

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
NATIONAL PROGRAM STAFF
Beltsville, Maryland 20705

September 10, 1976

Subject: Workshop on Instrumentation for Infrared Reflectance
Analysis of Forage Crops - September 16-17, 1976

To: K. H. Norris
J. S. Shenk

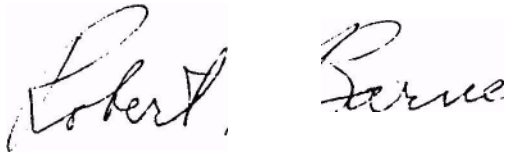
I would urge that members of the workshop address themselves to questions which will assist in clarifying the current status of the technology, researchable problems remaining to be solved, and the potential applicability of the technique to solving practical problems. In this context I would pose the question, "Can a concensus be reached by the group in answering the following questions concerning the potential for, and the research needs of, the infrared reflectance spectro computer system for the analysis of forages or feedstuffs?"

1. Can the IRSCS satisfactorily estimate the chemical composition and laboratory analysis of:
 - a. Forages,
 - b. Grains, and
 - c. Mixtures of forages and grains?
2. If so, are there any constraints or limitations that must be placed on such analyses, and are there research needs that can be identified? Indicate the analyses for which reliable prediction equations can be developed:
 - Crude protein
 - Acid detergent fiber
 - Cellulose
 - Carbohydrates
 - In vitro dry matter disappearance
 - Other.
3. If the IRSCS cannot satisfactorily estimate laboratory analyses, can the constraints be resolved by further research?
4. Can the IRSCS satisfactorily estimate animal performance measurements such as digestibility, intake, and gain?
5. Are satisfactory instruments available commercially?

6. What applications are foreseen for the use of IRSCS in the analyses of forages and feedstuffs?
7. Can specific approaches, needs, or constraints be identified for the various applications envisioned?

Where possible, (1) identify the location(s) where such research can best be done, (2) indicate the length of time required to complete the research, and (3) estimate the SYs (or fraction thereof) and the gross funds required to complete the research. It is suggested that this be developed in an outline form including the following items:

Researchable Problem	Location	SYs	Funds	Duration
----------------------	----------	-----	-------	----------



Robert F. Barnes Staff Scientist
Forage & Range

cc:

D. L. Anderson
W. G. Chace, Jr.
W. Martinez

ATTACHMENT #3

Estimates of Lab Errors for Forage and Grain Analysis

Product	Standard Deviation (%)	Range (%)
Wheat		
Protein	.05 (neutron activation) .15 (good lab) .25-.4 (poor lab)	8-18
Soybean		
Protein	.5-1	37-45
Fat	.25-1.0	18-24
Forage		
Protein	.4-.7	1-25
ADF	.6-.8	20-55
NDF	.7-2.0	25-75
IVDMD (dry matter digestibility)	1.0-3.0	35-100
		3
		4
DEI (digestible energy intake)	15-25	(metabolic weight)