

Wheat, Barley and Oats for Forage and Grain Production at the Yuma Valley Agriculture Center, 1986-87

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ABSTRACT

The potential of various types of small grains for winter forage production was investigated in this study. Two varieties of red wheat, durum wheat, barley, and oats were harvested at various stages. Harlan II barley produced the most forage at the early cutting while Mesa oats yielded the most forage at the later cutting. Gustoe barley produced the highest grain yields.

INTRODUCTION

Alfalfa is the major forage crop in Arizona. However, alfalfa growth is slow during the winter months and alternate sources of fresh forage are needed, particularly by dehydrators. This study was initiated to explore the potential of various species of small grains for winter forage.

METHOD

Two varieties of red wheat, durum wheat, barley and oats were planted in 5' x 130' plots at the Yuma Valley Agriculture Center on September 30, 1986. Subplots were harvested for forage either 1) once at the late tillering to 1 node stage on November 20, 1986, 2) once at the early boot to flowering stage on December 18, 1986, or 3) twice on both November 20 and December 29. Some subplots were not harvested for forage.

Grain yields were harvested on April 20, 1987 for those plots harvested for forage on November 20 or those not harvested for forage and on May 8, 1987 for those plots harvested for forage on November 20, December 18 and December 29.

CROP HISTORY

Planted: 9-30-86

Harvested: (See above)

Seedling rate: Barley - 94 lbs./A

Wheat - 130 lbs./A

Oats - 75 lbs./A

Irrigation: 7 applications of Colorado River water for a total of 31 inches

Fertilization: 85 lbs. of N applied preplant and 120 lbs. of N applied in the irrigation water for a total of 205 lbs. of N/A and 80 lbs. of P₂O₅/A applied preplant.

Previous crop: Cotton

Soil Type: Clay loam

RESULTS AND DISCUSSION

Harlan II barley produced the most forage when forage was harvested once on 11/20 due to its more advanced growth stage at harvest (Table 1). When forage was harvested twice, once on 11/20 and 12/29, Mesa oats was the most productive, followed closely by Harlan II barley, Gustoe barley, and Yavaros durum wheat (Table 2). Mesa oats was the highest yielder when forage was harvested once on 12/18 (Table 3). Gustoe barley recovered from the forage harvests to produce more grain than the other varieties.

Small grains can recover from clipping or grazing without substantial loss in yield if done early in the season and if the growing point is not removed. When not harvested for forage, the barleys produced more grain (particularly Gustoe), partially due to less sensitivity to frost damage (Table 4).

Table 1. Forage Harvested Once on 11/20/86

VARIETY	Growth Stage at Harvest	Forage Yield (lbs/A)* (Aver. of 4 reps)	Grain Yield (lbs/A) (Aver. of 4 reps)
<u>Red Wheat</u>			
Yecora Rojo	1 node	1597	1314
Probred	late tillering	1175	1369
<u>Durum Wheat</u>			
Aldura	late tillering	1367	1533
Yavaros	1 node	1162	2190
<u>Barley</u>			
Harlan II	flag leaf visible	2376	2555
Gustoe	late tillering	1392	4580
<u>Oats</u>			
Mesa	1 node	1699	2817
Cayuse	1 node	1047	1211

* Corrected to 12% moisture basis

Table 2. Forage Harvested Twice on 11/20/86 and 12/29/86.

Variety	Growth Stage at Harvest	Forage Yield (lbs/A) (Avg. of 4 reps.)		Total of 2 Cuttings	Grain Yields (lbs/A) (Avg. of 4 reps.)
		11/20	12/29*		
<u>Red Wheat</u>					
Yecora Rojo	1 node	1597	1832	3429	1816
Probred	late tillering	1175	3788	4963	2421
<u>Durum Wheat</u>					
Aldura	late tillering	1367	1689	3056	2270
Yavaros	1 node	1162	4282	5444	2043
<u>Barley</u>					
Harlan II	flag leaf visible	2376	3171	5547	2194
Gustoe	late tillering	1392	4035	5427	3329
<u>Oats</u>					
Mesa	1 node	1699	4159	5858	2763
Cayuse	1 node	1047	3768	4815	1850

* Corrected to 12% moisture.

Table 3. Forage Harvested Once on 12/18/86.

Variety	Growth Stage at Harvest	Forage Yield * (Aver. of 4 reps)	Grain Yield (Aver. of 4 reps)
<u>Red Wheat</u>			
Yecora rojo	flowering	5085	1740
Probred	late boot	4694	3102
<u>Durum Wheat</u>			
Aldura	flowering	5559	1967
Yavaros	flowering	5415	1816
<u>Barley</u>			
Harlan II	milk stage	8708	1665
Gustoe	early boot	7906	2875
<u>Oats</u>			
Mesa	flowering	9903	3291
Cayuse	flowering	7865	2494

* Corrected to 12% moisture

Table 4. Not Harvested For Forage

Variety	Grain Yield (lbs./A) (Aver. of 4 reps)
<u>Red Wheat</u>	
Yecora rojo	2052
Probred	1332
<u>Durum Wheat</u>	
Aldura	1659
Yavaros	2587
<u>Barley</u>	
Harlan II	3286
Gustoe	6059
<u>Oats</u>	
Mesa	2050
Cayuse	1304