

BLACK-TAILED JACKRABBIT SELECTION OF 8 FORAGES AVAILABLE FOR RECLAIMING GREAT BASIN RANGELANDS

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SUMMARY: Our objective was to establish the growing season relative preferences of jackrabbits for eight selections of grasses available for reclamation of Great Basin rangelands. The percent of plants grazed and utilization levels of two crested wheatgrass cultivars were nearly twice those of the other grasses. Two cultivars of basin wildrye and one selection of Russian wildrye were avoided by jackrabbits, while two cultivars of bluebunch wheatgrass and one selection of thick-spiked wheatgrass were passively foraged upon. Seedlings of unpalatable cultivars are suggested to discourage jackrabbit presence in right of ways where they pose a danger, to reduce competition between jackrabbits and livestock for forage, or moderate potential damage to ground cover or forage resources in critical areas during jackrabbit population peaks.

Black-tailed jackrabbits (*Lepus californicus*) frequent North American range and croplands from Washington, east to the Dakotas in the United States, and extend south into Mexico. When high populations occur, jackrabbits can compete with wild and domestic herbivores for forage, and many feel that high populations of these animals affect stature and composition of rangeland vegetation through selective grazing.

Agricultural crops and reclaimed rangelands, particularly crested wheatgrass (*Agropyron desertorum* (Fischer ex Link)

Schultes) seedlings, are often preferred by black-tailed jackrabbits. Jackrabbits select grasses in early spring and summer, forbs in late summer and fall, and shrubs during winter months. The spring and early summer period coincides with the late-boot and early anthesis stages of phenology of our caespitose grasses, a period when severe defoliation may significantly affect vigor or health of these plants.

We evaluated the relative preferences of black-tailed jackrabbits for eight selections of grasses adapted, to and available for reseeding areas in the arid Great Basin. Selections were: two cultivars of basin wildrye (*Elymus cinereus* Scribner & Smith), Magnar and Trailhead; two cultivars of bluebunch wheatgrass (*Agropyron spicatum* Pursh), Secar and Goldar; thick-spiked wheatgrass (*Agropyron dasystachyum* (Hooker) Scribner & J.G. Smith), selection #9021076; the Bozoisky cultivar of Russian wild-rye (*Elymus junceus* Fischer); Nordan crested wheatgrass (*Agropyron desertorum* (Fischer ex Link) Schultes); and a crested wheatgrass cross called Hycrest II, a product of *Agropyron desertorum* and *Agropyron cristatum* (L.) Gaertner). Our objective was to identify selections that might be attractive to, or avoided by, black-tailed jackrabbits.

MATERIALS & METHODS

The study was conducted on the Northern Great Basin Experimental Range 43 miles west-southwest of Burns, OR. With the exception of Hycrest II, from USDA-ARS Logan, UT, seed was acquired from the SCS

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Pullman Plant Materials Center, Washington. Seedlings were established in tubes in a green house during the winter and transplanted to plots in early April 1990. Crop-year precipitation for 1990 was 74 percent of average, but because plants were growing essentially free from competition, they tillered prolifically. Planting design was a

randomized complete block with eight treatments (cultivars) and nine replications. A replicate contained 98 plants of each selection (total/replicate = 784 plants).

Trails, frequent sightings, and jackrabbit scat on nearly every square meter of our plots gave us confidence that black-tailed jackrabbits were the main herbivores. Jackrabbits from surrounding terrain had free access to the plots from early June until 10 July 1990. Most foraging was nocturnal, and we did not census the animals. One would, however, typically encounter a jackrabbit for every 50 to 75 yards of day-time travel in the adjacent sagebrush/bunchgrass vegetation.

During the period the jackrabbits had access to plots, plants were in the vegetative and early-boot stages of phenology. The latter stage is the time when severe defoliation most negatively affects subsequent vigor and production of cool-season grasses. Diameters of individual plants ranged between 1 and 5 inches. After hares were excluded from plots by fencing, each plant was scored for presence or absence of any sign of defoliation, indexed as either a 0 or a 1, and degree of utilization as indexed by scores ranging from zero to three. Scores, based on appearance of plants, indicated: 0) no utilization, 1) 1-20 percent herbage weight removed, 2) 20 to 40 percent weight removed, and 3) more than 40 percent weight removed. Scores (n=98) for both response variables were summed by cultivar (n=8) within each replication (n=9) with the totals functioning as single observations (n=72) in randomized-complete-block analyses of variance. Data were converted to percentages after analyses.

Mean separations and preference ratings were accomplished with Least Significant Difference (LSD) procedures (P=0.05). Selections scoring greater than 1 LSD above the mean were viewed as "preferred", those less than 1 LSD below the

mean were recognized as "avoided", and those within plus or minus 1 LSD of the mean, were considered to be "passively" foraged upon by jackrabbits.

RESULTS & DISCUSSION

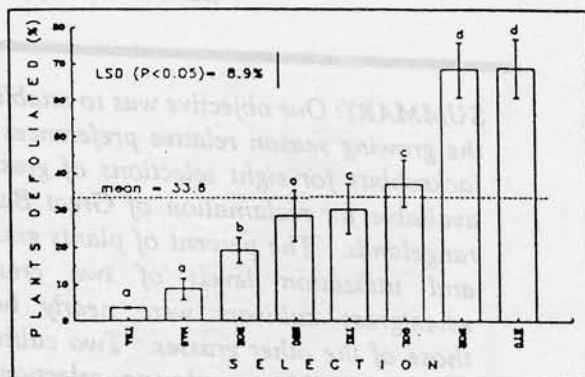


Figure 1

Approximately 34 percent of all plants received some degree of defoliation with the range extending from 4 percent for 'Trailhead' basin wild-rye to 69 percent for 'Hycrest II' crested wheatgrass. Mean percentages of plants defoliated and levels of utilization by black-tailed jackrabbits differed significantly among selections with nearly identical interpretations derived from both response variables (Figure. 1 and 2). The crested wheatgrass cultivars

(Nordan and Hycrest II) were clearly preferred forages. Percent of plants defoliated and levels of utilization for both cultivars were nearly two times greater than scores of the other selections, and approximately 6 percent of these plants were actually killed by overgrazing. The two bluebunch wheatgrass cultivars (Secar and Goldar), and the thick-spiked wheatgrass were foraged upon at roughly mean levels and were assigned a passive rating. The Bozoiisky Russian wild-rye and two basin wild-rye cultivars, Trailhead and Magnar, were lightly foraged upon and ranked as avoided.

Our results suggest these cultivars could be used as management tools to either discourage or encourage black-tailed jackrabbit use of an area. For example, plantings of the wildrye cultivars might avoid

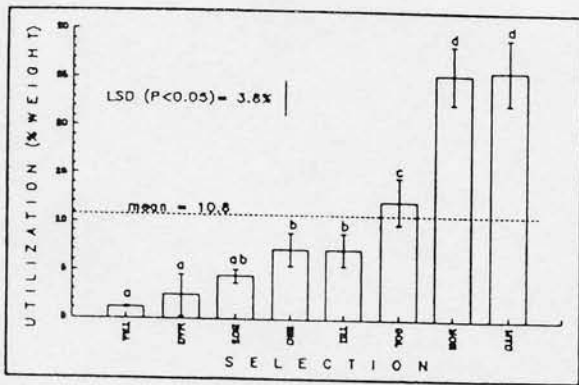


Figure 2

attraction to road or aircraft runway right of ways. In a similar vein, the basin and Russian wild-rye cultivars might function as protective buffers around more valuable crops or as alternative livestock forages less likely to be consumed or damaged by black-tailed jackrabbits. Conversely, plantings of crested wheatgrass cultivars might lure jackrabbits away from more valuable, but less palatable, crops or critical areas. Efficacy of buffer strips for crop protection has not been tested, however, and additional research is needed to address applicability of this hypothesis.

In the sagebrush-steppe, black-tailed jackrabbits typically inhabit shrub dominated

areas during daylight and make feeding forays into areas offering higher quality forage, but less overhead cover at night. Research has detected significantly less use of palatable feed by jackrabbits when distance from cover was only 5 to 10 yards. Under more applied conditions, in large seedings, and with high populations, black-tailed jackrabbits typically forage within a 300-yard band adjacent to protective cover.

CONCLUSIONS

Our findings clearly demonstrate selective grazing by black-tailed jackrabbits. Having identified favored and avoided cultivars, we suggest planting avoided selections in areas prone to frequent outbreaks of black-tailed jackrabbits. Possible benefits include minimizing potential damage to growing forage or arid land ground cover during its most susceptible stage of phenology, reducing competition with livestock or other wildlife for forage, and perhaps discouraging immigration and/or encouraging emigration of these hares to other areas.

