorgensen, Charles Howard, Nancy Shaw, and George James for assistance in various phases of work leading to the release.

Funds from the Pittman Robertson W-82-R project facilitated portions of this research. Some work was performed at the Snow Field Station, which is cooperatively maintained by the Intermountain Station, the Utah Division of Wildlife Resources, Snow College, and Utah State University.

Although quite palatable, it has not been eliminated by selective grazing when planted in mixtures.

Cultivated fields of Paiute have averaged about 230 pounds of cleaned seed per acre. Seed germination has averaged about 90%. At 100% purity, there are approximately 600,000 seeds per pound. Seed matures uniformly. Unlike other orchardgrass varieties, seed of Paiute is held tightly in the head, but can be harvested without difficulty.

Seeds of Paiute are relatively small, yet can be easily planted with most conventional drills. Seed should be planted at 1/2 inch but not more than 3/4 inch deep. A firm seedbed is recommended when drill seeded. Seedlings are competitive, and can be planted in mixtures with most other herbs. When drill seeded as a single species, between 3 and 6 pounds of seed per acre should be used. Paiute is suited to aerial or broadcast planting. Seed may be broadcast on a rough soil surface if soil slumping or mechanical cover can occur to insure seed coverage. Paiute can be established from spring or fall seedings. A high percentage of all seeds germinate and emerge, consequently, adequate stands usually develop even under adverse conditions. Although the seeds are small, seedlings are vigorous.

Paiute was developed by the Intermountain Forest and Range Experiment Station, Forest Service, U.S. Department of Agriculture; the Utah Division of Wildlife Resources; and the Soil Conservation Service, U.S. Department of Agriculture. The Agricultural Experiment Stations of the University of Arizona, University of Idaho, New Mexico State University,

and Utah State University participated in the release of this cultivar.

Breeder plants and foundation seed are maintained by the Aberdeen Plant Materials Center (SCS), Aberdeen, Idaho. Foundation seed is available through local Soil Conservation Districts, State Agricultural Experiment Stations, and Crop Improvement Associations of Idaho, Utah, Arizona, and New Mexico. Certified seed is expected to be available in fall 1984. Additional information can be obtained by contacting personnel at the USDA Forest Service Shrub Sciences Laboratory, Provo, Utah or through local USDA Soil Conservation Service offices.

Literature Cited

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Is Bigger Always Better?

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There is a general impression in the cow business that "bigger is always better." The main emphasis of cow management over the past 30 years has been to increase average weaning weights per calf on the assumption that this will increase net returns to the ranch unit.

Until recently, the emphasis on increased size has been justified as we moved away from the small animal size and early maturity in vogue during the 1940's. These small cattle had been useful in producing "choice" fed cattle with the relatively small amount of grain available during the war and recovery period. As grain production exploded and beef demand increased during the 1950's, we required larger cattle that could be fed large amounts of grain for extended periods of time. This required cattle with both later maturity and greater mature size. This trend toward larger cattle was strengthened by the development of commercial feedlots which purchased both feed and cattle. In these feedlots the fixed costs of lot, feedmill, machinery, and labor could be spread across more total gain with larger faster gaining cattle thus reducing cost per

pound of gain.

The commercial feeding industry has traditionally depended on yearling type cattle, many of which have been on grass (or wheat pasture) between weaning and entering the feedlot. Presently there has been an increased interest in calf feeding programs where calves go directly at weaning onto high energy rations and finish at 1,200 lbs. or more and 15 months of age or less. This "fast finish" practice provides incentives for even heavier weaning weights and, in many cases, requires considerable use of grain for both calves and cows before weaning to meet energy requirements. The economic impact to the cowman of these larger sizes has been assumed positive without evidence. For one thing, cowmen have always concerned themselves with average weaning weight per calf and have generally ignored both the pounds of calf weaned per acre of range and the cost of supplemental feed inputs. However, nutrition efficiency, at best, remains constant with increased cattle size and probably declines. Increased calf weaning weights will, then, require either fewer cows or more supplemental feeding of grain prior to weaning. Increased

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