

## PROGRESS IN DEVELOPING A REGIONAL ALFALFA HAY TEST TO PREDICT QUALITY

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### The Recent History of Alfalfa Chemical Evaluation in the West

It is very interesting reviewing how various alfalfa hay testing standards and procedures have evolved in several of the Western States during the past two decades. The University of California, Davis developed a system for evaluating alfalfa using a modification of the old Weende fiber laboratory test developed in Germany over 100 years ago. The California test was appropriately named modified crude fiber. A few years later the University of Nevada, Reno developed an alfalfa hay testing system utilizing the chemical procedures crude protein, in addition to a very new fiber procedure; acid detergent fiber (ADF). This ADF test was eventually widely utilized to index quality of alfalfa and many other crops. Recently, Utah and the Tri-State area, including Oregon, Idaho and Washington, have adapted the use of protein and ADF as principle quality indices.

In developing relationships between the chemical tests made in the laboratory and the digestibility of feed determined in digestion studies with animals, productive equations were developed to estimate digestibility from chemical tests. The developed equations in the various states differed. It should be noted that some studies were conducted using sheep fed alfalfa in the pellet form and other tests were conducted using chopped alfalfa hay fed to growing beef cattle or Holstein steers. Even other tests were conducted utilizing a test tube digestion technique.

At this point, with this brief history of alfalfa chemical evaluation, it should be apparent that there is a great need for researchers to coordinate their efforts in the future if a unified system is to be developed for the chemical evaluation of alfalfa hay.

### Formation of a Technical Committee on Chemical Testing of Alfalfa Hay

On March 22, 1981, an Ad Hoc Committee was formed at a Denver, Colorado meeting of western researchers to investigate the need for regional alfalfa quality research. Dr. John Patrick Jordan, Director, Colorado State University Experiment Station, was appointed administrative advisor by the research implementation committee of the Western Agricultural Experiment Station directors. Dr. Jordan had notified Western States Experiment Station directors of the meeting to evaluate the need for a cooperative research effort. At this meeting, the group included researchers from Colorado, Nevada, Wyoming, Utah, California, Oregon and Idaho. Dr. Clyde Richards was the CSRS, USDA representative from Washington DC. The committee members, after two days of discussion of testing procedure and problems encountered in the interstate marketing of alfalfa hay, unanimously agreed that the desirable course of action now would be to establish a Western Regional Project Committee. Charles Speth (Nevada) was nominated and elected Chairman, Paul Fannesbeck (Utah) as Chairman-Elect and Vern Marble (California) as Secretary-Treasurer. David Hannaway (Oregon) was appointed as a Director-at-Large. The regional cooperative study objectives at this time were narrowed down to: 1) evaluation of current procedures for testing hays, 2) develop a standardized technique for interim use to predict forage quality, and 3) search for new procedures to improve our ability to predict nutritive values.

### The Regional Research Project Proposal on Alfalfa Evaluation

The Ad Hoc Technical Committee on chemical testing of alfalfa hay needed to develop a research proposal for approval later in the year. The executive committee and Bill Garrett (California) were asked to write the project proposal. In mid-May, at a meeting held at the University of Nevada, Reno, a rough draft was made which was later refined and submitted for approval by the Research Implementation Committee of Western Agricultural Experiment Station directors.

I was recently notified by Dr. Merle H. Niehaus, Chairman of the Crop and Soil Science Department at New Mexico State University, that our Ad Hoc Committee was now recognized as a Western Regional Coordinating Committee (WRCC-48) and that he had been asked to be our new administrative advisor. The recognition as a coordinating committee is pleasing but it is short of our original goal which was to establish a regional project to answer some questions related to quality evaluation of alfalfa hay. It is my understanding that our committee will rewrite and resubmit the project proposal before February 1, 1983. If this new proposal is accepted, it could be in effect one year later. In talking to Dr. Niehaus, it seems there is growing interest in our efforts. At this time, the following States appear to share some interest in alfalfa quality: California, Colorado, Idaho, Nevada, Oregon, Utah, Wyoming, New Mexico, Montana and Nebraska. In addition, the Cooperative State Research Service (CSRS) will be represented by Dr. John F. Fulkerson.

I am looking forward to meeting with other researchers to rewrite the proposal and at this time researchers should be encouraged to look toward alfalfa quality work as a research priority area in their states. Much work needs to be accomplished. It is not necessary to wait until a regional research project is approved. We now have a recognized coordinating committee if we choose to utilize it.

#### Nevada and California Cooperative Studies

Alfalfa hays from California and Nevada's 1981 and 1982 crops have been pelleted and fed to sheep in digestion trials conducted in both States. The 1981 tests were reported at this conference last year. The 1982 hays have all been fed but the chemical evaluations are not complete. However, preliminary information from the University of California, Davis shows that the average percent digestible dry matter of this year's hays was 61.1% with a range of 57.2% to 64.5%.

In addition to the digestion studies this year, alfalfa hays from several regions were fed to growing cattle to evaluate intake as influenced by the chemical composition of the forage. This study was made possible by the great cooperation of farmers in the San Joaquin valley and northeastern California, who donated several test hays. The hays did influence total intake (21.6 to 24.8 pounds), average daily gain of fed cattle (1.43 to 2.8 pounds) and feed per pound gain (8.7 to 15.4 pounds). It should be noted that these cattle received 5 pounds of grain pellet daily in addition to all the alfalfa the animals would consume. When chemical analysis of these hays is completed, the chemical tests will be related to intake just as we relate chemical tests to the TDN of a feed. Both TDN and intake should be considered quality factors.