

## THREE-PASTURE SYSTEM GRAZING TRIAL

The grazing trial using crested wheatgrass for spring and early summer grazing, native grass in mid and late summer, and Russian wildrye for fall grazing was continued for the fourth year in the 1975 season. The trial compares fertilized crested wheatgrass and fertilized native grass with unfertilized pasture of the same kinds. The Russian wildrye pastures used in the trial have all been fertilized each year. The fertilized crested wheatgrass and native grass pastures have received 50 lbs N per acre annually. The Russian wildrye pastures received 75 lbs N in 1972, 150 lbs N in 1973, and 50 lbs N-30 lbs P<sub>2</sub>O<sub>5</sub> in 1974 and 1975.

The grazing plan for the 1975 season is shown in Table 1. This year 13 yearling steers were grazed on each crested wheatgrass pasture. One steer was removed from each pasture group when the animals were moved to the native grass pastures. From then until the end of the season 12 yearling steers were grazed in each pasture. Two of the 8-acre Russian wildrye pastures were grazed in September and October, with the animals moving to a different set of Russian wildrye pastures after weighing at the end of October. The data presented in this report summarize the results of the trial only to the end of October.

Forage production and grazing utilization of the forage on the pastures for the 1975 season are shown in Table 2. Forage production on the crested wheatgrass pastures was about the same as in 1972, but was somewhat above last year's production averaging 13% greater on the unfertilized pasture and over 50% greater on the fertilized pasture. Overall utilization was the highest yet obtained on crested wheatgrass pastures, but still lighter than desirable. Considerable amounts of standing, mature crested wheatgrass remained in both pastures after the end of the grazing period. The grazing period on these pastures extended from May 13 to July 8, a total of 56 days.

The production of the native grass pastures was about the same as in the 1972 and 1973 seasons but slightly less than last year. Production on the unfertilized native grass at 2462 lbs/acre dry-weight was about 20% less than last year's production. Fertilized native grass also produced about 20% less than last year but still over 4000 lbs/acre.

Utilization on the unfertilized native was lighter than desirable - 29%, and at 43% on the fertilized pasture was essentially the same as last year on this treatment. The grazing period on the native grass pastures this year was from July 8 to September 3, a total of 57 days.

Production on the Russian wildrye pastures was substantially better in the 1975 season than in any of the previous years of the trial. Prior to this year production on these pastures has ranged from about 1500 to 1700 lbs/acre, dry-weight, but this year Russian wildrye production averaged about 38% greater than the average production in previous years. Utilization on these pastures was quite heavy this year being almost complete (89%) on one of the pastures and 68% on the other. Pastures 2 and 4 were grazed from Sept. 3 to Oct. 27, a period of 54 days. Pasture 4 was utilized most heavily (the pasture on which Kedlor was fed as a supplement). The steers were moved to wildrye pastures 1 and 3 on Oct. 27, with Kedlor being fed on pasture 3.

The performance of the steers on the pastures is shown in the data of Table 3. As in the 1974 season 6 of the steers in each lot were black whitefaces and 6 were Herefords. Gain per acre and gain per head were lower on the unfertilized crested than expected, but on fertilized crested were fairly comparable to gains of previous years. In the past 3 years of the trial gains per head on the unfertilized crested wheatgrass have been somewhat better than on the fertilized crested, but this year they were not, with the daily gain per head on the unfertilized crested averaging 1.17 lbs and on the fertilized crested 1.26 lbs.

The gains of the steers on native grass this year were better than in any of the previous years of the trial averaging 2.34 lbs/head/day on the unfertilized native and 1.95 lbs/head/day on the fertilized native. The gain per acre on the unfertilized pasture at 89.1 lbs was the highest yet obtained on this pasture. The per acre gain on the fertilized native grass was not quite as good as obtained in the 1974 season. The relatively low utilization on the native grass pastures would indicate that gains per acre could have been increased by use of a heavier stocking rate.

The steers were moved to the Russian wildrye pastures on Sept. 3, and the weights and gains of the animals on these pastures are given in Table 3. The grass on the pastures at the beginning of the grazing period was estimated to contain about 50% green material, and on Oct. 27, when the animals were weighed off the first set of pastures, it was estimated that the grass still had about 30% green material on it. During the 54-day grazing period very little regrowth occurred. As in past years the grazed the grass nearly to ground level, consuming both dry and green

material at the same time.

The daily gains on the Russian wildrye pastures were substantially below the gains obtained last year, averaging 0.85 lbs/head/day on one pasture and 0.59 lbs/head/day on the other. The difference in gains appears to be related to the Kedlor supplementation, and in Table 4 the gains on the Russian wildrye have been adjusted by weighted average to offset the effects of the Kedlor treatment. The daily gain for the first 26 days on the Russian wildrye pastures as shown by the adjusted average was 0.92 lbs/head. For the next 28 days (9/29 - 10/27) the daily gains dropped to 0.53 lbs/head. The gains per acre, while generally lower than gains obtained on green pasture, were still substantial (Table 3).

The performance of the black whitefaces and the Herefords was compared, as before, and the data are given in Table 4. While there are some inconsistencies in the data, the black whitefaces seem to have had slightly better gains than the Herefords, especially on fertilized native grass and on the Russian wildrye pastures. Differences, however, were relatively small when considered on the seasonlong basis. The results obtained in the previous years of the trial tend to confirm the conclusion that differences in gains between the two groups of steers tend to be small and trends are inconsistent.

Half of each lot of steers was fed Kedlor (biuret) beginning on August 1, while the animals were on native grass. When the steers were moved from the native grass to Russian wildrye pastures, all the steers that had been fed Kedlor were put in one lot (pasture #4) and continued to receive supplement. Those steers that had not received the supplement were placed in the other lot (pasture #2). The Kedlor blocks were used in the trial to see whether the non-protein nitrogen supplement would compensate for the loss in the quality of the pasture forage as it matures. The summary of the daily gains per head of the supplemented and non-supplemented steers is given in Table 5.

The data of Table 5 indicate that while there may have been some positive effect of the Kedlor supplement on the steers on unfertilized native grass, there was apparently little or no effect on the steers on the fertilized native grass pastures. In the 1973 and 1974 seasons there appeared to be substantial benefits from feeding Kedlor on both the fertilized and unfertilized native grass pastures. On the Russian wildrye pastures it would appear that feeding Kedlor had some detrimental effects during the first 26-day grazing period (9/3 - 9/29). Gain/head/day with Kedlor averaged only 0.67 lbs during this period. The daily gains per head during the second period (28 days from 9/29 - 10/27) were

nearly the same for both supplemented and non-supplemented steers, 0.51 lbs with Kedlor and 0.55 without.

The steers receiving the Kedlor supplement on the Russian wildrye pastures ate approximately 0.42 lbs per head per day, which is about twice the recommended rate of consumption. They also consumed more grass than did the non-supplemented steers (Table 2). As in the 1972 and 1973 seasons, it would seem that supplemented steers experience some kind of nutritional imbalance when they go on to Russian wildrye pasture from the native grass pasture.

A summary of the 1975 results with the 3-pasture grazing system shows that the yearling steers on the unfertilized pastures each gained an average of 231 lbs during the 167 day grazing period from May 13 to Oct. 27. During this period each steer consumed an average of about 62% of the forage on 2.3 acres. This represents an overall beef production of 100.4 lbs/acre. The steers grazing the combination of the unfertilized crested wheatgrass and native grass with the fertilized Russian wildrye gained an average of 238 lbs during the same period, utilizing about 53% of the total forage produced on 3.5 acres. The overall production of beef on these pastures was thus 68.0 lbs/acre.

Table 6 summarizes the 4-year results of the trial. The 3-pasture system with fertilizer on all pastures has produced an average of about 95 lbs of beef per acre, while the system with only the Russian wildrye pastures fertilized has produced an average of about 65 lbs of beef per acre over the 4-year period of the trial. At the present time the unfavorable economic situation continues to put the use of fertilizer in the system at a marginal level, despite the substantial increase in beef production per acre.

Pasture	Grazing period	Pasture size-acres	No. of steers	Stocking rate-acres/steer per month
Crested wheatgrass	May-June	16	13	0.6
Crested wheatgrass + 50 lbs N	May-June	8	13	0.3

Native grass	July-Aug.	18	12	0.7
Native grass + 50 lbs N	July-Aug.	12	12	0.5
#2-Russian wildrye (fertilized)	Sept.-Oct.	8	12	0.3
#4-Russian wildrye (unfertilized)	Sept.-Oct.	8	12	0.3
#1-Russian wildrye (fertilized)	November	8	12	0.3
#3-Russian wildrye (unfertilized)	November	8	12	0.3

<b>Table 2. Forage production and utilization during grazing periods on crested wheatgrass, native grass, and Russian wildrye pastures - 1975 season.</b>							
Pasture	Pasture size acres	Period grazed	Days in period	Forage produced-lbs/acre	Forage utilized-lbs/acre	Forage left on ground-lbs/acre	% utilization
Crested wheatgrass	16	5/13-7/8	56	2213	1506	707	68
Crested + 50 lbs N	8	5/13-7/8	56	3611	2749	862	76
Native grass	18	7/8-9/3	57	2462	710	1752	29
Native + 50 lbs N	12	7/8-9/3	57	4069	1748	2321	43

Russian wildrye (2) (fertilized)	8	9/13-10/27	54	2220	1510	710	68
Russian wildrye (4) (unfertilized)	8	9/13-10/27	54	2145	1909	236	89

**Table 3. Pasture systems grazing trial. Weights and gains of yearling steers on crested wheatgrass, native grass, and Russian wildrye pastures - 1975 season.**

Pasture	Period grazed	Days in period	No. of steers	Avg. initial wt/steer lbs	Avg. final wt/steer lbs	Gain per head- lbs	Avg. daily gain per head lbs	Avg. daily gain per acre-lbs
Crested wheatgrass	5/13-7/8	56	13	605.8	671.5	65.7	1.17	53.4
Crested + 50 lbs N	5/13-7/8	56	13	621.5	692.3	70.8	1.26	115.1
Native grass	7/8 -9/3	57	12 <sup>1</sup>	686.7	820.4	133.7	2.34	89.1
Native + 50 lbs N	7/8 -9/3	57	12 <sup>1</sup>	695.0	806.3	111.3	1.95	111.3
#2-Russian wildrye + 50 N & 30 P <sub>2</sub> O <sub>5</sub>	9/3-10/27	54	12	812.1	857.9	45.8	0.85	68.7
#4-Russian wildrye + 50 N & 30 P <sub>2</sub> O <sub>5</sub>	9/3-10/27	54	12 <sup>2</sup>	814.6	846.3	31.7	0.59	47.6 <sup>3</sup>

<sup>1</sup>One steer cut from each group when animals moved from crested wheatgrass to native grass pastures.

<sup>2</sup>All steers receiving Kedlor placed in pasture #4 when animals moved from native grass to Russian wildrye pastures.

<sup>3</sup>Steers in this pasture all receiving Kedlor.

**Table 4. Average daily gains (lbs) of Herefords and Black-Whiteface steers<sup>1</sup> on unfertilized and fertilized pastures during the 167-day grazing period in the 1975 season.**

Pasture treatment	Steers	Crested wheatgrass		Native grass		Russian wildrye <sup>2</sup>		Avg. for 167 days
		5/13 - 6/3 21 days	6/3 - 7/8 35 days	7/8 - 8/1 24 days	8/1 - 9/3 33 days	9/3 - 9/29 26 days	9/29 - 10/27 28 days	
Unfertilized	Herefords	2.24	0.42	2.54	2.14	0.86	0.42	1.33
	Black WF	2.22	0.66	2.85	2.04	0.97	0.64	1.49
	Avg.	2.23	0.54	2.70	2.09	0.92	0.53	1.41
Fertilized	Herefords	2.74	0.50	2.28	1.71	0.86	0.42	1.32
	Black WF	2.21	0.59	2.33	1.84	0.97	0.64	1.36
	Avg.	2.47	0.54	2.31	1.78	0.92	0.53	0.34

<sup>1</sup>Each lot of 12 steers consisted of 6 Herefords and 6 Angus x Hereford steers.

<sup>2</sup>Effects of Kedlor treatment removed by averaging steers of the same kind from both treatments together.

**Table 5. Daily gains per head (lbs) of steers with and without Kedlor supplement on native grass and Russian wildrye pastures in the 1975 season.**

Pasture treatment	Supplement treatment	Native grass		Russian wildrye	
		7/8 - 8/1 (24 days)	8/1 - 9/29 (33 days)	9/3 - 9/29 (26 days)	9/29 - 10/27 (28 days)
Unfertilized	With Kedlor	3.09	2.17	---	---
	W/o Kedlor	2.29	2.02	---	---
Fertilized	With Kedlor	2.26	1.76	0.67	0.51
	W/o Kedlor	2.15	1.76	1.16	0.55

<sup>1</sup>Kedlor first made available to steers on native grass on August 1.

**Table 6. Four-year average weights and gains of yearling steers on crested wheatgrass, native grass, and Russian wildrye pastures, 1972-1975.**

Pasture	Pasture size-acres	Avg. No. days grazed	No. of steers	Avg. initial wt/steer lbs	Avg. final wt/steer lbs	Avg. gain per head-lbs	Avg. daily gain per head lbs <sup>1</sup>	Avg. gain per acre-lbs <sup>1</sup>
Crested wheatgrass	16	56	12	581.0	675.7	94.7	1.70	68.1
Crested + 50 lbs N	8	56	12	586.9	672.4	85.5	1.53	123.0



Native grass	18	62	12	679.6	776.2	96.6	1.56	63.2
Native + 50 lbs N	8	62	12	673.1	772.1	99.0	1.58	97.3
#1-Russian wildrye (fertilized)	8	43	12	771.5	824.8	53.3	1.33	71.3
#2-Russian wildrye (fertilized)	8	43	12	776.5	816.7	39.9	1.20	56.2
<sup>1</sup> Averaged from annual values as included in reports, not from days-grazed and gains reported above.								

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