



Data was compiled on the Benedict Feeding Company blackboard showing the results of a feeding trial comparing wheat in the ration with milo and barley. Tests were recently completed. From left a Jim Benedict, partner of Benedict Feeding Co., from Stanfield; Frederick Van Wilson, Pinal County Agricultural Agent; and Herold V. Loughead, Acting Area Livestock Specialist, Cooperative Extension Service.

## Wheat is Used in Feedlot Rations

Some Arizona growers have been producing wheat in place of barley, just the reverse of what happened a number of years ago in the Pacific northwest.

There, they planted barley as an alternate crop for wheat. And, when they planted barley on land that had supported wheat in earlier years the harvested barley crop yielded about 40 per cent volunteer wheat.

Feeding this mixture proved successful in that area and led to further exploration into the use of wheat as a cattle feed, either alone, or in combination with other grains.

This background on the question of using wheat for cattle feed was provided by Herold V. Loughead, Acting Area Livestock Specialist, and Frederick Van Wilson, Agricultural Agent in Pinal County, both with the Cooperative Extension Service of the University of Arizona.

They point out that a new soft, winter wheat called Gaines was introduced to northwestern growers and soon thereafter was planted in Arizona.

At about the same time a group of Mexican wheat varieties were introduced to Arizona by U of A agronomists.

And, because these varieties pro-

vided excellent yields the acreage has doubled from 23,000 acres in 1966 to 50,000 acres in 1967.

The 1968 crop was harvested from 52,000 acres and according to Robert E. Dennis, Extension Agronomist, "there is every indication that there will be an increase in wheat planting in 1969."

He pointed out, "growers at the intermediate elevations will use the Gaines variety while at lower elevations there will be a significant acreage increase using the soft, spring Mexican wheat varieties called Siete Cerros and Sonora 64."

Wheat has been grown primarily in Maricopa, Pinal, Yuma and Cochise counties. In these areas the Mexican varieties have been outproducing other available wheat varieties as well as yielding better than barley, according to Loughead and Van Wilson.

"It must be remembered," they said, "these wheats are feeding wheats, not milling wheats."

And, since more wheat is being produced in this state we're beginning to see the use of it as a cattle feed.

Before wheat can replace barley in the cattle finishing ration the price for it will need to be about the same price as is paid for barley, at least, not more than barley.

Because wheat is a new feed grain for cattle much of the information presented here has been obtained from the research in other states. Most of the information, except for one feeding trial which was conducted by the Benedict Feeding Company at Stanfield, has been taken from reports from Universities in Oregon, Washington and Colorado.

Both Loughead and Van Wilson feel these data should be included because the Pacific northwest trials used wheat that is most similar to, or the same as, that which is grown in Arizona.

According to the results of research available at this time — which varies considerably — the feeding efficiency increased with the use of wheat in the ration. This is not born out in the Benedict feeding trial described later in this article.

Apparently in other states there has been no appreciable difference in carcass grades, or quality, where other grains have been compared with the combinations of wheat and barley or wheat and milo.

They pointed out that a high wheat ration does present a palatability problem. In other state research feed intake drops off when the grain portion of the ration is more than 50

Table 1. Crude Protein Percentage of Several Spring Wheats\*

Variety	Year Grown	Crude Protein Percentage		
		Rep 1	Rep 2	Average
Lerma Rojo	1967	11.38	11.63	11.51
Maricopa	1967	8.97	9.06	9.02
Maricopa	1967	10.88	10.78	10.83
Mayo 64	1967	11.66	11.54	11.60
Nainari	1967	11.11	11.02	11.07
Ramona 50	1967	12.05	12.14	12.10
Sonora 64	1967	12.52	12.50	12.51
Sonora 64	1967	10.29	10.22	10.26
Sonora 64 X	1967	12.23	12.14	12.19
Yaqui	1967	11.11	11.20	11.16
Maricopa	1968	10.06	10.00	10.03
Pitic 62	1968	11.20	11.42	11.31
Ramona 50	1968	11.27	11.36	11.32
Siete Cerros	1968	10.13	10.13	10.13
Sonora 64	1968	11.63	11.44	11.54
Sonora 64	1968	12.25	12.00	12.13

\* Seed for these determinations was obtained from the on-farm tests conducted on the Floyd Spar Farm, Wellton-Mohawk, 1967 & 1968, and William G. Brandon Farm, Queen Creek, 1967. The analyses was conducted by William H. Hale, Animal Science Professor, UA Animal Science Department.

cent wheat. In the Benedict trial they felt that 25 per cent would be more beneficial.

On the other hand such research indicates that wheat has a higher digestibility than does milo. In digestibility trials with considerable range in the responses, the digestibility of barley and wheat were similar.

Wheat also has a higher crude protein content than does milo. This reduces the amount of supplemental protein which needs to be added to the ration. Protein content of several Mexican wheat test plots grown in 1967-68 are shown in Table 1.

While the source of fiber is unimportant the amount of fiber is important, they said, as was learned in Oregon, a feeding ration incorporating one of the soft wheats must be formulated to include from four to ten per cent fiber content to gain optimum results. When fiber content is below the four to ten per cent range there will be proportionally lower responses in feeding value.

There need be no change, however, in the vitamin and mineral supplementation.

As far as is presently known wheat has its highest feeding value when combined with Arizona barley or milo.

Oklahomans report a lower incidence of urinary calculi among steers fed wheat as compared with milo.

One of the real values of wheat in a cattle ration, according to Loughhead and Van Wilson, is that it can be processed with barley. Wheat and barley can be mixed prior to process-

ing while milo and wheat must be mixed after processing.

The processing of wheat is the same as with barley — steam rolled. That's why you can premix the two grains. Wheat and barley do not require as much steaming and flaking as does milo. This makes it somewhat less desirable to combine milo with wheat.

The main thing to remember in processing is that fines are a factor which contribute to poor palatability. So processing procedures which reduce the fines will help the ration.

Loughhead and Van Wilson point out that here in Arizona the Benedict Feeding Company recently concluded a feeding trial using Gaines wheat processed by steam rolling. Wheat was mixed with a regular finishing ration substituting the wheat for either milo or barley. There were 64 steers per lot and these were fed for 120 days between July, 1968, and November 16, 1968. Data is shown in Table 2.

Table 2. Wheat Feeding Trial by Benedict Feeding Company (July, 1968, to November 16, 1968)

	Milo 48% Barley 32%	Wheat 48% Barley 32%	Milo 48% Wheat 32%
Pounds feed per head per day	22.5	19.0	21.3
Daily gain per head in pounds	2.94	2.56	2.89
Feed conversion pounds feed per pound gain	7.65	7.42	7.37
Carcass grade Choice	54	31	49
Number of head Good	10	33	15
Dressing per cent	61.11	60.50	60.45

In reviewing the results of their trial, Jim Benedict of the Benedict Feeding Company concluded —

“Looking at the carcass grades and yields it is evident that the cattle which were on rations containing wheat were not finished as well as those animals which were on the control ration of barley and milo.

“This appears to be directly associated with feed consumption since the steers being fed wheat did not eat as much per day as did those on barley and milo.

“It would appear from the results of this trial that a ration containing 25 per cent wheat would be satisfactory.”

He pointed out that as a result of this trial he would have to be able to buy wheat at a price about midway between the prices of milo and barley to make the use of wheat economical.

At this point more research is needed, say Loughhead and Van Wilson. They feel that the incorporation of wheat in cattle rations should be considered by the feeder as a trial and probably restricted to a few pens. A starting point might be to use 25 per cent wheat as suggested by Benedict. To include other percentage ranges may provide valuable information for the feeder who is looking into the responses of wheat as a portion of the steer finishing ration.

Controlled experiments will be needed to find out more precisely what percentages of grain combinations and any other ration alterations that may be needed to formulate a balanced, economically sound finishing ration.

The Animal Science Department at the University of Arizona plans to initiate trials in January to determine value of feeding Mexican wheats.