Intersociety Forage Evaluation Symposium

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The grasslander's common measuring unit of pasture or other forage production is green or dry weight yield per acre. While this is satisfactory for some purposes, the ultimate use of 'grass' is for livestock production, and when animals are introduced as the measuring units, numerous factors become involved in determining the final production obtained. It is only in recent years that interrelationships between forage yield and quality and animal response have been closely studied and partly understood.

The Grassland Improvement Steering Committee of the American Society of Agronomy found by correspondence that there was sufficient interest in these problems among the members of this Society and members of the American Society of Animal Production, the American Dairy Science Association, and The American Society of Range Management to warrant holding an intersociety symposium on forage evaluation. This symposium was held in conjunction with the annual meeting of the American Society of Agronomy at Purdue University, in August 1958.

Representatives appointed by each society first agreed upon a program desired, then decided on the general subject matter areas to be covered (to be based primarily on original research results), and finally agreed upon the research workers to be asked to present papers in these areas. The contributions of these individuals and teams of workers are presented in the eight papers which follow.

Major progress in forage evaluation can be made only in the light of information on the part that individual factors play in producing animal response. Certainly, forage intake and the digestibility of the forage dry matter and its feed nutrients are major factors influencing animal response to forage condition. These factors are thoroughly discussed by M. E. McCullough; the techniques are described in detail by Harris, Cook, and Butcher, and are considered by Weir, Meyer, and Lofgreen.

A major problem for both animal and forage scientists has been a method of forage sampling that accurately represents the forage actually consumed by the grazing animal. The advantages of the use of the esophageal fistula for this purpose are fully brought out by Weir et al. and mentioned by Harris et al. The importance of not overlooking selective grazing by different classes of animals and under different forage conditions is also very well covered by Weir et al.

Forage workers have been prone to consider higher forage protein contents synonymous with higher forage quality. Several of the papers stress the far greater need of animals for energy than for protein, and Max Kleiber points out in detail the specific and different need and use of protein vs. energy for animal production, also the deficiency in the use of excess protein as a source of energy.

Range conditions present somewhat different and additional problems in forage evaluation than do most improved pastures. The paper by Harris et al. points out some of these difficulties and solutions to them. Some range plants high in essential oils cannot be evaluated on a gross energy basis and the chromogen technique is not applicable. The nutritional adequacy of range forage varies much with season so that studies on supplemental feeding, which may require special animal techniques as described, are needed to allow maximum contribution of the range forage to animal production.

Not covered in this symposium, yet an important factor in evaluating grazing or other management treatment effects, is the stand and survival of important forage species under range conditions where it may be difficult to re-establish such forages.

The suitability of various factors involved in evaluating hays is shown in the paper by Reid, Kennedy, Tuck, Slack, Trimberger, and Murphy. These authors have developed information on date of harvesting for predicting the feeding value of hay (or other forage), which could provide to extension workers an excellent system for promoting the production of high quality hay by farmers in a given area.

In most grazing trials animal variability is a factor that can markedly influence results. G. O. Mott covers the subject thoroughly as it relates to beef cattle.

Much of the nutrition of ruminant animals is based on the rumen fermentation end-products. Forage quality and its relation to these digestion end-products and their utilization by the animal are considered in detail by J. C. Shaw. While a difference of opinion is expressed in several of the papers as to which system of expressing available energy in feed is best, Shaw believes that most progress in forage and feed evaluation may be made through increased knowledge of the reactions in the rumen and in the absorption and metabolism of the ruminal end-products. The artificial rumen technique held promise as a laboratory test that could reliably predict the feeding value of a forage or feed.

Output per animal and per acre animal production as influenced by method of forage utilization, and some of the factors and interrelationships affecting results are thoroughly covered by Blaser, Bryant, Ward, Hammes, Carter, and MacLeod. Application of the results to grazing experimentation are discussed.

It would appear from the papers in general that, so far, no one criterion can adequately denote forage value. One or a limited number of factors can perhaps be used safely in evaluating a forage under limited conditions for a specific purpose and with a particular class of livestock, but for general use in forage evaluation it appears desirable to include as many factors affecting the final outcome as possible. Several papers suggest that more progress could be made through intensive research on a limited number of forages or forage conditions than through limited research on each of numerous forages or forage conditions.

It hardly could be hoped that all of the problems in forage evaluation would be covered in a one-day symposium. However, some of the most important new findings, ideas, and applications were considered and some promising avenues of approach to the over-all problem of forage evaluation were discussed. They merit close study and should be of considerable aid to forage investigators.