**WHAT ACTUALLY IS THE ADJUSTED CRUDE PROTEIN?** — The **Adjusted Crude Protein** is the value that should be used when balancing dairy rations for crude protein (CP). The adjustment is made to account for the portion of unavailable protein present in all forages. Typically, you would expect the unavailable protein to be between 0.5 and 1.5% of the dry matter. If it exceeds 1.5%, then additional heating has occurred rendering a greater percentage of the crude protein unavailable.

If heating has not occurred (unavailable CP < 1.5%), then no adjustment is necessary and the CP equals the adjusted CP. This is the case for the majority of hay and corn silage samples. The potential for heating is greater in haylage. If evidence of additional heating has occurred (unavailable CP > 1.5%), the CP has to be adjusted to account for 1) the normal amount of unavailable protein and 2) the additional unavailable protein. The normal amount of unavailable (bound) protein is estimated as 1% (halfway between 0.5 and 1.5). **The adjusted CP = CP - unavailable protein + 1%.** The 1% is added back to correct for the normal amount of bound protein in the sample.

The normal amount of bound protein has been accounted for in the daily requirements of dairy cattle established by the NRC. Thus, you should always use the **Adjusted CP** for ration balancing. Using the available protein will result in over supplementing protein.

## FEEDING ALCOHOL TO COWS YIELDS POSITIVE RESULTS

*(Reprinted from Chemical & Engineering News, 10/01/90)*

K. Matsuo writes from Osaka, Japan, to pass on some news of research on cattle that he saw in a chemical magazine.

Japanese government scientists, Matsuo reports, have found that feeding 1.5 L of alcoholic beverage (16% ethanol) a day to beef cows improves the quality of the meat. Fat and meat are “delicately interwoven,” so that the cow commands a higher price than cows that abstain from alcohol. For unknown reasons, the technique worked only on black cows; it did not, for example, work on holsteins, a black and white breed normally used as dairy cattle.

Alcohol also was found to promote weight gain in cattle, probably because ethanol suppresses excessive fermentation (and gas evolution, in the stomach). The cows do not feel full, Matsuo explains, “thus they may be tempted to take another bite.”

The Japanese scientists found further that feeding alcohol before and at midpoint of a truck or rail trip minimizes weight loss in cattle. The cattle became more obedient and easier to load and unload.

“Well,” Matsuo writes, “everything seems so smooth, but I would rather have beef and alcohol separate.”
— What will the Japanese think of next?

## REPRESENTATIVE SAMPLING

The most important aspect of forage analysis is proper sampling. Nothing demonstrates this more clearly than a study conducted by the University of Minnesota. Twenty agribusiness people were each asked to sample a different bale from a load of second cutting hay. Depending upon the bale, the major components varied as follows:

Crude Protein; 18.2% - 22%, ADF; 28.6% - 36.9%, NDF; 33.7% - 54.1%

It is evident from TABLE 1. that the analyses vary quite a lot depending upon the particular bale. These individual samples were then combined into a single composite sample. The composite sample was analyzed and the results compared to the mathematical average of the twenty individual samples (TABLE 2):

**TABLE 2.**

| | CP | ADF | NDF |
|---|---|---|---|
| Mathematical Average | 20.4 | 32.4 | 40.5 |
| Composite | 20.7 | 31.5 | 40.7 |

The composite results are virtually identical to the average. This study demonstrates the importance of proper sampling. Sampling only two or three bales would greatly bias the results. You need to sample at least twelve and preferably twenty bales. These subsamples should be blended together to make a composite sample and sent to the lab for analysis. This holds true for any type of sample.

Silage samples should be taken from in front of twelve to twenty cows, from twelve to twenty sites in a feed bunk, or from twelve to twenty sites from the face of a bunk silo. Sampling instructions appear on the back of all forage sample information sheets and on the Dairy One website . Proper sampling is essential to obtain a good, representative analysis.

Forage analysis is a shared responsibility. It is up to the sample taker to obtain a truly representative sample, and the lab to do the best job possible analyzing it. Between us, we can provide the best quality results in the industry.

**TABLE 1. (on right)**

| Bale No. | Sample Wt.g | DM | CP | ADF | NDF | RFV Index |
|---|---|---|---|---|---|---|
| | | | (% of Dry Matter) | | | |
| 1 | 9.3 | 87.9 | 18.2 | 35.3 | 44.6 | 128 |
| 2 | 9.8 | 86.7 | 18.4 | 35.8 | 48.7 | 117 |
| 3 | 10.2 | 86.6 | 18.4 | 36.1 | 44.3 | 128 |
| 4 | 11.4 | 87.3 | 18.9 | 32.5 | 39.0 | 152 |
| 5 | 9.5 | 88.4 | 19.8 | 31.4 | 38.3 | 156 |
| 6 | 11.2 | 87.1 | 19.8 | 32.7 | 41.5 | 142 |
| 7 | 10.7 | 85.9 | 20.3 | 32.7 | 40.0 | 148 |
| 8 | 11.1 | 88.0 | 20.3 | 31.5 | 38.5 | 156 |
| 9 | 13.6 | 85.6 | 20.3 | 36.9 | 54.1 | 103 |
| 10 | 10.0 | 85.5 | 20.4 | 32.1 | 40.6 | 146 |
| 11 | 11.2 | 87.4 | 20.5 | 32.0 | 39.2 | 152 |
| 12 | 11.9 | 86.9 | 20.5 | 32.5 | 39.1 | 151 |
| 13 | 11.2 | 86.4 | 20.8 | 31.5 | 41.2 | 145 |
| 14 | 12.1 | 86.2 | 20.8 | 33.4 | 42.0 | 139 |
| 15 | 10.6 | 88.0 | 21.2 | 30.3 | 35.7 | 170 |
| 16 | 10.3 | 84.7 | 21.3 | 31.4 | 38.5 | 156 |
| 17 | 12.3 | 86.8 | 21.4 | 29.3 | 33.9 | 181 |
| 18 | 11.4 | 89.9 | 21.5 | 28.6 | 33.7 | 184 |
| 19 | 11.9 | 85.2 | 21.9 | 32.1 | 40.3 | 148 |
| 20 | 11.8 | 87.8 | 22.4 | 29.4 | 37.0 | 166 |
| MIN | 9.3 | 84.7 | 18.2 | 28.6 | 33.7 | 103 |
| MAX | 13.6 | 89.9 | 22.4 | 36.9 | 54.1 | 184 |
| AVG | 11.0 | 86.9 | 20.4 | 32.4 | 40.5 | 148 |
| Composite | | 88.1 | 20.7 | 31.5 | 40.7 | 147 |
| Composite | | 88.0 | 20.3 | 31.7 | 41.0 | 146 |