

Technical Report No. 55  
STANDARDIZED PROCESSING AND STORAGE SCHEME  
FOR SAMPLES COLLECTED FOR  
IBP GRASSLAND ECOLOGY RESEARCH LABORATORY

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GRASSLANDS BIOME  
U. S. International Biological Program

July 1970

Investigators submitting samples to the Grassland Ecology Research Laboratory for chemical analyses should use: (i) a standardized processing and storage scheme, and (ii) the analysis request sheet. The form describing the standard processing and storage scheme is used by the investigators requesting analysis to determine processing required prior to sending samples to the laboratory. The analysis request sheet is used to indicate the required analyses.

To use the form describing the processing and storage scheme, note that for various analyses (i.e., energy, nitrogen, phosphorus, etc.) for various types of samples (i.e., soil, herbage, etc.), the processing instructions are indicated as a numeral, and the grinding instructions are indicated with a letter. Processing and grinding instructions for particular analyses are indicated by the numeral-letter combination for a particular analysis and type of sample.

Analyses to be conducted are indicated on the analysis request sheet simply by a check following the sample description and field number (to be assigned by the investigator).

Example 1. A diet sample is to be analyzed for dry matter, nitrogen, and gross energy. The reference code is 5-a (see Appendix 1) for these three analyses. Processing instruction 5 is "dry in a forced air oven at 45°C to constant weight," and grinding instruction "a" is "through 40 mesh screen in a Wiley mill." The investigator would, before sending samples to the GERL, dry the material in a forced air oven at 45°C to constant weight then grind through a 40 mesh screen in a Wiley mill.

Example 2. A sample of gastro-intestinal tract contents and a sample of urine from the same animal requires analysis for phosphorus on both samples. The coding for the gastro-intestinal sample would be 6-a. Processing instruction 6 is "preserve with Thymol in the field and dry as in 5." Grinding instruction "a" is "through 40 mesh screen in a Wiley mill"; therefore, the investigator would preserve with Thymol in the field, then dry with forced air oven at 45°C to constant weight, then grind through 40 mesh screen in a Wiley mill.

The urine sample to be analyzed for phosphorus is instruction 3-X. Processing instruction is reduce pH below 3 with HCl and store in a freezer at 0°C. Then, of course, no grinding is required.

Appendix 2 is the analysis request sheet. Extra copies of this sheet are available on request. The investigator enters a sample description (see example), his number (the field number), and indicates by checks analyses to be conducted. Appropriate indications for example 1 and 2 are indicated on the attached analysis request sheet. The laboratory number is entered by the GERL technicians.

# APPENDIX 1

## Processing and Storage Schemes\* for Samples Collected for Grasslands Ecology Research Laboratory

Analyses <sup>+,**</sup>	Type of Sample					
	Soil	Herbage	Diet	GI contents and feces	Urine	Body carcasses or tissues
Energy	7-x	5-a	5-a	5-a	3-x	4-b
Nitrogen	7-x	5-a	5-a	5-x	3-x	4-b
Phosphorus	7-x	5-a	5-a	6-a	3-x	4-b
Ash	7-x	5-a	5-a	6-a	3-x	4-b
Fiber	7-x	5-a	5-a	6-a	---	---
Lignin	7-x	5-a	5-a	6-a	---	---
Dry matter	7-x	1-x	---	2-x	---	4-b
Minerals	7-x	5-a	5-a	6-a	3-x	4-b
Soluble carbohydrates	7-x	1-b	1-b	5-a	3-x	4-b
Pigments or lipids	7-x	1-b	1-b	2-x	---	4-b

### \*Processing

1. Place in dry ice then store in freezer at 0°C.
2. Preserve with thymol then store in freezer at 0°C.
3. Reduce pH below 3 with HCl then store in freezer at 0°C.
4. Store in freezer at 0°C.
5. Dry in forced air oven at 45°C to constant weight.
6. Preserve with thymol in field then dry as in 5.
7. Place in air tight container.

### \*Grinding

- a. Through 40 mesh screen in Wiley Mill.
- b. Through 40 mesh screen in Wiley Mill with dry ice.
- x. No grinding.

+A minimum of 5 g of dry matter should be collected for each analysis.

\*\*Sample containers, labels and marking pens will be provided to provide uniformity and facilitate handling and storage.

## Grasslands Laboratory Analyses Request Sheet

Investigator:

Project Code No.

[illegible]

\_\_\_\_\_ Date Sample Received  
 \_\_\_\_\_ Date Analysis Needed  
 \_\_\_\_\_ Date Analysis Completed