

Growth Periods and Herbage Production of Cheatgrass and Reseeded Grasses in Southwestern Idaho

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THE investigations reported in this paper were undertaken to determine the growth periods, the amounts and periods of herbage production, and the variation in production from year to year of cheatgrass and reseeded grass species in southwestern Idaho. Such information is important in deciding whether to reseed cheatgrass areas and in choosing grasses

PLANT DEVELOPMENT

Measurements of plant height as an index of development were made every 15 days during the 1947 growing season on cheatgrass and 16 seeded grasses at all three study locations.

Figure 1 shows the dates at which cheatgrass and 7 representative grasses

TABLE 1

Site characteristics of study areas in southwestern Idaho

LOCATION	ELEVATION	ANNUAL PRECIPITATION	SLOPE	EXPOSURE	SNOW COVER	SOIL TYPE AND CONDITION
	<i>ft.</i>	<i>in.</i>	<i>pct.</i>			
Regina.....	3,500	10	2	West	Intermittent snow with some winters snow free.	Shallow loam, low organic matter; good moisture-holding capacity.
Black's Creek....	4,000	15	10	South	Snow cover from late December to late February.	Coarse sandy loam; low organic matter; fair moisture-holding capacity.
Arrowrock.....	4,600	18½	10	South	Snow cover from early December to early March.	Coarse sandy loam; low organic matter and low moisture-holding capacity.

for reseeding which will produce forage at the season when it is needed.

Data are presented under three headings: Plant development, seasonal yield, and total yield. Most of the studies were conducted at Regina, Black's Creek and Arrowrock—all within 20 miles southeast of Boise, Idaho. The topographic and climatic characteristics for these three sites are given in table 1.

began to grow and at which they ceased to grow or become dormant at Regina. At Arrowrock, dates were later on the average by 17 days. Dates at Black's Creek were intermediate.

The variation between starting dates of growth for all species at Regina was 20 days, or from February 5 to 25. Dates when growth ceased extended from May 15 to August 15, or 3 months. All seeded

species, with the exception of tall wheatgrass, started to grow as soon as or before cheatgrass. They remained green 2 to 12 weeks longer than cheatgrass.

At Regina on April 1, as spring grazing commenced, cheatgrass was 0.8 inch high, crested wheatgrass 4.1 inches, tall wheatgrass 3.7 inches and big bluegrass 4.4 inches. One month later cheatgrass was 2.2 inches high, crested wheatgrass 5 inches, tall wheatgrass 5.8 inches, and big bluegrass 10 inches. At Arrowrock, at

stem (*A. smithii*) wheatgrasses. At all three study locations, the combined growth period of crested wheatgrass and tall wheatgrass was over 6 months.

Supplementary growth study (1945-47).—Cheatgrass and crested wheatgrass were measured for height and notes were made on plant development at 15-day intervals during the 1945 and 1946 growing seasons at Regina and Arrowrock. The 3-year averages (including data for 1947 reported above) show that at Regina crested

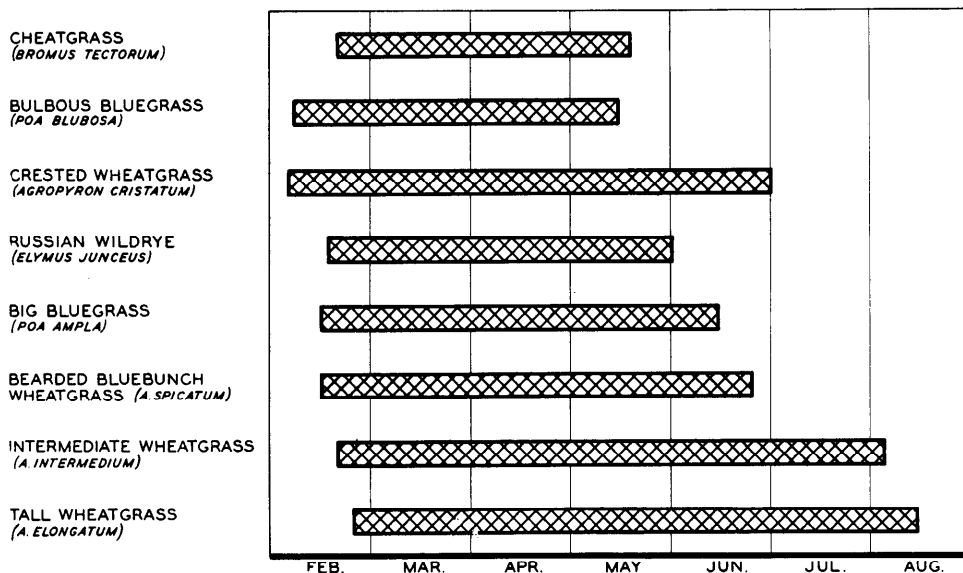


FIG. 1. Growth periods of cheatgrass and 7 seeded species at Regina, Idaho, 1947.

the opening of the grazing season on May 1, cheatgrass was 2.9 inches high, crested wheatgrass 11.2 inches, tall wheatgrass 17.4 inches, and big bluegrass had a height of 18.4 inches.

Grasses which had good height growth at the start of the season and produced early herbage were crested, bluebunch, Siberian (*Agropyron sibiricum*), and stiff-hair (*A. tricophorum*) wheatgrasses; bulbous, Sandberg (*Poa secunda*), and big bluegrasses; and Russian wildrye. Grasses which remained green late in the season were tall, intermediate, stiffhair, and blue-

wheatgrass began to grow 15 days earlier than cheatgrass; and at Arrowrock, 5 days earlier. At both locations, crested wheatgrass plants remained green on the average $1\frac{1}{2}$ months longer than cheatgrass.

SEASONAL YIELD

Forage yields were obtained by clipping cheatgrass and crested wheatgrass at the ground level every 15 days during the growing season at Regina and Arrowrock from 1945 to 1947. Average air-dry yields at Arrowrock for the 3-year period are shown in figure 2.

As shown in figure 2, crested wheatgrass furnished more total herbage and more early spring herbage than cheatgrass for the period of study. This was mainly because of the great fluctuation in cheatgrass production from year to year. For

ing season at Regina (April 1) cheatgrass had no herbage over 1 inch in height, whereas crested wheatgrass produced 265 pounds of herbage per acre at heights over an inch. The 3-year averages at Arrowrock show that at the opening of spring

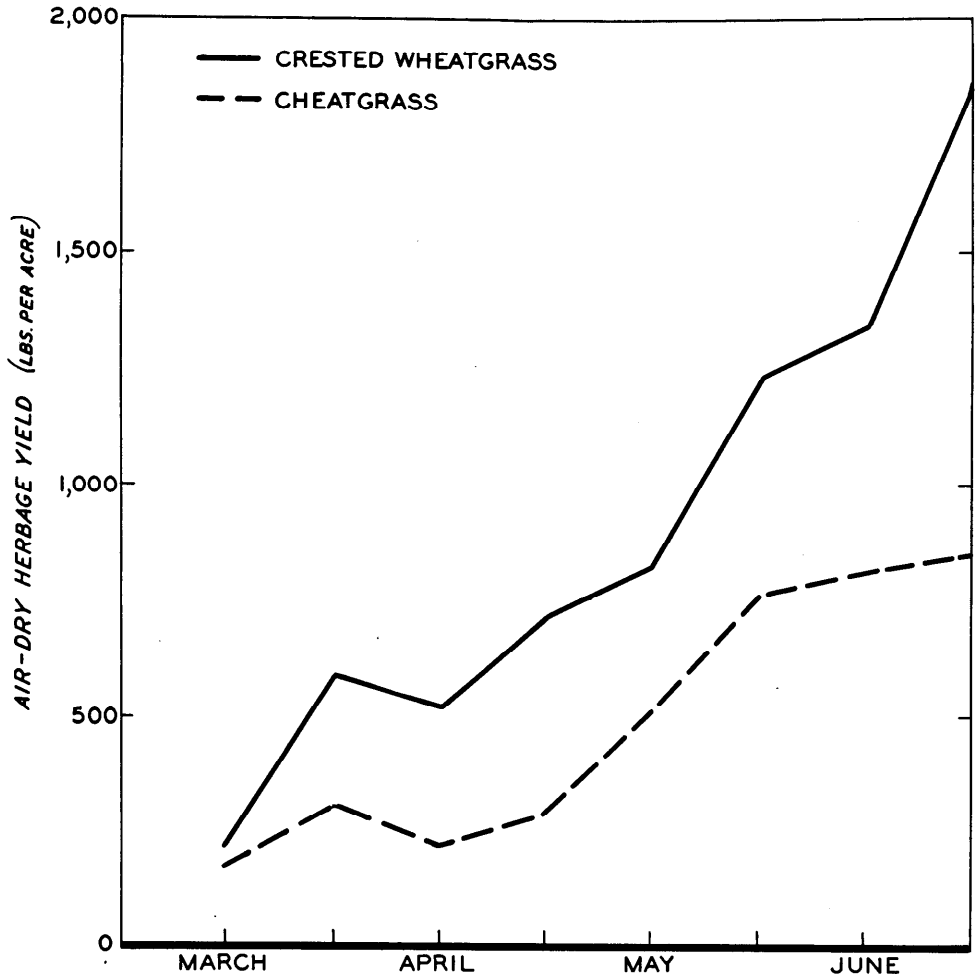


FIG. 2. Average herbage production of cheatgrass and crested wheatgrass during the growing season at Arrowrock, Idaho (1945-47).

example, on the Arrowrock study area, cheatgrass produced 1264 pounds of air-dry herbage per acre on June 1, 1947, and only 176 pounds on June 1, 1946. Yields of crested wheatgrass at the same location and dates were 1911 and 1213 pounds per acre, respectively.

In 1947, at the beginning of the graz-

ing (May 1) crested wheatgrass was producing more than twice as much herbage as cheatgrass (fig. 2).

TOTAL YIELD

Total yields were obtained from ungrazed herbage clipped at the ground level at the time seed was formed but before

it had shattered. Clippings were made in various years at Arrowrock, Regina, and at an additional site, Raft River. Yields at Arrowrock and Raft River are given in table 2.

TABLE 2

Annual herbage production of cheatgrass and crested wheatgrass at Arrowrock and Raft River, Idaho (1940-47)

YEAR	CHEATGRASS		CRESTED WHEATGRASS	
	Arrowrock	Raft River	Arrowrock	Raft River
	<i>lbs/A</i>	<i>lbs/A</i>	<i>lbs/A</i>	<i>lbs/A</i>
1940.....	1897	—	1603	—
1941.....	2560	—	2207	—
1942.....	—	2500	2427	—
1943.....	361	300	1285	—
1944.....	3461	1250	2472	—
1945.....	1510	1711	1537	—
1946.....	441	422	1090	1785
1947.....	1264	2006	2468	1664

There was considerable variation in production of cheatgrass from one year to another; crested wheatgrass was more uniform in its production. For example, the yield of cheatgrass at Arrowrock in 1943 was one-ninth that in 1944—361 and 3461 pounds per acre, respectively—whereas crested wheatgrass production in 1943 was one-half of that in 1944—1285 and 2472 pounds, respectively. The lowest yield of cheatgrass in the period of study was 361 pounds per acre; the lowest yield of

crested wheatgrass, 1090—three times that of cheatgrass.

CONCLUSIONS

As this study shows, the only advantage of cheatgrass is that it is present in considerable amounts in some years without the labor of reseeding. This alone is not enough on which to base a livestock operation. Economical operation demands that livestock should not exceed the number which can safely graze on the smallest herbage production to be expected in a poor year. To use this basis with cheatgrass would mean a very limited operation if no supplemental feeding was done.

Crested wheatgrass begins to grow earlier in the spring, remains green longer in the summer, generally produces more herbage, and fluctuates less in production from one year to another. The other species also provide one or more of these desirable features. Seeding crested wheatgrass, or combinations of other grasses which grow earlier and later, can extend the period of green growth considerably over that of cheatgrass. Before definite seeding recommendations are made, however, more study is needed of the relative palatability of the different grasses at successive intervals of grazing use. Practically all grasses are palatable in the early leaf stage, but many of them become unpalatable when seed stalks begin to show and while they are still green.