Rice Straw for Cattle Forage
What Facts the Rice Grower Should Know

By
Glenn Nader, UC Livestock Farm Advisor
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There is a drought in parts of California, Oregon and Nevada. This has limited forage for cattle and consequently hay prices are higher than last year. Thus, the interest in the use of rice straw as a dry matter supplement for cattle operation will be higher this year than normal. If rain does not occur this fall in the valley, further interest will also occur. This situation presents rice growers with an increased market potential for their straw, if it is selected and baled correctly. In the past, it has been put up as straw and had a mixture of success and failure. Four years of research by University of California farm advisors funded by Rice Research Board and more than 40 years of feeding rice straw at the Holzapfel Ranch in Willows has produced a list of selection and production tips and forage criteria.

Rice straw varies greatly in its forage value with protein from 2 to 7 % and 48 to 56 % Acid Detergent Fiber (ADF). ADF is a laboratory method of determining the fiber content that can assist in predicting the digestibility of a feed. The lower the ADF % the more digestible the feed. The 2 % protein material should **not** be baled for cattle feed, as its forage value is less than the cost of baling. Research has not been able to properly explain the reasons for the variability at this point, but some of the factors that may influence quality are:

1.) Days baled after harvest
2.) Nitrogen management
3.) Location or soils

Due to this fact, it is suggested that you test the plant material for its forage value before harvest. This will allow for some advanced time to plan and direct only the best forage quality rice aftermath to be baled for livestock. The following are laboratories that can provide a forage evaluation of Crude Protein and ADF:

A&L Western Ag. Lab - Modesto	(209) 529-4080
Atkins Farm Lab - Chico	(530) 343-4947
Fall River Agri-Lab - Fall River	(530) 336-5818
JL Laboratory - Modesto	(209) 538-8111
Monarch Lab - Chico	(530) 343-5818

The total cost of the Crude Protein and ADF ranged $16 to 28, plus shipping.

To collect a sample, randomly walk through across the field, cutting plants at the height of the expected harvest level. Stripe the grain from the head and place the remaining straw in a paper sack and air dry or in an oven at below 90 degrees. Then you can ship it to the laboratory and request it be evaluated for crude protein and acid detergent fiber (ADF). Sample each field that has a different variety or nitrogen management.

Research at one plot have indicated the following reductions over time in forage quality at 18 and 12 days before harvest to the forage quality at the time of baling:
18 days before harvest - 1.8 % reduction in protein and 2.2 % increase in ADF.
12 days before harvest - 1.25% reduction in protein and .4% increase in ADF.

For pre harvest straw management decisions, determine if the straw will meet livestock forage quality requirements by using the above data for 12 and 18 days to estimate the forage value at

the time of harvest and baling by subtracting the pre harvest values from your lab results on protein and ADF. If it is near or below the minimum criteria, then consider baling the straw for other uses or incorporation.

If you are sampling a stack of baled straw, take core samples from at least 25 bales and place in a labeled zip lock bag that can be delivered to the laboratory for analysis. Hay sampling probes can be made from golf clubs or the Penn State hay probe can be purchased from Nasco Inc. in Modesto.

Here are some minimum forage value criteria for rice forage for cattle feed:

Protein	4.5% or higher
ADF	50% or lower
Moisture	15% or lower

Management that can impact the forage value.
The number of days that baling occurs after harvest will greatly impact palatability and forage quality. Forage that is baled 1 to 3 days after harvest maintains the best palatability (smell, flavor, color) of the forage. Forage chemical quality starts to decrease at 6 to 10 days after harvest. The Holzapfel Ranch in Willows has been using rice forage for cattle feed for more than 40 years. They treat it like hay by raking and baling in the first three days after harvest. Many rice producers are concerned that drying the fields to allow for this early baling could risk a reduction in rice quality. Choosing the better drained soils or addition of traction tires to the haying equipment can improve the ability to minimize the risks to rice grain quality while being able to remove the rice aftermath at its optimum forage value.

Research has shown that the higher the nitrogen fertilization of rice, the higher the protein content of straw. This is **not** intended as a statement that growers should increase nitrogen applications for improved forage quality. It should only be used as a strategy to pick the higher fertility management fields for potential livestock forage production and understand that there is a very high correlation between the nitrogen fertilization and protein content.

Label Restriction for Straw use for Livestock.
In a review in 1999, some rice herbicides (Prowl and Whip) had not had research conducted to allow for the feeding of the rice straw to cattle. There is no known toxicological danger from any of these products, it is just that studies have not been conducted. It is not legal to sell rice straw for feed from fields treated with these products. Most desiccants require 14 days after treatment restrictions on feeding to livestock and Roundup products have an 8-week restriction. Read the label on these products or check with your suppler on to see if appropriate research has changed these products impacts on your ability to sell the straw for feed.

Marketing Rice Straw for Forage
Baling rice straw for cattle feed based on potential need has a high degree of risk. The adage of bale it and they will come can be costly. Some have formed a Cooperative to help market the straw. Making contact with a potential purchaser (cattle producers) can be difficult. The best way to develop a marketing plan and potential contract before baling is through contact with a California licensed hay broker. *A list of northern California Hay brokers can be obtained by contacting the Sutter/Yuba Farm Advisors office at (530) 822-7515.*