Systems Analysis in Forage Crops Production and Utilization

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Preface

The interrelations of livestock production; growing, grazing, or harvesting and feeding forages; and the overall cost-price-return factors have long been recognized by those interested in forages. The complexity of the problems and the departmentalization of agricultural research have often resulted in limiting cooperative studies. Now, however, increasing demands for livestock products and spiraling costs are forcing greater multidisciplinary research. The need for such an approach has led to an interest in systems analysis in forage crops production and livestock utilization.

In response to this interest, the Crop Science Society of America, in cooperation with the American Agricultural Economics Association and the American Forage and Grassland Council, held a symposium at the Crop Science Society of America Annual Meeting Nov. 13, 1973, in Las Vegas, Nevada. Papers given at that symposium are presented in this special CSSA publication.

Blaser and co-workers discuss the progress and problems of dealing with research on soil-plant-animal relations. As they indicate, much of the research to date is piecemeal and fragmented, and often difficult to interpret and implement into farm practice. Their plea is for much more team research on related forage-livestock studies. They point out that good detailed studies on forage-animal systems are complex and expensive and that present information is inadequate. They review the progress of animal-forage research, not as a comprehensive literature review, but as an overview of experimental procedures being used and the problems and limitations of the various methods.

From the viewpoint of agricultural economists, Hoglund and co-workers emphasize the need for coordinated research between agronomists, animal scientists, agricultural engineers, and agricultural economists. With much current interest in simulation or systems analysis modeling by economists and engineers, there is a need for a joint effort between researchers trained in this new technology and agronomists and animal scientists who understand the biological relationships involved. Hoglund et al. point to the need for a greater understanding of the data needs of each discipline and for an academic climate which encourages such dialogue and team effort. The desire of individuals to work on a team approach is basic to success, but the administrators must encourage and make possible such interdisciplinary research.
Jacobs points out the problem of translating research information into farm practice. Experimental techniques used to obtain biological evaluation provide data from which economic evaluation is difficult. He shows that a total systems analysis approach provides a method of putting forage and livestock variables together with the appropriate cost factors, and for dealing with cause-effect relationships.

Wedin and James show how the alternatives of pasture and forage utilization within the framework of the total farm business affect the economic returns. With linear programming and utilizing current available information, they show how such data can point out where and to what extent pasture and forage use can be maximized in livestock production. The authors show how such programming provides insights into pasture and forage use in beef cow-calf enterprises in Iowa.

Another important facet of the total forage-animal system is the development of new planting, harvesting, handling, and feeding equipment needed in the system. Much of this development in the United States is done by commercial equipment companies. Becton, a commercial agricultural engineer, points out all of the problems that must be considered and solved in providing producers with equipment that does a satisfactory job at a cost they can afford. This contribution is probably too often overlooked. The new "big-package" hay handling equipment is an example of how new innovations can virtually revolutionize forage-livestock programs.

The common thread through all of the papers presented is the need for better communication and teamwork between agronomists, animal and dairy scientists, economists, and engineers if real progress is to be made in meeting the challenges of providing sound new information to forage-livestock producers, who in turn are trying to provide meat, milk, and fiber to the American consumer at a reasonable price. The consensus of the symposium authors is that system analysis provides the best procedure for integrating all of many variables involved in growing and getting the forage to the animal.

R. W. Van Keuren
Editor