PNAAQ978
ISN: 36489

INTERNATIONAL FEED DATABANK SYSTEM

Coding Instructions and Processing Procedures

L. C. KEARL, Associate Director, International Feedstuffs Institute, Assistant Professor, Department of Animal, Dairy, and Veterinary Sciences, Utah State University, Logan, Utah 84322 USA

D. LAI DINH, Dokumentationsstelle der Universität Hohenheim, Paracelsusstrasse 2, Postfach 70 05 62, 7000 Stuttgart 70, Federal Republic of Germany

F. JAGER, Dokumentationsstelle der Universität Hohenheim, Paracelsusstrasse 2, Postfach 70 05 62, 7000 Stuttgart 70, Federal Republic of Germany

L. E. HARRIS, Director, International Feedstuffs Institute, Professor of Nutrition, Department of Animal, Dairy, and Veterinary Sciences, Utah State University, Logan, Utah 84322 USA

NOTE: This publication may be ordered from each center listed on page iii.

Reference Citation

Kearl, L. C., D. LAI Dinh, F. Jager and L. E. Harris, 1980. International feed databank system, coding instructions and processing procedures. International Network of Feed Information Centers. Publication 3. Prepared on behalf of INFIC by the International Feedstuffs Institute, Utah Agricultural Experiment Station, Utah State University, Logan, Utah 84322 USA

B660

International Standard Book Number 087421-104-2

Library of Congress Catalog Card Number 80-81688

Published by the International Network of Feed Information Centers (INFIC)

Copyright November 1980

Cooperating International Network of Feed Information Centers (INFIC)

Agriculture Canada, Research Branch, Ottawa, Ontario, CANADA K1A 0C6
Dr. Jack Aitken, Research Coordinator

Arab Centre for the Studies of Arid Zones and Dry Lands (ACSAD), Animal Science Division, P.O. Box 2440, Damascus, SYRIA
Dr. Mohamad F. A. Farid, Head, Nutrition Section

Australian Feeds Information Centre, Commonwealth Scientific and Industrial Research Organization (CSIRO), P.O. Box 239, N.S.W., 2148, AUSTRALIA
Dr. T. F. Leche, Director

College of Fisheries, University of Washington, Seattle, Washington 98195, USA
Dr. J. E. Halver

Dokumentationsstelle der Universität Hohenheim, Paracelsusstrasse 2, Postfach 70 05 62
7000 Stuttgart 70, FEDERAL REPUBLIC OF GERMANY
Dr. H. Haendler, Director; Mr. F. Jager

Institut d'Elevage et de Médecine Vétérinaire des Pays Tropicaux, 10 Rue Pierre-Curie, 94700 Maisons-Alfort, FRANCE
Dr. J. F. Giovannetti

Instituto Interamericano de Ciencias Agricolas (IICA), Apartado 10281, San Jose, COSTA RICA
Dr. R. Martinez-Ferrate, Associate Deputy Director General for External Coordination

International Feedstuffs Institute (IFI), Utah State University, Logan, Utah 84322, USA
Dr. Lorin E. Harris, Director; Mr. Leonard C. Kearl, Associate Director; Dr. Paul V. Fonnesbeck, Assistant Professor, Animal, Dairy and Veterinary Sciences

Korean Feedstuffs Institute, College of Agriculture, Seoul National University, Suweon, 170-00, KOREA
Dr. In. K. Han

Ministry of Agriculture, Fisheries and Food, Great Westminster House, Horseferry Road, London, 2W1P 2AE, UNITED KINGDOM
Mr. G. Alderman

Philippine National Feeds Information Centre (PNFIC), Department of Animal Science, University of Philippines at Los Banos, College, Laguna, PHILIPPINES
Dr. R. G. Zamora, Project Leader

Tropical Products Institute, 56/62 Gray's Inn Road, London WC1X 8LU, UNITED KINGDOM
Mr. B. S. Capper

Universidade de Lisboa, Cidade Universitaria, Lisbon, PORTUGAL
Dr. Ribeiro

Universiti Pertanian Malaysia, Faculty Veterinary Medicine and Animal Science, Serdang, Selangor, MALAYSIA
Dr. S. S. Jalaludin, Dean Faculty Veterinary Medicine and Animal Science

Consultants or Contributors

Mr. G. Alderman, Senior Scientific Advisor, Ministry of Agriculture, Fisheries, and Food, Great Westminster House, Horseferry Road, London SW1 T2AE, England

Dr. C. C. Balch, National Institute for Research in Dairying (NIRD), Shinfield, United Kingdom

Dr. T. F. Leche, CSIRO, Division of Animal Production
P.O. Box 239, Blacktown, N.S.W. 2148, Australia

Dr. L. Mayer, P.O. Box 460, Koror, Palan, West Caroline Islands, US-Tr. Terr., Pacific Is. 96940

Dr. V. A. Oyenuga, Ibadan University, Nigeria

Dr. A. J. H. van Es, Institute for Livestock Nutrition Research "Hoorn," Lelystad, Netherlands

Acknowledgements

The following organizations have assisted financially or technically in the development of INFIC:

Agency for International Development, Livestock Division, Washington, D.C., USA

Agriculture Canada, Research Branch, Ottawa, Canada

Bundesministerium fuer wirtschaftliche Zusammenarbeit, Bonn, Federal Republic of Germany

Dokumentationsstelle der Universität Hohenheim, Stuttgart, Federal Republic of Germany

FAO, Animal Production Service, Animal Production and Health Division, Food and Agriculture Organization of the United Nations, Via delle Terme di Caracalla, 00100, Rome, Italy

Institut d'Elevage et de Médecine Vétérinaire des Pays Tropicaux (IEMVT), Maisons-Alfort, France

Institut für Dokumentationswesen, Frankfurt, Federal Republic of Germany

International Feedstuffs Institute, Utah Agricultural Experiment Station, Utah State University, Logan, Utah, USA

Contents

COOPERATING INTERNATIONAL NETWORK OF FEED INFORMATION CENTERS (INFIC) iii

CONSULTANTS OR CONTRIBUTORS iv

ACKNOWLEDGEMENTS v

SUMMARY 1

1. INTRODUCTION 2

2. INSTRUCTIONS FOR CODING THE INTERNATIONAL FEED DESCRIPTION FORM 2

2.1 International Feed Description 2

2.2 International Feed Names 2

2.3 Country or Regional Feed Names 3

2.4 International Feed Number (IFN) 3

3. INSTRUCTIONS FOR ENTERING INFORMATION ON THE INTERNATIONAL FEED DESCRIPTION FORM 3

3.1 Feed Description Form 4

3.2 Recording New Entries into the Feed Description File 6

3.2.1 International Feed Description 6

3.2.2 International Feed Name 6

3.2.3 Country or Regional Feed Names 6

3.3 Correction of Entries 6

3.4 Cross References 6

4. BIBLIOGRAPHIC REFERENCE FORM 7

5. INSTRUCTIONS FOR CODING THE INTERNATIONAL FEED SOURCE FORM 8

5.1 Columns on Source Form Common to All Card Formats 8

5.2 Card 10. Origin of Data, Origin of Sample and Description of the Feed Sample 10

5.3 Card 21. Quality of Feed, Soil, and Fertilizer 12

5.4 Card 22. Plant Height and Feed Storage 15

5.5 Card 24. Environment Pollution and Pesticides 16

5.6 Card 30. Digestion Trial 18

5.7 Card 4. Chemical and Biological Data 20

5.7.1 Dry Matter Basis of Data 20

5.8 Data Published or Reported on a Ratio Basis 22

6. ATTRIBUTE DECK 22

7. COMBINING DATA FROM TWO OR MORE FEEDS 23

8. CARD FORMATS 23

9. EXAMPLES OF DATA ENTRY USING CARD FORMATS 23

REFERENCES 25

LIST OF TABLES

2.1 Facets, Elements, and Descriptors which Portray the International Feed Description, International Feed Name, and Country Names 29

2.2 Examples of Facets, Elements and Descriptors Used to Compose the International Feed Description 31

3.1 Country or Region Codes 32

3.2 Language Codes 34

3.3 Feed Classes 35

3.4a Part Descriptors Changed or Deleted When Composing the International Feed Name from the International Feed Description 36

3.4b Example International Feed Description and International Feed Name Corresponding to the Parts Listed in Table 3.4a 38

3.5a Process Descriptors Changed or Deleted When Composing the International Feed Name from the International Feed Description 40

3.5b Example International Feed Description and International Feed Names Corresponding to the Processes Listed in Table 3.5a 42

4.1 Instructions for Filling in the Bibliographic Reference Form 44

5.1 Example Diagram to Show How Data Can be Combined 46

5.2 Codes for State, Province, Department or Similar Country Divisions 47

5.3 Example Codes for Laboratories within a Country, within a State (for Germany, Federal Republic of) 54

5.4 Codes for Climatic Zone 56

5.5 Major Fishing Areas 57

5.6 Example Codes for Counties within State within Country 58

5.7 Feed Additives 62

5.8 Hay Grades for Legumes and Legume-Grass Mixtures 64

5.9 Hay Grades for Grass-Legume Mixtures 65

5.10 Soil Units 66

5.11 Codes for Pollution Source 68

5.12 Codes for Distance Between Source and Receptor 69

5.13 Brand of Pesticide 70

5.14 Animal Kinds and Codes 72

5.15 Animal Breeds 73

5.16 Codes for the Analytical Code Factor 78

5.17 Unit or Conversion Codes and Factors 79

LIST OF TABLES (continued)

5.18 Types of Data That Can be Converted to % Amino Acids or % of Fat in Dry Matter 81

6.1 List of Attributes and Codes 82

LIST OF FIGURES

2.1 An international feed description form illustrating fscets, elements and descriptors for an international feed description. 106

3.1 An 80-column keypunch transmittal form. 107

3.2 An 80-column keypunch transmittal form showing how to fill in the form for adding a descriptor, changing a descriptor, deleting a descriptor or deleting a feed name. 108

3.3 To enter language and country codes, enter A in column 1, the feed number in columns 4 - 8, the element number in columns 12 - 14, and the language code in columns 15 - 17. No country codes are used in element lines 025 through 375. When entering a country name, the country code is entered in columns 9 - 11 on element line 425 and subsequent lines as needed. 109

3.4 To enter an "official country" number, enter an A in column 1, the IFN in columns 4 - 8, the country code in columns 9 - 11, the element number in columns 12 - 14, the language code in columns 15 - 17, and the "official country" number in columns 18 - 23 (left justified). 110

3.5 To enter a feed class number, enter A in column 1, the feed number in columns 4 - 8, the element number in columns 12 - 14, the language code in columns 15 - 17, and the feed class code in column 77. 111

3.6 When the scientific name is not Latin and is the same as the Generic name, enter a code 1 in column 31 on the 025 element line. In these cases, only one name (Generic) appears in the printout. 112

3.7 To enter the stage of maturity code, enter the appropriate letter in column 32, element line 275. 113

3.8 When a grade inferior is entered, put a sorting code 9 in column 32 on the 325 element line 114

3.9 When a feed description consists of more than 2 plant species (maximum of 4 species), cross out unused element numbers in the 400 series and enter the appropriate element number in these spaces. Enter all other data as previously described. 115

3.10 An international feed description form illustrating the special cases where the part and processes are normally changed but should remain the same in both the international feed description and the international feed name. In these special cases, a code one (1) is placed in column 31, element line 215. 116

3.11 To enter a cross reference, leave columns 1 - 12 blank and enter the information in columns 13 - 80. 117

LIST OF FIGURES (continued)

4.1 Agris input sheet. 118

4.2 Bibliographic reference form showing original data. 119

4.3 Bibliographic reference form showing data from scientific journals. 120

4.4 Bibliographic reference form showing data from books and magazines. 121

5.1 This source form may be used to describe the feed sample and record data for card formats 10, 31, 4, 21, 22 and 24. 122

5.2 Map of fishing areas (the numbers on the map are the codes for fishing areas). 126

6.1 Atlas format for tables of feed composition. 127

7.1 Format for entering feed numbers to combine data. 129

8.1 CARD 10. Origin of data, origin of sample and description of the feed sample. 130

8.2 CARD 21. Quality of feed, soil, and fertilizer. 131

8.3 CARD 22. Plant height and feed storage. 132

8.4 CARD 24. Environment pollution and pesticides. 133

8.5 CARD 30. Digestion trial. 134

8.6 CARD 4. Chemical and biological data. 135

9.1 This bibliographic reference form contains information on original (unpublished) data received from an analytical laboratory. To identify this as such, a 1 is placed in the third space of the bibliographic reference number. 136

9.2 Card 10 provides a means for recording information on where a sample was analyzed, where it came from, the feed name and description. (The International Feed Description is entered for illustrative purposes only.) 137

9.3 Card 30 provides a means for recording information concerning digestibility trials. These include animal specie and sex, number and weight of animals, and specific physiological condition the animals are in, length of trial and feed consumed. 138

9.4 Card 4 provides a means for recording attribute values, digestion coefficients, method of analysis, and unit code factors. 139

9.5 This bibliographic reference form contains information on data taken from a publication where the information is presented for the first time. To identify this as such, a 2 is placed in the third space of the bibliographic reference number. 140

9.6 Card 10 provides a means for recording information on where a sample was analyzed, where it came from, the feed name and description. (The International Feed Description is entered for illustrative purposes only.) 141

9.7 Card 30 provides a means for recording information concerning digestibility trials. These include animal specie and sex, number and weight of animals, and specific physiological condition the animals are in, length of trial and feed consumed. 142

9.8 Card 4 provides a means for recording attribute values, digestion coefficients, method of analysis, and unit code factors. 143

LIST OF FIGURES (continued)

9.9 This bibliographic reference form contains information on data taken from books and miscellaneous publications. The source of this information is unknown, therefore, it is used with caution and in some cases may be discarded. To identify this as such, a 3 is placed in the third space of the bibliographic reference number. 144

9.10 Card 10 provides a means for recording information on where a sample was analyzed, where it came from, the feed name and description. (The International Feed Description is entered for illustrative purposes only.) 141

9.11 Card 30 provides a means for recording information concerning digestibility trials. These include animal specie and sex, number and weight of animals, and specific physiological condition the animals are in, length of trial and feed consumed. 146

9.12 Card 4 provides a means for recording attribute values, digestion coefficients, method of analysis, and unit code factors. 147

Summary

This publication describes procedures used in coding the International Feed Description Form and the International Source Form.

The International Feed Description Form contains information describing the International Feed Description, the International Feed Name (the English version is generated by computer software), and country names.

The International Source Form contains six card formats. These are illustrated and the information to be entered on each is explained in detail with a listing of the codes to be used. Information to be entered on card formats include: origin of the feed sample (geographical location); bibliographic sketch (identifying the source document); management practices (methods of harvesting, storing, crop fertilization, etc.); and chemical and biological information on approximately 700 attributes that affect the nutritional value of feedstuffs. These include: chemical analysis, data from digestion trials, and environmental factors.

The information contained herein is primarily for use by personnel at INFIC Type I Centers.

1. INTRODUCTION

International Network of Feed Information Centers (INFIC) Publication Number 2 (Harris et al. 1980a) gives an overall view of the International Feed Databank System and outlines procedures for entering data on the source forms (input forms). INFIC Publication Number 4 (Haendler et al. in prep.) explains the methodology of describing feeds in detail and presents the INFIC Documentation Language in the INFIC Feed Thesaurus. The Thesaurus lists the descriptors and synonyms in various languages. INFIC Publication Number 5 (Harris et al. 1980b) shows how the descriptors can be combined to coin an international feed description and an international feed name. This publication deals with the coding of data input, as explained in INFIC publication 2, for entry into the system and for processing it with INFIC software for different purposes. Instructions for coding the international feed descriptions (names) and data and adding, correcting or deleting information are presented. This publication is a manual to be used by personnel at INFIC Type I Processing centers. It may be maintained in looseleaf form so that pages noting corrections, additions, or deletions of information can be inserted. The pages, tables and figures are numbered to facilitate this process. All tables and figures are in the back for the convenience of those who code the source form. When corrections or new codes are necessary, notify the INFIC center in charge of correlating the technical phases of INFIC.

2. INSTRUCTIONS FOR CODING THE INTERNATIONAL FEED DESCRIPTION FORM

2.1 International Feed Description

Each feed to be recorded has to be identified unambiguously and in a selection oriented manner by an International Feed Description (feed name): i.e., by a chain of up to six descriptors selected from six facets (original material, part, process, maturity, cutting and grade) as listed in the INFIC Feed Thesaurus. The INFIC Feed Description File shows how the descriptors listed in the Thesaurus are combined to make up a feed description.

To selectively retrieve the feed descriptions, for instance to sort them alphabetically according to different aspects, each feed description has to be recorded on an International Feed Description Form in such a way that once the material is stored in the databank, single descriptors can be used as retrieval or sorting characteristics (see Figure 2.1). Therefore, the different descriptors have to be assigned to different element lines. Each element line is labeled by a tag (Table 2.1).

Within each element, descriptors define certain characteristics of a feed. The use of Facet 1, because it incorporates so many options, requires that elements of each feed name be assigned a separate tag for genus, species, variety, generic name, breed or kind, and strain or chemical formula. Explanations given in INFIC publications 2 and 4 classify the usage of preferred scientific terms and the preferred terms of other system languages within Facet 1.

A data line is reserved and labeled by tags like 215 (for descriptors of Facet 2), 245 (for descriptors of Facet 3), etc. for facets 4–6 (see Table 2.2).

The INFIC system is unique since each descriptor is an alphabetic code that can be used for sorting purposes. Available computer software sorts the descriptors in Facet 1 in any selected order, e.g., TRIFOLIUM PRATENSE vs. CLOVER RED or CLOVER RED vs. TRIFOLIUM PRATENSE.

When sorting the feed description file by Facet 2, element tag 215, using the descriptor LEAVES, all feeds having the descriptor LEAVES can be listed in alphabetical sequence. Thus, the feed description file may be sorted and listed in order by Facets 2-6 (e.g., part, process, maturity, cut and grade). With such a printout, the feeds assigned a given descriptor can be listed in one group.

Assigning descriptors as alphabetic codes makes the international naming system open-ended and permits the inclusion of an unlimited combination of alphabetic codes within the numeric element tags.

2.2 International Feed Names

The requirements for an unambiguous and selection-oriented description of feeds under the conditions of computer processing lead to some descriptions that look very unusual in ordinary communication. For instance, the combination of descriptors like "AERIAL PART" plus "SUN-CURED" stands for what in common language is usually called "hay." Therefore, those working with composition tables must consider using terminology that is well understood. To avoid a return to ambiguousness and multiplicity of terms in common languages, INFIC has coined "International Feed Names" and recommends them for use in feed composition tables.

International Feed Names exist in different languages identified by the language code. They are linked within the file with the corresponding International Feed Description. Thus, the system allows feed composition tables to be printed using different kinds of feed names, which include the International Feed Description, the

International Feed Name and Country Names all in the same or in different languages.

To optimize this procedure, the International Feed Description form provides special element lines to record the International Feed Names and the respective language code (Table 2.1). This name, however, must be a translation retaining the meaning of the English version of the International Feed Name.

2.3 Country or Regional Feed Names

In different countries or regions, local feed names exist. Some of them are very common, others are defined in scientific papers or established through government regulation. It may be necessary to insert some of these names as cross references or to use the feed names directly in local feed composition tables. For this purpose, such local feed names should be recorded with their respective language and country codes. Several country names can be recorded using element lines 425, 430, etc. (Table 2.1).

2.4 International Feed Number (IFN)

The feed description and the different kinds of names for a feed are linked together as one entry in the feed description file. Each entry is assigned a five-digit international feed number (IFN). For computer programming purposes, this number becomes the central link that ties together the descriptive information such as country, state, environmental factor, etc.; the chemical and biological data; and the feed descriptions and other names. This number is used when recalling information from the databank and in computer software for calculating the most profitable animal diets. For informational purposes in printouts and feed composition tables, the feed class number (1 digit) is placed in front of the IFN. This makes a six-digit number with the first digit always denoting the classification to which the feed has been assigned.

3. INSTRUCTIONS FOR CODING THE INTERNATIONAL FEED SOURCE FORM

The International Feed Description Form (Figure 2.1) is provided for adding new feed descriptions and names to the file. To make corrections, an 80-column key punch transmittal form (Figure 3.1) is used. The information presented is divided into sections for ease in explaining.

Section 3.1 describes the information and gives the tag to be entered in each column or set of columns.

Section 3.2 describes the methods used to record a new international feed description, international feed name and country feed names.

Section 3.3 details the procedures used for making corrections to records existing in the file.

Section 3.4 explains various ways that cross-references can be recorded and inserted into feed composition tables.

In Figures 3.2–3.10, the information being entered has been circled to assist in easy identification.

3.1 Feed Description Form

Column	
1	*Code A, C, or D.* Col. 1 is reserved for the operation code. When a new feed description is added to the file, use code A. When adding a descriptor or element to an existing feed description, use code A (see Section 3.3). When descriptors or elements existing in a feed description are changed, use code C. To delete a complete description or parts of it (descriptors or elements) use code D (see Figure 3.2).
2-3	*Leave Blank.* (These columns are reserved for expansion of the IFN).
4-8	*The International Feed Number (IFN).* The IFN must appear in every line containing information. It consists of five (5) digits.
9-11	*Country or Region Code.* Country codes are used to identify the country or region where the country feed name(s) is used. This makes it possible to select names for a given country based on this code. Country codes are listed in Table 3.1. The country code is assigned to the respective element line(s) i.e., 425–427. Since the language code is used with each country code, names from several countries can be entered using one element line. However, when more than one name is used for a specific country, additional element lines are used (tag 430–500). To add new country names to the existing description file, use the procedure outlined in Section 3.3.
12-14	*Element Tag.* A three-digit data field tag is printed (column 12-14) on the feed description form (Figure 2.1). These tags identify the elements which are used to record the normally occurring descriptors. In some rare cases, the tag is replaced to allow the recording of other descriptors as described under Section 3.2.1 (international Feed Description).
15-17	*Language Code.* Since Feed Descriptions and Feed Names can be recorded in different languages, the appropriate language has to be identified by adding the respective language code (as given in Table 3.2) to each element line filled in (also see Figure 3.3).

Column	
	Note that an International Feed Description Form can be used for the International Feed Description in only one of the system languages but the element lines reserved for the International Feed Name (tag 350) and Country Feed Names (tag 425) can be used for other languages.
18-23	*Feed Regulation Code.* Several countries or regions (like the European Communities) have adopted Official Feed Names by regulation or law. The numbers or letters assigned to these feeds by the regulatory body become the codes and are entered in these columns. These names are entered as the Official Country Feed Name (tag 425). When the country name or local name is not the official name, do not assign a code to it in columns 18-23. Such codes include FMV for "Futtermittelverordnung" for the Federal Republic of Germany and BEG for the regulations of the Council of the European Communities. The American Feed Control Officials and the Canada Feed Act have Official numbers for their feeds. These are in the present name file (see Figure 3.4).
24-26	*Leave Blank.* These columns are used to describe the information that appears in each element line.
27	*Feed Classification Code.* The feed classification codes are shown in Table 3.3. Enter the feed classification code in column 27 on element line 025 only (Figure 3.5).
28-30	*Leave Blank.* These columns are reserved for sub-feed classes to be added in the future.
31	*Printing Code.* When the descriptors entered on element lines 025, 030, and 040 for nonspecific feed names (those without scientific names [Latin]), are the same on element lines 155, 185 and 190, a code 1 on element line 025 programs the computer so that the descriptors appear only once in a printout. This prevents repeating the entries on element lines 025, 030, 040, and 155, 185, 190. An example: instead of Prairie plants, midwest – Prairie plants, midwest, it will read Prairie plants, midwest (Figure 3.6).

Column

The English version of the International Feed Name is generated by computer using the International Feed Description and information from Tables 3.4a and 3.5a. Tables 3.4b and 3.5b list example International Feed Names using the changes or deletions of part and process descriptors shown in Tables 3.4a and 3.5a.

Usually the descriptor AERIAL PART SUN–CURED is changed to HAY SUN–CURED when the international feed name is generated by the computer. However, in special cases such as in the sorghum and zea mays species, the descriptors should remain the same. To accomplish this, a one (1) is entered in column 31 on element line 215. Both names will then printout as Sorghum or Maize, aerial part, sun-cured (see Figure 3.10).

International Feed Names in languages other than English should also be entered on element line 350. These names should be a translation of the English name and retain the original meaning as nearly as possible.

In order to have the names printout in a specified way, codes are entered in column 31 (element line 350, [other than English] 360, 370, 425, etc.). The codes represent the point at which the name will be separated in feed composition tables. These codes are determined from the commas present in the name. An example is Alfalfa, hay, sun-cured, the code is 1; Alfalfa, Ranger, hay, sun-cured, the code is 2; and so on. Using these comma codes it will be printed as:

Alfalfa
– hay, sun-cured

Alfalfa, Ranger
– hay, sun-cured

32 *Sorting Code.* To allow a sorting of the entries according to the chronological sequence of the stages of maturity, the descriptors of Facet 4 (tag 275) have to be preceded by the following alphabetic sorting codes (Figure 3.7):

A GERMINATED
B EARLY VEGETATIVE
C LATE VEGETATIVE

Column

D EARLY BLOOM
E MIDBLOOM
F FULL BLOOM
G LATE BLOOM

H MILK STAGE
I DOUGH STAGE
J MATURE
K POST RIPE

L STEM CURED
M REGROWTH EARLY VEGETATIVE
N REGROWTH LATE VEGETATIVE

IMMATURE is a descriptor used for fruit, seeds and leaves which are not mature (green); therefore, no code is needed for sorting purposes.

For similar reasons, all grade descriptors of Facet 6 which indicate poor quality (GRADE INFERIOR, MOLDY, CULL, etc.) have to be preceded by code 9 on element line 325. (This column is left blank for all other grade descriptors.) See Figure 3.8.

33-80 *Feed Descriptions and Names.* These columns are used to record the descriptors and other feed names.

Print in block or capital letters. Use only one language for the descriptors used in the International Feed Description (element lines 025-325). Do not hyphenate words when using more than one line. Use more than one line when necessary.

3.2 Recording of New Entries to the Feed Description File

As explained in Section 2, a complete entry in the feed description file consists of the International Feed Description, the International Feed Name, and Country Names. These may be entered in different languages and are coded for retrieval in several options.

3.2.1 International Feed Description

Enter the full feed description in accordance with the INFIC Feed Thesaurus (Haendler et al. in prep.) and the INFIC Feed Description File (Harris et al. 1980b) on element lines 025-325. In some cases, further tags may be necessary, for instance, when a feed has more than two different plant species as original material. In these cases, further data tags are provided to accom- this, delete data tags not being used and insert the new tags and terms in the available spaces (Figure 3.9).

When there are two or more plants, a hypen is put between each plant (generic name) on the 155/156 element line.

3.2.2 International Feed Name

International Feed Names are coined by changing or deleting specific part and/or process descriptors present in the International Feed Description.

When possible, International Feed Names that apply to every country should be used in feed composition tables. This name is recorded on element line 350 with the respective language code. No country code is needed as the International Feed Names apply to all countries.

Table 3.4a gives a list of part descriptors that are changed when the International Feed Name is coined (by computer or hand). Table 3.5a lists the process descriptors that are changed when coining the International Feed Name.

Software has been developed to change and/or delete part and process descriptors when converting the International Feed Description to the International Feed Name (English version). There are, however, a few exceptions to this rule. Therefore, in cases where the part and processes are normally changed but should remain the same in both the feed description and the feed name, a one (1) is placed in column 31, element line 215. An example: maize, aerial part, sun-cured. Normally, aerial part, sun-cured, is changed to read hay, sun-cured. In this case, however, it should remain maize, aerial part, sun-cured (see Figure 3.10).

3.2.3 Country or Regional Names

When it is not possible to use the International Feed Name for feed composition tables, Country Feed Names may be used. However, every effort should be made to adopt the International Feed Name.

The local feed names in different languages (also others than the system languages) are recorded on element line 425. Designate the respective language code in columns 15-17 and the country code in columns 9-11.

When a country has "Official" feed names that are numbered, the country feed number is entered in columns 27-30.

3.3 Correction of Entries

All corrections made to the feed description file are carried out on the 80 column key punch transmittal form (Figure 3.1).

To add a missing descriptor or a new term, place code A in column 1, the IFN in columns 4-8, the element number in columns 12-14 and the language code in columns 15-17 for each line used. Fill in all other columns 18-80 as previously described (Section 3.1).

To change a descriptor or term, place a C in column 1, the IFN in columns 4-8, the element number in columns 12-14 and the language code in columns 15-17 for each line used. Fill in all other columns 18-80 as previously described.

To delete a descriptor or term in one language version, place code D in column 1, the IFN in columns 4-8, the element number in columns 12-14 and the language code in columns 15-17 for each line used. Leave blank all other columns. When the descriptor or term is deleted in all language versions, leave the language code blank.

To delete a whole entry, place code D in column 1 and the IFN in columns 4-8 only.

3.4 Cross References

Generally, cross references from country feed names to the International Feed Names (or Feed Descriptions) are used as reference tools in feed composition tables. Cross references can be entered by the computer. Certain kinds of plants, however, have more than one name in one language. Several of these are feeds or are processed to

become feeds. In order to keep the number of cross references in limits, another kind of cross reference had to be introduced, i.e., from kind of plant to kind of plant, or from a synonym to the descriptor (as it is considered in the INFIC Feed Thesaurus).

Each center may develop its own system for putting cross references into feed composition tables.

The following is one system that may be used:

- list the five-digit IFN numbers of the feed names needed to make a feed composition table with the element tag. Element tag 155 will print out the International Feed Description. Element tag 350 will print out the International Feed Name. Element tag 425 will print out the Country Feed Name.

- retrieve the feed names and list them.

- determine the cross references needed. Insert the cross reference between the two feed numbers where appropriate (usually in alphabetical order). Using an 80-column transmittal form, leave columns 1-12 blank and enter the cross reference (e.g., Lucerne--see Alfalfa) in columns 13-80 (see Figure 3.11). If more than one line is needed for the cross reference, enter an asterisk (*) in column 1 for each additional line used and enter the cross reference information in columns 13-80. The asterisk is entered only for continuation lines. When the table is printed, this cross reference will appear between the two feeds. This system will permit the selection of any synonym from the Thesaurus and cross reference it to the original material (155 element line or the 350 element line) to which it is associated.

4. BIBLIOGRAPHIC REFERENCE FORM

Not all information about feeds can be presented in numerical form. Aspects like the palatability of feeds, their influence on performance and health or on the quality of a feed cannot be given as numerical data. This type of information is usually presented in scientific papers. Not only publications from which data are extracted for the feed databank, but also other publications may be very important as sources of additional feed information. Therefore, links between the agricultural literature documentation, as it pertains to feed literature, and INFIC are very effective.

The centers of agricultural documentation cooperate world-wide within AGRIS, the International Information System for the Agricultural Sciences and Technology, which has a coordinating center at FAO headquarters in Rome. See Figure 4.1 for an example AGRIS Form.

Some of the members of INFIC – like the Documentation Center of Hohenheim University – are contributing to the AGRIS input. All AGRIS input centers located in 80 countries use AGRIS input sheets or sheets with analog categories to record the literature. Furthermore, centers like Hohenheim use reference numbers for the identification of the documents which are composed of a letter (for instance A = Hohenheim Documentation Center), the year of recording the document (for example 80) and a current number (five digits). A similar bibliographic reference number is also assigned to documents belonging to nonconventional literature or are just records from feed laboratories. The center identification, the letter A, is omitted when filling in the source form.

The bibliographic reference number is used as the link between the numerical data and the source document. In order to achieve this, the reference numbers have to be recorded on the source form. The INFIC bibliographic reference number is a seven-digit number and would include the year plus the 5-digit serial number (see Section 5.2, columns 51-57). Thus, the respective document with additional information can be recalled from the literature file by using the bibliographic reference number. Also a bibliography can be printed from the computer for publication.

The International Feedstuffs Institute uses the first two digits of the seven-digit number for the year. The next number identifies the kind of data. A digit 1 denotes the data came from the source where it was generated; the chemical laboratory, etc. This is called raw data. A digit 2 indicates the information was extracted from scientific journals where the researcher was reporting his findings. A digit 3 indicates the data were taken from books, magazines, etc. (Figures 4.2, 4.3, 4.4). Since type 3 data is not original, it is sometimes desirable to sort it out when developing regression equations. This data, however, is useful to fill in areas where data are missing. When data are found to replace the type 3 data, it is deleted. The other four digits are assigned consecutively upward.

Instructions for filling in the Bibliographic Reference Form are given in Table 4.1. It is suggested that INFIC use a bibliographic form with tags which will coincide with the AGRIS Input Sheet. If the information in Figures 4.2, 4.3 and 4.4 is submitted to AGRIS, the identification of the center should be prefixed in front of the seven-digit INFIC bibliographic reference number under tag 001. This could be done by a computer pro-

program. The information could then be transferred to the AGRIS system. INFIC Centers who wish to use the AGRIS form could obtain instructions and forms from: AGRIS Coordinating Centre, Food and Agriculture Organization of the United Nations, Via delle Terme di Caracalla, 00100 Rome, Italy.

5. INSTRUCTIONS FOR CODING THE INTERNATIONAL SOURCE FORM

The international feed source form is filled in by collaborating (donor) laboratories. The system proposed assumes that a source form is filled in for each sample analyzed (a sample is a single analysis or the average of two or more analyses of a sample), or the information may be data taken from the literature. The value shown in the literature may be from a single analysis or the average value taken from several samples. When it is the average of several analyses, it is treated as one value when data are summarized.

The completed source forms are sent to INFIC Type I Processing centers. At the centers the following procedures are followed:

- the source form is coded.
- the data on the source form are punched into cards or onto computer tapes or disks.
- the raw data are printed and checked with the original source form.
- the corrected data are entered onto a master data file. The data on the master data file are linked to the feed descriptions by the international feed number.
- the data are sorted and summarized in different ways. For example, the data may be sorted by country and then summarized.
- the feed descriptions and the summarized data are brought together by the international feed number and printed out for reports or publications.

For convenience, the areas on the source form are divided into cards as follows:

Card 10 provides a means for recording information on where a sample was analyzed, where it came from, the feed name and description.

Card 21 provides a means for recording information on the foreign material present in a sample and environmental factors; i.e., soil and terrain conditions, source of water and types and amount of fertilizer applied.

Card 22 provides a means for recording information on harvesting conditions, storage facilities and climatic conditions associated within the storage area.

Card 24 provides a means for recording information on environmental pollution and pesticide application.

Card 30 provides a means for recording information concerning digestibility trials. These include animal species and sex, number and weight of animals, the specific physiological condition the animals are in, length of trial and feed consumed.

Card 4 provides a means for recording attribute values, digestion coefficients, method of analysis, and unit code factors.

A source form listing some attributes from each of the six card formats is shown in Figure 5.1. A description on how to code this form follows.

5.1 Columns on Source Form Common to All Card Formats

Columns 1-9

Eighty column computer cards may be used or the information may be entered onto tape or from a remote terminal such as an ADM-3 or equivalent. The term "Card" is used for ease in explaining the procedures.

A source form number is punched into the first eight columns of all cards used in reporting information on the source feed sample. In this manner, the information remains intact and is referred back to the International Feed Number that was assigned to Card 10 in this series. A Card 10 must be present when recording information on each feed sample.

The original source form number may be less than eight digits and may contain letters, but must be right justified through column 8 when coded. Column 9 is left blank when recording the original source form number. This column is used to make new source form numbers when data are combined from two or more similar feeds such as all analyses for hay. Table 5.1 shows an example. See Section 7 for instructions on preparing combining cards.

When possible, the source form number should be pre-printed by INFIC centers on the source form and sent to collaborating laboratories. However, if this is not possible, the source form number will be assigned when they are coded at INFIC centers.

The INFIC center code is entered in column 1. This prevents having duplicate source form numbers. Information can be retrieved for regions by combining data from a group of countries. In columns 2 and 3, the year could be entered. Using this procedure, a new set of source form numbers would be started each year. The codes are as follows:

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8	Col. 9
A	7	8	0	0	0	0	1	Blank

Year

INFIC Center code (a letter)

Sequence number right justified through column 8

INFIC Center Codes

IFI (Logan)	= Blank
Canada	= C
Hohenheim	= A
IEMVT (Paris)	= F
CSIRO (Australia)	= U
IICA (San Jose)	= L
ACSAD (Damascus)	= D
Southeast Asia	= Y
TPI (London)	= T

5.2 Card 10. Origin of Data, Origin of Sample and Description of the Feed Sample (see Figure 8.1)

Column	
1-8	*Source Form No.* This number is punched into the first 8 columns (right justified) (see section 5.1).
9	*Column is Blank.* See section 5.1.
10-11	*Card No.* Code is 10.
12-16	*Project No.* Code is the number filled in by the project leader.
	Origin of Data
17-19	*Country or Region.* Enter the country code where the laboratory analyzing the feed is located (Table 3.1).
20-21	*State, Province or Department.* Enter the state, province, department or similar divisions within country where the laboratory analyzing the feed is located. The INFIC Center in cooperation with collaborating laboratories makes up codes within each country under its jurisdiction. These codes are given in Table 5.2.
22-23	*Laboratory Name and Address.* Each laboratory within a country, state, province, department, etc., is given a code number. The INFIC Center develops codes for laboratories under its jurisdiction. Codes are assigned consecutively, 01 to 99, as the laboratories come into the program. Each Center develops its own set of laboratory codes. An example for one state in Germany is shown in Table 5.3.
24-29	*Laboratory Sample No.* The laboratory sample number is filled in by the laboratory leader. When the source form number is used for the laboratory sample number, this area is left blank.
	Origin of Sample
30-35	*Date Originally Collected.* Enter year, month and day for the code; i.e., (801123). When year only is known, put zeroes in other spaces. When date is unknown, put zeroes in all columns 30-35; i.e., 000000.
36-38	*Country or Region.* Record code from list of countries or region (Table 3.1). Enter code of country or region where the sample originated.
39-43	*Climatic Zone.* The INFIC Center prepares a map of each country which shows the climatic zones. See Table 5.4 for the latitudinal region, the altitude and rainfall which are used to prepare this map.
44-45	*Fishing Area.* Enter code from list of fishing areas in Table 5.5 and Figure 5.2
46-47	*State, Province or Department.* Enter code from list of states, provinces, departments, etc., within country where sample originated. Each center makes up its own codes (see Table 5.2).
48-50	*County.* A list of codes will be made available at each collaborating laboratory when deemed appropriate. Enter code for county or equal local administrative unit from which the sample came (see Table 5.6 for an example).
51-57	*Bibliographic Reference No.* Each Type I INFIC Center assigns its own bibliographic reference numbers. One way is to prefix in columns 51 and 52 the year. In column 53 enter a 1, 2 or 3. For original data not published, use a 1; for original data published, use a 2; for data coming from books, magazines, etc. that may not be original data, use a 3. In columns 54 to 57 the numbers would be assigned consecutively upward. At the beginning of each year these numbers would start over (see Section 4).
58-64	*International Feed Number.* Check to see if the International Feed Number selected (when present, it appears above the squares provided on the source form) matches the International Feed Description on the source form and in the name file (Harris et al. 1980b). When this occurs, fill in the International Feed Number in the squares provided and cross out the number above the squares. When a feed number is not present on the source form, check to see if the feed description on the source form matches any of the feed descriptions

5.2 Card 10 (Continued)

Column	
	in the name file. If it matches, enter the international feed number in the squares provided.
	When the feed description does not match a feed description in the name file, coin a new feed description according to the instructions in Section 3.1.
	The five-digit international feed number is used to identify the feed description and the associated data for sorting and computer summarization control purposes.
	Columns 58 and 59 are left blank. These columns are for expanding the international feed number.
65-68	*Plant Crosses, Cultivars, or Other Feed Products.* When a plant cross or other feed product is not on the market as a feed, it may be desirable to code the information in columns 65-68 and not make up a new international feed description. In these cases, make up a list of plant crosses, hybrids, or varieties within a Genus and species and assign codes as needed. Columns 65-68 allow for 9,999 codes within each Genus and species. Also make up codes for rare feeds or feeds prepared in the laboratory which are not sold. Each INFIC Type I Center uses independent codes and assigns them to the list as they are provided by Type II and Observing Centers.
	When the plant hybrid or feed product is sold on the market, the Type I INFIC Center retrieves the data and formulates a new international feed description and an international feed number is assigned by the INFIC Center in charge of maintaining the feed description file.
	The following is an example:
	The international feed description is:
	Wheat, hard red winter, grain.
	The new wheat is:
	Wheat, hard red winter, highland, grain.
	Highland is the strain. Until this strain is important and on the market, all data are entered under WHEAT, HARD RED WINTER.

Column	
69-72	*Additives.* Record code from list of common and/or chemical names (Table 5.7).
73	*Unit Weight for Additives.* The code is the unit used to express the amount (by weight) of the additive that was mixed with the feed.

Code	*Unit weight per metric ton*
1	mg/metric ton of feed on an as fed basis
2	g/metric ton of feed on an as fed basis
3	kg/metric ton of feed on an as fed basis

74-76	*Amount of Additive.* The code is the amount of the additive (without decimal point) added per metric ton in relation to the codes given in column 73.
77	*Season.* Codes for season are:

Code	*Description*
1	Dry season
2	Wet season

These codes apply only to the tropics. Leave blank for other areas.

78	*Fertilizer.* Codes for fertilizer are:

Code	*Description*
1	Yes (fertilized)
2	No (not fertilized)
3	Unknown

Do not enter information unless the type of fertilizer and application rates are known (see Section 5.3, Card 21). This code is used so data can be sorted to list feeds grown on soils with and without fertilizer.

5.3 Card 21. Quality of Feed, Soil, and Fertilizer (see Figure 8.2)

Column	
1-8	*Source Form No.* See Card 10.
9	*Blank.*
10-11	*Card No.* Code is 21.
12	*Feed Quality by Class.* The codes for the quality of dry forages (Feed Class 1) and silages (Feed Class 3) are:

Dry forages or hay are coded according to the grades given in Tables 5.8 and 5.9. Eventually, forages should be analyzed for acid detergent fiber or neutral detergent fiber in place of crude fiber (Harris 1970). However, in the meantime crude fiber can be the criterion used for establishing the grade. Codes would be as follows:

Legumes and legume–grass mixtures.

	Code
Grade	1
Grade	2
Grade	3
Grade	4
Grade	6 (inferior)

Grass-legume mixtures:

	Code
(there is no grade 1)	
Grade	2
Grade	3
Grade	4
Grade	5
Grade	6 (inferior)

Silage (class 3):

	Code
Grade	1
Grade	2
Grade	3
Grade	4

Note: This is a temporary listing of grades used for silage. A more complete description for each grade or codes will be determined after consultation with agronomists and other interested parties.

Column	
13-14	*Degree of Purity Percent.* Code is the percent (without decimal point) of foreign material contained in the feed sample. Most samples are not pure. This information will assist in establishing grades for the product.
15-16	*Foreign Material.* Codes are:

Code	*Description*
01	sand-earth
02	mineral contamination
03	weed seeds
04	other foreign material

17-18 *Soil Units.* Use the FAO World Soil Unit Codes (Table 5.10).

19 *Soil Texture Classes.* Codes are:

Code	*Description*
1	coarse texture: sands, loamy sands, and sandy loams with less than 18% clay, and more than 65% sand.
2	medium texture: sandy loams, loams, sandy clay loams, silt loams, silt, silty clay loams, and clay loams with less than 35% clay and less than 65% sand; the sand fraction may be as high as 82% when a minimum of 18% clay is present.
3	fine texture: clays, silty clays, sandy clays, clay loams, and silty clay loams with more than 35% clay.

20 *Slope Classes.* Codes are:

Code	*Description*
1	level to gently undulating: dominant slopes ranging between 0 and 8%.
2	rolling to hilly: dominant slopes ranging between 8 and 30%.
3	steeply dissected to mountainous: dominant slopes are over 30%.

21-23 *Soil pH.* Code is pH value of the soil. Place a decimal point in Column 22. This makes it possible to code a soil pH value from 0.1 to 9.9.

5.3 Card 21 (Continued)

Column

24 *Water (Type).* Codes are:

Code	*Description*
1	rainfall
2	irrigation (sprinkler)
3	irrigation (furrow)
4	irrigation (border flooding)
5	irrigation (drip)

25-28 *Irrigation Plus Rainfall.* This code is the vertical measurement of the amount of water applied plus the rainfall in millimeters (do not use decimal).

Fertilization

29-30 *Nitrogen Fertilizer (Type).* Codes are:

Code	*Description*
01	ammonia gas
02	ammonium nitrate
03	ammonium sulfa-nitrate
04	urea
05	calcium ammonium nitrate
06	calcium nitrate (nitrate of lime)
07	calcium cyanamide
08	nitrate of soda (sodium nitrate)
09	ammonium sulfate

31-34 *Quantity in Kilogram per Hectare.* Code is kg of nitrogen applied per hectare.

35-37 *Number of Days Between Last Application of Nitrogen Fertilizer and Harvest.* Code is number of days.

38-39 *Phosphorus Fertilizer (Type).* Codes are:

Code	*Description*
01	hyperphos
02	novaphos
03	thenania phosphate
04	raw phosphate
05	superphosphate
06	thomasphosphate
07	phosphorus fertilizer

Column

40-43 *Quantity in Kilogram per Hectare.* Code is kg of phosphorus applied per hectare.

44-45 *Potassium Fertilizer (Type).* Codes are:

Code	*Description*
01	kainite
02	potassium magnesia
03	potassium chloride, 38-42% K_2O
04	potassium chloride, 48-52% K_2O
05	potassium chloride, 60% K_2O
06	potassium sulfate
07	potassium fertilizer

46-49 *Quantity in Kilogram per Hectare.* Code is kg of potassium applied per hectare.

50-51 *Calcium Fertilizer (Type).* Codes are:

Code	*Description*
01	quicklime, burned lime
02	lime, ground from iron works
03	calcium carbonate
04	slaked lime
05	lime fertilizer

52-55 *Quantity in Kilogram per Hectare.* Code is kg of calcium fertilizer applied per hectare.

56-57 *Organic Manure (Type).* Codes are:

Code	*Description*
01	green manure
02	guano
03	semi-liquid manure
04	horn meal
05	liquid manure, slurry
06	sewage sludge
07	bone meal
08	compost
09	garbage
10	plant residues, plant refuses
11	peat moss
12	stable manure, barn manure

58-61 *Quantity in 100 Kilograms per Hectare.* Code is number of 100 kg of organic manure applied per hectare.

5.3 Card 21 (Continued)

Column

62-63 *Trace-Elements Fertilizer (Type).* When assigning a code for trace elements, use the code for the predominant trace element. Codes are:

Code	*Description*
01	boron fertilizer
02	chlorine fertilizer
03	cobalt fertilizer
04	iron sulphate
05	copper sulphate
06	magnesium fertilizer
07	manganese sulphate
08	molybdenum fertilizer
09	sodium fertilizer
10	sulphur fertilizer
11	zinc fertilizer

64-66 *Quantity in Kilogram per Hectare.* Code is kg of trace elements (in terms of the element) applied per hectare.

67-68 *Mixed Fertilizer (Type).* Codes are:

Code	*Description*
01	phosphorus-potassium
02	nitrogen-magnesium
03	phosphate-potassium
04	phosphorus-potassium, 15-18% P, 20-25% K
05	nitrogen-potassium
06	nitrogen-phosphate
07	thomasphosphate-potassium
08	nitrophoska grey (11.5% N, 8.5% P_2O_5, 18% K_2O)
09	nitrophoska red (13% N, 13% P_2O_5, 21% K_2O)
10	nitrophoska blue (12% N, 12% P_2O_5, 20% K_2O)

69-72 *Quantity in Kilogram per Hectare.* Code is kg of mixed fertilizer applied per hectare.

5.4 Card 22. Plant Height and Feed Storage (see Figure 8.3)

Column	
1-8	*Source Form No.* (Same as card 10).
9	*Blank.*
10-11	*Card No.* Code is 22.
12-15	*Height When Cut.* Code is height in centimeters (without a decimal point) of the plant before cutting.
16-19	*Height of Remaining Stubble.* Code is height in centimeters (without a decimal point) of stubble remaining after cutting.
20-21	*Storage Facility.* Codes are:

Codes	*Description*
01	cellar
02	pit
03	trench
04	kiln
05	granary
06	case
07	stack
08	upright high stack silo
09	upright half high stack silo
10	attached silo
11	flat silo
12	moveable silo
13	fence silo
14	metal or plastic silo
15	silo made with pressed material (plywood)
16	sealed upright silo
17	experimental silo

22-23 *Kinds of Material Used in Constructing Storage Facilities.* Codes are:

Code	*Description*
01	concrete
02	soil
03	wood
04	plastic
05	metal
06	stone
07	straw
08	miscellaneous

24-25 *Kind of Covering or Lock.* Codes are:

Code	*Description*
01	concrete cover
02	plastic shee
03	inner race lock
04	clamp lock
05	mechanical pressing
06	sound bag lock
07	seeger retaining ring
08	dipping cover

26-29 *Storage Time in Days.* Code is number of days material was in storage (without decimal point).

30-32 *Temperature in Storage Container.* Code is the temperature in degrees centigrade to the nearest whole degree.

33-34 *Air Humidity in Storage Container.* Code is the relative humidity to the nearest whole percent.

35-36 *Light and Air Conditions Inside the Container.* Codes are:

Code	*Description*
01	light with air exchange
02	semi-dark with air exchange
03	dark with air exchange
04	airtight with light
05	airtight and semi-dark
06	airtight and dark

5.5 Card 24. Environment Pollution and Pesticides (see Figure 8.4)

Column

1-8 *Source Form Number.* Same as Card 10.

9 *Blank.*

10-11 *Card No.* Code is 24.

12-14 *Pollution Source.* Codes are given in Table 5.11.

15-17 *Pollution Substance.* Code for columns 15-17 are contaminants taken from the attribute deck (see Section 6.). Toxicity depends upon the concentrations of the material in the feed. Examples of potentially toxic materials are:

Code	*Description*
585	arsenic
584	bromine
540	fluorine
550	lead
592	mercury
544	selenium
568	strontium

18 *State of Substance.* Codes for the physical state of the polluting substance are:

Code	*Description*
1	gasiform (gases and fumes)
2	dustiform (dusts and aerosols
3	liquid (liquids or emulsified substances)
4	gasiform and dustiform (gases, fumes, dusts, and aerosols)
5	gasiform, dustiform, and liquid (gases, fumes, dusts, aerosols, and liquids)
6	gasiform, liquid or emulsified (gases, fumes, liquids, or emulsified substances)
7	dustiform, liquid, or emulsified (dusts, aerosols, liquids, or emulsified substances)

19-20 *Distance Between Pollution Source and Receptor.* Codes are in Table 5.12.

21 *Wind Direction.* Codes are:

Code	*Description*
1	prevailing wind direction (downwind)
2	opposite direction to the prevailing wind (upwind)
3	lateral to prevailing wind (right or left)

Column

22 *Unit of Measurement for Pollutant Concentration.* Codes are:

Code	*Description*
1	$\mu g/m^3$ air
2	mg/m^3 air
3	mg/kg soil
4	mg/l water

23-29 *Pollutant Quantity in Relation to Unit.* Fill in amount of pollutant in terms of units listed under pollutant concentration (column 22). There is a decimal point in column 26.

30 *Intensity of Automobile Traffic.* Codes are:

Code	*Description*
1	stable: 0-600 cars/hour
2	stable: 601-1,200 cars/hour
3	undisturbed: minimum 1,201 cars/hour

31-33 *Exposure of Feed Material to Pollutant.* Record the number of days feed material was exposed to the pollutant.

34 *Symptoms of Damage on Original Material.* Codes are:

Code	*Description*
1	healthy looking
2	acute damages (exterior and/or interior parts of the plant having been destroyed by gas)
3	direct chronic damages (malfunction by gas, smoke, and dust influence)
4	indirect chronic damages (depression of growth and/or yield by gas, smoke, and dust influence)
5	infested (mycel)

35-37 *Brand of Pesticide.* Each center develops its own codes. Examples for Germany are given in Table 5.13.

38 *Class of Pesticide.* Codes are:

Code	*Description*
01	acaricides
02	fungicides

5.5 Card 24 (Continued)

Column

03	herbicides
04	insecticides
05	products used against parasites infesting materials in storage
06	molluscocides
07	nematocides
08	rodenticides

39 *Formulation of Pesticide.* Codes are:

Code	*Description*
1	emulsifiable spray products
2	products emitting fog
3	products emitting smoke
4	wet disinfectants (seeds)
5	spray powder
6	spreading products
7	fine spray products

40-41 *Active Ingredients of Pesticide.* Code is the amount in percent without a decimal point.

42 *Method of Pesticide Application.* Codes are:

Code	*Description*
1	spraying (drops minimum 150μ)
2	fine spraying (drops 50-150μ)
3	fogging (drops maximum 50μ)
4	spreading
5	smoking

43 *Type of Application of the Pesticide.* Codes are:

Code	*Description*
1	application in storerooms
2	soil application
3	aerial application

44 *Unit for Pesticide.* Codes are:

Code	*Description*
1	g/na
2	kg/ha
3	liter/ha

45-50 *Pesticide Quantity in Relation to Unit.* Code is amount of pesticide applied in relation to the units given in column 44. Decimal point is in column 49.

Column

51-52 *Number of Pesticide Applications.* Code is the number of applications.

53-55 *Days Between Last Pesticide Application and Harvest.* Code is the number of days.

56 *Unit for Residue of Pesticides in Feed Fed to Animal (Diet or Ration).* Codes are:

Code	*Description*
1	μg/kg
2	mg/kg
3	g/kg

57-62 *Quantity of Pesticide in Relation to Unit.* Code is amount of pesticide used in relation to the units given in column 56. There is a decimal point in column 59.

63-67 *Daily Intake of Pesticide.* Code is the amount of pesticide consumed in mg. Decimal point is in column 66.

68-70 *Feeding Period in Days.* Code is the number of days pesticide was consumed.

71-78 *Weight of Animal at Beginning of Feeding Pesticide.* Record weight in kilograms (decimal point is in column 75).

Note: When data are entered in columns 63 to 78, a card 30 must be filled in giving the animal kind.

5.6 Card 30. Digestion Trial (see Figure 8.5)

Column

When biological data have been determined on a feed sample, a Card 30 must be filled in. The animal kind (columns 12-14) must be reported along with any other information that has been determined.

1-8 *Source Form No.* Same as Card 10.

9 *Blank.*

10-11 *Card No.* Code is 30.

12-14 *Animal Kind.* Codes are given in Table 5.14.

15-17 *Animal Breed.* To avoid having too many codes, record the code of the animal nearest like the breed. When it is a crossbreed, give the code for the sire. Codes are assigned within animal kind as shown in Table 5.15.

18 *Sex.* Codes for sex are:

Code	*Description*
1	male
2	female
3	castrated male
4	spayed female

19-20 *Animal Requirements.* This code refers to the nutrient requirements of animals for various physiological functions within specified regional or local environmental conditions. These codes are usually entered at INFIC Type I Centers.

21-25 *Age of Animal.* Code is actual age recorded as follows: year for the first two digits, months for the second two digits, and weeks for the last (right) digit. For example, 01053 would signify 1 year, 5 months and 3 weeks of age.

26-27 *Number of Animals in Treatment.* Code is number of animals in the trial for each feed being evaluated.

28-35 *Average Weight of Animals.* Decimal point is in column 32. Code is the weight in kg for animal kind.

Column

36 *Physiological State for Pregnancy.* Codes are:

Code	*Description*
1	non-pregnant
2	pregnant first 2/3
3	pregnant last 1/3

37 *Physiological State for Weight Gain.* Codes for gain or loss in live weight are:

Code	*Description*
1	losing weight
2	maintaining weight
3	gaining weight
4	fattening

38 *Physiological State for Production.* Codes are:

Code	*Description*
1	lactating
2	laying eggs
3	working

39 *Physiological State for Condition.* Codes are:

Code	*Description*
1	very thin
2	thin
3	thrifty
4	fat
5	very fat

40-41 *Percent of Test Ingredient in Ration Fed.* Code is the nearest whole percent on a 100% dry matter basis.

42 *Type of Feeding.* Codes are:

Code	*Description*
1	*ad libitum* feeding
2	controlled feeding

43 *Method Used for Digestion Trial.* There are two methods used for digestion trials, the direct and indirect. When using the direct method for determining the nutrient digestion coefficients of a feed, the test feed is the only feed given to the animal. When using the indirect method,

Column

the test feed is fed with a base feed and when no additional information is given, use code 2. When additional information is available, select the appropriate code between 3 and 6. The codes are:

Code	*Description*
1	Direct method
2	Indirect method: digestibility is determined by difference (base feed plus a test feed).
3	Addition: varying proportions of a test feed are added to the base feed.
4	Exchange: a certain proportion of the base feed is exchanged by a test feed.
5	Replacement: a certain indigestible component of the base feed is replaced by an adequate proportion of the test feed.
6	Regression: varying quantities of a test feed are added to the base feed: digestibility is calculated by regression equations.

44 *Type of Feces Collection.* Codes are:

Code	*Description*
1	Total feces collected.
2	Feces indicator used to calculate amount of feces.

45-46 *Length of Digestion Trial, Preliminary Days.* Code is the preliminary period in days.

47-48 *Length of Trial, Collection Days.* Code is the collection period in days.

49-55 *Daily Dry Matter Consumed.* Code is the amount of dry matter in kilograms consumed per day (decimal is in column 52).

56-62 *Dry Matter Consumed Weekly.* Code is the amount of dry matter in kilograms consumed per week (decimal is in column 59).

5.7 Card 4. Chemical and Biological Data (see Figure 8.6)

Column	
1-8	*Source Form No.* Same as Card 10.
9	*Blank*
10	*Card No.* Code is 4. Card 4 is for recording the chemical and biological data of a feed sample. Card number 4 is entered in column 10 for each Card 4 used. There are five fields in Card 4 for recording information on a feed sample. These fields are:

Columns	*Field*
11-24	1
25-38	2
39-52	3
53-66	4
67-80	5

When more than five attributes have been determined on a feed sample, use additional Card 4's to record the information.

Column	
11-13 25-27 39-41 53-55 67-69	*Attribute Numbers.* The attribute code is entered in columns 11-13, 25-27, 39-41, 53-55, 67-69. Many of the attribute codes are given on the source form; i.e., 101 for as fed dry matter, 107 for ether extract, etc. When the attribute numbers are not given on the source form, add appropriate codes from the attribute deck (see Section 6.) and enter the data under "other analysis."
14-20 28-34 42-48 56-62 70-76	*Chemical and Biological Data.* Enter chemical and biological data in columns 14-20, 28-34, 42-48, 56-62, and 70-76, left justified. These columns have a floating decimal point. Check to see that each entry has a decimal point. When biological data such as digestion coefficients, availability, etc., are recorded (i.e., for amino acids, digestible energy, metabolizable energy or net energy), a Card 30 must be completed. Do not record estimated or computed values.
21-22 35-36 49-50 63-64 77-78	*Analytical Code Factor.* Codes for the analytical procedure used in determining the attribute present in the feed sample. Codes for the analytical code factors are given in Table 5.16
23-24 37-38 51-52 65-66 79-80	*Unit Code Factor.* The unit code factor is used to identify conversion factors so the computer can convert the given units to the preferred unit. Moreover, they serve for recording the digestibility coefficients. For these a unit code (47) must always be entered. For the nutrients or attributes the unit code must be inserted only if they are not recorded in the preferred unit. The preferred units are listed in the attribute deck (see Table 6.1). The unit code factors are given in Table 5.17.

5.7.1 Dry Matter Basis of Data

Check to determine if the dry matter basis for recording the data is correct (entered as percent). When the data are recorded on an "as fed" basis (code 102) the values for attribute code 101 (as fed dry matter) and code 102 must be the same. When data are recorded on a "100% dry matter basis," the value for code 104 must be 100.0. Data may also be recorded on a "partially dry" basis. In this case, fill in the partial dry matter opposite code 103.

The definitions for as fed, partially dry and dry are:

As fed refers to the feed as it is consumed by the animal; the term "as collected" is used for materials which are not usually fed to the animal; i.e., urine, feces, etc. When the analyses on a sample are affected by partial drying, the analyses are made on the as fed or as collected sample. Similar terms: air dry; as received; fresh; green; wet.

Partially dry refers to a sample of "as fed" or "as collected" material that has been dried in an oven (usually with forced air) at a temperature usually about 60° C or freeze dried and than equilibrated with the air; the sample after these processes would usually contain more than 88% dry matter (12% moisture); some materials are prepared in this way so they may be sampled, chemically analyzed and stored. This analysis is referred to as "partial dry matter % of 'as fed' or 'as collected' sample." The partially dry sample must be analyzed for dry matter (determined in an oven at 105°C) to correct subsequent chemical analyses of the samples to a "dry" basis. This analysis is referred to as "dry matter % of partial dry sample." Similar terms: air dry (sometimes air dry is used for as fed).

5.7 Card 4 (Continued)

Column

Dry refers to a sample of material that has been dried at 105° C until all the moisture has been removed. Similar terms: 100% dry matter; moisture free. When dry matter (in an oven at 105° C) is determined on an "as fed" sample it is referred to as "dry matter on as fed sample." When dry matter is determined on a partial dry sample, it is referred to as "dry matter of partial dry sample." It is recommended that analyses be reported on the "dry basis (100% dry matter or moisture free), and in addition the "as fed dry matter" should be reported (Harris et al., 1969).

5.8 Data Published or Reported on a Ratio Basis

Before data on a ratio basis can be entered into the databank, it must be converted to:

- Amino acids as % of dry matter, or
- fatty acids as % of dry matter.

In some publications the concentrations of amino acids and fatty acids are reported as a percentage of the protein, fat or fatty acids; i.e., as g(amino acid)/16g nitrogen, g(fatty acid)/100g fat and g(fatty acid)/100g fatty acid.

These terms are difficult to use in preparing animal diets because requirements are stated in amounts per day or concentrations of the dry matter. Therefore, it is advantageous to convert them to the concentration (%) amino acid, fat or fatty acid of the dry matter and store the data in the computer as percent of dry matter. When amino and fatty acid data are reported as a percentage of the protein, fat or fatty acid, they are converted to a percentage of the total feed prior to entry into the databank. Software has been developed whereby the computer will automatically make these conversions when proper codes are affixed in the unit code column to each datum value entered. Examples are:

a. Lysine	3.1g/16g N	(code 96)
b. Palmitic acid	2.3g/100g fat	(code 44)
c. Acetic acid	1.9g/100g fatty acids	(code 45)

For these ratios to be converted to a percentage of the dry matter, the percentage of protein (nitrogen), fat (ether extract), and total fatty acids present in the feed dry matter must be known (Table 5.18). Examples of how ratio data are handled follow.

a. In this example, there are 3.1g of lysine for each 16g of nitrogen and 18.75% protein (attribute 109) in the feed dry matter.

3.1 x 18.75 x 0.01 = 0.58% of lysine in the feed dry matter;

This is the way the information is stored in the computer. When it is necessary to use ratios in printing out feed composition tables, or other printed matter, the reciprocal of the above formula is used.

$$\frac{0.58 \times 100}{18.75} = 3.1$$

b. In this example, the feed contains 2.3 g of palmitic acid for each 100g of fat (ether extract), and there is 6.2% fat (attribute 107) in the feed on a dry matter basis.

2.3 x 6.2 x 0.01 = 0.14% lactic acid in the feed dry matter.

The reciprocal of this is:

$$\frac{0.14 \times 100}{6.2} = 2.3$$

c. In this example the feed contains 1.9g of acetic acid for each 100g of total fatty acids and there is 5.7% total fatty acid (attribute 212) in the feed.

1.9 x 5.7 x 0.01 = 0.11% acetic acid in the feed dry matter.

The reciprocal of this is:

$$\frac{0.11 \times 100}{5.7} = 1.9$$

A summary of data that can be converted to a % amino acid, % fat, or % fatty acid in the dry matter is given in Table 5.18.

Data that cannot be converted should be discarded because this type data cannot be entered into the databank.

6. ATTRIBUTE DECK

The attribute deck contains the following information (Table 6.1):

Sequence number codes. These numbers control the order in which the attributes will appear when feed composition tables are printed using the Atlas Format (Figure 6.1).

Attribute codes. These codes identify over 700 different nutrients and other information, such as dry matter intake and gain per hectare.

Animal kind codes. These codes identify the different species of animals.

Unit codes. Each means of expression is coded, such as %, mg/kg, etc. When a table using summarized data is printed, each individual datum entry is identified by the appropriate unit of expression.

Numbers to right of decimal point. This column specifies the number of digits to the right of the decimal point when data are printed.

Working attribute deck. For convenience, an abridged attribute deck is made up to list only those attributes most commonly used within each center.

INFIC favors the use of joules to express energy, however, some countries still use the calorie system. For these countries, it is suggested that data be entered as kcal. For the larger animals, codes are given for Mcal. In the right column a factor of .001 is given to convert kcal to Mcal. When data are traded among the centers, it is converted to megajoules.

Data should not be entered on the source form which is calculated. These items are as follows:

Digestible protein
Energy for cattle NE_l
Nehring NF_f energy values
Scandinavian Feed Units
Starch equivalent (SE)
Starch unit
Available minerals
Available amino acids
Vitamin A equivalent

7. COMBINING DATA FROM TWO OR MORE FEEDS

Most feeds do not have information on all of the essential attributes; i.e., trace minerals, amino acids, etc. Therefore, software has been developed to combine the data recorded on two or more feeds, of similar nutrient and physical characteristics, into one. Under these conditions, all of the data are published under one feed name (see Table 5.1).

A combining card form (Figure 7.1) has been prepared for this purpose. Information is entered on the combining card form in the following manner: When a feed is selected to receive data from other feeds, the international feed number (5 digits) is entered in columns 1-5. For those feeds selected to provide data to another feed, the international feed numbers are entered in columns 6-10, 11-15, . . ., 76-80. When additional space is required, repeat the procedure on as many lines as necessary.

A computer program makes up new source form numbers for those feeds which are to be combined by adding a digit in column 9 (see Section 5.1). The international feed number of those feeds to be combined is also changed on these new source forms to the international feed number (columns 1-5) which is receiving the data from the feed numbers listed in columns 6-10, 11-15, . . . , 76-80.

When a summarization of the data is made, the combining source form data are averaged in with the data of the feed whose number appears in columns 1-5.

This procedure is an option to be used at the discretion of the INFIC center each time the data are summarized.

8. CARD FORMATS

When feed information is being taken from the literature or laboratory records, it may be more efficient to use card formats in place of source forms. International Card Formats have been developed to use when recording data about feeds (Figures 8.1, 8.2, 8.3, 8.4, 8.5, 8.6). Codes to put in the card formats for each column are given in Sections 5.2 through 5.7.

As many as 40 entries can be put on one set of card formats (Cards 10, 21, 22, 24, and 30). The number of Card 4's to use will depend upon the amount of data to be recorded. Only use the number of card formats necessary to describe the sample.

Each center may establish its own system for filing and validating the information. An example of how it may be done follows:

File in a folder—

bibliographic reference sheet

card formats with data filled in

original data (a copy may be made or a reference put in the file giving the location of the original data)

the computer printout of the 10, 21, 22, 24, 30 and 4 card formats.

When errors occur, the data are all in the folder for checking.

9. EXAMPLES OF DATA ENTRY USING CARD FORMATS

A feed bibliographic reference form is completed for every source of data being entered into the databank. Information for several feed samples may be recorded under one bibliographic number. Examples of feed bibliographic reference forms giving the source of the information and card formats 10, 30, and 4 listing the information taken from each source are given in Figures 9.1 through 9.12.

The bibliographic number 8010493 in Figure 9.1 identifies this information as original unpublished data being supplied from the source where the feeds were analyzed. Card format 10 is coded to indicate the source form number (7212768), the name of the laboratory (02), the year (740000), the country (216), the bibliographic number (8010493), and the international feed number (08135) (see Figure 9.2). The feed name is entered on this example only for informational purposes. Normally, feed names do not appear on the card formats.

Card format 30 is designed to record digestibility data (Figure 9.3). The appropriate source form number is put on each line of data entered (7212768), the card number (30), the animal kind (420), the breed (950), the sex (1), age (00030), number of animals (4), average weight (30.0 kg), losing, gaining, fattening or maintaining weight (3), percent of test ingredient in the ration (15), *ad libitum* or controlled feeding (1), fed fed alone (2), total feces collection or feces indicator (2), preliminary days (4), collection days (3), and daily dry matter consumed (2.11 kg). See Section 5 for definition of codes.

Card format 4 is designed to record analytical and biological values associated with each feed (Figure 9.4). As in card 10 and card 30, the appropriate source form number must appear (7212768), the card number (4), the attribute (104, etc.), and the value (100.). Attribute 102, 103, or 104 with its value must always be entered first. There are 5 fields for data to be entered. The five fields (columns 11-24, 25-38, 39-52, 53-66, 67-80) are duplicates of each other and data are entered in the same manner. When digestion coefficients are available, they are entered as data in columns 14-20, 28-34, etc. and the code factor 47 is entered in columns 23-24, 27-28, etc. (Table 5.17). An example is shown in Figure 9.4, line 2. On this line, the crude protein, attribute number 109, is entered in columns 25-27, the value 39.0 is entered in columns 28-31. To enter the digestion coefficient associated with this attribute, the attribute number 109 is entered in columns 39-41, the value 78.0 (this is the digestion coefficient) in columns 42-45, and code factor 47 in columns 51-52 to indicate that it is a digestion coefficient (Table 5.17). Code 47 is also used to print a D after digestion coefficients (Table 6.1).

Figures 9.5 through 9.8 illustrate how original data published in journals, trade magazines, etc. are coded (code 2 in this position of bibliographic number) and entered into the databank. Figures 9.9–9.12 illustrate the way data from unknown sources (code 3 in this position of bibliographic number) are taken from books and other published articles. In all cases, the data are entered into the system in the same manner. The primary difference is in coding the literature reference form in such a way that the source of information can be identified and classified as original unpublished data, original data published by the researcher who generated the information, or data of unknown source taken from the literature. It is important to have this kind of information because often the same information can be entered into the databank from different published sources of unknown origin. Each INFIC Center may work out the method they wish to use for bibliographic reference codes.

By carefully studying the three sets of examples presented (Figures 9.1–9.12), an appreciation of the steps taken in entering data should be attained. It should be noted that 40 samples may be recorded on card formats 10 and 30, however, additional card 4 formats may be needed. Because of this, it may be more efficient to use card formats instead of source forms (Figure 5.1).

References

FAO-UNESCO. 1974. Soil map of the world. Published by the United Nations Educational, Scientific and Cultural Organization, Place de Fontenoy, 75700 Paris, France.

Harris, L. E., Earle W. Crampton and J. Malcolm Asplund. 1969. Feed description and methods for reporting nutritive value. Techniques and Procedures in Animal Science Research Monograph. pp. 157. Am. Soc. Animal Sci., 19 Sheridan Ave., Albany, New York, USA 12210.

Harris, L. E. 1970. Nutrition research techniques for domestic and wild animals. Vol. 1. L. E. Harris, 1408 Highland Drive, Logan, Utah, USA 84321.

Harris, L. E., H. Haendler, R. Riviere, L. Rechaussat. 1980a. International feed databank system; an introduction into the system with instructions for describing feeds and recording data. International Network of Feed Information Centers. Publication 2. Prepared on behalf of INFIC by the International Feedstuffs Institute, Utah Agricultural Experiment Station, Utah State University, Logan, Utah, USA 84322.

Harris, L. E., F. Jager, T. F. Leche, H. Mayr and L. C. Kearl. 1980b. International feed descriptions, international feed names, and country feed names International Network of Feed Information Centers Publication 5. Prepared on behalf of INFIC by the International Feedstuffs Institute, Utah Agricultural Experiment Station, Utah State University, Logan, Utah, USA 84322.

Haendler, H., U. Neese, F. Jager and L. E. Harris. (In preparation). INFIC Feed Thesaurus, a multilingual thesaurus for describing feeds for the databank of the International Network of Feed Information Centers. Publication 4. Prepared on behalf of INFIC by the Dokumentationsstelle der Universität Hohenheim, Postfach 70 05 62, D 7000 Stuttgart 70, Federal Republic of Germany.

Naumann, K., und Bassler, R. 1972. Methodenbuch III "Die Chemische Untersuchung von Futtermitteln", Verlag J. Neumann-Neudamm; Melsungen; Berlin Basel; Wien.

Rohweder, S. A., R. F. Barnes and Ned Jorgensen. 1976. The use of chemical analysis to establish hay standards. The First International Symposium Feed Composition, Animal Nutrient Requirements, and Computerization of Diets (Edited by P. V. Fonnesbeck, L. E. Harris and L. C. Kearl), Utah Agr. Exp. Sta., Utah State University, Logan, Utah, USA 84322.

Yearbook Fishery Statistics. 1977. Vol. 44. Food and Agriculture Organization of the United Nations, Via delle Terme di Caracalla 00100, Rome, Italy.

Tables

Previous Page Blank

TABLE 2.1 Facets, Elements, and Descriptors which Portray the International Feed Description, International Feed Name, and Country Names

Facet No.		Element Tag		Descriptors[a]
International Feed Description				
1	Original material (origin)	025	Genus (first)	*TRIFOLIUM*
		030	Species (first)	*PRATENSE*
		035	Variety (first)	
		040	Genus (second)	
		045	Species (second)	
		050	Variety (second)	
		055	Genus (third)	
		060	Species (third)	
		065	Variety (third)	
		070	Genus (fourth)	
		075	Species (fourth)	
		080	Variety (fourth)	
		155	Generic (common) name	CLOVER
		156 for continuation of 155		
		157 for continuation of 156		
		158 for continuation of 157		
		185	Breed or kind	RED
		186 for continuation of 185		
		195	Strain or chemical formula	
		196 for continuation of 195		
2	Part	215		AERIAL PART
		216 for continuation of 215		
		217 for continuation of 216		
3	Process	245		SUN-CURED
		246 for continuation of 245		
		247 for continuation of 246		
4	Maturity	275		EARLY BLOOM
		276 for continuation of 275		
5	Cutting	300		CUT 2

Previous Page Blank

TABLE 2.1 Facets, Elements, and Descriptors which Portray the International Feed Description, International Feed Name, and Country Names (Continued)

Facet No.		Element Tag		Descriptors[a]
6	Grade	325		
		326	for continuation of 325	
		327	for continuation of 326	
International Feed Name				
		350		International Feed Name
		351	for continuation of 350	
		352	for continuation of 351	
		360		Alternate International Feed Name
		361	for continuation of 362	
		362	for continuation of 361	
		370		Alternate International Feed Name
		371	for continuation of 370	
		372	for continuation of 371	
Country Feed Names				
		425		Country Feed Name (first)
		426	for continuation of 425	
		427	for continuation of 426	
		430		Country Feed Name (second)
		431	for continuation of 430	
		432	for continuation of 431	
		435		Country Feed Name (third)
		436	for continuation of 435	
		437	for continuation of 436	
		440–504 in groups of five as above		Country Feed Name (fourth–fifteenth)

[a] Facets and descriptors pertain only to the International Feed Descriptions (elements 025 to 325).

TABLE 2.2 Examples of Facets, Elements and Descriptors Used to Compose the International Feed Description

Facet No.	Description	Element Tags	Descriptors
1	Origin		
	Genus	025	*Trifolium*
	species	030	*pratense*
	variety	035	———
	Generic (common) name	155	Clover
	breed or kind	185	red
	strain	195	———
2	part	215	aerial part
3	process	245	sun–cured
4	maturity	275	early bloom
5	cut	300	cut 2
6	grade	325	———

TABLE 3.1 Country or Region Codes

Code	Country
001	Abu Dhabi
005	Afghanistan
996	Africa, Central (Region)
998	Africa, East (Region)
675	Africa, North (Region)
997	Africa, West (Region)
018	Albania
025	Algeria
036	Andorra
045	Ango
054	Argentina
090	Australia
072	Austria
095	Bahrain
100	Bangladesh
103	Barbados
	Belgium Congo, see Zaire
108	Belgium
180	Belize (British Honduras)
295	Benin (Dahomey)
126	Bolivia
135	Botswana
144	Brazil
198	Bulgaria
200	Burma
205	Burundi
	Cambodia, see Khmer Rep.
214	Cameroon
216	Canada
222	Central African Rep.
223	Central America (Region)
	Ceylon, see Sri-Lanka
230	Chad
234	Chile
238	China, Peoples Dem. Rep. of
252	Colombia
245	Comoro Islands
260	Congo, Peoples Rep. of
270	Costa Rica
278	Cuba
284	Cyprus
288	Czechoslovakia
306	Denmark
316	Dominican Republic
323	Ecuador
340	Egypt, Arab Rep. of
348	El Salvador
467	Equatorial Guinea
350	Ethiopia
352	Fiji
357	Finland
375	France
393	French Guiana
903	French Territory of Afars and Issas
400	Gabonese Rep.
405	Gambia
411	Germany, Fed. Rep. of (WG)
414	Germany, Dem. Rep. of (EG)
418	Ghana
447	Greece
456	Guadeloupe
465	Guatemala
470	Guinea (Fr.)
184	Guinea-Bissau
162	Guyana (British Guiana)
473	Haiti
483	Honduras
501	Hungary
506	Iceland
509	India
511	Indonesia
513	Iran
515	Iraq
519	Ireland
525	Israel
537	Italy
542	Ivory Coast
547	Jamaica
545	Japan
549	Jordan
552	Kenya
152	Khmer Rep. (Cambodia)
156	Korea, Peoples Rep. of (North)
157	Korea, Rep. of (South)

TABLE 3.1 Country and Region Codes (Continued)

Code	Country
158	Kuwait
554	Laos
176	Lebanon
164	Lesotho
168	Liberia
172	Libyan, Arab Rep.
555	Liechtenstein
572	Luxembourg
578	Malagasy Rep. (Madagascar)
579	Malawi
580	Malaysia (Malaya)
581	Maldives
583	Mali (Sudanese Rep.)
585	Malta
587	Mauritania
588	Mauritius
590	Mexico
608	Monaco
610	Morocco
612	Mozambique
622	Nepal
626	Netherlands
644	New Zealand
662	Nicaragua
666	Niger
670	Nigeria
680	Norway
618	Oman (Muscat and Oman)
689	Pakistan
698	Panama
716	Paraguay
734	Peru
742	Philippines
752	Poland
770	Portugal
778	Puerto Rico
779	Qatar
	Rhodesia, see Zimbabwe
788	Romania
	Russia, see USSR
800	Rwanda
805	San Marino
810	Saudi Arabia
820	Senegal
825	Seychelles
830	Sierra Leone
835	Singapore
873	Somalia (Somali Rep.)
875	South Africa, Rep. of
880	Spain
227	Sri-Lanka
890	Sudan
900	Surinam
648	Swaziland
901	Sweden
652	Switzerland
656	Syrian Arab Rep.
658	Taiwan (Formosa)
902	Tanzania
904	Thailand
678	Togo
905	Trinidad and Tobago
910	Tunisia
913	Turkey
920	Uganda
925	United Arab Emirates
429	United Kingdom (Great Britain)
930	United States
940	Upper Volta
948	Uruguay
796	USSR (Russia)
966	Venezuela
967	Vietnam, Socialist Rep. of
969	West Indies Associated States (Caribbean Is.)
975	Yemen, Arab Rep. of
976	Yemen, People's Dem. Rep. of
983	Yugoslavia
106	Zaire
995	Zambia
780	Zimbabwe (Rhodesia)

TABLE 3.2 Language Codes

Code	Language
000	Scientific Name
098	African Languages
008	Afrikaans (South Africa)
052	Aino (Japan)
068	Amharic - Amarinya (Ethiopia)
045	Annamese (Vietnam)
023	Arabic
041	Assamese (India)
077	Baya (Cameroons)
029	Bengali (Bangladesh)
030	Bihari (India)
048	Bisayan (Philippine)
020	Bulgarian
042	Burmese (Burma)
049	Chinese
060	Chinyanja (Malawi)
017	Czech
013	Danish
078	Dscherma (Sahel–Zone)
002	English
070	Filippino (Philippine)
011	Finnish
009	Flemish
003	French
054	Fulah Peul (W. Africa)
069	Galinya (Ethiopia)
001	German
028	Gujarati (India)
053	Haussa (W. Africa)
024	Hebrew
058	Herero (SW Africa, Namibia)
026	Hindi (India)
018	Hungarian
075	India Languages
004	Italian
050	Japanese
046	Javanese (Java)
036	Kanarese (India)
066	Kikamba (Kenya)
055	Kisuaheli–Kingwana (E. Africa, Zaire)
051	Korean
037	Lahnda (Pakistan and Kashmiri)
056	Lingala (Zaire)
061	Luganda (Uganda)
065	Luo (Kenya)
044	Malay (Malaysia)
040	Malayalam (India)
032	Marathi (India)
064	Masai (Kenya and Tanzania)
059	Nama (Khoisan) = Hottentot (SW Africa, Namibia)
063	Nandi–Kipsigis (Kenya)
007	Netherlandian
012	Norweigan
035	Oriya (India)
062	Orutoro–Orunyori–Luhaya–Lunyan Luziba–Luciga–W. Uganda
057	Ovambo (SW Africa, Nambia)
067	Pacific Languages (Oceania)
076	Pakistan, West Languages
025	Persian
016	Polish
006	Portuguese
033	Punjabi (India and Pakistan)
034	Rajasthani (India)
019	Romanian
014	Russian
021	Serbo–Croatian (Yugoslavian)
043	Siamese (Thailand)
039	Sinhalese (Sri Lanka)
005	Spanish
047	Sundanese (Indonesia)
010	Swedish
079	Tamaschek (Sahel–Zone)
038	Tamil (Sri Lanka)
080	Teda (Tibesti) (Sahara Mountains)
031	Telugu (India)
022	Turkish
015	Ukrainian
099	Unknown Languages
027	Urdu (India)

TABLE 3.3 Feed Classes

Class Number	Class Denominations and Explanations
1	*Dry forages and roughages* All forages and roughages cut and cured and other products with more than 18% crude fiber or containing more than 35% cell wall (dry basis). Forages and roughages are low in net energy per unit weight usually because of the high cell wall content. Example forages: hay STRAW stover (AERIAL PART WITHOUT EARS WITHOUT HUSKS (for Maize) OR AERIAL PART WITHOUT HEADS (for Sorghum) Example roughages: HULLS PODS
2	*Pasture, range plants, and forages fed fresh* Included in this group are all forage feeds either not cut (including feeds cured on the stem) or cut and fed fresh.
3	*Silages* This class includes only ensiled forages (MAIZE, ALFALFA, GRASS, etc.), but not ensiled FISH, GRAIN, ROOTS, and TUBERS.
4	*Energy feeds* Products with less than 20% protein and less than 18% crude fiber or less than 35% cell wall (dry basis), as for example GRAIN, mill by-products, FRUIT, NUTS, ROOTS, and TUBERS. Also, when these feeds are ensiled they are classified as energy feeds.
5	*Protein supplements* Products which contain 20% or more of protein (dry basis) from animal origin (including ensiled products) as well as oil meals, GLUTEN, etc.
6	*Mineral supplements*
7	*Vitamin supplements* Including ensiled yeast.
8	*Additives* Feed supplements such as antibiotics, coloring material, flavors, hormones, and medicants.

TABLE 3.4a Part Descriptors Changed or Deleted When Composing the International Feed Name from the International Feed Description

Item Number	Descriptors in International Feed Description	Descriptors or Terms Used in International Feed Name
1	AERIAL PART	Deleted
2	AERIAL PART OIL RESIDUE	Deleted
3	BLUBBER OIL RESIDUE	BLUBBER
4	BONE OIL RESIDUE	BONES
5	BRAN WITH GERMS OIL RESIDUE	BRAN WITH GERMS
6	BRAN WITH GERMS WITH HULLS OIL RESIDUE	BRAN WITH GERMS WITH HULLS
7	CARCASS RESIDUE	MEAT
8	CARCASS RESIDUE WITH BLOOD	Tankage
9	CARCASS RESIDUE WITH BLOOD WITH BONE	Tankage with bone
10	CARCASS RESIDUE WITH BLOOD WITH RUMEN CONTENTS	Tankage with rumen contents
11	CARCASS RESIDUE WITH BONE	MEAT WITH BONE
12	FLOUR OIL RESIDUE	FLOUR
13	FRUIT OIL RESIDUE	FRUIT
14	FRUIT WITHOUT PITS OIL RESIDUE	FRUIT WITHOUT PITS
15	FRUIT WITHOUT SEEDS OIL RESIDUE	FRUIT WITHOUT SEEDS
16	GERMS OIL RESIDUE	GERMS
17	GERMS WITHOUT SOLUBLES OIL RESIDUE	GERMS WITHOUT SOLUBLES
18	GLUE BY-PRODUCT	GLUE RESIDUE
19	GLUTEN LOW GLUTAMIC ACID	GLUTEN
20	GRAIN OIL RESIDUE	GRAIN
21	GRAIN SCOURINGS	SCOURINGS
22	GRAIN SCREENINGS	SCREENINGS
23	GRAIN SCREENINGS REFUSE	SCREENINGS REFUSE
24	GRAIN STARCH	STARCH
25	GRITS BY-PRODUCT OIL RESIDUE	GRITS BY-PRODUCT
26	GRITS OIL RESIDUE	GRITS
27	KERNELS OIL RESIDUE	KERNELS
28	KERNELS WITH COATS OIL RESIDUE	KERNELS WITH COATS
29	KERNELS WITH COATS WITH SOME PODS OIL RESIDUE	KERNELS WITH COATS WITH SOME PODS
30	LEAVES OIL RESIDUE	LEAVES
31	LIVERS OIL RESIDUE	LIVERS
32	MEAT OIL RESIDUE	MEAT
33	MEATS OIL RESIDUE	MEATS
34	MEATS WITH HUSKS OIL RESIDUE	MEATS WITH HUSKS
35	MEATS WITH SHELLS OIL RESIDUE	MEATS WITH SHELLS
36	MEATS WITH SOME SHELLS OIL RESIDUE	MEATS WITH SOME SHELLS
37	OIL SLUDGE OIL RESIDUE	OIL SLUDGE

TABLE 3.4a Part Descriptors Changed or Deleted When Composing the International Feed Name from the International Feed Description (Continued)

Item Number	Descriptors in International Feed Description	Descriptors or Terms Used in International Feed Name
38	PITS OIL RESIDUE	PITS
39	POLISHINGS OIL RESIDUE	POLISHINGS
40	PROTEIN OIL RESIDUE	PROTEIN
41	PUPAE OIL RESIDUE	PUPAE
42	ROOTS OIL RESIDUE	ROOTS
43	SEED COATS OIL RESIDUE	SEED COATS
44	SEEDS GUMS ADDED OIL RESIDUE	SEEDS GUMS ADDED
45	SEEDS HULLS ADDED OIL RESIDUE	SEEDS HULLS ADDED
46	SEEDS LOW GOSSYPOL OIL RESIDUE	SEEDS LOW GOSSYPOL
47	SEEDS LOW PROTEIN LOW CARBOHYDRATES OIL RESIDUE	SEEDS LOW PROTEIN LOW CARBOHYDRATES
48	SEEDS OIL	OIL
49	SEEDS OIL RESIDUE	SEEDS
50	SEEDS UNSCREENED OIL RESIDUE	SEEDS UNSCREENED
51	SEEDS WITH SOME HULLS OIL RESIDUE	SEEDS WITH SOME HULLS
52	SEEDS WITHOUT COATS OIL RESIDUE	SEEDS WITHOUT COATS
53	SEEDS WITHOUT HULLS OIL RESIDUE	SEEDS WITHOUT HULLS
54	TUBERS WITHOUT PEELINGS OIL RESIDUE	TUBERS WITHOUT PEELINGS
55	VISCERA WITH FEET WITH HEADS	BY-PRODUCT
56	VISCERA WITH FEET WITH HEADS WITH FEATHERS	BY-PRODUCT WITH FEATHERS
57	WHEY WITHOUT ALBUMIN LOW LACTOSE	WHEY SOLUBLES
58	WHOLE OR CUTTINGS	Deleted
59	WHOLE OR CUTTINGS OIL RESIDUE	Deleted

TABLE 3.4b Example International Feed Description and International Feed Name Corresponding to the Parts Listed in Table 3.4a

International Feed No.	Item No. From Table 3.4a	International Feed Description	International Feed Name
3-07-840	1	ALFALFA, AERIAL PART, WILTED ENSILED, FULL BLOOM, CUT 1	ALFALFA, SILAGE WILTED, FULL BLOOM, CUT 1
1-00-030	2	ALFALFA, AERIAL PART OIL RESIDUE, SOLVENT EXTRACTED GROUND	ALFALFA, MEAL SOLVENT EXTRACTED
4-09-293	3	SEAL, HARBOUR, BLUBBER OIL RESIDUE, SOLVENT EXTRACTED	SEAL, HARBOUR, BLUBBER, SOLVENT EXTRACTED
6-08-338	4	ANIMAL, BONE OIL RESIDUE, BOILED SOLVENT EXTRACTED GROUND	ANIMAL, BONES, MEAL SOLVENT EXTRACTED
4-03-930	5	RICE, BRAN WITH GERMS OIL RESIDUE, SOLVENT EXTRACTED GROUND	RICE, BRAN WITH GERMS, MEAL SOLVENT EXTRACTED
1-13-554	6	RICE, BRAN WITH GERMS WITH HULLS OIL RESIDUE, SOLVENT EXTRACTED GROUND	RICE, BRAN WITH GERMS WITH HULLS, MEAL SOLVENT EXTRACTED
5-00-385	7	ANIMAL, CARCASS RESIDUE, DRY RENDERED GROUND	ANIMAL, MEAT, MEAL RENDERED
5-00-386	8	ANIMAL, CARCASS RESIDUE WITH BLOOD, DRY OR WET RENDERED	ANIMAL, TANKAGE, RENDERED
5-00-387	9	ANIMAL, CARCASS RESIDUE WITH BLOOD WITH BONE, DRY OR WET RENDERED GROUND	ANIMAL, TANKAGE WITH BONE, MEAL RENDERED
5-08-336	10	ANIMAL,CARCASS RESIDUE WITH BLOOD WITH RUMEN CONTENTS, DRY OR WET RENDERED GROUND	ANIMAL, TANKAGE WITH RUMEN CONTENTS, MEAL RENDERED
5-00-388	11	ANIMAL, CARCASS RESIDUE WITH BONE, DRY RENDERED GROUND	ANIMAL, MEAT WITH BONE, MEAL RENDERED
5-03-645	12	PEANUT, FLOUR OIL RESIDUE, MECHANICAL EXTRACTED	PEANUT, FLOUR, MECHANICAL EXTRACTED
4-14-459	13	PEPPER, FRUIT OIL RESIDUE, SOLVENT EXTRACTED	PEPPER, FRUIT, SOLVENT EXTRACTED
4-08-475	14	OLIVE, FRUIT WITHOUT PITS OIL RESIDUE, SOLVENT EXTRACTED GROUND	OLIVE, FRUIT WITHOUT PITS, MEAL SOLVENT EXTRACTED
1-11-746	15	COFFEE, FRUIT WITHOUT SEEDS OIL RESIDUE, MECHANICAL EXTRACTED	COFFEE, FRUIT WITHOUT SEEDS, MECHANICAL EXTRACTED
5-02-894	16	MAIZE, GERMS OIL RESIDUE, DRY MILLED MECHANICAL EXTRACTED GROUND	MAIZE, GERMS, MEAL MECHANICAL EXTRACTED
5-02-898	17	MAIZE, GERMS WITHOUT SOLUBLES OIL RESIDUE, WET MILLED SOLVENT EXTRACTED GROUND	MAIZE, GERMS WITHOUT SOLUBLES, MEAL SOLVENT EXTRACTED
5-01-966	18	FISH, GLUE BY-PRODUCT, DEHYDRATED GROUND	FISH, GLUE RESIDUE, MEAL
5-02-901	19	MAIZE, GLUTEN LOW GLUTAMIC ACID, HYDROLYZED DEHYDRATED	MAIZE, GLUTEN, HYDROLYZED
4-13-332	20	MAIZE, GRAIN OIL RESIDUE, SOLVENT EXTRACTED GROUND	MAIZE, GRAIN, MEAL SOLVENT EXTRACTED
4-02-152	21	CEREALS, GRAIN SCOURINGS	CEREALS, SCOURINGS
4-02-156	22	CEREALS, GRAIN SCREENINGS	CEREALS, SCREENINGS
4-02-151	23	CEREALS, GRAIN SCREENINGS REFUSE	CEREALS, SCREENINGS REFUSE
4-08-023	24	MAIZE, GRAIN STARCH, HEAT HYDROLYZED	MAIZE, STARCH, HEAT HYDROLYZED
4-08-025	25	MAIZE, GRITS BY-PRODUCT OIL RESIDUE, SOLVENT EXTRACTED	MAIZE, GRITS BY-PRODUCT, SOLVENT EXTRACTED
5-04-592	26	SOYBEAN, GRITS OIL RESIDUE, SOLVENT EXTRACTED	SOYBEAN, GRITS, SOLVENT EXTRACTED
5-03-648	27	PEANUT, KERNELS OIL RESIDUE, MECHANICAL EXTRACTED CAKED	PEANUT, KERNELS, MECHANICAL EXTRACTED CAKED
5-26-963	28	PEANUT, KERNELS WITH COATS OIL RESIDUE, SOLVENT EXTRACTED TOASTED GROUND	PEANUT, KERNELS WITH COATS, MEAL SOLVENT EXTRACTED TOASTED
5-24-754	29	PEANUT, KERNELS WITH COATS WITH SOME PODS OIL RESIDUE, MECHANICAL EXTRACTED GROUND, 4.1-8% FAT	PEANUT, KERNELS WITH COATS WITH SOME PODS, MEAL MECHANICAL EXTRACTED, 4.1-8% FAT
2-01-673	30	CREOSOTEBUSH, LEAVES OIL RESIDUE, ALCOHOL EXTRACTED	CREOSOTEBUSH, LEAVES, ALCOHOL EXTRACTED
5-01-968	31	FISH, LIVERS OIL RESIDUE, MECHANICAL EXTRACTED GROUND	FISH, LIVERS, MEAL MECHANICAL EXTRACTED
4-05-163	32	WHALE, MEAT OIL RESIDUE, SOLVENT EXTRACTED GROUND	WHALE, MEAT, MEAL SOLVENT EXTRACTED
5-11-966	33	PALM, COHUNE, MEATS OIL RESIDUE, MECHANICAL EXTRACTED CAKED	PALM, COHUNE, MEATS, MECHANICAL EXTRACTED CAKED

TABLE 3.4b Example International Feed Description and International Feed Name Corresponding to the Parts Listed in Table 3.4a (Continued)

International Feed No.	Item No. From Table 3.4a	International Feed Description	International Feed Name
4-12-244	34	CASHEW, COMMON, MEATS WITH HUSKS OIL RESIDUE, MECHANICAL EXTRACTED GROUND	CASHEW, COMMON, MEATS WITH HUSKS, MEAL MECHANICAL EXTRACTED
5-25-591	35	WALNUT, PERSIAN, MEATS WITH SHELLS OIL RESIDUE, MECHANICAL EXTRACTED GROUND	WALNUT, PERSIAN, MEATS WITH SHELLS, MEAL MECHANICAL EXTRACTED
5-25-588	36	BEECH, EUROPEAN, MEATS WITH SOME SHELLS OIL RESIDUE, SOLVENT EXTRACTED GROUND	BEECH, EUROPEAN, MEATS WITH SOME SHELLS, MEAL SOLVENT EXTRACTED
4-20-663	37	OILPALM, AFRICAN, OIL SLUDGE OIL RESIDUE, SOLVENT EXTRACTED	OILPALM, AFRICAN, OIL SLUDGE, SOLVENT EXTRACTED
5-27-525	38	APRICOT, PITS OIL RESIDUE, MECHANICAL EXTRACTED GROUND	APRICOT, PITS, MEAL MECHANICAL EXTRACTED
4-13-300	39	RICE, POLISHINGS OIL RESIDUE, MECHANICAL EXTRACTED	RICE, POLISHINGS, MECHANICAL EXTRACTED
5-09-227	40	FISH, PROTEIN OIL RESIDUE, SOLVENT EXTRACTED	FISH, PROTEIN, SOLVENT EXTRACTED
5-20-950	41	SILKWORM, PUPAE OIL RESIDUE, SOLVENT EXTRACTED	SILKWORM, PUPAE, SOLVENT EXTRACTED
4-26-371	42	LICORICE, ROOTS OIL RESIDUE, MECHANICAL EXTRACTED GROUND	LICORICE, ROOTS, MEAL MECHANICAL EXTRACTED
1-13-575	43	CACAO, SEED COATS OIL RESIDUE, MECHANICAL EXTRACTED GROUND	CACAO, SEED COATS, MEAL MECHANICAL EXTRACTED
5-20-657	44	RAPE, TURNIP, SEEDS GUMS ADDED OIL RESIDUE, SOLVENT EXTRACTED GROUND	RAPE, TURNIP, SEEDS GUMS ADDED, MEAL SOLVENT EXTRACTED
5-09-636	45	COTTON, UPLAND, SEEDS HULLS ADDED OIL RESIDUE, MECHANICAL EXTRACTED GROUND	COTTON, UPLAND, SEEDS HULLS ADDED, MEAL MECHANICAL EXTRACTED
5-09-002	46	COTTON, SEEDS LOW GOSSYPOL OIL RESIDUE, MECHANICAL EXTRACTED GROUND	COTTON, SEEDS LOW GOSSYPOL, MEAL MECHANICAL EXTRACTED
5-04-613	47	SOYBEAN, SEEDS LOW PROTEIN LOW CARBOHYDRATES OIL RESIDUE, SOLVENT EXTRACTED GROUND	SOYBEAN, SEEDS LOW PROTEIN LOW CARBOHYDRATES, MEAL SOLVENT EXTRACTED
4-20-836	48	COTTON, SEEDS OIL	COTTON, OIL

TABLE 3.5a Process Descriptors Changed or Deleted When Composing the International Feed Name from the International Feed Description

Item Number	Descriptors in International Feed Description	Descriptors or Terms Used in International Feed Name
1	ALCOHOL EXTRACTED GROUND	Meal alcohol extracted
2	BOILED DEHYDRATED GROUND	Meal boiled
3	BOILED ENSILED	Silage boiled
4	BOILED MECHANICAL EXTRACTED GROUND	Meal boiled mechanical extracted
5	BOILED PREPRESSED SOLVENT EXTRACTED GROUND	Meal boiled prepressed solvent extracted
6	BOILED SOLVENT EXTRACTED GROUND	Meal boiled solvent extracted
7	CONVENTIONAL COOKER DEHYDRATED GROUND	Meal conventional cooker dehydrated
8	DEHYDRATED COARSE GROUND	COARSE GROUND
9	DEHYDRATED FINE GROUND	FINE GROUND
10	DEHYDRATED GROUND	meal
11	DEHYDRATED OR SUN-CURED	DEHYDRATED
12	DRY MILLED	Deleted
13	DRY MILLED MECHANICAL EXTRACTED GROUND	Meal mechanical extracted
14	DRY MILLED SOLVENT EXTRACTED GROUND	Meal solvent extracted
15	DRY OR WET RENDERED	RENDERED
16	DRY OR WET RENDERED GROUND	Meal rendered
17	DRY RENDERED	Deleted
18	DRY RENDERED GROUND	Meal rendered
19	ENSILED	Silage
20	ENSILED AMMONIATED	Silage ammoniated
21	ENSILED DEHYDRATED	Silage dehydrated
22	ENSILED DEHYDRATED PELLETED	Silage dehydrated pelleted
23	EXTRACTION UNSPECIFIED GROUND	Meal extraction unspecified
24	FLASH DEHYDRATED GROUND	Meal flash dehydrated
25	FREEZE DEHYDRATED GROUND	Meal freeze dehydrated
26	HEAT AND ACID PRECIPITATED DEHYDRATED	Deleted
27	HYDROLYZED DEHYDRATED	HYDROLYZED
28	HYDROLYZED DEHYDRATED GROUND	Meal hydrolyzed
29	MALTASE TREATED DEHYDRATED GROUND	Meal maltase treated
30	MANUALLY EXTRACTED ENSILED	Silage manually extracted
31	MECHANICAL EXTRACTED GROUND	Meal mechanical extracted
32	MECHANICAL EXTRACTED STEAMED GROUND	Meal mechanical extracted steamed
33	MECHANICAL EXTRACTED TOASTED GROUND	Meal mechanical extracted toasted
34	PREPRESSED SOLVENT EXTRACTED GROUND	Meal prepressed solvent extracted

TABLE 3.5a Process Descriptors Changed or Deleted When Composing the International Feed Name from the International Feed Description (Continued)

Item Number	Descriptors in International Feed Description	Descriptors or Terms Used in International Feed Name
35	SOLVENT EXTRACTED AMMONIATED GROUND	Meal solvent extracted ammoniated
36	SOLVENT EXTRACTED AUTOCLAVED GROUND	Meal solvent extracted autoclaved
37	SOLVENT EXTRACTED GROUND	Meal solvent extracted
38	SOLVENT EXTRACTED TOASTED GROUND	Meal solvent extracted toasted
39	SPRAY DEHYDRATED GROUND	Meal spray dehydrated
40	STEAMED DEHYDRATED GROUND	Meal steamed
41	STEAMED ENSILED	Silage steamed
42	SUN-CURED MECHANICAL EXTRACTED GROUND	Meal sun-cured mechanical extracted
43	WASHED ENSILED	Silage washed
44	WATER EXTRACTED DEHYDRATED GROUND	Meal water extracted
45	WET MILLED DEHYDRATED GROUND	Meal
46	WET MILLED MECHANICAL EXTRACTED GROUND	Meal mechanical extracted
47	WET MILLED SOLVENT EXTRACTED GROUND	Meal solvent extracted
48	WILTED ENSILED	Silage wilted

TABLE 3.5b Example International Feed Description and International Feed Names Corresponding to the Processes Listed in Table 3.5a

International Feed No.	Item No. From Table 3.5a	International Feed Description	International Feed Name
4-30-154	1	HORSECHESTNUT, COMMON, MEATS WITH SHELLS, ALCOHOL EXTRACTED GROUND	HORSECHESTNUT, COMMON, MEATS WITH SHELLS, MEAL ALCOHOL EXTRACTED
4-07-976	2	GARBAGE, MUNICIPAL, BOILED DEHYDRATED GROUND	GARBAGE, MUNICIPAL, MEAL BOILED
4-03-767	3	POTATO, TUBERS, BOILED ENSILED	POTATO, TUBERS, SILAGE BOILED
5-13-202	4	SESAME, SEEDS OIL RESIDUE, BOILED MECHANICAL EXTRACTED GROUND	SESAME, SEEDS, MEAL BOILED MECHANICAL EXTRACTED
5-13-203	5	COTTON, UPLAND, SEEDS OIL RESIDUE, BOILED PREPRESSED SOLVENT EXTRACTED GROUND	COTTON, UPLAND, SEEDS, MEAL BOILED PREPRESSED SOLVENT EXTRACTED
6-13-775	6	CATTLE, BONE OIL RESIDUE, BOILED SOLVENT EXTRACTED GROUND	CATTLE, BONES, MEAL BOILED SOLVENT EXTRACTED
5-26-005	7	ANIMAL, BLOOD, CONVENTIONAL COOKER DEHYDRATED GROUND	ANIMAL, BLOOD, MEAL CONVENTIONAL COOKER DEHYDRATED
1-02-780	8	MAIZE, COBS, DEHYDRATED COARSE GROUND	MAIZE, COBS, COARSE GROUND
1-02-781	9	MAIZE, COBS, DEHYDRATED FINE GROUND	MAIZE, COBS, FINE GROUND
1-00-018	10	ALFALFA, AERIAL PART, DEHYDRATED GROUND, LATE VEGETATIVE	ALFALFA, MEAL, LATE VEGETATIVE
4-13-452	11	PEACH, FRUIT WITHOUT PITS, DEHYDRATED OR SUN-CURED	PEACH, FRUIT WITHOUT PITS, DEHYDRATED
4-05-190	12	WHEAT, BRAN, DRY MILLED	WHEAT, BRAN
5-25-556	13	MAIZE, GERMS OIL RESIDUE, DRY MILLED MECHANICAL EXTRACTED GROUND, 4.1-8% FAT	MAIZE, GERMS, MEAL MECHANICAL EXTRACTED, 4.1-8% FAT
5-02-868	14	MAIZE, GERMS OIL RESIDUE, DRY MILLED SOLVENT EXTRACTED GROUND	MAIZE, GERMS, MEAL SOLVENT EXTRACTED
5-00-386	15	ANIMAL, CARCASS RESIDUE WITH BLOOD, DRY OR WET RENDERED	ANIMAL, TANKAGE, RENDERED
5-08-786	16	ANIMAL, BY-PRODUCT, DRY OR WET RENDERED GROUND	ANIMAL, BY-PRODUCT, MEAL RENDERED
5-04-791	17	SWINE, CRACKLINGS, DRY RENDERED	SWINE, CRACKLINGS
5-10-142	18	ANIMAL, CARCASS RESIDUE, DRY RENDERED GROUND, 40% PROTEIN	ANIMAL, MEAT, MEAL RENDERED, 40% PROTEIN
3-00-225	19	ALFALFA, AERIAL PART AIV PRESERVATIVE ADDED, ENSILED	ALFALFA, AERIAL PART AIV PESERVATIVE ADDED, SILAGE
3-26-647	20	OATS, STRAW, ENSILED AMMONIATED	OATS, STRAW, SILAGE AMMONIATED
3-13-793	21	SORGHUM, AERIAL PART, ENSILED DEHYDRATED	SORGHUM, SILAGE DEHYDRATED
3-08-812	22	ALFALFA, AERIAL PART, ENSILED DEHYDRATED PELLETED	ALFALFA, SILAGE DEHYDRATED PELLETED
5-24-061	23	FISH, COD, LIVERS OIL RESIDUE, EXTRACTION UNSPECIFIED GROUND	FISH, COD, LIVERS, MEAL EXTRACTION UNSPECIFIED
5-26-006	24	ANIMAL, BLOOD, FLASH DEHYDRATED GROUND	ANIMAL, BLOOD, MEAL FLASH DEHYDRATED
1-14-457	25	LEADTREE, WHITEPOPINAC, LEAVES, FREEZE DEHYDRATED GROUND	LEADTREE, WHITEPOPINAC, LEAVES, MEAL FREEZE DEHYDRATED
5-01-177	26	CATTLE, WHEY ALBUMIN, HEAT AND ACID PRECIPITATED DEHYDRATED	CATTLE, WHEY ALBUMIN
4-01-184	27	CATTLE, WHEY, HYDROLYZED DEHYDRATED	CATTLE, WHEY, HYDROLYZED
5-03-795	28	POULTRY, FEATHERS, HYDROLYZED DEHYDRATED GROUND	POULTRY, FEATHERS, MEAL HYDROLYZED
4-02-885	29	MAIZE, STARCH PROCESS RESIDUE, MALTASE TREATED DEHYDRATED GROUND	MAIZE, STARCH PROCESS RESIDUE, MEAL MALTASE TREATED
4-24-549	30	BEET, SUGAR, PULP, MANUALLY EXTRACTED ENSILED	BEET, SUGAR, PULP, SILAGE MANUALLY EXTRACTED
5-14-666	31	ADANSONIA, GRANDIDIERI, SEEDS OIL RESIDUE, MECHANICAL EXTRACTED GROUND	ADANSONIA, GRANDIDIERI, SEEDS, MEAL MECHANICAL EXTRACTED
5-01-571	32	COCONUT, MEATS OIL RESIDUE, MECHANICAL EXTRACTED STEAMED GROUND	COCONUT, MEATS, MEAL MECHANICAL EXTRACTED STEAMED
5-24-767	33	SOYBEAN, SEEDS OIL RESIDUE, MECHANICAL EXTRACTED TOASTED GROUND	SOYBEAN, SEEDS, MEAL MECHANICAL EXTRACTED TOASTED
5-08-135	34	RAPE, SUMMER, SEEDS OIL RESIDUE, PREPRESSED SOLVENT EXTRACTED GROUND	RAPE, SUMMER, SEEDS, MEAL PREPRESSED SOLVENT EXTRACTED
5-09-352	35	COTTON, SEEDS OIL RESIDUE, SOLVENT EXTRACTED AMMONIATED GROUND	COTTON, SEEDS, MEAL SOLVENT EXTRACTED AMMONIATED
5-26-965	36	PEANUT, KERNELS WITH COATS OIL RESIDUE, SOLVENT EXTRACTED AUTOCLAVED GROUND	PEANUT, KERNELS WITH COATS, MEAL SOLVENT EXTRACTED AUTOCLAVED

TABLE 3.5b Example International Feed Description and International Feed Names Corresponding to the Processes Listed in Table 3.5a (Continued)

International Feed No.	Item No. From Table 3.5a	International Feed Description	International Feed Name
5-25-599	37	AKEE, SEEDS OIL RESIDUE, SOLVENT EXTRACTED GROUND	AKEE, SEEDS, MEAL SOLVENT EXTRACTED
5-04-607	38	SOYBEAN, SEEDS OIL RESIDUE, SOLVENT EXTRACTED TOASTED GROUND	SOYBEAN, SEEDS, MEAL SOLVENT EXTRACTED TOASTED
5-00-381	39	ANIMAL, BLOOD, SPRAY DEHYDRATED GROUND	ANIMAL, BLOOD, MEAL SPRAY DEHYDRATED
6-00-400	40	ANIMAL, BONES, STEAMED DEHYDRATED GROUND	ANIMAL, BONES, MEAL STEAMED
4-25-024	41	ARTICHOKE, JERUSALEM, TUBERS, STEAMED ENSILED	ARTICHOKE, JERUSALEM, TUBERS, SILAGE STEAMED
5-24-020	42	FISH, WHOLE OR CUTTINGS OIL RESIDUE, SUN-CURED MECHANICAL EXTRACTED GROUND	FISH, MEAL SUN-CURED MECHANICAL EXTRACTED
3-22-128	43	BEET, COMMON, LEAVES, WASHED ENSILED	BEET, COMMON, LEAVES, SILAGE WASHED
5-00-396	44	ANIMAL, LIVERS, WATER EXTRACTED DEHYDRATED GROUND	ANIMAL, LIVERS, MEAL WATER EXTRACTED
5-04-388	45	SORGHUM, GLUTEN, WET MILLED DEHYDRATED GROUND	SORGHUM, GLUTEN, MEAL
5-25-555	46	MAIZE, GERMS OIL RESIDUE, WET MILLED MECHANICAL EXTRACTED GROUND, 4.1-8% FAT	MAIZE, GERMS, MEAL MECHANICAL EXTRACTED, 4.1-8% FAT
5-02-898	47	MAIZE, GERMS WITHOUT SOLUBLES OIL RESIDUE, WET MILLED SOLVENT EXTRACTED GROUND	MAIZE, GERMS WITHOUT SOLUBLES, MEAL SOLVENT EXTRACTED
3-00-221	48	ALFALFA, AERIAL PART, WILTED ENSILED	ALFALFA, SILAGE WILTED

TABLE 4.1 Instructions for Filling In the Bibliographic Reference Form

Tag	
001	The Bibliographic Reference Number allows 9 spaces for an alpha/numeric code (see Figure 4.1)
100	*Personal Names and Affiliation* enter the name(s) of the author(s) – ie the person(s) chiefly responsible for the creation of the intellectual content of the documentary unit. single author is entered surname first (with its first letter a capital) followed by a comma and a space. initials are entered after the surname separated from each other by a full stop but not a space. omit all accents. enter all personal names in the sequence given on the document separated from each other by a semicolon and a space. if all authors share a common relator give this in brackets after the last name, for example, (eds.), (comps). if all authors share the same affiliation enter the affiliation after the last author, if not the same as the corporate name in tag 110. you may enter the affiliation of each author after each author's name if the affiliations are different. enter affiliations as for corporate names (see below).
110	*Corporate Name* enter the name(s) of the organization(s) identified on the documentary unit as responsible for its content either intellectually or technically, editorially or contractually. always enter a corporate name in upper and lower case, using capitals for the first letter of the first work and for the first letter of all other significant words. always indicate the place and country at the end of the name of the corporate body, the name of the country between brackets. omit accents. give parts of any corporate name in one of the following sequences depending on its complexity: 1 largest element *comma space* place *space bracket* country *bracket.* 2 largest element *comma space* place of the smallest element *space bracket* country *bracket full stop space* smallest element.
Note:	There must be an entry at either tag 100 or tag 110.
200	*English Title* enter the main English title of the documentary unit. if the original title is not in English use any English title in the original document OR translate the title into English and enclose it in square brackets to show it is a translation.
230	*Original Title: Main Title* enter the title in the original language, if not English.
401	*Imprint: Place and Country of Publication* enter the place and country of publication as indicated. the *place* must include the name of the city or town followed by the state or country, etc. the *country* is entered in English and is enclosed in brackets.
402	*Imprint: Publisher* enter the name of the publisher, if any. enter the name of only one publisher. omit words like 'Incorporated, Sons, Limited', etc. omit accents.
403	*Date of Publication* enter the date of publication of the document. use only the year for monographs
500	*Collation* describe the physical extent of a documentary unit expressed in pages, volumes, numbers, parts, supplements, etc. collation elements are abbreviated and standardized English equivalents (p. v. no. pt. suppl.)

TABLE 4.1 Instructions for Filling In the Bibliographic Reference Form (Continued)

Tag		
	convert Roman numbers to Arabic (XXI to 21) for monographs page numbers are given first followed by p. insert a space after a number and after a full stop.	
610	*Notes* enter any note(s) needed, in your opinion, to draw attention to significant information about the documentary unit not brought out by your previous entries. separate notes by a full stop and a space. common terms used are graphs, ref., ill., Bibliographies, tables, Summary, Summaries.	

TABLE 5.1 Example Diagram to Show How Data Can be Combined

Dry Forages

Alfalfa, aerial part, sun-cured, late vegetative →
Alfalfa, aerial part, sun-cured, early bloom →
Alfalfa, aerial part, sun-cured, midbloom →
Alfalfa, aerial part, sun-cured, full bloom →
Alfalfa, aerial part, sun-cured, late bloom →

Alfalfa, aerial part, sun-cured, (all analyses)

Other stages of maturity are generally not combined in the "all analysis" feed because they are considered to be inferior in nutritive value. The feeds to be combined, however, should be a decision to be made at each INFIC Center.

Alfalfa, aerial part, sun-cured, cut 1 →
Alfalfa, aerial part, sun-cured, cut 2 →
Alfalfa, aerial part, sun-cured, cut 3 →
etc.

Alfalfa, aerial part, sun-cured, (all analyses)

Alfalfa, aerial part, sun-cured, late vegetative, cut 1 →
All cuts with late vegetative could be combined into late vegetative

Alfalfa, aerial part, late vegetative

Alfalfa, aerial part, sun-cured, late vegetative, cut 1 →
All stages of maturities with cut 1 from late vegetative to late bloom could be combined into Alfalfa, aerial part, sun-cured, cut 1

Alfalfa, aerial part, sun-cured, cut 1

Feeds with the following process terms are not combined:

pelleted
wafered
cubed

Energy Feeds

Sorghum, Atlas, grain →
Sorghum, E. C. R., grain →
Sorghum, Abu70, grain →

Sorghum, grain

Barley, Black, grain →
Barley, Spring, grain →
Barley, Winter, grain →
Barley, Yellow, grain →

Barley, grain

TABLE 5.2 Codes for State, Province, Department or Similar Country Divisions

Code	Division
Algeria Country Code 025 (Wilayas)	
01	Adrar
02	Algiers
03	Annaba
04	Batna
05	Bechar
06	Bejaia
07	Biskra
08	Blida
09	Bouira
10	Constantine
11	Djelfa
12	El-Asnam
13	Guelma
14	Jijel
15	Laghouat
16	Misila
17	Mascara
18	Medea
19	Mostaganem
20	Oran
21	Ouargla
22	Oum El Bouaghi
23	Saida
24	Setif
25	Sidi-Bel-Abbes
26	Skikda
27	Tamanrasset
28	Tebessa
29	Tiaret
30	Tizi-Ouzou
31	Tlemcen
Benin Country Code 295 (Provinces)	
01	Atacora (Natitingou)
02	Atlantique (Cotonou)
03	Borgoi (Parakou)
04	Mono (Lokossa)
05	Oueme (Porto-Novo)
06	Zou (Abomey)
Botswana Country Code 135 (States)	
01	Central
02	Chobe
03	Ghanzi
04	Kgalagadi
05	Kgatleng
06	Kweneng
07	Ngamiland
08	Northeast
09	Southeast
10	Southern
Burundi Country Code 205 (Provinces)	
01	Bubanza
02	Bujumbura
03	Bururi
04	Gitega
05	Muhinga
06	Muramvya
07	Ngozi
08	Ruyigi
Cameroon Country Code 214 (Provinces)	
01	Centre-Sud (Yaounde)
02	Est (Bertoua)
03	Littoral (Douala)
04	Nord (Garoua)
05	Nord-Quest (Bamenda)
06	Quest (Bafoussam)
07	Sud-Quest (Buea)
Chad Country Code 230 (Prefectures and/or Territories)	
01	Batha (Ati)
02	Biltine (Biltine)
03	Chari-Baguirmi (N'Djamena)
04	Guera (Mongo)
05	Kanem (Mao)
06	Lac (Bol)
07	Logone Occidental (Moundou)
08	Logone Oriental (Doba)
09	Mayo-Kebbi (Bongor)
10	Moyen-Chari (Sarh)
11	Ouaddai (Abeche)
12	Tandjile (Lai)
13	Salamat (Am-Timan)
14	Borkou-Ennedi-Tibesti

TABLE 5.2 Codes for State, Province, Department or Similar Country Divisions (Continued)

Code	Division
Central African Republic Country Code 222 (Prefectures)	
01	Bamingui-Bangoran (N'Dele)
02	Kemo-Gribingui (Sibot)
03	Basse-Kotto (Mobaye)
04	Haute-Kotto (Bria)
05	Lobaye (M'Baiki)
06	M'Bomou (Bangassau)
07	Haut-M'Bomou (Obo)
08	Nana-Mambere (Bouar)
09	Ouaka (Bambari)
10	Ombella-M'Poko (Boali)
11	Ouham (Bossangoa)
12	Ouham-Pende (Bozoum)
13	Haute-Sangha (Berberati)
14	Vakanga (Birao)
Comoro Islands Country Code 245 (Islands)	
01	Anjouan (Mustamudu)
02	Grande-Comore (Moroni)
03	Moheli (Fomboni)
Congo, Peoples Republic of, Country Code 260 (Provinces)	
01	Bouenza (Madingou)
02	Cuvette (Owando)
03	Kouilou (Pointe-Noire)
04	Lekumu (Sibiti)
05	Likouala (Impfondo)
06	Niari (Loubomo)
07	Plateaux (Djambala)
08	Pool (Kinkala)
09	Sangha (Ouesso)
Egypt Country Code 340 (Districts)	
01	Cairo
02	Alexandria
03	Suez
04	Ismaileya
05	Port Said
06	Matrouh
07	Sini
08	El-Bahr El-Ahmar (Red Sea)
09	El-Wadi El-Gadid (New Valley)
10	Behairah
11	Kafr El-Sheikh
12	Gharbeyah
13	Dagahleyah
14	Sargeyah
15	Menofeyah
16	Qalyobeyah
17	Giza
18	Fayoum
19	Beny Sueif
20	Menya
21	Asyout
22	Souhag
23	Qena
24	Aswan
France Country Code 375 (Departments)	
01	Ain
02	Aisne
03	Allier
04	Alpes (Haute Provence)
05	Alpes (Hautes)
06	Alpes-Maritimes
07	Ardèche
08	Ardennes
09	Ariège
10	Aube
11	Aude
12	Aveyron
13	Bouches-du-Rhône
14	Calvados
15	Cantal
16	Charente
17	Charente-Maritime
18	Cher
19	Corrèze
20	Corse
21	Côte-d'Or
22	Côtes-du-Nord
23	Creuse
24	Dordogne
25	Doubs
26	Drôme
27	Eure
28	Eure-et-Loir
29	Finistère
30	Gard
31	Garonne (Haute)

TABLE 5.2 Codes for State, Province, Department or Similar Country Divisions (Continued)

Code	Division
France (continued)	
32	Gers
33	Gironde
34	Hérault
35	Ille-et-Vilaine
36	Indre
37	Indre-et-Loire
38	Isère
39	Jura
40	Landes
41	Loir-et-Cher
42	Loire
43	Loire (Haute)
44	Loire-Atlantique
45	Loiret
46	Lot
47	Lot-et-Garonne
48	Lozère
49	Maine-et-Loire
50	Manche
51	Marne
52	Marne (Haute)
53	Mayenne
54	Meurthe-et-Moselle
55	Meuse
56	Morbihan
57	Moselle
58	Nièvre
59	Nord
60	Oise
61	Orne
62	Pas-de-Calais
63	Puy-de-Dôme
64	Pyrenées-Atlantiques
65	Pyrenées (Hautes)
66	Pyrenées-Orientales
67	Rhin (Bas)
68	Thin (Haute)
69	Thone
70	Saône (Haute)
71	Saône-et-Loire
72	Sarthe
73	Savoie
74	Savoie
75	Paris
76	Seine-Maritime
77	Seine-et-Marne
78	Yvelines
79	Sèvres (Deux)
80	Somme
81	Tarn
82	Tarn-et-Garonne
83	Var
84	Vancluse
85	Vendée
86	Vienne
87	Vienne (Haute)
88	Vosges
89	Yonne
90	Territoire de Belfort
91	Essonne
92	Hauts-de-Seine
93	Seine-Saint-Denis
94	Val-de-Marne
95	Val-d'Oise
Gabonese Republic Country Code 400 (Provinces)	
01	Estuaire (Libreville)
02	Ngounie (Mouila)
03	Nyanga (Tchibanga)
04	Naut Ogooue (Franceville)
05	Ogooue Ivindo (Booue)
06	Ogooue Losso (Koula-Mouton)
07	Ogooue Maritime (Port-Gentil)
08	Moyen Ogooue (Lambarene)
09	Woleu-Ntem (Oyem)
Germany, Federal Republic of, Country Code 411 (States)	
02	Baden-Württemberg
04	Bayern
06	Berlin
08	Bremen
09	Hamburg
10	Hessen
12	Niedersachsen
14	Nordrhein-Westfalen
16	Rheinland-Pfalz
18	Saarland
20	Schleswig-Holstein

TABLE 5.2 Codes for State, Province, Department or Similar Country Divisions (Continued)

Code	Division
Guinea Country Code 470 (Regions)	
01	Boke
02	Conakry
03	Kankan
04	Kindia
05	Labe
06	N'Zerekore
Iraq Country Code 515 (Districts)	
01	Baghdad
02	Dialy
03	Karkook
04	Solaymaneyah
05	Arbeel
06	Dahouk
07	Ninawa
08	Anbar
08	
09	Karbalaa
10	Babel
11	Diwaneyah
12	Koot (or Coot)
13	Misan
14	The-gar
15	Basra
16	Mothana
Ivory Coast Country Code 542 (Departments)	
01	Abengourou
02	Abidjan
03	Aboisso
04	Adzope
05	Agboville
06	Anane
07	Biankouma
08	Bondoukou
09	Bouafle
10	Bouake
11	Bouna
12	Boundiali
13	Dabakola
14	Daloa
15	Dimbokro
16	Divo
17	Ferkessedougou
18	Gagnoa
19	Guiglo
20	Katiola
21	Korhogo
22	Man
23	Odienne
24	Sassandra
25	Seguela
26	Touba
Lebanon Country Code 176 (Districts)	
01	North Lebanon
02	Mountain
03	South Lebanon
04	Bogaa
05	Beirut
Liberia Country Code 168 (Counties)	
01	Bong (Suakolo)
02	Cape Mount (Pobertsport)
03	Grand Bassa (Buchanan)
04	Grand Gedeh (Tchien)
05	Loffa (Voinjama)
06	Maryland (Harper)
07	Mont Serrado (Monrovia)
08	Nima (Sanniquellie)
09	Sinoe (Greenville)
Libyan, Arab Rep. Country Code 172 (Districts)	
01	Tripoli
02	Zawya
03	Gherian
04	Khoms
05	Mosrata
06	Green Mountain (Gabal Al-Akhdar)
07	Derna
08	Khalig
09	Sabha
Malagasy Republic Country Code 578 (Provinces)	
01	Antananarivo
02	Diego-Suarez
03	Fianarantsoa
04	Majunga
05	Tamatave
06	Tulear

TABLE 5.2 Codes for State, Province, Department or Similar Country Divisions (Continued)

Code	Division
Mali Country Code 583 (Regions)	
01	Bamako (Bamako)
02	Boucle Du Niger (Gao)
03	Centre (Segou)
04	Mopti (Mopti)
05	Quest (Kayes)
06	Sud (Sikasso)
Mauritania Country Code 587 (Regions and/or District)	
01	1st region (Nema)
02	2nd region (Aioun-el-Atrouss)
03	3rd region (Kiffa)
04	4th region (Kaedi)
05	5th region (Aleg)
06	6th region (Rosso)
07	7th region (Atar)
08	8th region (Nouadhibon)
09	9th region (Fidjikja)
10	10th region (Selibabi)
11	11th region (Dakla)
12	Nouakchott
Mauritius Country Code 588 (Districts)	
01	Black-River
02	Flack
03	Grand-Port
04	Moka
05	Pamplemousses
06	Plaines-Wilhems
07	Port-Louis
08	Riviere Du Rempart
09	Savanne
Morocco Country Code 610 (Prefectures and/or Provinces)	
01	Rabat-Sale
02	Casablanca
03	Agadir
04	Al-Hoceima
05	Beni-Mallal
06	El-Ayoun
07	El-Jadida
08	El-Kalaa-Sraghna
09	Fes
10	Figuig
11	Kenitra
12	Khermisset
13	Khenifra
14	Khouribga
15	Ksar-Es-Souk
16	Marrakech
17	Maknes
18	Nador
19	Ouarzazate
20	Oujda
21	Safi
22	Saguia-El-Hamra
23	Settat
24	Smara
25	Tanger
26	Tarfaya
27	Taza
28	Tetouan
Niger Country Code 666 (Departments)	
01	Agades
02	Diffa
03	Dosso
04	Maradi
05	Niamey
06	Tahoua
07	Zinder
Rwanda Country Code 800 (Prefectures)	
01	Butare
02	Byumba
03	Cyangugu
04	Gikongoro
05	Gisenyi
06	Gitarama
07	Kibungo
08	Kibuye
09	Kigali
10	Ruhengeri
Senegal Country Code 820 (Regions)	
01	Cap-Vert (Dakar)
02	Casamance (Ziquinchor)
03	Diourbel (Diourbel)

TABLE 5.2 Codes for State, Province, Department or Similar Country Divisions (Continued)

Code	Division
Senegal (continued)	
04	Fleuve (Saint-Louis)
05	Louga (Louga)
06	Senegal Oriental (Tambacounda)
07	Sine-Saloum (Kaolack)
08	Thies (Thies)
Sierra Leone Country Code 830 (Regions)	
01	Eastern (Kenema)
02	Northern (Makeru)
03	Southern (Bo)
04	Western (Freetown)
Sudan Country Code 890 (Provinces)	
01	Bahr El Ghazal
02	Northern Darfour
03	Southern Darfour
04	Equatoria
05	Gezira
06	Kassala
07	Khartoum
08	Northern Kordofan
09	Southern Kordofan
10	Nile
11	Blue Nile
12	Upper Nile
13	Northern
14	Red Sea
15	White Nile
Syrian Arab Rep. Country Code 656 (Districts)	
01	Damascus
02	Swaida
03	Daraa'
04	Qnaitrah
05	Tartous
06	Latakia
07	Homs
08	Hama
09	Idleb
10	Aleppo
11	Raga
12	Der Az-Zour
13	Hasakah
Togo Country Code 678 (Regions)	
01	Maritime (Lome)
02	Plateaux (Atakpame)
03	Central (Sokode)
04	Savannes (Mango)
Tunisia Country Code 910 (Governorates)	
01	Baja
02	Bizerta
03	Gabes
04	Gafsa
05	Jendouba
06	Kairouan
07	Kasserine
08	Le Kef
09	Mehdia
10	Medenine
11	Monastir
12	Nabeul
13	Sfax
14	Sidi-Bouzid
15	Siliana
16	Sousse
17	Tunis-Nord
18	Tunis-Sud
Turkey Country Code 913 (Regions)	
01	East Anatolia (Dogu Anadolu)
02	Southeast Anatolia (Guneydegu Anadolu)
03	Black Sea Region (Karadeniz Bolgesi)
04	Inner Anatolia (Iy Anadolu)
05	Aegean Region (Ege Bolgesi)
06	Mediterranean Region (Akdeliz Bolgesi)
07	Marmara Region (Marmara Bolgesi)
Upper Volta Country Code 940 (Deparment)	
01	Centre (Ouagadougou)
02	Centre-Est (Tenkodogo)
03	Centre-Quest (Koudougou)
04	Est (Fada-N'Gourma)
05	Hauts-Bassins (Bobo-Dioulasso)
06	Plateaux Nord Mossi (Kaya)
07	Sahel (Dori)
08	Sud-Quest (Gaoua)

TABLE 5.2 Codes for State, Province, Department or Similar Country Divisions (Continued)

Code	Division
Upper Volta (continued)	
09	Volta Noire (Dedougou)
10	Yatenga (Ouahigouya)
Zaire Country Code 106 (Regions)	
01	Bandundu (Bandundu)
02	Equateur (Mbandaka)
03	Kasai Occidental (Kananga)
04	Kasai Oriental (Mbuji-Mayi)
05	Kivu (Bukavu)
06	Shaba (Lubumbashi)
07	Bas-Zaire (Matadi)
08	Haut-Zaire (Kisangani)

TABLE 5.3 Example Codes for Laboratories within a Country, within a State (for Germany, Federal Republic of)

Card	Column	Code	State Laboratory
10	22-23		**Baden-Württemberg**
		01	Institut fur Tierernährurg der Universität Hohenheim
		02	Landesanstalt fur landwirtschaftliche Chemie, Hohenheim
		03	Staatliche Landwirtschaftliche Untersuchungs– und Forschungsanstalt, Augustenberg
			Bayern
		01	Bayerische Landesanstalt fur Bodenkultur and Pflanzenbau, Freising–München
		02	Bayerische Hauptversuchsanstalt fur Landwirtschaft der Technischen Universität München, Freising 12–Weihenstephan
		03	Bayerische Landesanstalt fur Bodenkultur and Pflanzenbau - Landwirtschaftliches Untersuchungsamt - Würzburg
		04	Bayerische Landesanstalt fur Bodenkultur und Pflanzenbau - Landwirtschaftliches Untersuchungsamt - Augsburg
		05	Institut fur Tierernährung der Technischen Hochschule München, Freising - Weihenstephan
			Berlin
		01	Biologische Bundesanstalt für Land– und Forstwirtschaft Institut fur Nichtparasitäre Pflanzenkrankheiten, Berlin
			Bremen
		01	Staatliche Chemische Untersuchungsanstalt, Bremen
			Hamburg
		01	Institut fur Angewandte Botanik, Hamburg
		02	Dr. Meyer–Castens & Co. mbH., Hamburg
		03	Soybean Council, Hamburg
			Hessen
		01	Hessische Landwirtschaftliche Versuchsanstalt - Landwirtschaftliches Untersuchungsamt, Darmstadt
		02	Hessische Landwirtschaftliche Versuchsanstalt, Kassel–Harleshausen
		03	Hessische Lehr - und Forschungsanstalt fur Grünlandwirtschaft und Futterbau, Bad Hersfeld
			Niedersachsen
		01	Landwirtschaftliche Untersuchungs - und Forschungsanstalt, Hameln
		02	Landwirtschaftliche Untersuchungs - und Forschungsanstalt, Oldenburg
			Nordrhein-Westfalen
		01	Altromin GmbH, Lage (Lippe)
		02	Deuka Deutsche Kraftfutter GmbH Stolp, Dusseldorf
		03	Landwirtschaftliche Untersuchungs - und Forschungsanstalt - Joseph–König–Institut, Münster
		04	Landwirtschaftliche Untersuchungs - und Forschungsanstalt, Bonn

TABLE 5.3 (continued)

Card	Column	Code	State Laboratory
10	22 - 23		**Rheinland-Pfalz**
		01	Deutsche Maizena–Werke, Mainz
		02	Landwirtschaftliche Untersuchungs - und Forschungsanstalt, Speyer
			Schleswig-Holstein
		01	Institut fur Hygiene der Bundesanstalt fur Milchforschung, Kiel
		02	Konservenfabrik, Meldorf
		03	Landwirtschaftliche Untersuchungs - und Forschungsanstalt, Kiel, mit Institut fur Wirkstoffprüfung

TABLE 5.4 Codes for Climatic Zone

Code	Description	
	Latitudinal Region	**Degrees C**
1	Tropical	0° to 13°
2	Subtropical	13° to 27°30′
3	Warm Temperate	27°30′ to 42°
4	Cool Temperate	42° to 56°30′
5	Boreal	56°30′ to 63°45′
6	Sub Polar	63°45′ to 70°22.5′
7	Polar	70°22.5′ to 90°
	Altitudinal Belt	**Meters**
1	Basal	<500
2	Premontane (subtropical)	501 to 1500
3	Lower Montane	1501 to 2500
4	Montane	2501 to 3500
5	Subalpine	3501 to 4000
6	Alpine	4001 to 4250
7	Nival	>4250
	Rainfall (millimeters)	
1	62.5 to 125	
2	126 to 250	
3	251 to 500	
4	501 to 1000	
5	1001 to 2000	
6	2001 to 4000	
7	4001 to 8000	
8	>8000	

TABLE 5.5 Major Fishing Areas[a]

Code	Description
Inland Waters	
01	Africa
02	America, North
03	America, South
04	Asia
05	Europe
06	Oceania
07	USSR
08	Antarctic
Fishing Areas, Atlantic Ocean and Adjacent Seas	
18	Arctic Sea
21	Atlantic, Northwest
27	Atlantic, Northeast
31	Atlantic, Western Central
34	Atlantic, Eastern Central
37	Mediterranean and Black Sea
41	Atlantic, Southwest
47	Atlantic, Southeast
48	Atlantic, Antarctic
Fishing Areas, Indian Ocean and Adjacent Seas	
51	Indian Ocean, Western
57	Indian Ocean, Eastern
58	Indian Ocean, Antarctic
Fishing Areas, Pacific Ocean and Adjacent Seas	
61	Pacific, Northwest
67	Pacific, Northeast
71	Pacific, Western Central
77	Pacific, Eastern Central
81	Pacific, Southwest
87	Pacific, Southeast
88	Pacific, Antarctic

[a] Taken from yearbook of fishery statistics. 1977.

TABLE 5.6 Example Codes for Counties within State within Country

Code	Country, State, County
411	**Germany (country)**
01	**Baden-Württemberg (state)**
001	Böblingen
002	Esslingen
003	Göppingen
004	Heidenheim
005	Heilbronn
006	Hohenlohekreis
007	Ludwigsburg
008	Ostalbkreis
009	Rems–Murr–Kreis
010	Schwäbisch Hall
011	Tauberkreis
012	Calw
013	Enzkreis (Pforzheim)
014	Freudenstadt
015	Karlsruhe
016	Odenwaldkreis (Mosbach)
017	Rastatt
018	Rhein–Neckar–Kreis (Heidelberg)
019	Breisgau–Hochschwarzwald (Freiburg)
020	Emmendingen
021	Konstanz
022	Lörrach
023	Ortenaukreis (Offenburg)
024	Rottweil
025	Schwarzwald–Barr–Kreis (Villingen–Schwenningen)
026	Tuttlingen
027	Waldshut
028	Alb–Donau–Kreis
029	Biberach
030	Bodenseekreis (Friedrichshafen)
031	Ravensburg
032	Reutlingen
033	Sigmaringen
034	Tübingen
035	Zolleralbkreis (Balingen)
04	**Bayern (state)**
036	Altötting
037	Bad Reichenhall
038	Bad Tölz
039	Dachau
040	Ebersberg
041	Eichstätt
042	Erding
043	Freising
044	Fürstenfeldbruck
045	Garmisch–Partenkirchen
046	Landsberg
047	Miesbach
048	Mühldorf
049	München
050	Neuburg an der Donau
051	Pfaffenhofen/Ilm
052	Rosenheim
053	Starnberg
054	Traunstein
055	Weilheim
056	Deggendorf
057	Freyung
058	Kelheim
059	Landshut
060	Passau
061	Regen
062	Rottal, Pfarrkirchen
063	Straubing–Bogen, Straubing
064	Untere Isar, Dingolfing
065	Amberg
066	Cham
067	Neumarkt
068	Neustadt an der Waldnaab
069	Regensburg
070	Schwandorf
071	Tirschenreuth
072	Bamberg
073	Bayreuth
074	Coburg
075	Forchheim
076	Hof
077	Kronach
078	Kulmbach
079	Lichtenfels
080	Wunsiedel
081	Ansbach
082	Erlangen
083	Fürth
084	Lauf an der Pegnitz
085	Neustadt/Aich

TABLE 5.6 Example Codes for Counties within State within Country (Continued)

Code	Country, State, County
411	**Germany (country) (continued)**
04	**Bayern (state) (continued)**
086	Roth bei Nürnberg
087	Weissenburg
088	Aschaffenburg
089	Bad Kissingen
090	Bad Neustadt an der Saale
091	Hassberg–Kreis, Hassfurt
092	Kitzingen
093	Miltenberg
094	Mittelmain, Lohr
095	Schweinfurt
096	Würzburg
097	Augsburg–Ost, Aichach
098	Augsburg–West, Augsburg
099	Dillingen
100	Günzkreis, Günzburg
101	Illerkreis, Neu–Ulm
102	Lindau
103	Marktoberdorf
104	Mindelheim
105	Nördlingen–Donauwörth, Nordlingen
106	Oberallgäu, Sonthofen
10	**Hessen (state)**
107	Bergstrasse (heppenheim)
108	Biedenkopf
109	Darmstadt
110	Dieburg
111	Dillkreis (Dillenburg)
112	Odenwaldkreis (Erbach)
113	Wetteraukreis (Friedberg)
114	Gelnhausen
115	Giessen
116	Gross–Gerau
117	Hanau
118	Vogelsbergkreis (Lauterbach)
119	Limburg
120	Main–Taunus–Kreis (Frankfurt–Main–Höchst)
121	Hochtaunuskreis (Oberlahnkreis (Weilburg)
122	Hochtaunuskreis (Bad Homburg vor der Höhe)
123	Offenbach
124	Rheingaukreis (Rüdesheim)
125	Schlüchtern
126	Untertaunuskreis (Bad Schwalbach)
127	Wetzlar
128	Eschwege
129	Frankenberg
130	Fritzlar–Homberg (Fritzlar)
131	Fulda
132	Hersfeld–Rotenburg (Bad Hersfeld)
133	Kassel
134	Marburg
135	Melsungen
136	Waldeck (Korbach)
137	Witzenhausen
138	Ziegenhain
12	**Niedersachsen (state)**
139	Grafschaft Diepholz (Diepholz)
140	Grafschaft Hoay (Syke)
141	Grafschaft Schaumburg (Rinteln)
142	Hameln–Pyrmont (Hamein)
143	Hannover
144	Neustadt/am Rubenberge
145	Nienburg
146	Schaumburg–Lippe (Stadthagen)
147	Springe/Deister
148	Alfeld/Leine
149	Einbeck
150	Göttingen
151	Hildesheim–Marienburg (Hildesheim)
152	Holzminden
153	Northeim
154	Osterode
155	Peine
156	Burgdorf
157	Celle
158	Fallingbostel
159	Gifhorn
160	Harburg (Winsen an der Luhe)
161	Lüchov–Dannenberg (Lüchow)
162	Lüneburg
163	Soltau
164	Uelzen
165	Bremervörde
166	Land Hadeln (Ottendorf)
167	Osterholz (Osterholz-Scharmbeck)
168	Rotenburg/Wümme
169	Stade

TABLE 5.6 Example Codes for Counties within State within Country (Continued)

Code	Country, State, County
411	**Germany (country) (continued)**
12	**Niedersachsen (state) (continued)**
170	Verden
171	Wesermünde (Bremerhaven)
172	Aschendorf–Hümmling (Aschendorf an der Ems)
173	Grafschaft Bentheim (Nordhorn)
174	Lingen
175	Meppen
176	Osnabrück
177	Aurich
178	Leer
179	Norden
180	Wittmund
181	Braunschweig
182	Gandersheim (Bad Gandersheim)
183	Goslar
184	Helmstedt
185	Wolfenbüttel
186	Ammerland (Westerstede)
187	Cloppenburg
188	Friesland (Jever)
189	Oldenburg
190	Vechta
191	Wesermarsch (Brake/Unterweser)
14	**Nordrhein-Westfalen (state)**
192	Arnsberg
193	Brilon
194	Ennepe–Ruhr–Kreis (Schwelm)
195	Iserlohn
196	Lippstadt
197	Lüdenscheid
198	Meschede
199	Olpe
200	Siegen
201	Soest
202	Unna
203	Wittgenstein (Berleburg/Westfalen)
204	Büren
205	Lippe (Detmold)
206	Gütersloh
207	Herford
208	Höxster
209	Minden–Lübbecke (Minden)
210	Paderborn
211	Warburg
212	Dinslaken
213	Düsseldorf–Mettmann (Mettmann)
214	Geldern
215	Grevenbroich
216	Kempen–Krefeld (Kempen/Niederrhein)
217	Kleve
218	Moers
219	Rees (Wesel)
220	Rhein–Wupper–Kreis (Opladen)
221	Aachen
222	Bergheim/Erft
223	Düren
224	Euskirchen
225	Heinsberg
226	Köln
227	Oberbergischer Kreis (Gummersbach)
228	Rheinisch–Bergischer–Kreis (Bergisch Gladbach)
229	Rhein–Sieg–Kreis (Siegburg)
230	Ahaus
231	Beckum
232	Borken
233	Coesfeld
234	Lüdinghausen
235	Münster
236	Recklinghausen
237	Steinfurt (Burgsteinfurt)
238	Tecklenburg
239	Warendorf
16	**Rheinland-Pfalz (state)**
240	Ahrweiler (Bad Neuenahr-Ahrweiler)
241	Altenkirchen
242	Bad Kreuznach
243	Birkenfeld
244	Cochem–Zell (Cochem)
245	Mayen–Koblenz (Koblenz)
246	Neuwied
247	Oberwesterwaldkreis (Westerburg)
248	Rhein–Hunsrück–Kreis (Simmern)
249	Rhein–Lahn–Kreis (Bad Ems)
250	Unterwesterwaldkreis (Montabaur)

TABLE 5.6 Example Codes for Counties within State within Country (Continued)

Code	Country, State, County
411	**Germany (country) (continued)**
16	**Rheinland-Pfalz (state) (continued)**
251	Bernkastel–Wittlich (Wittlich)
252	Bitburg–Prüm (Bitburg)
253	Daun
254	Trier–Saarburg (Trier)
255	Alzey–Worms (Alzey)
256	Bad Dürkheim (Neustadt an der Weinstrasse)
257	Donnersbergkreis (Kirchheimbol
258	Germersheim
259	Kaiserslautern
260	Kusel
261	Landau–Bad Bergzabern (Landau in der Pfalz)
262	Ludwigshafen
263	Mainz–Bingen (Mainz)
264	Pirmasens
18	**Saarland (state)**
265	Homburg
266	Merzig-Wadern (Merzig)
267	Ottweiler
268	Saarbrücken
269	Saarlouis
270	St. Ingbert
271	St. Wendel
20	**Schleswig-Holstein (state)**
272	Dithmarschen Heide
273	Flensburg–Land Flensburg
274	Herzogtum Lauenburg Ratzeburg
275	Nordfriesland Husum
276	Ostholstein Eutin
277	Pinneberg
278	Plön
279	Rendsburg–Eckernförde Rendsburg
280	Schleswig
281	Segeberg Bad Segeberg
282	Steinburg Itzehoe
283	Storman Bad Oldesloe

TABLE 5.7 Feed Additives

Code	Description
Preservatives	
1001	AIV acid
1002	AIV salt
1003	amasil
1004	formic acid
1005	ascorbic acid
1006	chloric acid
1007	glycosil
1008	potassium metabisulfite
1009	common salt
1010	kofasil
1011	lactic acid
1012	sodium nitrite
1013	sodium salicyclate
1014	phosphoric acid
1015	propionic acid
1016	hydrochloric acid
1017	sulfuric acid
1018	silotracin (silage)
1019	spurosil (silage)
Antioxidants	
2002	2 b-di-tert-butyl-4 methylphenol
NPN Compounds	
3001	biuret
3002	urea
3003	urea phosphoric acid
Antibiotics	
4001	zinc bacitracin
4002	penicillin (procaine)
4003	streptomycin
4004	chlortetracycline
4005	bacitracin
4006	bacitracin methylene disalicylate
4007	manganese bacitracin
Animal Drugs	
5001	2-acetylamino-5 nitrothiazole
5002	aklomide
5003	ammonium chloride
5004	amprolium
5005	amprolium and ethopabate
5006	bambermycins
5007	buquinolate
5008	caradox
5009	carbarsone (not U.S.P.)
5010	chlormadione acetate
5011	chlortetracycline plus sulfamethazine (cattle)
5012	chlortetracyline plus penicillin plus sulfathiazole
5014	clopidol
5015	coumaphos
5016	decoquinate
5017	dichlorvos
5018	diethylstilbestrol
5019	dimetridazole
5020	enzymes (except pepsin)
5021	erythromycin thiocyanate
5022	famphur
5023	furazolidone
5024	griesofulvin
5025	hygromycin B (chicken feeds)
5026	ipronidazole
5027	lasalocid sodium
5028	levamisole hydrochloride
5029	lincomycin
5030	melengestrol acetate
5031	monensin
5032	monensin sodium
5033	nequinate
5034	nicarbazin
5035	nihydrazone
5036	nithiazide
5037	**nitromide
5038	novobiocin
5039	nystatin
5040	oleandomycin
5041	oxytetracycline (salmon and catfish)
5042	poloxaline
5043	pyrantel tartrate
5044	pyrimethamine plus sulfaquinoxaline
5045	reserpine
5046	rebenidine hydrochloride
5047	ronnel
5048	sulfadimethoxine plus ormetoprim
5049	sulfamerazine (trout feeds)
5050	**sulfanitran

TABLE 5.7 List of Additives (Continued)

Code	Description
5051	thiabendazole
5052	tylosin
5053	tylosin plus hygromycin B
5054	tylosin plus sulfamethazine
5055	virginiamycin
5056	zoalene

** Approved for use only in combination with other drugs.

TABLE 5.8 Hay Grades for Legumes and Legume-Grass Mixtures[a]

Grades	Stage of maturity International term	Definition	Physical description	Typical chemical composition—%[b] CP (%)	ADF (%)	NDF (%)	CF (%)	Relative feed value (%)
1 Legume hay	Late vegetative	Bud to first flower; stage at which stems are beginning to elongate to just before blooming.	40 to 50% leaves[c]; green; less than 5% foreign material; free of mold, musty odor, dust, etc.	>19	<31	<40	<25	>140
2 Legume hay	Early bloom	Early to midbloom; stage between initiation of bloom and stage in which 1/2 of plants are in bloom.	35 to 45% leaves[c]; light green to green; less than 10% foreign material; free of mold, musty odor, dust, etc.	17–19	31–35	40–46	25–29	124–140
3 Legume hay	Midbloom	Mid to full bloom; stage in which 1/2 or more of plants are in bloom.	25 to 40% leaves[c]; yellow green to green; less than 15% foreign material; free of mold, musty odor; dust, etc.	13–16	36–41	47–51	30–34	100–123
4 Legume hay	Full bloom	Full bloom and beyond	less than 30% leaves[c]; brown to green; less than 20% foreign material; slight musty odor, etc.	<13	>41	>51	>34	<100
6 Grade— Inferior[d]								

Hay which contains more than a trace of injurious foreign material (toxic or noxious weeds and hardware) or that definitely has objectionable odor or is under cured, heat damaged, hot, wet, musty, moldy, caked, badly broken, badly weathered or stained, extremely overripe, dusty, which is distinctly low quality or contains more than 20% foreign material or more than 20% moisture.

[a] Adapted from Rohweder et al., (1976)

[b] Chemical analyses expressed on dry matter basis. CP = Crude protein; ADF = Acid detergent fiber; NDF = Neutral detergent fiber; Relative feed value = Digestible dry matter intake. Chemical concentrations based on research data from North Central and North East States and Florida, USA. Dry matter (moisture) concentration can affect market quality. Suggested moisture levels are: Grades 1 and 2 - 14%, Grade 3 - 18%, and Grade 4 - 20%.

[c] Proportion by weight.

[d] Slight evidence of any factor will lower a lot of hay by one grade.

TABLE 5.9 Hay Grades for Grass-Legume Mixtures[a]

Grades	Stage of maturity International term	Definition	Physical description	Typical chemical composition–%[b] CP[c] (%)	ADF (%)	NDF[d] (%)	CF (%)	Relative feed value (%)
2 Grass hay	Late vegetative	Late vegetative to early boot; stage at which stems are beginning to elongate to just before heading, 2 to 3 weeks growth.	50% or more leaves[e]; green; less than 5% foreign material; free of mold, musty odor, dust, etc.	> 18	< 33	< 55	< 22	124–140
3 Grass hay	Early bloom to midbloom	Boot to early head; stage between late boot where inflorescence is just emerging until the stage in which 1/2 inflorescences are in anthesis; 4 to 6 weeks growth.	40% or more leaves[e]; light green to green; less than 10% foreign material; free of mold, musty odor, dust, etc.	13–18	33–38	55–60	27–32	101–123
4 Grass hay	Full bloom to late bloom to milk stage	Head to milk; stage in which 1/2 or more of inflorescences are in anthesis and the stage in which seeds are well formed but soft and immature; 7 to 9 weeks regrowth.	30% or more leaves[e]; yellow green to green; less than 15% foreign material; free of mold, musty odor, dust, etc.	8–12	39–41	61–65	33–36	85–100
5 Grass hay	Dough stage to mature	Dough to seed; stage in which seeds are of dough-like consistency until stage when plants are normally harvested for seed; more than 10 weeks growth.	20% or more leaves[e]; brown to green; less than 20% foreign material; slightly musty odor, dust, etc.	< 8	> 41	> 65	> 36	< 85

6 Grade— inferior[f]

Hay which contains more than a trace of injurious foreign material (toxic or noxious weeds and hardware) or that definitely has objectionable odor or is undercured, heat damaged, hot, wet, musty, moldy, caked, badly broken, badly weathered or stained, overripe, dusty, which is distinctly low quality, or contains more than 20% foreign material or more than 20% moisture.

[a] Adapted from Rohweder et al., (1976)

[b] Chemical analyses expressed on dry matter basis. CP = Crude protein; ADF = Acid detergent fiber; NDF = Neutral detergent fiber; Relative feed value = Digestible dry matter intake. Chemical concentrations based on research data from North Central and North East states and Florida, USA. Dry matter (moisture) concentration can affect market quality. Suggested mositure levels are: Grade 2 14%, Grade 3 18%, and Grade 4 and 5 20%.

[c] Fertilization with nitrogen may increase CP concentration in each grade by up to 40%.

[d] Tropical grasses may have higher NDF concentrations than indicated in this table.

[e] Proportion by weight for grasses that do not flower or for which flowering is indeterminant.

[f] Slight evidence of any factor will lower a lot of hay by one grade.

TABLE 5.10 Soil Units[a]

Code	Description
J	**FLUVISOLS**
Je	Eutric Fluvisols
Jc	Calcaric Fluvisols
Jd	Dystric Fluvisols
Jt	Thionic Fluvisols
G	**GLEYSOLS**
Ge	Eutric Gleysols
Gc	Calcaric Gleysols
Gd	Dystric Gleysols
Gm	Mollic Gleysols
Gh	Humic Gleysols
Gp	Plinthic Gleysols
Gx	Gelic Gleysols
R	**REGOSOLS**
Re	Eutric Regosols
Rc	Calcaric Regosols
Rd	Dystric Regosols
Rx	Gelic Regosols
I	**LITHOSOLS**
Q	**ARENOSOLS**
Qc	Cambic Arenosols
Ql	Luvic Arenosols
Qf	Ferralic Arenosols
Qa	Albic Arenosols
E	**RENDZINAS**
U	**RANKERS**
T	**ANDOSOLS**
To	Ochric Andosols
Tm	Mollic Andosols
Th	Humic Andosols
Tv	Vitric Andosols
V	**VERTISOLS**
Vp	Pellic Vertisols
Vc	Chromic Vertisols
O	**HISTOSOLS**
Oe	Eutric Histosols
Od	Dystric Histosols
Ox	Gelic Histosols
Z	**SOLONCHAKS**
Zo	Orthic Solonchaks
Zm	Mollic Solonchaks
Zt	Takyric Solonchaks
Zg	Gleyic Solonchaks
S	**SOLONETZ**
So	Orthic Solonetz
Sm	Mollic Solonetz
Sg	Gleyic Solonetz
Y	**YERMOSOLS**
Yh	Haplic Yermosols
Yk	Calcic Yermosols
Yy	Gypsic Yermosols
Yl	Luvic Yermosols
Yt	Takyric Yermosols
X	**XEROSOLS**
Xh	Haplic Xerosols
Xk	Calcic Xerosols
Xy	Gypsic Xerosols
Xl	Luvic Xerosols
K	**KASTANOZEMS**
Kh	Haplic Kastanozems
Kk	Calcic Kastanozems
Kl	Luvic Kastanozems
C	**CHERNOZEMS**
Ch	Haplic Chernozems
Ck	Calcic Chernozems
Cl	Luvic Chernozems
Cg	Glossic Chernozems
H	**PHAEOZEMS**
Hh	Haplic Phaeozems
Hc	Calcaric Phaeozems
Hl	Luvic Phaeozems
Hg	Gleyic Phaeozems
N	**NITOSOLS**
Ne	Eutric Nitosols
Nd	Dystric Nitosols
Nh	Humic Nitosols
M	**GREYZEMS**
Mo	Orthic Greyzems
Mg	Gleyic Greyzems
B	**CAMBISOLS**
Be	Eutric Cambisols
Bd	Dystric Cambisols
Bh	Humic Cambisols
Bg	Gleyic Cambisols
Bx	Gelic Cambisols
Bk	Calcic Cambisols
Bc	Chromic Cambisols
Bv	Vertic Cambisols
Bf	Ferralic Cambisols
L	**LUVISOLS**
Lo	Orthic Luvisols
Lc	Chrimic Luvisols
Lk	Calcic Luvisols
Lv	Vertic Luvisols
Lf	Ferric Luvisols
La	Albic Luvisols
Lp	Plinthic Luvisols
Lg	Gleyic Luvisols
D	**PODZOLUVISOLS**
De	Eutric Podzoluvisols
Dd	Dystric Podzoluvisols
Dg	Gleyic Podzoluvisols
P	**PODZOLS**
Po	Orthic Podzols
Pl	Leptic Podzols
Pf	Ferric Podzols
Ph	Humic Podzols
Pp	Placic Podzols
Pg	Gleyic Podzols
W	**PLANOSOLS**
We	Eutric Planosols
Wd	Dystric Planosols
Wm	Mollic Plansols
Wh	Humic Planosols
Ws	Solodic Planosols
Wx	Gelic Planosols

TABLE 5.10 Soil Units (Continued)

Code	Description
A	**ACRISOLS**
Ao	Orthic Acrisols
Af	Ferric Acrisols
Ah	Humic Acrisols
Ap	Plinthic Acrisols
Ag	Gleyic Acrisols
F	**FERRALSOLS**
Fo	Orthic Ferralsols
Fx	Xanthic Ferralsols
Fr	Rhodic Ferralsols
Fh	Humic Ferralsols
Fa	Acric Ferralsols
Fp	Plinthic Ferralsols

[a] Taken from FAO – UNESCO Soil Map of the World. 1974. Published by the United Nations Educational, Scientific and Cultural Organization. Place de Fontenoy, 75700, Paris.

TABLE 5.11 Codes for Pollution Source

Code	Description
001	volcanoes
002	dust clouds, dust storm
003	inundation
010	coal mines
021	factories for acid, alkali and chlorine production
022	potassium industry and saline
023	soda works
024	fertilizer factories
025	plant protection products industry
026	detergents and soap industry
027	plastic material industry
040	iron works, iron foundries
051	aluminum works
052	copper works
053	lead works
054	zinc works
060	furnaces for steam and energy production
070	nuclear energy production plants
080	mineral oil industry
091	cement industry
092	mortar factories
093	limestone factories
094	brick works
095	china–ware factories
096	enamel works
100	plants for processing animal and vegetable products
201	wood, cellulose and paper industry
202	plants for carcass disposal and meat/bone production
300	compost of garbage (housing) and refuse (industry)
401	agriculture (waste water)
402	household (sewage)
410	industry (sewage)
501	railway
502	inland navigation
503	sea navigation
504	air traffic
505	automobiles
601	fertilizing
602	applying of plant protection products
701	fungus
702	parasites

TABLE 5.12 Codes for Distance Between Source and Receptor

Code	Distance
01	0 – 10 m
02	11 – 20 m
03	21 – 50 m
04	51 – 100 m
05	101 – 150 m
06	151 – 200 m
07	201 – 300 m
08	301 – 400 m
09	401 – 500 m
10	501 – 700 m
11	.701 – 1.000 km
12	1.001 – 1.500 km
13	1.501 – 2.000 km
14	2.001 – 3.000 km
15	3.001 – 4.000 km
16	4.001 – 5.000 km
17	5.001 – 6.000 km
18	6.001 – 7.000 km
19	7.001 – 8.000 km
20	8.001 – 9.000 km
21	over 9.000 km
22	near by the source of emission
23	far from the source of emission

TABLE 5.13 Brand of Pesticide

Code	Brand (Commercial Name)	Description
001	Aldrin–Giessmittel	aldrin
002	Aglutox–Streumittel	aldrin
003	Aldrin–Streumittel	aldrin
020	Deoval, Mon	DDT
021	Derixol M, UCB	DDT
022	DiDiTan Ultra, Sch	DDT
023	Gesarol 50, Spi. Ura	DDT
030	Mause–Kindrin 391, Mar	endrin
031	Segetan–Wühlmausmittel	endrin
032	Shell–Wühlmausmittel	endrin
033	ST–M3 , ASU	endrin
040	Basiment 450 extra, Bay	HCH, techn.
041	Forst–Nexen, CME	HCH, techn.
042	Forst–Vitton–Emulsion, CME	HCH, techn.
043	Forst–Vitton–Staub, CME	HCH, techn.
050	A Ahepta–Saatgutpuder, ASU	heptachlor
051	Agronex–Hepta, CME	heptachlor
052	Agronex–Hepta–flüssig, CME	heptachlor
053	Sarea–Samenpille, Uni	heptachlor
060	Varonit, Bay	hexachlor–benzol (HCB)
061	Varonit–Morkit, Bay	hexachlor–benzol (HCB)
062	A Agrano–Krahex, ASU	hexachlor–benzol (HCB)
063	Abavit–Corbin, Sch	hexachlor–benzol (HCB)
064	Abavit, Sch	hexachlor–benzol (HCB)
065	Ceresan–Universal–Trockenbeize–Bay	hexachlor–benzol (HCB)
066	Falisan–Universal–Trockenbeize–2,5,Els	hexachlor–benzol (HCB)
067	Trockenbeize 4613, Bay	hexachlor–benzol (HCB)
068	Abavit–Gamma–Corbin, Sch	hexachlor–benzol (HCB)
070	Kelthane PPS	kelthane
071	Kelthane Merck, CME	kelthane
072	Kelthane MF, Spi, Ura	kelthane
073	Kelthane MR RIEDEL, RdH	kelthane
074	Kelthane "Spiess–Urania," Spi, Ura	kelthane
080	Agronex, CME	lindane
081	Gamma–Betoxin, Pro	lindane
082	Gamma–Saatgutpuder Bayer, Bay	lindane
083	Hortex–Saatgutpuder, CME	lindane
084	Lindan forte, PPS	lindane
085	Luxan Lindan–Saatgutpuder, Lux	lindane
086	Nexit–stark, CME	lindane
087	Verindal, Ultra, Sch	lindane
088	A Alindan–Inkrusta–S, ASU	lindane
089	Agronex–Spezial, CME	lindane
090	Lindamal Neu, Bay	lindane
091	Verindal Rapspuder, Sch	lindane

TABLE 5.13 Brand of Pesticide (Continued)

092	Insektenpuder, PPS	lindane
093	Detia–Pflanzo–Emulsion, DEL	lindane
094	Oktagam Neu, ASU, Pro	lindane
120	Cuprogram Neu, ASU	methoxychlor
121	Kaltnebellösung Methoxychlor N200, CGD	methoxychlor
122	Methoxychlor–Emulsion, ASU, Pro	methoxychlor
123	Methoxychlor–Stäubemittel, ASU, Pro	methoxychlor

TABLE 5.14 Animal Kinds and Codes

Code	Name
030	Alpaca
850	Ass (donkey)
050	Buffalo, water
040	Camel
060	Cat
070	Cattle
140	Chicken
170	Deer
210	Dog
230	Duck
255	Fish
280	Fox
350	Goat
355	Goose
360	Guinea–pig
160	Hamster
150	Hare
420	Horse
450	Llama
490	Man
560	Mink
510	Mouse
130	Mule
570	Pigeon
580	Quail
630	Rabbit
700	Rat
720	Reindeer
610	Roe (deer)
710	Ruminants[a]
770	Sheep
840	Swine
860	Test tube (*in vitro*)
910	Turkey
920	Zebra
930	Zebu

[a] Ruminant data are entered as cattle and sheep data (animal kind, codes 070 and 770). When ruminant values are to appear in feed tables, etc., the computer averages the combined cattle and sheep data and this is printed as ruminant data (code 710). Ruminant data published in the literature are usually calculated values and should not be entered into the system.

TABLE 5.15 Animal Breeds

Code	Breed
Ass (Donkey) Code 850	
100	Abyssinian
200	East African
700	Somali
750	Southern African
800	Sudanese Pacis
850	Sudanese Riding
Buffalo, water Code 050	
250	Egyptian
350	Iranian
400	Iraqi
Cattle Code 070	
050	Aberdeen Angus
055	Abyssinian-Shorthorned Zebu-Ingessana
056	Abyssinian-Shorthorned Zebu-Murle
060	Africander-Bolowana
061	Africander-Bonsmara
065	Alur
070	Angolian-Kisantu
071	Angolian-Nateba
075	Ankole-Bahima
076	Ankole-Bashi
077	Ankole-Kigezi
078	Ankole-Watusi
080	Angoni-Mozambique Angoni
081	Angoni-Northern Rhodesia
082	Angoni-Nyasa Zebu
083	Angoni-Nyasaland
090	Arado-Asaorta
091	Arado-Baria and Biberi
092	Arado-Beja
093	Arado-Galla
094	Arado-Tigre
095	Arado-Wagara
096	Arado-Wallega
100	Ayrshire
110	Barotse, Baila
120	Basuto, Drakensberger
150	Beefmaster
160	Boran-Kenya
161	Boran-Somali
162	Boran-Tanaland
200	Brahman
250	Brangus
275	Brown Atlas
300	Brown Swiss
350	Charbray
375	Charolais
387	Charolais x Brahman
390	Criollo
392	Damascus
394	Danakil
396	Egyptian
400	Galloway
980	German Black Pied
997	German Brown
990	German Red
985	German Red Pied
995	German Simmental
993	German Yellow
450	Guernsey
500	Hereford
550	Holstein Friesian
561	Humped and Humpless Crosses-Bambra or Mere
562	Humped and Humpless Crosses-Biu
563	Humped and Humpless Crosses-Borgu
564	Humped and Humpless Crosses-Djakore (Senegal)
565	Humped and Humpless Crosses-"Sanga"
570	Humped (Zebus)-Adamawa
571	Humped (Zebus)-Azaouak
572	Humped (Zebus)-Diali
573	Humped (Zebus)-Fellota
574	Humped (Zebus)-Maure
575	Humped (Zebus)-Red Bororo
576	Humped (Zebus)-Senegal Fulani
577	Humped (Zebus)-Shuwa
578	Humped (Zebus)-Sokota
579	Humped (Zebus)-Sudanese Fulani
580	Humped (Zebus)-Tuareg
581	Humped (Zebus)-White Fulani
590	Iranian
595	Iraqui
600	Jersey
610	Karamajong-Karamajong
611	Karamajong-Toposa

TABLE 5.15 Animal Breeds (Continued)

Code	Breed
Cattle (continued)	
612	Karamajong-Turkana
615	Korean Native
620	Kurdi
625	Lake Chad Cattle-Kuri
626	Lake Chad Cattle-Kuri x Zebu
630	Lebanese
635	Libyan
638	Madagascar Zebu, Rana
642	Mashona
646	Matabele-Goverui
648	Matabele-Inkoue
650	Milking Shorthorn
660	Nilotic
670	Naganda-Kyoga
671	Naganda-Serere
675	Nguni, Bapedi
680	North Sudan Zebu-Baggara
681	North Sudan Zebu-Begait
682	North Sudan Zebu-Kenana
683	North Sudan Zebu-Red Butana
685	Nuba Mountain
690	Oksh
695	Ovambo
700	Polled Hereford
750	Polled Shorthorn
800	Red Pole
825	Red Pole x Criollo
850	Santa Gertrudis
875	Santa Gertrudis x Criollo
900	Shorthorn
902	Small East African Zebu-Lugware
903	Small East African Zebu-Mongalla
904	Small East African Zebu-Masai
905	Small East African Zebu-Nandi
906	Small East African Zebu-Nkedi
907	Small East African Zebu-Tanganyika
908	Small East African Zebu-Zanzibar
915	Small Humpless Cattle-Baoule (Ivory Coast)
916	Small Humpless Cattle-Dwarf Shorthorn
917	Small Humpless Cattle-Gold Coast
918	Small Humpless Cattle-N'Dama
925	Small Zebus of the Somaliland-Garre
926	Small Zebus of the Somaliland-Gasara
927	Small Zebus of the Somaliland-North Somali
930	Sukuma
935	Tonga
940	Tswana-Batawana
941	Tswana-Damara
942	Tswana-Sengola and Sheshaga
943	Tswana-Southern
950	Tuli
955	Tuli or Jiddu
970	Zebu
975	Zebu x Criollo
Chickens Code 140	
020	Australorpus
040	Blue Andalusians
060	Buff-laced Polish
080	Buff Cochins
110	Buff Leghorns
140	Buff Orpingtons
170	Buff Plymouth Rocks
200	Buff Wyandottes
220	Buttercups
240	Columbian Wyandottes
260	Golden Speckled Hamburgs
280	Jersey Black Giants
300	Jersey White Giants
320	Lamonas
340	Light Bramas
360	New Hampshire
380	Partridge Cochins
400	Partridge Plymouth Rocks
420	Partridge Wyandottes
410	Rhode Island Reds
440	Rhode Island Whites
450	Shaver
460	Silver-laced Wyandottes
480	Silver Penciled Hamburgs
500	Silver Penciled Plymouth Rocks
530	Silver Spangled Hamburgs
560	Single Comb Anconas
590	Single Comb Black Leghorns
620	Single Comb Black Minorcas
650	Single Comb Black Tailed Red Leghorns

TABLE 5.15 Animal Breeds (Continued)

Code	Breed
Chickens (continued)	
680	Single Comb Buff Minorcas
710	Single Comb Dark Leghorns
740	Single Comb Light Leghorns
770	Single Comb Rhode Island Reds
800	Single Comb White Leghorns
820	Single Comb White Orpingtons
840	Speckled Sussex
860	White Cornish
880	White Dorking
900	White-laced Red Cornish
920	White Minorcas
940	White Plymouth Rocks
960	White Wyandottes
Fish Code 255	
900	Trout (rainbow)
Goats Code 350	
100	Angola
200	Angora
210	Arab
220	Benadir, Biunal
221	Benadir, Garre
222	Benadir, Tuni
260	Congo
280	Damascus
300	East African, Boran
301	East African, Kigezi
302	East African, Nubendi
303	East African, Small East African
320	Egyptian
340	Eritrean and Byssinian, Aruis-Bale
341	Eritrean and Abyssinian, Kanakil
342	Eritrean and Abyssinian, Galla-Sidamo
360	Fouta Djallon
885	German Improved Fawn
880	German Improved White
400	Iraqui
500	Karakul
540	Kurdi
560	Madagascar
800	Milk Goats
810	Nubian
815	Sahel
825	Sokoto or Maradi
830	Somali, Abgal
831	Somali, Kenya
832	Somali, Ogaden
833	Somali, Somaliland Protectorate
840	Southern Africa, Angola
841	Southern Africa, Bechuanaland
842	Southern Africa, Boer
843	Southern Africa, Northern Rhodesia
844	Southern Africa, Mozambique
845	Southern Africa, Nyasaland
846	Southern Africa, Pafuri
847	Southern Africa, South West Africa
848	Southern Africa, Southern Rhodesia
849	Southern Africa, Swazi
850	Southern Africa, Zulu
855	Southern Sudan
860	Sudanese Desert
865	Sudanese Nubian
870	Syrian Mountain
Horse Code 420	
020	Abyssinian-Galla
040	American Jack
110	American Quarter
180	American Saddle
250	Appaloosa
270	Arab-Barb Type, Beledougou or Banamba
271	Arab-Barb Type, Chad
272	Arab-Barb Type, Hodh
273	Arab-Barb Type, Horse of the South
274	Arab-Barb Type, Sahel
275	Arab-Barb Type, The Djerma
320	Arabian
340	Barb
360	Berber
380	Dongola
400	Dongola Type, Dongola
401	Dongola Type, Dongola-Barb
402	Dongola Type, Housa
403	Dongola Type, Songhai
490	Draft
993	Dulmer Pony
992	East Friesian
520	Egyptian
986	German Thoroughbred

TABLE 5.15 Animal Breeds (Continued)

Code	Breed
Horses (continued)	
560	Hackney
989	Hanover
990	Holstein
600	Kurdi
630	Morgan
650	Mzabite
991	Oldenburg
700	Palomino
740	Persian Arab
770	Pony
771	Pony, Bobo or Bodoy
772	Pony, Kirdi
773	Pony, Koto-Koli
774	Pony, N'Bayar
775	Pony, N'Par
776	Pony, Torodi
800	Somali Pony
820	South African Horse, Boer Horse
821	South African Horse, Basuto Pony
822	South African Horse, Cape Horse
823	South African Horse, Namaqua Pony
840	Standardbred
987	Standardbred, Trotter
875	Syrian
910	Tennessee Walking
980	Thoroughbred
988	Trakehnen
985	Western Sudan Pony
Sheep Code 770	
005	Abyssinian, Akele Guzai
006	Abyssinian, Arusi-Bale
007	Abyssinian, Mens
008	Abyssinian, Rashaidi
009	Abyssinian, Tucur
015	Africander, Damara
016	Africander, Namaqua
017	Africander, Ronderib
018	Africander, Transvaal
019	Akkaraman (Turkish)
020	Algerian Arab
023	Angola Thin-Tailed
026	Arab
029	Arabi
032	Arrit
035	Atlantic Coast of Morocco
038	Ausimi
041	Awassi
044	Barbary
047	Berber
050	Beni Guil
982	Bentheim
052	Black-Faced Highland
053	Black Head Persian
055	Black Head Persian Derivatives, Bezuidenhout Africander
056	Black Head Persian Derivatives, Dorper
057	Black Head Persian Derivatives, Van Rooy
058	Black Head Persian Derivatives, Wiltiper
060	Cheviot
120	Columbia
130	Congo Dwarf
140	Congo Long-Legged
180	Corriedale
190	Cotswold
215	Criolla
240	Debouillet
275	Dongola
300	Dorset
310	East African Black-Head
320	East African Long-Tailed, Tanganyka Long-Tailed
321	East African Long-Tailed, Ruanda Urundi
330	Fellahi
989	German Blackheaded Mutton
981	German Heath
986	German Mountain
987	German Mutton Merino
990	German Whiteheaded Mutton
340	Hampshire
350	Iran Fat-Tailed
355	Iran Thin-Tailed
360	Karakul
365	Kurdi
984	Leine
363	Lincoln
370	Macina
375	Madagascar
380	Masai, N.E. Uganda
381	Masai, Nandi

TABLE 5.15 Animal Breeds (Continued)

Code	Breed
Sheep (continued)	
382	Masai, Samburu
985	Mast Friesian
420	Merino
440	Mondombes
480	Montdale
376	Morkaraman
489	Naumi, Bapedi
491	Naumi, Landim
429	Naumi, Swazi
493	Naumi, Zulu
500	Northern Sudanese Sheep, Baraka
501	Northern Sudanese Sheep, Gezira
502	Northern Sudanese Sheep, Sudanese Desert
503	Northern Sudanese Sheep, Wallega
540	Oxford
600	Panama
640	Rahmani
660	Rambouillet
690	Rambouillet x Merino
700	Rhodesian, Northern Rhodesia
701	Rhodesina, Nyasaland
702	Rhodesian, Southern Rhodesia
720	Romeldale
730	Romney
740	Ryeland
780	Shropshire
800	Somali, Adali
801	Somali, Kenya
802	Somali, Toposa
820	Southdale
840	Southdown
880	Southern Sudan
900	Suffolk
930	Suffolk x Western
940	Tadla
950	Tadmit
955	Tailless
960	Targhee
983	Thoen
965	Tswana
970	West African Dwarf
968	West African, Fellata
966	West African, Zaghaw
975	West African Long Legged, Arab (Maure)
976	West African Long-Legged, Fulani
977	West African Long-Legged, Taureg
980	Western-Southdown
988	Wurttemberg Merino
Swine Code 840	
050	American Landrace
953	Angeln Saddleback (Angler Sattelschwein)
150	Berkshire
250	Chester White
350	Duroc
951	German Landrace (Deutsche Landrasse)
954	German Pasture (Deutsches Weideschwein)
952	German Yorkshire (Deutsches Weisses Edelschwein)
450	Hampshire
550	Hereford
650	Poland China
750	Poland China, Spotted
850	Tamworth
950	Yorkshire
Turkeys Code 910	
100	Black
300	Bourbon Red
500	Broad-Breasted Bronze
700	Narragansett
900	White Holland

TABLE 5.3 Codes for the Analytical Code Factor

Code	Description
01	Chemical
02	Atomic absorption
03	Spectographic
04	Chromatographic
05	Chromatography in thin layers
06	Chromatography by gas
07	Gravimetry
08	Microbiological
09	Activation of neutron
10	Paper chromatography
11	Polarography
12	Spectrophotometry
13	Volumetry
14	Biological
15	Flame photography
20	AOAC method
21	European Community Method
22	Method of VDLUFA[a]

[a]Naumann, K., und Bassler, R. 1972.

TABLE 5.17 Unit or Conversion Codes and Factors

Code No.	To convert from	To	Multiply by
01	%	mg/kg	10,000.
02	kcal/g	kcal/kg	1,000.
03	kcal/100g	kcal/kg	10.
04	g/100g	%	1.
04	ppm	mg/kg	1.
05	ICU/100g	ICU/g	0.01
05	IU/100g	IU/g	0.01
05	µg/100g	mg/kg	0.01
06	g/kg or mg/g	%	0.1
07	IU/kg	IU/g	0.001
07	mg/100g	%	0.001
08	mg/kg	%	0.0001
08	ppm	%	0.0001
09	therms per lb	kcal/kg	2,204.6
10	therms/100 lb	kcal/kg	22.046
11	kcal/lb	kcal/kg	2.2046
11	µg/lb	µg/kg	2.2046
11	mg/lb	mg/kg	2.2046
13	g/lb	%	0.22046
14	ICU/lb	ICU/g	0.002205
14	IU/lb	IU/g	0.002205
14	µg/lb	mg/kg	0.002205
15	mg/lb	%	0.00022
17	BTU/kg	kcal/kg	0.252
18	BTU/lb	kcal/kg	0.5556
19	µg crystalline vitamin A alcohol/kg	IU/g	.00333
20	µg crystalline vitamin A alcohol/100g	IU/g	.0333
21	µg crystalline vitamin A alcohol/g	IU/g	3.33
23	µg vitamin A acetate/kg	IU/g	.002906
24	µg vitamin A acetate/100g	IU/g	.02906
25	µg vitamin A acetate/g	IU/g	2.906

TABLE 5.17 Unit or Conversion Codes and Factors (Continued)

Code No.	To convert from	To	Multiply by
27	μg vitamin A palmitate/kg	IU/g	.001818
28	μg vitamin A palmitate/100g	IU/g	.01818
29	μg vitamin A palmitate/g	IU/g	1.818
31	μg beta-carotene/kg	IU/g	.001667
32	μg beta-carotene/100g	IU/g	.01667
33	μg beta-carotene/g	IU/g	1.667
35	% CaO	% Ca	0.715
36	% Fe_2O_3	% Fe	0.699
37	% K_2O	% K	0.830
38	% M_gO	% Mg	0.603
39	% Na_2O	% Na	0.742
40	% P_2O_5	% P	0.436
41	% SO_2	% S	0.500
42	mg/kg Cu_2O	mg/kg Cu	0.888
43	mg/kg Mn O	mg/kg Mn	0.774
44	% of fat	% of total	Fat % (nutrient No. 107) x 0.01
45	% of fat	% of total	Total fatty acids % (nutrient No. 210) x 0.01
46	Joule	cal	.2389
46	kJ	kcal	.2389
46	MJ	Mcal	.2389
47	Code for putting D after digestion coefficients and availability coefficients		
48	cal	J	4.184
48	kcal	kJ	4.184
48	Mcal	MJ	4.184
95	% of nitrogen	% of total	nitrogen % (nutrient No. 212) x 0.0625
96	% of protein	% of total	protein % (nutrient No. 109) x amino acid % x 0.01
97	% of ash	% of total	ash % (nutrient No. 105) x mineral % x 0.01
98	ppm of ash	% of total	ash % (nutrient No. 105) x mineral ppm x 0.000001
99	ppm ash	mg/kg of total	ash % (nutrient No. 105) x mineral ppm x 0.01

TABLE 5.18 Types of Data That Can be Converted to % Amino Acids or % of Fat in Dry Matter

On source form							Summarization		
Dry matter	Protein or fat or total fatty acids	Amino acids or fatty acids	Conversion to dry matter basis	Conversion to amino acid or fatty acid as % of feed	Unit code factor	Stored in data bank as	Printout as amino acid or fatty acid	Can be converted to % of protein, % of fat basis, fatty acid basis	Traded or not traded
Available	Available DM basis	On dry basis	Not necessary	Not necessary	Not necessary	amino acid or fatty acid (dry basis)	Yes as fed and dry basis	Yes[d]	Yes
Available	Missing	On dry basis	Not necessary	Not necessary	Not necessary	amino acid or fatty acid (dry basis)	Yes dry basis only	No	Yes
Missing	Missing	On dry basis	Not necessary	Not necessary	Not necessary	amino acid or fatty acid (dry basis)	Yes dry basis only	No	Yes
Available	Available as fed basis	On as fed basis	Yes[b]	Not necessary	Not necessary	amino acid or fatty acid (dry basis)	Yes as fed and dry basis	Yes[d]	Yes
Available	Missing	On as fed basis	Yes[b]	Not necessary	Not necessary	amino acid or fatty acid (dry basis)	Yes as fed and dry basis	No	Yes
Available	Available on dry basis	As % of protein, fat, or total fatty acids	Not necessary	Yes[c]	44, 45, or 96	amino acid or fatty acid (dry basis)	Yes as fed and dry basis	Yes[d]	
Available	Missing	As % of protein, fat, or total fatty acids	No	No	P, F, or T F	as % of protein or fat	Not possible	Not necessary on protein or fat basis	No
Missing	Missing	As % of protein[a], fat, or total fatty acids	No	No	P, F, or T F	as % of protein or fat	Not possible	Not necessary on protein or fat basis	No
Available	Available on as fed basis	As % of protein[a], fat, or total fatty acids	Yes[b]	Yes[c]	44, 45, or 96	amino acid or fatty acid (dry basis)	Yes as fed and dry basis	Yes[d]	Yes
Missing	Available on dry basis	As % of protein[a], fat, or total fatty acids	Not necessary	Yes[c]	44, 45, or 96	amino acid or fatty acid (dry basis)	Yes dry basis only	Yes[d]	Yes

[a] The term "Amino acid as % of protein" seems less ambiguous than expressions such as "amino acid in g/16 g N"

[b] To convert amino acid on as fed basis to dry matter basis = $\frac{\text{amino acid on as fed basis} \times 100 \text{ (same for fatty acid basis)}}{\text{DM\%}}$

[c] See Section 5.8. For example to convert from % of protein (Amino acid/16 g N) to % of dry matter use code 96 (arginine in % of feed = arginine as % of protein x protein % [nutrient No. 109] x 0.01).

[d] For example to convert amino acid as % of feed to amino acid as % of protein = $\frac{\text{arginine as \% of feed} \times 100}{\text{protein as \% of feed}}$

TABLE 6.1 List of Attributes and Codes

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit		Number Digits to Right of Decimal Point
0005	105	000	01	ASH		%	1
0010	547	000	01	ASH, ACID INSOLUBLE (SILICA)		%	1
0015	344	000	01	ASH, SOLUBLE		%	1
0020	559	000	01	ASH, NEUTRAL DETERGENT		%	2
0025	106	000	01	CRUDE FIBER		%	1
0030	106D	070	02	CATTLE	DIG COEF	%	0
0035	106D	210	02	DOGS	DIG COEF	%	0
0040	106D	280	02	FOXES	DIG COEF	%	0
0045	106D	350	02	GOATS	DIG COEF	%	0
0050	106D	420	02	HORSES	DIG COEF	%	0
0055	106D	490	02	MAN	DIG COEF	%	0
0060	106D	560	02	MINK	DIG COEF	%	0
0065	106D	630	02	RABBITS	DIG COEF	%	0
0070	106D	700	02	RATS	DIG COEF	%	0
0075	106D	710	02	RUMINANTS	DIG COEF	%	0
0080	106D	770	02	SHEEP	DIG COEF	%	0
0085	106D	840	02	SWINE	DIG COEF	%	0
0090	931D	860	02	IN VITRO	DIG COEF	%	0
0095	101	000	01	DRY MATTER		%	1
0100	101D	070	02	CATTLE	DIG COEF	%	0
0105	101D	210	02	DOGS	DIG COEF	%	0
0110	101D	280	02	FOXES	DIG COEF	%	0
0115	101D	350	02	GOATS	DIG COEF	%	0
0120	101D	420	02	HORSES	DIG COEF	%	0
0125	101D	490	02	MAN	DIG COEF	%	0
0130	101D	560	02	MINK	DIG COEF	%	0
0135	101D	630	02	RABBITS	DIG COEF	%	0
0140	101D	700	02	RATS	DIG COEF	%	0
0145	101D	770	02	SHEEP	DIG COEF	%	0
0150	101D	840	02	SWINE	DIG COEF	%	0
0155	916D	860	02	IN VITRO (TILLY)	DIG COEF	%	0
0160	959D	860	02	IN VITRO (BARNES)	DIG COEF	%	0
0165	962D	860	02	IN VITRO (VAN SOEST)	DIG COEF	%	0
0170	929D	000	02	ESTIMATED (VAN SOEST)	DIG COEF	%	0
0175	930D	070	02	CATTLE (NYLON BAG)	DIG COEF	%	0
0180	930D	770	02	SHEEP (NYLON BAG)	DIG COEF	%	0
0185	107	000	01	ETHER EXTRACT OR CRUDE FAT		%	1
0190	107D	070	02	CATTLE	DIG COEF	%	0
0195	107D	210	02	DOGS	DIG COEF	%	0
0200	107D	280	02	FOXES	DIG COEF	%	0
0205	107D	350	02	GOATS	DIG COEF	%	0
0210	107D	420	02	HORSES	DIG COEF	%	0
0215	107D	490	02	MAN	DIG COEF	%	0
0220	107D	560	02	MINK	DIG COEF	%	0
0225	107D	630	02	RABBITS	DIG COEF	%	0

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit	Number Digits to Right of Decimal Point
0230	107D	700	02	RATS	DIG COEF %	0
0235	107D	710	02	RUMINANTS	DIG COEF %	0
0240	107D	770	02	SHEEP	DIG COEF %	0
0245	107D	840	02	SWINE	DIG COEF %	0
0250	108	000	01	NITROGEN FREE EXTRACT	%	1
0255	108D	070	02	CATTLE	DIG COEF %	0
0260	108D	210	02	DOGS	DIG COEF %	0
0265	108D	280	02	FOXES	DIG COEF %	0
0270	108D	350	02	GOATS	DIG COEF %	0
0275	108D	420	02	HORSES	DIG COEF %	0
0280	108D	490	02	MAN	DIG COEF %	0
0285	108D	560	02	MINK	DIG COEF %	0
0290	108D	630	02	RABBITS	DIG COEF %	0
0295	108D	700	02	RATS	DIG COEF %	0
0300	108D	710	02	RUMINANTS	DIG COEF %	0
0305	108D	770	02	SHEEP	DIG COEF %	0
0310	108D	840	02	SWINE	DIG COEF %	0
0315	110	000	01	ORGANIC MATTER	%	1
0320	117	350	63	GOATS DIG ORGANIC MATTER	%	0
0325	117	770	63	SHEEP DIG ORGANIC MATTER	%	0
0330	927D	860	02	IN VITRO (MOORE)	DIG COEF %	0
0335	112D	860	02	IN VITRO (TILLY)	DIG COEF %	0
0340	109	000	01	PROTEIN	%	1
0345	109D	070	02	CATTLE	DIG COEF %	0
0350	109D	210	02	DOGS	DIG COEF %	0
0355	109D	280	02	FOXES	DIG COEF %	0
0360	109D	350	02	GOATS	DIG COEF %	0
0365	109D	420	02	HORSES	DIG COEF %	0
0370	109D	490	02	MAN	DIG COEF %	0
0375	109D	560	02	MINK	DIG COEF %	0
0380	109D	630	02	RABBITS	DIG COEF %	0
0385	109D	700	02	RATS	DIG COEF %	0
0390	109D	710	02	RUMINANTS	DIG COEF %	0
0395	109D	770	02	SHEEP	DIG COEF %	0
0400	109D	840	02	SWINE	DIG COEF %	0
0403	963D	860	02	IN VITRO	DIG COEF %	0
0405	111	070	03	CATTLE	DIG PROT %	1
0410	111	210	03	DOGS	DIG PROT %	1
0415	111	280	03	FOXES	DIG PROT %	1
0420	111	350	03	GOATS	DIG PROT %	1
0425	111	420	03	HORSES	DIG PROT %	1
0430	111	490	03	MAN	DIG PROT %	1
0435	111	560	03	MINK	DIG PROT %	1
0440	111	630	03	RABBITS	DIG PROT %	1
0445	111	700	03	RATS	DIG PROT %	1
0450	111	710	03	RUMINANTS	DIG PROT %	1
0455	111	770	03	SHEEP	DIG PROT %	1
0460	111	840	03	SWINE	DIG PROT %	1

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit	Number Digits to Right of Decimal Point
0465	212	000	01	NITROGEN	%	1
0470	213	000	01	NITROGEN FACTOR (6.25)		2
0475	963	000	01	NITROGEN, TOTAL	%	1
0480	784	000	01	BIOLOGICAL VALUE (MITCHELL)	%	0
0485	785	000	01	CHEMICAL SCORE (BLOCK)	%	0
				CARBOHYRDATES AND RELATED COMPOUNDS		
0495	341	000	01	ARABINOSE	%	1
0500	325	000	01	CARBOHYRDATES, OTHER	%	1
0505	334	000	01	CARBOHYDRATES BY DIFFERENCE	%	1
0510	321	000	01	CARBOHYDRATES, AVAILABLE	%	0
0515	324	000	01	CELL CONTENTS (FONNESBECK)	%	1
0520	328	000	01	CELL CONTENTS, (NEUTRAL DETERGENT SOLUBLES)(VAN SOEST)	%	1
0525	328D	070	02	CATTLE	DIG COEF %	0
0530	328D	210	02	DOGS	DIG COEF %	0
0535	328D	280	02	FOXES	DIG COEF %	0
0540	328D	350	02	GOATS	DIG COEF %	0
0545	328D	420	02	HORSES	DIG COEF %	0
0550	328D	490	02	MAN	DIG COEF %	0
0555	328D	560	02	MINK	DIG COEF %	0
0560	328D	630	02	RABBITS	DIG COEF %	0
0565	328D	700	02	RATS	DIG COEF %	0
0570	328D	710	02	RUMINANTS	DIG COEF %	0
0575	328D	770	02	SHEEP	DIG COEF %	0
0580	328D	840	02	SWINE	DIG COEF %	0
0585	932D	860	02	IN VITRO	DIG COEF %	0
0590	337	000	01	CELL WALLS (FONNESBECK)	%	1
0595	329	000	01	CELL WALLS (NEUTRAL DETERGENT FIBER) (VAN SOEST)	%	1
0600	329D	070	02	CATTLE	DIG COEF %	0
0605	329D	210	02	DOGS	DIG COEF %	0
0610	329D	280	02	FOXES	DIG COEF %	0
0615	329D	350	02	GOATS	DIG COEF %	0
0620	329D	420	02	HORSES	DIG COEF %	0
0625	329D	490	02	MAN	DIG COEF %	0
0630	329D	560	02	MINK	DIG COEF %	0
0635	329D	630	02	RABBITS	DIG COEF %	0
0640	329D	700	02	RATS	DIG COEF %	0
0645	329D	710	02	RUMINANTS	DIG COEF %	0
0650	329D	770	02	SHEEP	DIG COEF %	0
0655	329D	840	02	SWINE	DIG COEF %	0
0657	933D	860	02	IN VITRO	DIG COEF %	0
0660	237	000	01	NITROGEN IN NEUTRAL DETERGENT FIBER	%	2
0670	327	000	01	CELL WALL CARBOHYDRATES	%	0

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit		Number Digits to Right of Decimal Point
0675	323	000	01	CELLULOSE (CRAMPTON)		%	1
0680	323D	070	02	CATTLE	DIG COEF	%	0
0685	323D	210	02	DOGS	DIG COEF	%	0
0690	323D	280	02	FOXES	DIG COEF	%	0
0695	323D	350	02	GOATS	DIG COEF	%	0
0700	323D	420	02	HORSES	DIG COEF	%	0
0705	323D	490	02	MAN	DIG COEF	%	0
0710	323D	560	02	MINK	DIG COEF	%	0
0715	323D	630	02	RABBITS	DIG COEF	%	0
0720	323D	700	02	RATS	DIG COEF	%	0
0725	323D	710	02	RUMINANTS	DIG COEF	%	0
0730	323D	770	02	SHEEP	DIG COEF	%	0
0735	323D	840	02	SWINE	DIG COEF	%	0
0740	934D	860	02	CELLULOSE (CRAMPTON) IN VITRO	DIG COEF	%	0
0745	338	000	01	CELLULOSE (FONNESBECK)		%	1
0750	314	000	01	CELLULOSE (MATRONE)		%	1
0755	314D	070	02	CATTLE	DIG COEF	%	0
0760	314D	210	02	DOGS	DIG COEF	%	0
0765	314D	280	02	FOXES	DIG COEF	%	0
0770	314D	350	02	GOATS	DIG COEF	%	0
0775	314D	420	02	HORSES	DIG COEF	%	0
0780	314D	490	02	MAN	DIG COEF	%	0
0785	314D	560	02	MINK	DIG COEF	%	0
0790	314D	630	02	RABBITS	DIG COEF	%	0
0795	314D	700	02	RATS	DIG COEF	%	0
0800	314D	710	02	RUMINANTS	DIG COEF	%	0
0805	314D	770	02	SHEEP	DIG COEF	%	0
0810	314D	840	02	SWINE	DIG COEF	%	0
0815	315D	860	02	IN VITRO (MATRONE)	DIG COEF	%	0
0820	354	000	01	CELLULOSE (SCHARRER)		%	1
0825	330	000	01	CELLULOSE (VAN SOEST)		%	1
0830	330D	070	02	CATTLE	DIG COEF	%	0
0835	330D	210	02	DOGS	DIG COEF	%	0
0840	330D	280	02	FOXES	DIG COEF	%	0
0845	330D	350	02	GOATS	DIG COEF	%	0
0850	330D	420	02	HORSES	DIG COEF	%	0
0855	330D	490	02	MAN	DIG COEF	%	0
0860	330D	560	02	MINK	DIG COEF	%	0
0865	330D	630	02	RABBITS	DIG COEF	%	0
0870	330D	700	02	RATS	DIG COEF	%	0
0875	330D	710	02	RUMINANTS	DIG COEF	%	0
0880	330D	770	02	SHEEP	DIG COEF	%	0
0885	330D	840	02	SWINE	DIG COEF	%	0
0890	937D	860	02	IN VITRO (VAN SOEST)	DIG COEF	%	0
0895	351	000	01	CHITIN		%	1

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit	Number Digits to Right of Decimal Point
0900	273	000	01	FIBER, ACID DETERGENT (VAN SOEST)	%	1
0905	273D	070	02	CATTLE	DIG COEF %	0
0910	273D	210	02	DOGS	DIG COEF %	0
0915	273D	280	02	FOXES	DIG COEF %	0
0920	273D	350	02	GOATS	DIG COEF %	0
0925	273D	420	02	HORSES	DIG COEF %	0
0930	273D	490	02	MAN	DIG COEF %	0
0935	273D	560	02	MINK	DIG COEF %	0
0940	273D	630	02	RABBITS	DIG COEF %	0
0945	273D	700	02	RATS	DIG COEF %	0
0950	273D	710	02	RUMINANTS	DIG COEF %	0
0955	273D	770	02	SHEEP	DIG COEF %	0
0960	273D	840	02	SWINE	DIG COEF %	0
0965	935D	860	02	FIBER, ACID DETERGENT IN VITRO	DIG COEF %	0
0973	239	000	01	NITROGEN IN ACID DETERGENT FIBER	%	2
0970	349	000	01	FRUCTOSE	%	1
0980	336	000	01	GALACTOSE	%	1
0985	355	000	01	GLUCOSE	%	1
0990	316	000	01	GLUCOSIDES	%	1
0995	317	000	01	HEMICELLULOSE	%	1
1000	317D	070	02	CATTLE	DIG COEF %	0
1005	317D	210	02	DOGS	DIG COEF %	0
1010	317D	280	02	FOXES	DIG COEF %	0
1015	317D	350	02	GOATS	DIG COEF %	0
1020	317D	420	02	HORSES	DIG COEF %	0
1025	317D	490	02	MAN	DIG COEF %	0
1030	317D	560	02	MINK	DIG COEF %	0
1035	317D	630	02	RABBITS	DIG COEF %	0
1040	317D	700	02	RATS	DIG COEF %	0
1045	317D	710	02	RUMINANTS	DIG COEF %	0
1050	317D	770	02	SHEEP	DIG COEF %	0
1055	317D	840	02	SWINE	DIG COEF %	0
1060	936D	860	02	IN VITRO	DIG COEF %	0
1065	339	000	01	HEMICELLULOSE (FORNESBECK)	%	1
1070	320	000	01	HEXOSANS	%	1
1075	348	000	01	HEXOSES	%	1
1080	352	000	01	INULIN	%	1
1085	331	000	01	LACTOSE	%	2
1090	211	000	01	LIGNIN (ELLIS)	%	1
1095	211D	070	02	CATTLE	DIG COEF %	0
1100	211D	350	02	GOATS	DIG COEF %	0
1105	211D	420	02	HORSES	DIG COEF %	0
1110	211D	490	02	MAN	DIG COEF %	0
1115	211D	630	02	RABBITS	DIG COEF %	0
1120	211D	700	02	RATS	DIG COEF %	0

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit	Number Digits to Right of Decimal Point
1125	211D	710	02	RUMINANTS	DIG COEF %	0
1130	211D	770	02	SHEEP	DIG COEF %	0
1135	211D	840	02	SWINE	DIG COEF %	0
1140	345	000	01	LIGNIN (FONNESBECK)	%	1
1145	272	000	01	LIGNIN (SULLIVAN)	%	1
1150	272D	070	02	CATTLE	DIG COEF %	0
1155	272D	350	02	GOATS	DIG COEF %	0
1160	272D	420	02	HORSES	DIG COEF %	0
1165	272D	490	02	MAN	DIG COEF %	0
1170	272D	630	02	RABBITS	DIG COEF %	0
1175	272D	700	02	RATS	DIG COEF %	0
1180	272D	710	02	RUMINANTS	DIG COEF %	0
1185	272D	770	02	SHEEP	DIG COEF %	0
1190	272D	840	02	SWINE	DIG COEF %	0
1195	270	000	01	LIGNIN (VAN SOEST)	%	1
1200	270D	070	02	CATTLE	DIG COEF %	0
1205	270D	350	02	GOATS	DIG COEF %	0
1210	270D	420	02.	HORSES	DIG COEF %	0
1215	270D	490	02	MAN	DIG COEF %	0
1220	270D	630	02	RABBITS	DIG COEF %	0
1225	270D	700	02	RATS	DIG COEF %	0
1230	270D	710	02	RUMINANTS	DIG COEF %	0
1235	270D	770	02	SHEEP	DIG COEF %	0
1240	270D	840	02	SWINE	DIG COEF %	0
1245	280	000	01	LIGNIN KMNO4 (VAN SOEST)	%	1
1250	280D	070	02	CATTLE	DIG COEF %	0
1255	280D	350	02	GOATS	DIG COEF %	0
1260	280D	420	02	HORSES	DIG COEF %	0
1265	280D	490	02	MAN	DIG COEF %	0
1270	280D	630	02	RABBITS	DIG COEF %	0
1275	280D	700	02	RATS	DIG COEF %	0
1280	280D	710	02	RUMINANTS	DIG COEF %	0
1285	280D	770	02	SHEEP	DIG COEF %	0
1290	280D	840	02	SWINE	DIG COEF %	0
1295	347	000	01	MALTOSE	%	1
1300	335	000	01	MANNOSE	%	1
1305	904	000	01	PECTIC SUBSTANCES	%	1
1310	318	000	01	PECTINS	%	1
1315	319	000	01	PENTOSANS	%	1
1320	340	000	01	PENTOSES	%	1
1325	343	000	01	RIBOSE	%	1
1330	326	000	01	STARCH	%	1
1335	346	000	01	SUCROSE	%	1
1340	322	000	01	SUGARS, TOTAL	%	1
1345	332	000	01	SUGARS, NON REDUCING	%	2
1350	333	000	01	SUGARS, REDUCING	%	2
1355	350	000	01	SUGAR, INVERT	%	1
1360	342	000	01	XYLOSE	%	1

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit		Number Digits to Right of Decimal Point
ENERGY UTILIZATION							
1365	421	000	53	ENERGY, GROSS	GE	MJ/KG	2
				ENERGY, DIGESTIBLE			
1370	422	060	54	CATS	DE	MJ/KG	2
1375	422	070	54	CATTLE	DE	MJ/KG	2
1380	422	210	54	DOGS	DE	MJ/KG	2
1385	422	255	54	FISH, SALMON, TROUT	DE	MJ/KG	2
1390	422	260	54	FISH, WARMWATER	DE	MJ/KG	2
1395	422	280	54	FOXES	DE	MJ/KG	2
1400	422	350	54	GOATS	DE	MJ/KG	2
1405	422	420	54	HORSES	DE	MJ/KG	2
1410	422	490	54	MAN	DE	MJ/KG	2
1415	422	560	54	MINK	DE	MJ/KG	2
1420	422	630	54	RABBITS	DE	MJ/KG	2
1425	422	700	54	RATS	DE	MJ/KG	2
1430	422	710	54	RUMINANTS	DE	MJ/KG	2
1435	422	770	54	SHEEP	DE	MJ/KG	2
1440	422	840	54	SWINE	DE	MJ/KG	2
				ENERGY, METABOLIZABLE			
1445	423	060	55	CATS	ME	MJ/KG	2
1450	423	070	55	CATTLE	ME	MJ/KG	2
1453	437	070	55	CATTLE LACTATING	ME	MJ/KG	2
1455	423	210	55	DOGS	ME	MJ/KG	2
1460	423	255	55	FISH, SALMON, TROUT	ME	MJ/KG	2
1465	423	260	55	FISH, WARMWATER	ME	MJ/KG	2
1470	423	280	55	FOXES	ME	MJ/KG	2
1475	423	350	55	GOATS	ME	MJ/KG	2
1480	423	420	55	HORSES	ME	MJ/KG	2
1485	423	490	55	MAN	ME	MJ/KG	2
1490	423	560	55	MINK	ME	MJ/KG	2
1495	423	630	55	RABBITS	ME	MJ/KG	2
1500	423	700	55	RATS	ME	MJ/KG	2
1505	423	710	55	RUMINANTS	ME	MJ/KG	2
1510	423	770	55	SHEEP	ME	MJ/KG	2
1515	423	840	55	SWINE	ME	MJ/KG	2
1520	425	140	55	CHICKENS	ME	MJ/KG	2
1525	424	140	57	CHICKENS	ME-N	MJ/KG	2
1530	424	910	57	TURKEYS	ME-N	MJ/KG	2
				ENERGY, NET			
1535	426	070	58	CATTLE	NE-M	MJ/KG	2
1540	426	710	58	RUMINANTS	NE-M	MJ/KG	2
1545	426	770	58	SHEEP	NE-M	MJ/KG	2
1550	426	840	58	SWINE	NE-M	MJ/KG	2

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit	Number Digits to Right of Decimal Point		
1555	427	070	59	CATTLE	NE-GAIN MJ/KG	2		
1560	427	759	59	RUMINANTS	NE-GAIN MJ/KG	2		
1565	427	770	59	SHEEP	NE-GAIN MJ/KG	2		
1570	427	840	59	SWINE	NE-GAIN MJ/KG	2		
1575	428	140	60	CHICKENS	NE-P MJ/KG	2		
1580	438	140	56	CHICKENS	TME MJ/KG	2		
1583	430	070	64	CATTLE	NE-L MJ/KG	2		
1585	433	070	62	CATTLE (NEHRING)	NEF MJ/KG	2		
1590	433	770	62	SHEEP (NEHRING)	NEF MJ/KG	2		
1595	433	840	62	SWINE (NEHRING)	NEF MJ/KG	2		
1605	421	000	11	ENERGY, GROSS	GE KCAL/KG	0		
1610	421	000	32	ENERGY, GROSS	GE MCAL/KG	2	.001	*
1615	421D	070	04	CATTLE	GE DIG COEF %	0		
1620	421D	210	04	DOGS	GE DIG COEF %	0		
1625	421D	280	04	FOXES	GE DIG COEF %	0		
1630	421D	350	04	GOATS	GE DIG COEF %	0		
1635	421D	420	04	HORSES	GE DIG COEF %	0		
1640	421D	490	04	MAN	GE DIG COEF %	0		
1645	421D	560	04	MINK	GE DIG COEF %	0		
1650	421D	630	04	RABBITS	GE .DIG COEF %	0		
1655	421D	700	04	RATS	GE DIG COEF %	0		
1660	421D	710	04	RUMINANTS	GE DIG COEF %	0		
1665	421D	770	04	SHEEP	GE DIG COEF %	0		
1670	421D	840	04	SWINE	GE DIG COEF %	0		
				ENERGY, DIGESTIBLE				
1675	422	060	05	CATS	DE KCAL/KG	0		
1680	422	070	32	CATTLE	DE MCAL/KG	2	.001	*
1685	422	070	05	CATTLE	DE KCAL/KG	0		
1690	422	210	05	DOGS	DE KCAL/KG	0		
1695	422	255	05	FISH, SALMON, TROUT	DE KCAL/KG	0		
1700	422	260	05	FISH, WARMWATER	DE KCAL/KG	0		
1705	422	280	05	FOXES	DE KCAL/KG	0		
1710	422	350	32	GOATS	DE MCAL/KG	2	.001	*
1715	422	350	05	GOATS	DE KCAL/KG	0		
1720	422	420	32	HORSES	DE MCAL/KG	2	.001	*
1725	422	420	05	HORSES	DE KCAL/KG	0		
1730	422	490	05	MAN	DE KCAL/KG	0		
1735	422	560	05	MINK	DE KCAL/KG	0		
1740	422	630	05	RABBITS	DE KCAL/KG	0		
1745	422	700	05	RATS	DE KCAL/KG	0		
1750	422	710	32	RUMINANTS	DE MCAL/KG	2	.001	*
1755	422	710	05	RUMINANTS	DE KCAL/KG	0		
1760	422	770	32	SHEEP	DE MCAL/KG	2	.001	*
1765	422	770	05	SHEEP	DE KCAL/KG	0		
1770	422	840	05	SWINE	DE KCAL/KG	0		
				ENERGY, METABOLIZABLE				
1775	423	060	06	CATS	ME KCAL/KG	0		

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit			Number Digits to Right of Decimal Point	
1780	423	070	33	CATTLE	ME	MCAL/KG		2	.001 *
1785	423	070	06	CATTLE	ME	KCAL/KG		0	
1790	437	070	33	CATTLE LACTATING	ME	MCAL/KG		2	.001 *
1795	437	070	06	CATTLE LACTATING	ME	KCAL/KG		0	
1800	425	140	06	CHICKENS	ME	KCAL/KG		0	
1805	423	210	06	DOGS	ME	KCAL/KG		0	
1810	423	255	06	FISH, SALMON, TROUT	ME	KCAL/KG		0	
1815	423	260	06	FISH, WARMWATER	ME	KCAL/KG		0	
1820	423	280	06	FOXES	ME	KCAL/KG		0	
1825	423	350	33	GOATS	ME	MCAL/KG		2	.001 *
1830	423	350	06	GOATS	ME	KCAL/KG		0	
1835	423	420	33	HORSES	ME	MCAL/KG		2	.001 *
1840	423	420	06	HORSES	ME	KCAL/KG		0	
1845	423	490	06	MAN	ME	KCAL/KG		0	
1850	423	560	06	MINK	ME	KCAL/KG		0	
1855	423	630	06	RABBITS	ME	KCAL/KG		0	
1860	423	700	06	RATS	ME	KCAL/KG		0	
1865	423	710	33	RUMINANTS	ME	MCAL/KG		2	.001 *
1870	423	710	06	RUMINANTS	ME	KCAL/KG		0	
1875	423	770	33	SHEEP	ME	MCAL/KG		2	.001 *
1880	423	770	06	SHEEP	ME	KCAL/KG		0	
1885	423	840	06	SWINE	ME	KCAL/KG		0	
1890	438	140	36	CHICKENS	TME	KCAL/KG		0	
1895	424	140	07	CHICKENS	ME-N	KCAL/KG		0	
1900	424	910	07	TURKEYS	ME-N	KCAL/KG		0	
				ENERGY, NET					
1905	426	070	34	CATTLE	NE-M	MCAL/KG		2	.001 *
1910	426	070	08	CATTLE	NE-M	KCAL/KG		0	
1915	426	710	34	RUMINANTS	NE-M	MCAL/KG		2	.001 *
1920	426	710	08	RUMINANTS	NE-M	KCAL/KG		0	
1925	426	770	34	SHEEP	NE-M	MCAL/KG		2	.001 *
1930	426	770	08	SHEEP	NE-M	KCAL/KG		0	
1935	426	840	08	SWINE	NE-M	KCAL/KG		0	
1940	427	070	35	CATTLE	NE-GAIN	MCAL/KG		2	.001 *
1945	427	070	10	CATTLE	NE-GAIN	KCAL/KG		0	
1950	427	710	35	RUMINANTS	NE-GAIN	MCAL/KG		2	.001 *
1955	427	710	10	RUMINANTS	NE-GAIN	KCAL/KG		0	
1960	427	770	35	SHEEP	NE-GAIN	MCAL/KG		2	.001 *
1965	427	770	10	SHEEP	NE-GAIN	KCAL/KG		0	
1970	427	840	10	SWINE	NE-GAIN	KCAL/KG		0	
1975	428	140	09	CHICKENS	NE-P	KCAL/KG		0	
1980	430	070	41	CATTLE	NE-L	MCAL/KG		2	.001 *
1985	433	070	46	CATTLE (NEHRING)	NEF	MCAL/KG		2	.001 *
1990	433	070	61	CATTLE (NEHRING)	NEF	KCAL/KG		0	
1995	433	770	46	SHEEP (NEHRING)	NEF	MCAL/KG		2	.001 *
2000	433	770	61	SHEEP (NEHRING)	NEF	KCAL/KG		0	
2005	433	840	61	SWINE (NEHRING)	NEF	KCAL/KG		0	

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit	Number Digits to Right of Decimal Point
				TDN		
2015	429	070	01	CATTLE	%	1
2020	429	210	01	DOGS	%	1
2025	429	280	01	FOXES	%	1
2030	429	350	01	GOATS	%	1
2035	429	420	01	HORSES	%	1
2040	429	560	01	MINK	%	1
2045	429	630	01	RABBITS	%	1
2050	429	700	01	RATS	%	1
2055	429	710	01	RUMINANTS	%	1
2060	429	770	01	SHEEP	%	1
2065	429	840	01	SWINE	%	1
2070	436	840	15	SWINE (LEHMANN)	%	1
				SCANDINAVIAN FEED UNIT		
2080	432	070	43	CATTLE	UNIT	2
2085	432	420	43	HORSES	UNIT	2
2090	432	770	43	SHEEP	UNIT	2
2095	432	840	43	SWINE	UNIT	2
2100	431	710	42	STARCH EQUIVALENT (SE)	UNIT	1
2105	006	000	00	CODES FOR SE		
2110	007	000	00	VALUE NUMBER FOR SE		
2115	434	000	00	STARCH UNIT		1
2120	114	000	01	NUTRITIVE MATTER (FONNESBECK)	%	1
2125	116	000	01	NONNUTRITIVE MATTER (FONNESBECK)	%	1
2130	435	000	01	NUTRIENTS,TOTAL	%	1
2135	912	000	01	NUTRITIVE VALUE INDEX (NVI)	%	0
2140	912D	070	01	CATTLE	%	0
2145	912D	210	01	DOGS	%	0
2150	912D	280	01	FOXES	%	0
2155	912D	350	01	GOATS	%	0
2160	912D	420	01	HORSES	%	0
2165	912D	490	01	MAN	%	0
2170	912D	560	01	MINK	%	0
2175	912D	630	01	RABBITS	%	0
2180	912D	700	01	RATS	%	0
2185	912D	770	01	SHEEP	%	0
2190	912D	840	01	SWINE	%	0
2195	917	000	01	RELATIVE INTAKE	%	0
2200	917D	070	01	CATTLE	%	0
2205	917D	210	01	DOGS	%	0
2210	917D	280	01	FOXES	%	0
2215	917D	350	01	GOATS	%	0
2220	917D	420	01	HORSES	%	0
2225	917D	490	01	MAN	%	0
2230	917D	560	01	MINK	%	0
2235	917D	630	01	RABBITS	%	0
2240	917D	700	01	RATS	%	0

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit	Number Digits to Right of Decimal Point
2245	917D	770	01	SHEEP	%	0
2250	917D	840	01	SWINE	%	0
MINERALS						
2255	548	000	17	ALUMINUM	MG/KG	2
2260	587	000	17	ANTIMONY	MG/KG	3
2265	585	000	17	ARSENIC	MG/KG	3
2270	567	000	17	BARIUM	MG/KG	3
2275	796	000	17	BERYLLIUM	MG/KG	3
2280	569	000	17	BORON	MG/KG	3
2285	584	000	17	BROMINE	MG/KG	3
2290	588	000	17	CADMIUM	MG/KG	3
2295	530	000	01	CALCIUM	%	2
2300	531	000	01	CHLORINE	%	2
2305	570	000	17	CHROMIUM	MG/KG	3
2310	538	000	17	COBALT	MG/KG	3
2315	539	000	17	COPPER	MG/KG	1
2320	540	000	17	FLUORINE	MG/KG	2
2325	541	000	17	IODINE	MG/KG	3
2330	532	000	17	IRON	MG/KG	0
2335	555	000	17	LANTHANUM	MG/KG	3
2340	550	000	17	LEAD	MG/KG	3
2345	593	000	17	LITHIUM	MG/KG	3
2350	533	000	01	MAGNESIUM	%	2
2355	542	000	17	MANGANESE	MG/KG	1
2360	592	000	17	MERCURY	MG/KG	3
2365	543	000	17	MOLYBDENUM	MG/KG	2
2370	561	000	17	NICKEL	MG/KG	2
2375	534	000	01	PHOSPHORUS	%	2
2380	534D	140	01	CHICKENS, HENS AVAILABILITY	%	0
2385	534D	141	01	CHICKENS,CHICKS AVAILABILITY	%	0
2390	534D	840	01	SWINE AVAILABILITY	%	0
2395	534D	910	01	TURKEYS, HENS AVAILABILITY	%	0
2400	534D	911	01	TURKEYS, POULTS AVAILABILITY	%	0
2405	575	000	01	CHICKENS, CHICKS AVAILABLE	%	2
2410	576	000	01	CHICKENS, HENS AVAILABLE	%	2
2415	577	000	01	SWINE AVAILABLE	%	2
2423	579	000	01	TURKEYS, HENS AVAILABLE	%	2
2420	578	000	01	TURKEYS, POULTS AVAILABLE	%	2
2430	581	000	01	ORTHO PHOSPHATE	%	2
2435	580	000	01	CITRATE SOLUBLE PHOSPHORUS	%	2
2440	582	000	01	PHYTIN PHOSPHORUS	%	2
2445	583	000	01	WATER SOLUBLE PHOSPHORUS	%	2

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit	Number Digits to Right of Decimal Point
2450	535	000	01	POTASSIUM	%	2
2455	797	000	17	RUBIDIUM	MG/KG	3
2460	909	000	01	SALT (NACL)	%	2
2465	544	000	17	SELENIUM	MG/KG	3
2470	589	000	17	SILVER	MG/KG	3
2475	546	000	01	SILICON	%	2
2480	536	000	01	SODIUM	%	2
2485	537	000	01	SULPHUR	%	2
2490	568	000	17	STRONTIUM	MG/KG	3
2495	551	000	17	THALLIUM	MG/KG	3
2500	590	000	17	TIN	MG/KG	3
2505	591	000	17	TITANIUM	MG/KG	3
2510	549	000	17	TUNGSTON	MG/KG	3
2515	553	000	17	URANIUM	MG/KG	3
2520	586	000	17	VANADIUM	MG/KG	3
2525	545	000	17	ZINC	MG/KG	1
VITAMINS AND RELATED COMPOUNDS						
2530	656	000	17	ASCORBIC ACID	MG/KG	1
2535	914	000	01	BETAINE	%	3
2540	646	000	17	BIOTIN	MG/KG	2
2543	647	000	17	CAROTINE	MG/KG	1
2545	675	000	17	CAROTENOIDS	MG/KG	2
2550	676	000	17	CAROTENE,TOTAL	MG/KG	2
2555	677	000	17	A-CAROTENE	MG/KG	2
2560	674	000	17	B-CAROTENE	MG/KG	2
2565	678	000	17	G-CAROTENE	MG/KG	2
2570	679	000	17	LUTEIN	MG/KG	2
2575	681	000	17	CRYPTOXANTHIN	MG/KG	2
2580	913	000	17	XANTHOPHYLL	MG/KG	2
2585	680	000	17	ZEAXANTHINE	MG/KG	2
2590	648	000	17	CHOLINE	MG/KG	0
2595	915	000	01	ERGOSTEROL	%	2
2600	649	000	17	FOLIC ACID	MG/KG	2
2605	666	000	17	INOSITOL	MG/KG	3
2610	650	000	17	NIACIN	MG/KG	1
2615	665	000	17	P-AMINOBENZOIC ACID	MG/KG	3
2620	651	000	17	PANTOTHENIC ACID	MG/KG	1
2625	652	000	17	RIBOFLAVIN	MG/KG	1
2630	653	000	17	THIAMINE	MG/KG	1
2635	682	000	17	TOCOPHEROL	MG/KG	2
2640	683	000	17	TOCOPHEROL,TOTAL	MG/KG	2
2645	684	000	17	A-TOCOPHEROL	MG/KG	2
2650	685	000	17	B-TOCOPHEROL	MG/KG	2
2655	687	000	17	D-TOCOPHEROL	MG/KG	2
2660	686	000	17	G-TOCOPHEROL	MG/KG	2

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit	Number Digits to Right of Decimal Point
2665	655	000	17	VITAMIN B6	MG/KG	2
2670	657	000	17	VITAMIN K	MG/KG	2
2675	658	000	18	VITAMIN B12	UG/KG	1
2680	659	000	19	VITAMIN A	IU/G	1
2685	663	000	19	VITAMIN A EQUIVALENT	IU/G	1
2690	654	000	17	VITAMIN E	MG/KG	1
2695	660	000	19	VITAMIN D2 AND D3	IU/G	1
2700	661	000	19	VITAMIN D3	ICU/G	1
AMINO ACIDS, AVAILIBILITY AND AVAILABLE						
2705	763	000	01	ALANINE	%	2
2710	764	000	01	ARGININE	%	2
2715	764D	140	01	CHICKENS, CHICKS AVAILABILITY	%	0
2720	764D	840	01	SWINE AVAILABILITY	%	0
2725	764D	910	01	TURKEYS, POULTS AVAILABILITY	%	0
2730	011	000	01	CHICKENS, CHICKS AVAILABLE	%	2
2735	012	000	01	SWINE AVAILABLE	%	2
2740	013	000	01	TURKEY, POULTS AVAILABLE	%	2
2745	765	000	01	ASPARTIC ACID	%	2
2750	766	000	01	CITRULLINE	%	2
2755	768	000	01	CYSTEINE	%	2
2760	767	000	01	CYSTINE	%	2
2762	798	000	01	CYTISINE	%	2
2765	769	000	01	GLUTAMIC ACID	%	2
2770	770	000	01	GLYCINE	%	2
2775	770D	140	01	CHICKENS, CHICKS AVAILABILITY	%	0
2780	770D	840	01	SWINE AVAILABILITY	%	0
2785	770D	910	01	TURKEYS, POULTS AVAILABILITY	%	0
2790	014	000	01	CHICKENS, CHICKS AVAILABLE	%	2
2795	015	000	01	SWINE AVAILABLE	%	2
2800	016	000	01	TURKEYS, POULTS AVAILABLE	%	2
2805	771	000	01	HISTIDINE	%	2
2810	771D	140	01	CHICKENS, CHICKS AVAILABILITY	%	0
2815	771D	840	01	SWINE AVAILABILITY	%	0
2820	771D	910	01	TURKEYS, POULTS AVAILABILITY	%	0
2825	017	000	01	CHICKENS, CHICKS AVAILABLE	%	2
2830	018	000	01	SWINE AVAILABLE	%	2
2835	019	000	01	TURKEYS, POULTS AVAILABLE	%	2
2840	772	000	01	HYDROXYPROLINE	%	2
2845	773	000	01	ISOLEUCINE	%	2

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit	Number Digits to Right of Decimal Point
2850	773D	140	01	CHICKENS, CHICKS AVAILABILITY	%	0
2855	773D	840	01	SWINE AVAILABILITY	%	0
2860	773D	910	01	TURKEYS,POULTS AVAILABILITY	%	0
2865	022	000	01	CHICKENS, CHICKS AVAILABLE	%	2
2870	023	000	01	SWINE AVAILABLE	%	2
2875	024	000	01	TURKEYS, POULTS AVAILABLE	%	2
2880	774	000	01	LEUCINE	%	2
2885	774D	140	01	CHICKENS, CHICKS AVAILABILITY	%	0
2890	774D	840	01	SWINE AVAILABILITY	%	0
2895	774D	910	01	TURKEYS, POULTS AVAILABILITY	%	0
2900	028	000	01	CHICKENS, CHICKS AVAILABLE	%	2
2905	029	000	01	SWINE AVAILABLE	%	2
2910	030	000	01	TURKEYS, POULTS AVAILABLE	%	2
2912	799	000	01	LUPANINE		
2915	775	000	01	LYSINE	%	2
2920	775D	140	01	CHICKENS, CHICKS AVAILABILITY	%	0
2925	775D	840	01	SWINE AVAILABILITY	%	0
2930	775D	910	01	TURKEYS, POULTS AVAILABILITY	%	0
2935	034	000	01	CHICKENS, CHICKS AVAILABLE	%	2
2940	035	000	01	SWINE AVAILABLE	%	2
2945	036	000	01	TURKEYS, POULTS AVAILABLE	%	2
2950	788	000	01	LYSINE AVAILABLE (CARPENTER)	%	2
2955	776	000	01	METHIONINE	%	2
2960	776D	140	01	CHICKENS, CHICKS AVAILABILITY	%	0
2965	776D	840	01	SWINE AVAILABILITY	%	0
2970	776D	910	01	TURKEYS, POULTS AVAILABILITY	%	0
2975	040	000	01	CHICKENS, CHICKS AVAILABLE	%	2
2980	041	000	01	SWINE AVAILABLE	%	2
2985	042	000	01	TURKEYS, POULTS AVAILABLE	%	2
2990	786	000	01	METHIONINE CYSTINE	%	2
2995	777	000	01	PHENYLALANINE	%	2
3000	777D	140	01	CHICKENS, CHICKS AVAILABILITY	%	0
3005	777D	840	01	SWINE AVAILABILITY	%	0
3010	777D	910	01	TURKEYS, POULTS AVAILABILITY	%	0
3015	046	000	01	CHICKENS, CHICKS AVAILABLE	%	2
3020	047	000	01	SWINE AVAILABLE	%	2
3025	048	000	01	TURKEYS, POULTS AVAILABLE	%	2

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit	Number Digits to Right of Decimal Point
3030	778	000	01	PROLINE	%	2
3035	779	000	01	SERINE	%	2
3040	780	000	01	THREONINE	%	2
3045	780D	140	01	CHICKENS, CHICKS AVAILABILITY	%	0
3050	780D	840	01	SWINE AVAILABILITY	%	0
3055	780D	910	01	TURKEYS, POULTS AVAILABILITY	%	0
3060	052	000	01	CHICKENS, CHICKS AVAILABLE	%	2
3065	053	000	01	SWINE AVAILABLE	%	2
3070	054	000	01	TURKEYS, POULTS AVAILABLE	%	2
3075	781	000	01	TRYPTOPHAN	%	2
3080	781D	140	01	CHICKENS, CHICKS AVAILABILITY	%	0
3085	781D	840	01	SWINE AVAILABILITY	%	0
3090	781D	910	01	TURKEYS, POULTS AVAILABILITY	%	0
3095	058	000	01	CHICKENS, CHICKS AVAILABLE	%	2
3100	059	000	01	SWINE AVAILABLE	%	2
3105	060	000	01	TURKEYS, POULTS AVAILABLE	%	2
3110	782	000	01	TYROSINE	%	2
3115	783	000	01	VALINE	%	2
3120	783D	140	01	CHICKENS, CHICKS AVAILABILITY	%	0
3125	783D	840	01	SWINE AVAILABILITY	%	0
3130	783D	910	01	TURKEYS, POULTS AVAILABILITY	%	0
3135	064	000	01	CHICKENS, CHICKS AVAILABLE	%	2
3140	065	000	01	SWINE AVAILABLE	%	2
3145	066	000	01	TURKEYS, POULTS AVAILABLE	%	2
3150	961	140	01	POULTRY AMINO ACID AVAILABLE	%	0
				LIPIDS, FATTY ACIDS AND FAT SPECIFICATIONS		
3155	563	000	01	INSOLUBLE IN FORMIC ACID	%	1
3160	282	000	01	CHOLESTEROL	%	2
3165	278	000	01	FAT, ROSE GOTTLIEB	%	1
3170	115	000	01	FAT,TOTAL	%	1
3175	271	000	01	TOTAL LIPIDS	%	1
3180	689	000	01	SAPONIFIABLE LIPIDS	%	1
3185	694	000	01	NONSAPONIFIABLE LIPIDS	%	1
3190	274	000	01	FREE FATTY ACID	%	0
3195	275	000	01	PETROLEUM ETHER INSOLUBLES	%	3
3200	210	000	01	FATTY ACIDS	%	1
3205	216	000	01	ACETIC 2:0 (ETHANOIC)	%	3
3210	218	000	01	ARACHIDIC (EICOSANOIC 20:0)	%	3

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit	Number Digits to Right of Decimal Point
3215	220	000	01	ARACHIDONIC (EICOSATETRAENOIC 20:4)	%	3
3220	287	000	01	BEHENIC (DOCOSANOIC 22:0)	%	3
3225	286	000	01	BEHENOLIC (DOCOSENOIC 22:1)	%	3
3230	222	000	01	BUTANOIC 4:0	%	3
3235	079	000	01	2-BUTYLOCTADECANOIC 22:0	%	3
3240	224	000	01	CAPRIC (DECANOIC 10:0)	%	3
3245	226	000	01	CAPROIC (HEXANOIC 6:0)	%	3
3250	228	000	01	CAPRYLIC (OCTANOIC 8:0)	%	3
3255	866	000	01	CEROTIC (HEXACOSANOIC 26:0)	%	3
3260	224	000	01	DECANOIC 10:0 (CAPRIC)	%	3
3265	283	000	01	DECENOIC 10:1	%	3
3270	085	000	01	2-DECYLOCTADECANOIC 28:0	%	3
3275	898	000	01	DIHYDROXYOCTADECANOIC 18:0	%	3
3280	897	000	01	DIHYDROXYOCTADECENOIC 18:1	%	3
3285	714	000	01	DOCOSADIENOIC 22:2	%	3
3290	287	000	01	DOCOSANOIC 22:0 (BEHENIC)	%	3
3295	230	000	01	DOCOSAHEXAENOIC 22:6	%	3
3300	232	000	01	DOCOSAPENTAENOIC 22:5	%	3
3305	234	000	01	DOCOSATETRAENOIC 22:4	%	3
3310	725	000	01	DOCOSATRIENOIC 22:3	%	3
3315	286	000	01	DOCOSENOIC 22:1 (BEHENOLIC)	%	3
3320	246	000	01	DODECANOIC 12:0 (LAURIC)	%	3
3325	284	000	01	DODECENOIC 12:1	%	3
3330	087	000	01	2-DODECYLOCTADECANOIC 30:0	%	3
3335	791	000	01	DOTRIACONTAHEXAENOIC 32:6	%	3
3340	872	000	01	DOTRIACONTANOIC 32:0	%	3
3345	886	000	01	DOTRIACONTENOIC 32:1	%	3
3350	236	000	01	EICOSADIENOIC 20:2	%	3
3355	218	000	01	EICOSANOIC 20:0 (ARACHIDIC)	%	3
3360	244	000	01	EICOSENOIC 20:1	%	3
3365	238	000	01	EICOSAHEXAENOIC 20:6	%	3
3370	240	000	01	EICOSAPENTAENOIC 20:5	%	3
3375	220	000	01	EICOSATETRAENOIC 20:4 (ARACHIDONIC)	%	3
3380	863	000	01	ENANTHIC (HEPTANOIC 7:0)	%	3
3385	242	000	01	EICOSATRIENOIC 20:3	%	3
3390	216	000	01	ETHANOIC (ACETIC 2:0)	%	3
3395	896	000	01	12,13-EPOXY-9-OCTADECENOIC	%	3
3400	075	000	01	2-ETHYLHEXADECANOIC 18:0	%	3
3405	865	000	01	HENDECANOIC 11:0 (UNDECANOIC)	%	3
3410	086	000	01	2-HENDECYLOCTADECANOIC 29:0	%	3

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit	Number Digits to Right of Decimal Point
3415	713	000	01	HENEICOSADIENOIC 21:2	%	3
3420	860	000	01	HENEICOSANOIC 21:0	%	3
3425	752	000	01	HENEICOSAHEXAENOIC 21:6	%	3
3430	742	000	01	HENEICOSAPENTAENOIC 21:5	%	3
3435	724	000	01	HENEICOSATRIENOIC 21:3	%	3
3440	732	000	01	HENEICOSATETRAENOIC 21:4	%	3
3445	876	000	01	HENEICOSENOIC 21:1	%	3
3450	790	000	01	HENTRIACONTAHEXAENOIC 31:6	%	3
3455	871	000	01	HENTRIACONTANOIC 31:0	%	3
3460	885	000	01	HENTRIACONTENOIC 31:1	%	3
3465	757	000	01	HEPTACOSAHEXAENOIC 27:6	%	3
3470	867	000	01	HEPTACOSANOIC 27:0	%	3
3475	747	000	01	HEPTACOSAPENTAENOIC 27:5	%	3
3480	737	000	01	HEPTACOSATETRAENOIC 27:4	%	3
3485	881	000	01	HEPTACOSENOIC 27:1	%	3
3490	794	000	01	HEPTACYCLOPROPYLOCTANOIC	%	3
3495	710	000	01	HEPTADECADIENOIC 17:2	%	3
3500	856	000	01	HEPTADECANOIC 17:0 (MARGARIC)	%	3
3505	730	000	01	HEPTADECATETRAENOIC 17:4	%	3
3510	720	000	01	HEPTADECATRIENOIC 17:3	%	3
3515	857	000	01	HEPTADECENOIC 17:1	%	3
3520	863	000	01	HEPTANOIC 7:0 (ENANTHIC)	%	3
3525	717	000	01	HEXACOSADIENOIC 26:2	%	3
3530	746	000	01	HEXACOSAPENTAENOIC 26:5	%	3
3535	756	000	01	HEXACOSAHEXAENOIC 26:6	%	3
3540	866	000	01	HEXACOSANOIC 26:0 (CEROTIC)	%	3
3545	736	000	01	HEXACOSATETRAENOIC 26:4	%	3
3550	728	000	01	HEXACOSATRIENOIC 26:3	%	3
3555	880	000	01	HEXACOSENOIC 26:1	%	3
3560	709	000	01	HEXADECADIENOIC 16:2	%	3
3565	260	000	01	HEXADECANOIC 16:0 (PALMITIC)	%	3
3570	729	000	01	HEXADECATETRAENOIC 16:4	%	3
3575	719	000	01	HEXADECATRIENOIC 16:3	%	3
3580	262	000	01	HEXADECENOIC 16:1 (PALMITOLEIC)	%	3
3585	226	000	01	HEXANOIC 6:0 (CAPROIC)	%	3
3590	890	000	01	HEXATRIACONTENOIC 36:1	%	3
3595	081	000	01	2-HEXYLOCTADECANOIC 24:0	%	3
3600	892	000	01	HYDROXYDECANOIC 10:0	%	3
3605	705	000	01	HYDROXYDOCOSANOIC 22:0	%	3
3610	893	000	01	HYDROXYDODECANOIC 12:0	%	3
3615	704	000	01	HYDROXYEICOSANOIC 20:0	%	3
3620	701	000	01	HYDROXYEICOSENOIC 20:1	%	3
3625	702	000	01	HYDROXYHEXADECANOIC 16:0	%	3

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit	Number Digits to Right of Decimal Point
3630	700	000	01	HYDROXYOCTADECADIENOIC 18:2	%	3
3635	703	000	01	HYDROXYOCTADECANOIC 18:0	%	3
3640	891	000	01	HYDROXYOCTANOIC 8:0	%	3
3645	899	000	01	9-HYDROXY-12-OCTADECENOIC	%	3
3650	895	000	01	12-HYDROXY-9-OCTADECENOIC	%	3
3655	269	000	01	2-HYDROXYPROPANOIC 3:0	%	3
3660	894	000	01	HYDROXYTETRADECANOIC 14:0	%	3
3665	246	000	01	LAURIC (DODECANOIC 12:0)	%	3
3670	248	000	01	LINOLEIC (OCTADECADIENOIC 18:2)	%	3
3675	250	000	01	LINOLENIC (OCTADECATRIENOIC 18:3)	%	3
3680	856	000	01	MARGARIC (HEPTADECANOIC 17:0)	%	3
3685	241	000	01	16:0 (MULTIPLE BRANCHED)	%	3
3690	964	000	01	17:0 (MULTIPLE BRANCHED)	%	3
3695	214	000	01	18:0 (MULTIPLE BRANCHED)	%	3
3700	215	000	01	19:0 (MULTIPLE BRANCHED)	%	3
3705	217	000	01	20:0 (MULTIPLE BRANCHED)	%	3
3710	219	000	01	21:0 (MULTIPLE BRANCHED)	%	3
3715	221	000	01	22:0 (MULTIPLE BRANCHED)	%	3
3720	223	000	01	23:0 (MULTIPLE BRANCHED)	%	3
3725	225	000	01	24:0 (MULTIPLE BRANCHED)	%	3
3730	227	000	01	25:0 (MULTIPLE BRANCHED)	%	3
3735	229	000	01	26:0 (MULTIPLE BRANCHED)	%	3
3740	231	000	01	27:0 (MULTIPLE BRANCHED)	%	3
3745	233	000	01	28:0 (MULTIPLE BRANCHED)	%	3
3750	235	000	01	30:0 (MULTIPLE BRANCHED)	%	3
3755	712	000	01	3-METHYLBUTANOIC 5:0	%	3
3760	068	000	01	METHYLDECANOIC 11:0	%	3
3765	070	000	01	METHYLDODECANOIC 13:0	%	3
3770	080	000	01	2-METHYLDOCOSANOIC 23:0	%	3
3775	078	000	01	2-METHYLEICOSANOIC 21:0	%	3
3780	074	000	01	15-METHYLHEXADECANOIC 17:0	%	3
3785	077	000	01	METHYLNONADECANOIC 20:0	%	3
3790	067	000	01	8-METHYLNONANOIC 10:0	%	3
3795	076	000	01	10-METHYLOCTADECANOIC 19:0	%	3
3800	073	000	01	14-METHYLPENTADECANOIC 16:0	%	3
3805	721	000	01	4-METHYLPENTANOIC 6:0	%	3
3810	090	000	01	2-METHYLPROPANOIC 4:0	%	3
3815	082	000	01	2-METHYLTETRACOSANOIC 25:0	%	3
3820	072	000	01	2-METHYLTETRADECANOIC 15:0	%	3
3825	071	000	01	METHYLTRIDECANOIC 14:0	%	3
3830	252	000	01	MYRISTIC (TETRADECANOIC 14:0)	%	3

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit	Number Digits to Right of Decimal Point
3835	254	000	01	MYRISTOLEIC (TETRADECENOIC 14:1)	%	3
3840	759	000	01	NONACOSAHEXAENOIC 29:6	%	3
3845	869	000	01	NONACOSANOIC 29:0	%	3
3850	749	000	01	NONACOSAPENTAENOIC 29:5	%	3
3855	739	000	01	NONACOSATETRAENOIC 29:4	%	3
3860	883	000	01	NONACOSENOIC 29:1	%	3
3865	711	000	01	NONADECADIENOIC 19:2	%	3
3870	858	000	01	NONADECANOIC 19:0	%	3
3875	741	000	01	NONADECAPENTAENOIC 19:5	%	3
3880	731	000	01	NONADECATETRAENOIC 19:4	%	3
3885	722	000	01	NONADECATRIENOIC 19:3	%	3
3890	859	000	01	NONADECENOIC 19:1	%	3
3895	864	000	01	NONANOIC 9:0 (PELARGONIC)	%	3
3900	084	000	01	2-NONYLOCTADECANOIC 27:0	%	3
3905	758	000	01	OCTACOSAHEXAENOIC 28:6	%	3
3910	868	000	01	OCTACOSANOIC 28:0	%	3
3915	748	000	01	OCTACOSAPENTAENOIC 28:5	%	3
3920	738	000	01	OCTACOSATETRAENOIC 28:4	%	3
3925	882	000	01	OCTACOSENOIC 28:1	%	3
3930	248	000	01	OCTADECADIENOIC 18:2 (LINOLEIC)	%	3
3935	266	000	01	OCTADECANOIC 18:0 (STEARIC)	%	3
3940	256	000	01	OCTADECATETRAENOIC 18:4	%	3
3945	250	000	01	OCTADECATRIENOIC 18:3 (LINOLENIC)	%	3
3950	258	000	01	OCTADECENOIC 18:1 (OLEIC)	%	3
3955	228	000	01	OCTANOIC 8:0 (CAPRYLIC)	%	3
3960	793	000	01	OCTYLCYCLOPROPENYLOCTANOIC	%	3
3965	795	000	01	OCTYLCYCLOPROPYLOCTANOIC	%	3
3970	258	000	01	OLEIC (OCTADECENOIC 18:1)	%	3
3975	260	000	01	PALMITIC (HEXADECANOIC 16:0)	%	3
3980	262	000	01	PALMITOLEIC (HEXADECENOIC 16:1)	%	3
3985	864	000	01	PELARGONIC (NONANOIC 9:0)	%	3
3995	862	000	01	PENTACOSANOIC 25:0	%	3
4000	745	000	01	PENTACOSAPENTAENOIC 25:5	%	3
4005	735	000	01	PENTACOSATETRAENOIC 25:4	%	3
4010	879	000	01	PENTACOSENOIC 25:1	%	3
4015	708	000	01	PENTADECADIENOIC 15:2	%	3
4020	855	000	01	PENTADECANOIC 15:0	%	3
4025	718	000	01	PENTADECATRIENOIC 15:3	%	3
4030	089	000	01	PENTADECENOIC 15:1	%	3
4035	268	000	01	PENTANOIC 5:0 (VALERIC)	%	3
4040	889	000	01	PENTATRIACONTENOIC 35:1	%	3
4045	264	000	01	PROPANOIC 3:0 (PROPIONIC)	%	3

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit	Number Digits to Right of Decimal Point
4050	264	000	01	PROPIONIC (PROPANOIC 3:0)	%	3
4055	069	000	01	6-PROPYLNONANOIC 12:0	%	3
4060	266	000	01	STEARIC (OCTADECANOIC 18:0)	%	3
4065	716	000	01	TETRACOSADIENOIC 24:2	%	3
4070	723	000	01	TETRACOSANOIC 24:0	%	3
4075	878	000	01	TETRACOSENOIC 24:1	%	3
4080	754	000	01	TETRACOSAHEXAENOIC 24:6	%	3
4085	744	000	01	TETRACOSAPENTAENOIC 24:5	%	3
4090	734	000	01	TETRACOSATETRAENOIC 24:4	%	3
4095	727	000	01	TETRACOSATRIENOIC 24:3	%	3
4100	707	000	01	TETRADECADIENOIC 14:2	%	3
4105	252	000	01	TETRADECANOIC14:0 (MYRISTIC)	%	3
4110	254	000	01	TETRADECENOIC 14:1 (MYRISTOLEIC)	%	3
4115	874	000	01	TETRATRIACONTANOIC 34:0	%	3
4120	792	000	01	TETRATRIACONTAHEXAENOIC 34:6	%	3
4125	888	000	01	TETRATRIACONTENOIC 34:1	%	3
4130	760	000	01	TRIACONTAHEXAENOIC 30:6	%	3
4135	870	000	01	TRIACONTANOIC 30:0	%	3
4140	750	000	01	TRIACONTAPENTAENOIC 30:5	%	3
4145	740	000	01	TRIACONTATETRAENOIC 30:4	%	3
4150	734	000	01	TRIACONTENOIC 30:1	%	3
4155	715	000	01	TRICOSADIENOIC 23:2	%	3
4160	753	000	01	TRICOSAHEXAENOIC 23:6	%	3
4165	861	000	01	TRICOSANOIC 23:0	%	3
4170	743	000	01	TRICOSAPENTAENOIC 23:5	%	3
4175	733	000	01	TRICOSATETRAENOIC 23:4	%	3
4180	726	000	01	TRICOSATRIENOIC 23:3	%	3
4185	877	000	01	TRICOSENOIC 23:1	%	3
4190	706	000	01	TRIDECADIENOIC 13:2	%	3
4195	854	000	01	TRIDECANOIC 13:0	%	3
4200	875	000	01	TRIDECENOIC 13:1	%	3
4205	088	000	01	TRIMETHYLOCTACOSANOIC 31:0	%	3
4210	083	000	01	TRIMETHYLTRICOSANOIC 26:0	%	3
4215	873	000	01	TRITRIACONTANOIC 33:0	%	3
4220	887	000	01	TRITRIACONTENOIC 33:1	%	3
4225	865	000	01	UNDECANOIC (HENDECANOIC 11:0)	%	3
4230	268	000	01	VALERIC (PENTANOIC 5:0)	%	3
CHARACTERISTICS OF FAT QUALITY						
4235	692	000	47	ACID VALUE	MG/G	1
4240	695	000	50	ALDEHYDE VALUE	UG/G FAT	1

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit	Number Digits to Right of Decimal Point
4245	699	000	52	BUTYRIC ACID VALUE	ML A/5G FAT	1
4250	691	000	48	IODINE ABSORPTION NUMBER	G/100G	0
4255	693	000	49	PEROXIDE VALUE	MILLIMOLE/KG	1
4260	698	000	52	POLENSKE VALUE	ML A/5G FAT	1
4265	697	000	52	REICHERT-MEISSL VALUE	ML A/5G FAT	1
4270	696	000	51	RHODANIC VALUE	I. 100 TEILE	1
4275	690	000	47	SAPONIFICATION NUMBER	MG/G	0
4280	279	000	37	MELTING POINT	DEGREES C	1
NONPROTEIN NITROGEN						
4285	113	000	01	NONPROTEIN NITROGEN	%	1
4290	848	000	01	AMMONIA	%	2
4295	673	000	01	BIURET	%	2
4300	849	000	01	NITRATE	%	2
4305	850	000	01	NITRITE	%	2
4310	672	000	01	UREA	%	2
ALKALOIDS AND RELATED COMPOUNDS						
4315	844	000	01	ALLYL-ISOTHIOCYANATE	%	2
4320	903	000	01	CAFFEIN	%	2
4325	845	000	01	GOITRIN	%	2
4330	901	000	01	GOSSYPOL, TOTAL	%	2
4335	902	000	01	GOSSYPOL, FREE	%	2
4340	960	000	17	HYDROCYANIC ACID (HCN)	MG/KG	2
4345	910	000	01	ISOTHIOCYANATE	%	3
4350	840	000	01	LUPINIDIN	%	2
4355	843	000	01	MUSTARD OIL	%	2
4360	841	000	01	NICOTINE	%	2
4365	846	000	01	P-HYDROXYBENZ-ISOTHIOCYAN	%	2
4370	838	000	01	SAPONIN	%	2
4375	842	000	01	SOLANINE	%	2
4380	907	000	01	TANNIC ACID	%	2
4385	905	000	01	THEOBROMINE	%	2
MYCOTOXINS						
4390	817	000	17	AFLATOXIN B1	MG/KG	3
4395	818	000	17	AFLATOXIN B2	MG/KG	3
4400	819	000	17	AFLATOXIN G1	MG/KG	3
4405	820	000	17	AFLATOXIN G2	MG/KG	3
4410	821	000	17	AFLATOXIN M1	MG/KG	3
4415	822	000	17	AFLATOXIN M2	MG/KG	3

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit	Number Digits to Right of Decimal Point
4420	823	000	17	ASPERTOXIN	MG/KG	3
4425	824	000	17	B-24-TOXIN	MG/KG	3
4430	825	000	17	CITRININ	MG/KG	3
4435	826	000	17	DIACETOXYSCIRPENOL	MG/KG	3
4440	827	000	17	FUSARENONE	MG/KG	3
4445	828	000	17	ISLANDITOXIN	MG/KG	3
4450	829	000	17	LUTEOSKYRIN	MG/KG	3
4455	830	000	17	NIVALENOL	MG/KG	3
4460	831	000	17	OCHRATOXIN	MG/KG	3
4465	832	000	17	PATULIN	MG/KG	3
4470	833	000	17	RUBRATOXIN	MG/KG	3
4475	834	000	17	STERIGMATOCYSTIN	MG/KG	3
4480	835	000	17	T-2-TOXIN	MG/KG	3
4485	836	000	17	ZEARALENONE	MG/KG	3
PESTICIDE AND RELATED COMPOUNDS						
4490	801	000	17	ALDRIN	MG/KG	3
4495	789	000	17	ALDRIN AND DIELDRIN	MG/KG	3
4500	802	000	17	CHLORDANE	MG/KG	3
4505	803	000	17	DDE	MG/KG	3
4510	804	000	17	DDD	MG/KG	3
4515	805	000	17	DDT	MG/KG	3
4520	806	000	17	DIELDRIN	MG/KG	3
4525	807	000	17	ENDRIN	MG/KG	3
4530	808	000	17	HEPTACHLOR	MG/KG	3
4535	809	000	17	HEPTACHLOR EPOXIDE	MG/KG	3
4540	787	000	17	HEPTACHLOR & HEPTACHLOR EPOXIDE	MG/KG	3
4545	761	000	17	HEXACHLORO-A-CYCLOHEXANE	MG/KG	3
4550	762	000	17	HEXACHLORO-B-CYCLOHEXANE	MG/KG	3
4555	810	000	17	HEXACHLOROCYCLOHEXANE	MG/KG	3
4560	811	000	17	HEXACHLORBENZOL	MG/KG	3
4565	812	000	17	KELTHANE	MG/KG	3
4570	813	000	17	LINDANE	MG/KG	3
4575	814	000	17	METHOXYCHLOR	MG/KG	3
4580	853	000	17	POLYCHLORINATED BIPHENYL	MG/KG	3
4583	815	000	17	TOXAPHENE	MG/KG	3
MISCELLANEOUS						
4585	926	070	29	DM INTAKE, CATTLE	KG/DAY	2
4590	944	350	29	DM INTAKE, GOATS	KG/DAY	2
4595	945	420	29	DM INTAKE, HORSES	KG/DAY	2

TABLE 6.1 List of Attributes and Codes (Continued)

Printing Sequence No.	Attribute No.	Animal No.	Unit No.	Attribute	Unit	Number Digits to Right of Decimal Point
4600	946	630	29	DM INTAKE, RABBITS	KG/DAY	2
4605	947	700	29	DM INTAKE, RATS	KG/DAY	2
4610	948	770	29	DM INTAKE, SHEEP	KG/DAY	2
4615	949	840	29	DM INTAKE, SWINE	KG/DAY	2
4620	925	070	39	DM INTAKE, CATTLE	% OF BODY WT	2
4625	950	350	39	DM INTAKE, GOATS	% OF BODY WT	2
4630	951	420	39	DM INTAKE, HORSES	% OF BODY WT	2
4635	952	630	39	DM INTAKE, RABBITS	% OF BODY WT	2
4640	953	700	39	DM INTAKE, RATS	% OF BODY WT	2
4645	954	770	39	DM INTAKE, SHEEP	% OF BODY WT	2
4650	955	840	39	DM INTAKE, SWINE	% OF BODY WT	2
4655	918	070	30	DM INTAKE, CATTLE	G/W 0.75	3
4660	938	350	30	DM INTAKE, GOATS	G/W 0.75	3
4665	939	420	30	DM INTAKE, HORSES	G/W 0.75	3
4670	940	630	30	DM INTAKE, RABBITS	G/W 0.75	3
4675	941	700	30	DM INTAKE, RATS	G/W 0.75	3
4680	942	770	30	DM INTAKE, SHEEP	G/W 0.75	3
4685	943	840	30	DM INTAKE, SWINE	G/W 0.75	3
4690	919	000	29	GAIN, CATTLE	KG/DAY	3
4695	920	000	29	GAIN, GOATS	KG/DAY	3
4700	921	000	29	GAIN, HORSES	KG/DAY	3
4705	922	000	29	GAIN, RABBITS	KG/DAY	3
4710	923	000	29	GAIN, SHEEP	KG/DAY	3
4715	956	000	40	GAIN PER HECTARE, CATTLE	KG	0
4720	957	000	40	GAIN PER HECTARE, SHEEP	KG	0
4725	958	000	40	MILK PER HECTARE, CATTLE	KG	0
4730	928	000	29	FAT CORRECTED MILK (FCM)	KG/DAY	2
4735	924	000	31	AMOUNT AVAILABLE	G	0
4740	906	000	28	PH	PH UNITS	2
4745	353	000	01	SCLEROGEN SUBSTANCES	%	1
4750	908	000	31	WEIGHT PER HECTOLITER	KG	0

Figures

INTERNATIONAL FEED DESCRIPTION FORM
(Feed Name Form)

Up date code (all)	Blank	Blank	International Feed No. (all)	Country Code	Element Tag (all)	Language Code (all)	Country No. for Official Feeds Only	Elements	Class	Code	Sort Code	Descriptors or Feed Names	
A			22701		025	002		Genus	1			MEDICAGO	
A			do		030	do		Species				SATIVA	
					035			Variety					
					040			Genus					
					045			Species					
					050			Variety					Facet 1
A			do		155	do		Genetic				ALFALFA	
					156			(Origin)					
					185			Kind					
					186			(Breed)					
					195			Strain					
					196								
A			do		215	do		Part				AERIAL PART	Facet 2
					216								
A			do		245	do		Process				DEHYDRATED GROUND	Facet 3
					246								
A			do		275	do		Maturity				LATE VEGETATIVE	Facet 4
A			do		300	do		Cut				CUT 1	Facet 5
A			do		325	do		Grade				MORE THAN 23% PROTEIN	Facet 6
					326								
					327								
					350			Interna-					
					351			tional					
					352			Name					
					360			Altern					
					361			Interna					
					362			Name					
					370			Altern					
					371			Interna					
					372			Name					
					425			Country					
					426								
					427								
					430			Country					
					431								
					432								
					435			Country					
					436								
					437								

FIGURE 2.1 An international feed description form illustrating facets, elements and descriptors for an international feed description.

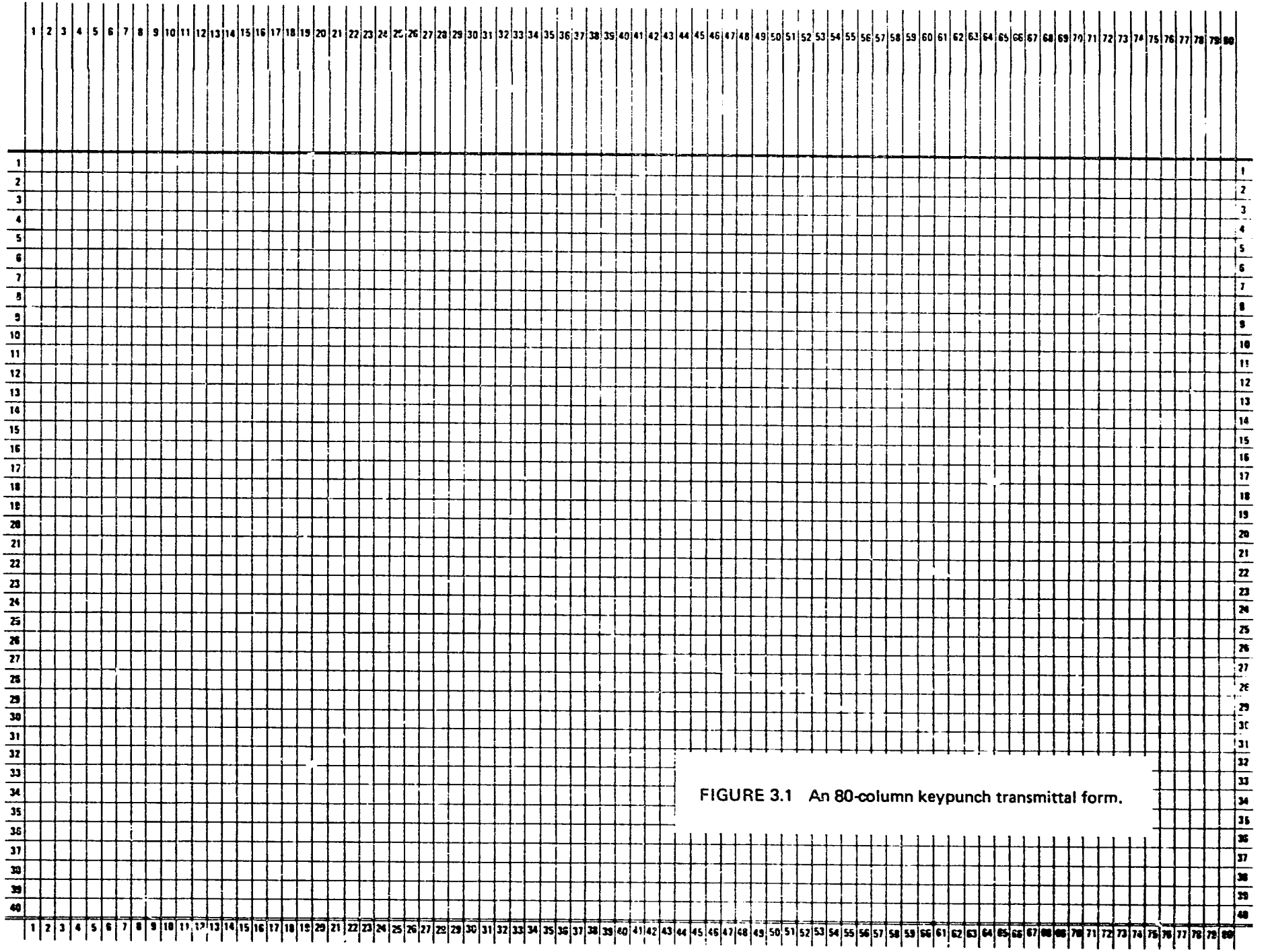

FIGURE 3.1 An 80-column keypunch transmittal form.

A 01609 245002 MECHANICAL EXTRACTED GROUND

To add an element to a feed, enter A in column 1.
Enter feed number in columns 4 - 8.
Enter element number in columns 12 - 14.
Enter language code in columns 15 - 17.
Enter descriptor in columns 33 - 80 as needed.

C 01609 245002 SOLVENT EXTRACTED GROUND

To change a line, enter C in column 1.
Enter feed number in columns 4 - 8.
Enter element number in columns 12 - 14.
Enter language code in columns 15 - 17.
Enter new descriptor in columns 22 - 80 as needed.

D 01609 245002

To delete a line, enter D in column 1.
Enter feed number in columns 4 - 8.
Enter element number in columns 12 - 14.
Enter language code in columns 15 - 17.

D 01609

To delete a feed, enter D in column 1.
Enter feed number in columns 4 - 8.

FIGURE 3.2 An 80-column keypunch transmittal form showing how to fill in the form for adding a descriptor, changing a descriptor, deleting a descriptor or deleting a feed name.

INTERNATIONAL FEED DESCRIPTION FORM
(Feed Name Form)

Up data code (all)	Blank	Blank	International Feed No. (all)	Country Code	Element Tag (all)	Language Code (all)	Country No. for Official Feeds Only	Elements	Class	Code	Sort Code	Descriptors or Feed Names
A			015999		025	002		Genus				GOSSYPIUM
			do		030	do		Species				SPP
					035			Variety				
					040			Genus				
					045			Species				
					050			Variety				
A			do		155	do		Genetic				COTTON
					156			(Origin)				
					185			Kind				
					186			(Breed)				
					195			Strain				
					196							
A			do		215	do		Part				HULLS
					219							
					245			Process				
					246							
					275			Maturity				
					300			Cut				
					325			Grade				
					326							
					327							
					350			International				
					351							
					352			Name				
					360			Alterna				
					361			International				
					362			Name				
					370			Alterna				
					371			International				
					372			Name				
A			do	890	425	023		Country				QOTN, QESHR AL-BEZR
					426							
					427							
					430			Country				
					431							
					432							
					435			Country				
					436							
					437							

FIGURE 3.3 To enter language and country codes, enter A in column 1, the feed number in columns 4 - 8, the element number in columns 12 - 14, and the language code in columns 15 - 17. No country codes are used in element lines 025 through 375. When entering a country name, the country code is entered in columns 9 - 11 on element line 425 and subsequent lines as needed.

INTERNATIONAL FEED DESCRIPTION FORM
(Feed Name Form)

Up date code (all)	Blank	Blank	International Feed No. (all)	Country Code	Element No. (all)	Language Code (all)	Country No. for Official Feeds Only	Elements	Class	Code	Sort Code	Descriptors or Feed Names
A			01627		025	002		Genus	5			GOSSYPIUM
A			do		030	do		Species				SPP
					035			Variety				
					040			Genus				
					045			Species				
					050			Variety				
A			do		155	do		Genetic				COTTON
					156			(Origin)				
					185			Kind				
					186			(Breed)				
					195			Strain				
					196							
A			do		215	do		Part				SEEDS OIL RESIDUE
					216							
A			do		245	do		Precess				MECHANICAL EXTRACTED
					246							
					275			Maturity				
					300			Cut				
A			do		325	do		Grade				43% PROTEIN
					326							
					327							
A			do		350	do		Interna-				COTTON, SEEDS, MEAL MECHANICAL EXTRACTED, 43%
A			do		351	do		tional				PROTEIN
					352			Name				
					360			Altern				
					361			Interna				
					362			Name				
					370			Altern				
					371			Interna				
					372			Name				
A			do	930	425	do	24.31	Country				COTTONSEEDS MEAL MECHANICAL EXTRACTED 43%
A			do	do	426	do						PROTEIN
					427							
					430			Country				
					431							
					432							
					435			Country				
					436							
					437							

FIGURE 3.4 To enter an "official country" number, enter an A in column 1, the IFN in columns 4 - 8, the country code in columns 9 - 11, the element number in columns 12 - 14, the language code in columns 15 - 17, and the "official country" number in columns 18 - 23 (left justified).

INTERNATIONAL FEED DESCRIPTION FORM
(Feed Name Form)

Up date code (all)	Blank	Blank	International Feed No. (all)	Country Code	Element Tag (all)	Language Code (all)	Country No. for Official Feeds Only	Elements	Class	Code	Sort Code	Descriptors or Feed Names
A			05-229		025	002		Genus	14			TRITICUM
A			do		030	do		Species				DURUM
					035			Variety				
					040			Genus				
					045			Species				
					050			Variety				
A			do		155	do		Genetic				WHEAT
					156			(Origin)				
A			do		185	do		Kind				DURUM
					186			(Breed)				
					195			Strain				
					196							
A			do		215	do		Part				GRAIN
					216							
					245			Process				
					246							
					275			Maturity				
					300			Cut				
					325			Grade				
					326							
					327							
A			do		350	do		International				WHEAT, DURUM, GRAIN
					351							
					352			Name				
					360			Alternate				
					361			International				
					362			Name				
					370			Alternate				
					371			International				
					372			Name				
					425			Country				
					426							
					427							
					430			Country				
					431							
					432							
					435			Country				
					436							
					437							

FIGURE 3.5 To enter a feed class number, enter A in column 1, the feed number in columns 4 - 8, the element number in columns 12 - 14, the language code in columns 15 - 17, and the feed class code in column 27.

INTERNATIONAL FEED DESCRIPTION FORM
(Feed Name Form)

Up date code (all)	Blank	Blank	International Feed No. (all)	Country Code	Element Tag (all)	Language Code (all)	Country No. for Official Feeds Only	Elements	Class	Code	Sort Code	Descriptors or Feed Names
A			03191		025	002		Genus	1	1		PRAIRIE PLANTS
A			do		030	do		Species				MIDWEST
					035			Variety				
					040			Genus				
					045			Species				
					050			Variety				
A			do		155	do		Genetic				PRAIRIE PLANTS
					156			(Origin)				
A			do		185	do		Kind				MIDWEST
					186			(Breed)				
					195			Strain				
					196							
A			do		215	do		Part				AERIAL PART
					216							
A			do		245	do		Process				SUN-CURED
					246							
					275			Maturity				
					300			Cut				
					325			Grade				
					326							
					327							
A			do		350	do		International				PRAIRIE PLANTS, MIDWEST, HAY, SUN-CURED
					351							
					352			Name				
					360			Alternate				
					361			International				
					362			Name				
					370			Alternate				
					371			International				
					372			Name				
					425			Country				
					426							
					427							
					430			Country				
					431							
					432							
					435			Country				
					436							
					437							

FIGURE 3.6 When the scientific name is not Latin and is the same as the Generic name, enter a code 1 in column 31 on the 025 element line. In these cases, only one name (Generic) appears in the printout.

INTERNATIONAL FEED DESCRIPTION FORM
(Feed Name Form)

Up data code (all)	Blank	Clerk	International Feed No. (all)	Country Code	Element Tag (all)	Language Code (all)	Country No. for Official Feeds Only	Elements	Class	Code	Sort Code	Descriptors or Feed Names
A			02820		025	005		Genus	3			ZEA
A			do		030	do		Species				MAYS
					035			Variety				
					040			Genus				
					045			Species				
					050			Variety				
A			do		155	do		Genetic				MAIZE
					156			(Origin)				
					185			Kind				
					186			(Breed)				
					195			Strain				
					196							
A			do		215	do		Part				AERIAL PART
					216							
A			do		245	do		Process				ENSILED
					246							
A			do		275	do		Maturity		(A)		IMATURE
					300			Cut				
					325			Grade				
					326							
					327							
					350			International				
					351							
					352			Name				
					360			Alternate				
					361			International				
					362			Name				
					370			Alternate				
					371			International				
					372			Name				
					425			Country				
					426							
					427							
					430			Country				
					431							
					432							
					435			Country				
					436							
					437							

FIGURE 3.7 To enter the stage of maturity code, enter the appropriate letter in column 32, element line 275.

INTERNATIONAL FEED DESCRIPTION FORM
(Feed Name Form)

Up data code (all)	Blank	Blank	International Feed No. (all)	Country Code	Element Tag (all)	Language Code (all)	Country No. for Official Feeds Only	Elements	Class	Code	Sort Code	Descriptors or Feed Names
A			00534		025	002		Genus	4			HORDEUM
A			do		030	do		Species				VULGARE
					035			Variety				
					040			Genus				
					045			Species				
					050			Variety				
A			do		155	do		Genetic				BARLEY
					156			(Origin)				
					185			Kind				
					186			(Breed)				
					195			Strain				
					196							
A			do		215	do		Part				GRAIN
					216							
					245			Process				
					246							
					275			Maturity				
					300			Cut				
A			do		325	do		Grade			9	GRADE INFERIOR
					326							
					327							
A			do		350	do		International				BARLEY, GRAIN, GRADE INFERIOR
					351							
					352			Name				
					350			Alternate				
					361			International				
					362			Name				
					370			Alternate				
					371			International				
					372			Name				
					425			Country				
					426							
					427							
					430			Country				
					431							
					432							
					435			Country				
					436							
					437							

FIGURE 3.8 When a grade inferior is entered, put a sorting code 9 in column 32 on the 325 element line.

INTERNATIONAL FEED DESCRIPTION FORM
(Feed Name Form)

Up date code (all)	Blank	Blank	International Feed No. (all)	Country Code	Element Tag (all)	Language Code (all)	Country No. for Official Feeds Only	Elements	Class	Code	Sort Code	Descriptors or Feed Names
A			12740		025	002		Genus	2			PTEROCARPUS
A			do		030	do		Species				LUCENS
					035			Variety				
A			do		040	do		Genus				BOMBAX
A			do		045	do		Species				COSTATUM
					050			Variety				
A			do		155	do		Genetic				PTEROCARPUS LUCENS-BOMBAX COSTATUM-BLUESTEM,
A			do		156	do		(Origin)				GAYANUS
					185			Kind				
					186			(Breed)				
					195			Strain				
					196							
A			do		215	do		Part				BROWSE AND AERIAL PART
					216							
A			do		245	do		Process				FRESH
					246							
					275			Maturity				
					300			Cut				
					325			Grade				
					326							
					327							
					350			Interna-				
					351			tional				
					352			Name				
					360			Altern				
					361			Interna				
					362			Name				
					370			Altern				
					371			Interna				
					372			Name				
					425			Country				
					426							
					427							
A			do		~~355~~	do		Country				ANDROPOGON
A			do		~~360~~	do						GAYANUS
					~~361~~							
					~~362~~							
					435			Country				
					436							
					437							

FIGURE 3.9 When a feed description consists of more than 2 plant species (maximum of 4 species) cross out unused element numbers in the 400 series and enter the appropriate element number in these spaces. Enter all other data as previously described.

INTERNATIONAL FEED DESCRIPTION FORM
(Feed Name Form)

Up date code (all)	Blank	Blank	International Feed No. (all)	Country Code	Element Tag (all)	Language Code (all)	Country No. for Official Feeds Only	Elements	Class	Code	Sort Code	Descriptors or Feed Names
A			02775		025	002		Genus	1			ZEA
A			do		030	do		Species				MAYS
					035			Variety				
					040			Genus				
					045			Species				
					050			Variety				
A			do		155	do		Genetic				MAIZE
					156			(Origin)				
					185			Kind				
					186			(Breed)				
					195			Strain				
					196							
A			do		215	do		Part		1		AERIAL PART
					216							
A			do		245	do		Process				SUN-CURED
					246							
					275			Maturity				
					300			Cut				
					325			Grade				
					326							
					327							
A			do		350	do		International				MAIZE, AERIAL PART, SUN-CURED
					351							
					352			Name				
					360			Alternate				
					361			International				
					362			Name				
					370			Alternate				
					371			International				
					372			Name				
					425			Country				
					426							
					427							
					430			Country				
					431							
					432							
					435			Country				
					436							
					437							

FIGURE 3.10 An international feed description form illustrating the special cases where the part and processes are normally changed but should remain the same in both the international feed description and the international feed name. In these special cases, a code one (1) is placed in column 31, element line 215.

BUTTERMILK - SEE CATTLE
CORN - SEE MAIZE
JOHNSONGRASS - SEE SORGHUM, JOHNSONGRASS
LUCERNE - SEE ALFALFA
MEAT - SEE ANIMAL
MILO - SEE SORGHUM MILO
MILK - SEE SPECIFIC ANIMAL

FIGURE 3.11 To enter a cross reference, leave columns 1 - 12 blank and enter the information in columns 13 - 80.

agris

AGRIS Form 1 (Rev.2)

001 [I C] [YEAR 7] [SERIAL NUMBER] — TRN

002 [/] — Input Sheet number / total no. of Input Sheets

003 [REVISE R] [WITHDRAW W] — Input change

004 [NEW N] [CHANGED C] [DELETED D] — record status

005 [ ] — affected RN

INPUT SHEET

006 [TRANSL +] [GENERIC /]

007 [ ] / [ ] — related RN (TRN)

008 [ ] ; [ ] ; [ ] — (PRIMARY) (SECONDARY) SUBJECT CATEGORIES

[ ] / [ ] — CPR or IO — CTRY OF PUBLICATION OR INTERN ORGANIZATION

TYPE OF RECORD: [MONOGRAPH B] [STANDARD C] [DRAWING D] [FILM F] [MAP OR ATLAS G] [PHONO. H] [SERIAL ARTICLE J] [PATENT P] [REPORT R] [COMPUT. MEDIUM T]

BIBLIOG LEVEL: [ANALYTICAL A] [MONOGRAPH M] [SERIAL S] [COLLECT C]

LITERARY INDICATOR: [CONFERENCE K] [DICTIONARY L] [NUMERICAL DATA N] [THESIS OR DISS U] [LEGISLATION W] [BIBLIOGRAPHY Z] [MAPS INCLUDED Y] [SUMMARY E] [NON CONVENTION V]

1

009 [ ] LEVEL

(Use a separate Input Sheet for each level circled in the Bibliographic Level box starting with the left most level and enter code in box 009. For serial entries use section 2 of this Input Sheet)

		Tag	Date (enter by Typewriter only)
Personal Name (s) (Affiliation (s))		100	
Corporate Name(s)		110	
Degree		111	
English Title	Main Title	200	
	Secondary elements	201	
Conf	Name	210	
	Place	211	
	Date	213	
Original Title (translit.)	Main Title	230	
	Secondary elements	231	
Edition		300	
Report/Patent Number		300	
Sec. Number(s)		310	
ISBN/IPC		320	
IMPRINT	Place of Publication	400	
	Publisher	400	
	Date of Publication	400	
Collation		500	
Language of text		600	
Notes		610	
*Objects. & Geogr. Codes		530	[ ] [ ] [ ] [ ] ; _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ / G [ ] [ ] [ ] ; _ _ _ _ _ _ _ _ _ _

2

009 [S] LEVEL

SERIAL TITLE	Main Title	230	
	Secondary elements	231	
ISSN		320	
Date of Publication		400	
Collation		500	
Notes		610	

GIL 33 5% 10.M

FIGURE 4.1 Agris input sheet.

BIBLIOGRAPHIC REFERENCE FORM

TAG

001 **Bibliographic Reference Number:** 8010427

100 **Personal Names and Affiliation:** Deyoe, C.W. (Department of Grain Science and Industry)

110 **Corporate Name:** Kansas State University

200 **English Title:** Unpublished data

230 **Original Title – Main Title:**

401 **Imprint – Place and Country of Publication:** Manhatten, Kansas 66506 (USA)

402 **Imprint – Publisher:**

403 **Date of Publication:** 1976

500 **Collation:**

610 **Notes:**

Figure 4.2 Bibliographic reference form showing original data.

BIBLIOGRAPHIC REFERENCE FORM

TAG

001 **Bibliographic Reference Number:** 8020627

100 **Personal Names and Affiliation:** Ditterline, R.L.; C.W. Newman; A.E. Carleton (Department of Animal and Range Sciences)

110 **Corporate Name:** Montana State University

200 **English Title:** Evaluation of sainfoin seed as a possible supplement for monograstic animals.

230 **Original Title – Main Title:**

401 **Imprint – Place and Country of Publication:** Bozeman, Montana 59715 (USA)

402 **Imprint – Publisher:** Nutrition Reports International

403 **Date of Publication:** 1977

500 **Collation:** v. 15(4) p. 397

610 **Notes:**

Figure 4.3 Bibliographic reference form showing data from scientific journals.

BIBLIOGRAPHIC REFERENCE FORM

TAG

001 **Bibliographic Reference Number:** 8030426

100 **Personal Names and Affiliation:** Allen, R.D.

110 **Corporate Name:** Feedstuffs Yearbook

200 **English Title:** Feedstuffs ingredient analysis

230 **Original Title – Main Title:**

401 **Imprint – Place and Country of Publication:** Minneapolis, Minnesota 55440 (USA)

402 **Imprint – Publisher:** Miller Publishing Company, 2501 Wayzata Blvd.

403 **Date of Publication:** 1974

500 **Collation:** v. 46(38) p. 33

610 **Notes:** Tables

Figure.4.4 Bibliographic reference form showing data from books and magazines.

INTERNATIONAL SOURCE FORM FOR COMPOSITION OF FEEDS

Read instructions before filling in form. Please print.

Source Form No. 1 8 0 0 0 1 7 7 8

ORIGIN OF DATA — CARD 10

10 1 0

Project No. — 12

Country United States — 17 9 3 0

State Hawaii — 20 5 1

Laboratory name Department of Animal Sciences — 22 0 8

Address Honolulu, Hawaii 96822

Sample No. — 24 8 0 1

ORIGIN OF SAMPLE

Date originally collected: Year: 196 , Month: Day: — 30 6 7 0 0 0 0

Country United States — 36 9 3 0

Climatic zone or fishing area — 39 — 44

State, Province or Department Hawaii — 46 5 1

County Honolulu — 48 0 0 2

Bibliographic No. author, year, reference — 51 8 0 0 1 8 3 3

Sherrod, L. B. S. M. Ishizaki
1966
Proc Western Sec Am Soc An Sci Vol 17

DESCRIPTION OF FEED

Class category: Dry forage (cut and cured) | Forage grazed | Cut and fed green | Silage | Other

Scientific name: Genus PENNISETUM

Species and variety CLANDESTINUM

Author's common name for scientific name KIKUYUGRASS

Parts of plant, animal or other feed product Aerial Part

Processes undergone before fed to animal Dehydrated

Stage plant maturity or age of animal 21 days growth

No. of crop or number of cut Regrowth early vegetative

Grade — IFN 58 1 2 2 1 6

Plant cross — 65

Additives: Name — 69

Weight in (check one) mg | g | kg — 73

Weight per metric ton — 74

Season dry | wet — 77 2

Fertilizer yes | no | unknown — 78 1

DIGESTIBILITY TRIAL — CARD 30

10 3 0

Animal kind: Sheep — 12 7 7 0

Breed Hampshire — Sex Wether — 15 3 4 0 — 18 3

Animal requirements — 19

Age: Years 1 Months 10 Weeks 1 — 21 0 1 1 0 1

Number of animals used for digestibility determination of the above feed — 26 2 4

Average weight of animals, kg — 28 4 8 0

Physiological state: non-pregnant ✓ | pregnant 1st 2/3 | pregnant last 1/3 — 36 1

losing wt | maintaining wt ✓ | gaining wt | fattening — 37 1

lactating | laying eggs | working — 38

very thin | thin | thrifty ✓ | fat | very fat — 39 3

Percent of test ingredient in ration fed (100.0% dry matter) — 40

Ad libitum feeding ✓ | Controlled feeding — 42 1

Feed fed alone ✓ | Feed not fed alone, digestibility by difference — 43 1

Method: Total feces collection ✓ | Feces indicator — 44 1

Length of trial: Preliminary days 7 | Collection days 7 — 45 7 — 47 7

Daily dry matter consumed kg 0.4 — 49 0.4

Weekly dry matter consumed kg — 56

FIGURE 5.1 This source form may be used to describe the feed sample and record data for card formats 10, 30, 4, 21, 22 and 24 (see following 3 pages).

Check analyses made

CARD 4

	Proximate Principal	Code	Unit	Quantity	Anal. Code Factor	Unit Code	Method of Analyses	Digestion Coefficient %
✓	Dry matter of sample on "as fed" basis	101	%	11.5				
	BASIS OF DATA†							
	As fed	102	%					
	Partially dry	103	%					
✓	Dry (100.0% dry matter)	104	%	100.0				
✓	Ash	105	%	9.6	20		Assoc. Official Agr. Chem. 1960	
✓	Protein	109	%	20.8	01		Kjeldahl	71.2
✓	Nitrogen	212	%	3.3	01		do	
✓	Ether extract	107	%	3.1	20		Assoc. Official Agr. Chem. 1960	51.6
✓	Crude fiber	106	%	25.6	01		Weende	56.6
✓	Nitrogen-free extract	108	%	40.9			By difference	57.5
	ORGANIC MATTER, ETC.							
✓	Organic matter	110	%	90.4			By difference (total minus ash)	60.7
	Cell contents	328	%				Van Soest J. Animal Sci. 26:119–128. 1967	
	Cell walls (neutral detergent fiber)	329	%				Van Soest J. Assoc. Official Anal. Chem. 50:50. 1967	
	Cellulose	330	%				Van Soest J. Assoc. Official Anal. Chem. 51:780. 1968	
	Fiber, acid detergent	273	%				Van Soest J. Assoc. Official Agr. Chem. 46:829. 1963	
	Lignin, acid detergent	270	%				Van Soest J. Assoc. Official Agr. Chem. 46:829. 1963	
	in vitro dry matter digestion coefficient	916					Tilley and Terry J. British Grassl. Soc. 18:104. 1963	
	ENERGY							
✓	Gross energy (GE)	421	MJ/kg	18.133			Bomb calorimeter	55.8
✓	Digestible (DE)	422	MJ/kg	10.217			Harris Natl. Acad. Sci. Natl. Res. Council pub. 1411. 1966	
	Metabolizable (ME)	423	MJ/kg				do	
	Metabolizable (ME_n)	424	MJ/kg				do	
✓	TDN	429	%	56.6			Biological	
	MINERALS							
✓	Calcium	530	%	0.32	02		Chemical ☐ Atomic ☑ Spectrographic ☐	
✓	Magnesium	533	%	0.35	02		Chemical ☐ Atomic ☑ Spectrographic ☐	
✓	Phosphorus	534	%	0.30	01		Chemical ☑	
✓	Manganese	542	mg/kg	233.1	02		Chemical ☐ Atomic ☑	
	VITAMINS							
	Carotene	647	mg/kg				Assoc. Official Agr. Chem. 1960	
✓	Riboflavin	652	mg/kg	20.4	20		do	
	Thiamine	653	mg/kg				do	
	OTHER ANALYSES AND OTHER DIGESTION COEFFICIENTS† (use two lines if necessary)							
✓	Copper	539	mg/lb	2.31	02	11	Atomic absorption	
✓	Potassium	535	mg/lb	6045.	02	15	do	
✓	Iron	532	%	.023	02	01	do	
✓	Niacin	650	mg/kg	49.8	01		Chemical	
✓	Arginine	764	g/16gN	2.3	06	96	Chromatography by gas	
✓	Fatty acids	210	%	1.8	06		do	
✓	Linoleic	248	g fatty acid per 100g fat	1.6	06	44	do	
✓	Stearic	266	g fatty acid per 100g fatty acid	1.2	06	45	do	

† For a list of other analyses and other digestion coefficients see Table 3.9.

QUALITY

CARD 21

Feed quality by class		12
Degree of purity %		13 90
Foreign material	weed seeds	15 03

SOIL

Soil units	calcic luvisols	17 LK
Soil texture class	medium texture	19 2
Soil slope classes		20
Soil–pH		21 7.5
Water (type)	irrigation	24 3
Irrigation plus rainfall (millimeters)		25

FERTILIZATION

N–fertilizer:	ammonium sulfa-nitrate	29 03
quantity in kg per hectare		31 158
No. of days between last application and harvest		35 50
P–fertilizer: type	superphosphate	38 05
quantity in kg per hectare		40 114
K–fertilizer: type	potassium sulfate	44 06
quantity in kg per hectare		46 114
Ca–fertilizer: type		50
quantity in kg per hectare		52
Organic manuring: type		56
quantity in 100kg per hectare		58
Trace–elements–fertilizer: type		62
quantity in kg per hectare		64
Mix fertilizer: type		67
quantity in kg per hectare		69

CARD 22

Height when cut (cm)		12 50.5
Stubble height (cm)		16 8.0
Storage facility	stack	20 07
Kind of building material		22
Kind of covering or lock	plastic sheet	24 02
No. of days stored		26 60
Temperature in storage container (C°)		30
Humidity in container		33
Light and air in container		35

CARD 24

POLLUTION

Pollution source	industry (sewage)	12 410
Pollution substance	fluorine	15 540
State of substance	gasiform	18 1
Distance between source and receptor	4.001 – 5.000 km	19 16
Wind direction	lateral to prevailing wind	21 3
Pollutant concentration	µg/m³ ✓ mg/m³ mg/kg mg/l	22 1
Pollutant quantity in relation to unit		23 250
Intensity of traffic		30
Time exposed to pollutant: days		31 21
Damage symptoms on original material	healthy looking	34 1

PLANT PROTECTION

CARD 24 (cont.)

Pesticide (brand)	Kelthane PPS	35 0 7 0
Class of pesticide	insecticides	38 4
Form of pesticide	fine spray products	39 7
Active ingredients %		40
Application method	fine spraying	42 2
Application type	aerial application	43 3
Unit for pesticide	g/ha ✓ kg/ha l/ha	44 1
Pesticide quantity in relation to unit		45
Number of applications		51 2
Days between last application and harvest		53 1 0

RESIDUES OF PESTICIDES IN FEED OF ANIMAL ORIGIN

Pesticide in diet unit (check one)	µg/kg mg/kg g/kg	56
Quantity of pesticide in relation to unit		57
Daily intake of pesticide (mg)		63
Feeding period, days		68 2 1
Weight of animals at beginning (kg)		71 4 8 0

SUPPLEMENTARY INFORMATION ABOUT FEEDS

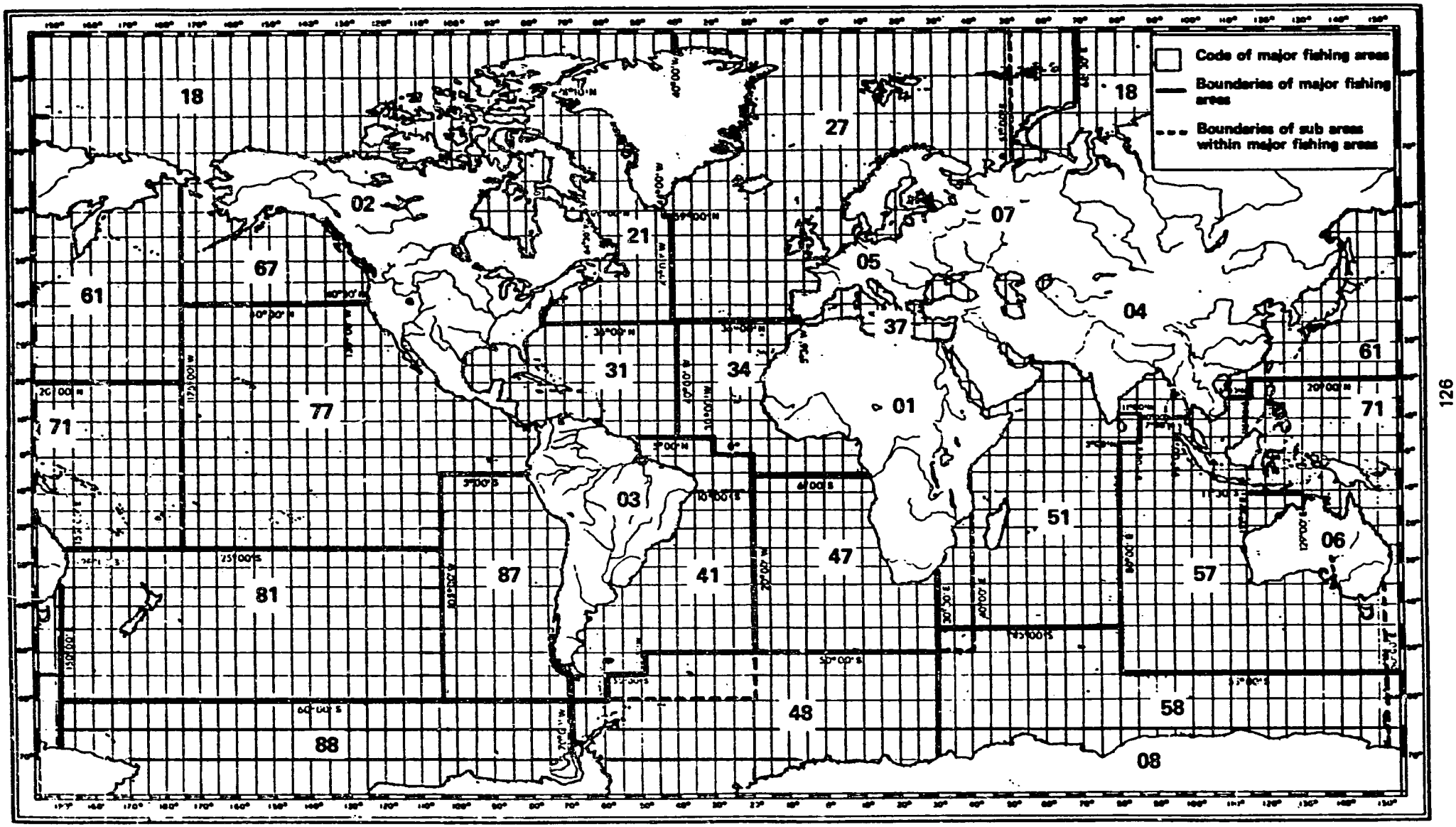

FIGURE 5.2 Map of fishing areas (the numbers on the map are the codes for fishing areas).

Feed Name or Nutrient			As Fed	Dry	No. Analyses	Coeff. of Var.[a]
Wheat, hard red winter, grain						
Triticum aestivum						
IFN 4-05-268						
Dry matter		%	88.	100.	19	1
Ash		%	1.7	1.9	13	12
Crude fiber		%	2.5	2.8	12	8
Sheep	dig. coef.	%	33.	33.	3	
Ether extract		%	1.6	1.8	15	16
Sheep	dig. coef.	%	72.	72.	2	
Nitrogen free extract		%	69.7	79.2	5	1
Sheep	dig. coef.	%	92.	92.	2	
Protein		%	12.6	14.3	15	6
TDN Ruminant		%	78.	89.	2	
TDN Cattle		%	78.	89.	1	
TDN Sheep		%	78.	89.	1	
DE Ruminant		Mcal/kg	3.43[b]	3.92[b]		
DE Sheep		Mcal/kg	3.46	3.93		
ME Ruminant		Mcal/kg	3.09[b]	3.51[b]		
ME Cattle		Mcal/kg	3.09	3.51		
ME Sheep		Mcal/kg	3.10	3.52		
NE_m Ruminant		Mcal/kg	2.12[c]	2.41[c]		
NE_m Cattle		Mcal/kg	2.12[c]	2.41[c]		
NE_g Ruminant		Mcal/kg	1.46[c]	1.66[c]		
NE_g Cattle		Mcal/kg	1.46[c]	1.66[c]		
ME_n Chicken		kcal/kg	3210.	3648.	3	
NE_p Chicken		kcal/kg	1934.			
TDN Swine		%	76.	86.		
DE Swine		kcal/kg	3318.[c]	3771.[c]		
ME Swine		kcal/kg	3090.[c]	3511.[c]		
DP Ruminants		%	8.5[c]	9.7[c]		
DP Cattle		%	8.0[c]	9.1[c]		
DP Sheep		%	9.1[c]	10.3[c]		
DP Horse		%	9.1[c]	10.3[c]		
Calcium		%	.04	.05	14	11
Chlorine		%	.05	.06	2	
Magnesium		%	.11	.13	10	20
Phosphorus		%	.38	.43	14	8
Potassium		%	.43	.49	12	10
Sodium		%	.02	.02	9	91
Sulfur		%	.13	.15	2	

FIGURE 6.1 Atlas format for tables of feed composition.

Feed Name or Nutrient		As Fed	Dry	No. Analyses	Coeff. of Var.[a]
Cobalt	mg/kg	.14	.16	8	40
Copper	mg/kg	4.8	5.4	8	20
Iron	mg/kg	31.2	35.4	10	17
Manganese	mg/kg	29.0	32.9	9	20
Selenium	mg/kg	.399	.453	8	88
Zinc	mg/kg	37.7	42.8	8	28
Biotin	mg/kg	.11	.12	1	
Carotene	mg/kg	.1	.1	3	
Choline	mg/kg	1040.	1179.	9	18
Folic acid	mg/kg	.39	.44	4	9
Niacin	mg/kg	53.6	60.9	161	18
Pantothenic acid	mg/kg	9.8	11.1	159	31
Riboflavin	mg/kg	1.4	1.6	160	18
Thiamine	mg/kg	4.2	4.8	159	10
Vitamin B_6	mg/kg	3.0	3.4	154	23
Vitamin E	mg/kg	11.0	12.5	4	25
Arginine	%	.64	.73	9	4
Cystine	%	.32	.36	9	9
Glycine	%	.57	.65	8	4
Histidine	%	.30	.34	9	8
isoleucine	%	.51	.58	8	9
Leucine	%	.89	1.00	8	6
Lysine	%	.36	.41	9	4
Methionine	%	.21	.24	9	11
Phenylalanine	%	.63	.71	8	6
Serine	%	.59	.67	7	7
Threonine	%	.37	.42	8	11
Tryptophan	%	.17	.19	3	
Tyrosine	%	.43	.48	9	6
Valine	%	.59	.67	8	12

[a] Coefficient of variation is calculated if there are four or more analyses.
[b] Weighted average of cattle and sheep.
[c] Calculated by formula (see Section 4.3).

FIGURE 6.1 (continued) Atlas format for tables of feed composition.

	To:	From:	From:	From:	From:	From:	From:	From:	From:	From:	From:	From:	From:	From:	From:	From:	From:	From:	From:	From:
	Feed number	Feed number	Feed number	Feed number	Feed number	Feed number	Feed number	Feed number	Feed number	Feed number	Feed number	Feed number	Feed number	Feed number	Feed number	Feed number	Feed number	Feed number	Feed number	Feed number
1	00059	00056	00057	00058	00055	05676	08633	08635	08636	08622	08716	08816	09098	09101	09155	09273				
2	00059	13410																		
3	00068	00064	00065	00066	00067	08653	08867	09157	13111	13112										
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				
16																				
17																				
18																				
19																				
20																				
21																				
22																				
23																				
24																				
25																				
26																				
27																				
28																				
29																				
30																				
31																				
32																				
33																				
34																				
35																				
36																				
37																				
38																				
39																				
40																				

FIGURE 7.1 Format for entering feed numbers to combine data.

CARD 10	1–8 Source form number	9	10–11 Card number	12–16 Project number	17–19 Country	20–21 State	22–23 Laboratory	24–29 Sample number	30–35 Year	36–38 Month	39–40 Day	41–43 Country or Region	44–46 Climatic zone	47–48 Fishing area	49–50 State or Province	51–53 County	54–57 Bibliographic reference number	58–60 International feed number	61–64	65–68 Plant cross	69–72 Additives	73 Weight code	74–76 Weight per metric ton	77 Season	78 Fertilizer	79–80
1			10																							1
2			10																							2
3			10																							3
4			10																							4
5			10																							5
6			10																							6
7			10																							7
8			10																							8
9			10																							9
10			10																							10
11			10																							11
12			10																							12
13			10																							13
14			10																							14
15			10																							15
16			10																							16
17			10																							17
18			10																							18
19			10																							19
20			10																							20
21			10																							21
22			10																							22
23			10																							23
24			10																							24
25			10																							25
26			10																							26
27			10																							27
28			10																							28
29			10																							29
30			10																							30
31			10																							31
32			10																							32
33			10																							33
34			10																							34
35			10																							35
36			10																							36
37			10																							37
38			10																							38
39			10																							39
40			10																							40

FIGURE 8.1 CARD 10. Origin of data, origin of sample and description of the feed sample.

CARD 21	1–8 Source form number	9	10–11 Card number	12 Quality feed class	13–14 Degree of purity %	15–16 Foreign material	17–18 Soil unit	19 Soil texture	20 Soil slope	21–23 Soil pH	24 Water (type)	25–28 Irrigation plus rainfall	29–30 N–fertilizer: type	31–34 Quantity in kg per hectare	35–37 No. days between last application and harvest	38–39 P–fertilizer: type	40–43 Quantity in kg per hectare	44–45 K–fertilizer: type	46–49 Quantity in kg per hectare	50–51 Ca–fertilizer: type	52–55 Quantity in kg per hectare	56–57 Organic manuring: type	58–61 Quantity in 100 kg per hectare	62–63 Trace elements fertilizer: type	64–66 Quantity in kg per hectare	67–68 Mix fertilizer: type	69–72 Quantity in kg per hectare	73–80	
1			21																										1
2			21																										2
3			21																										3
4			21																										4
5			21																										5
6			21																										6
7			21																										7
8			21																										8
9			21																										9
10			21																										10
11			21																										11
12			21																										12
13			21																										13
14			21																										14
15			21																										15
16			21																										16
17			21																										17
18			21																										18
19			21																										19
20			21																										20
21			21																										21
22			21																										22
23			21																										23
24			21																										24
25			21																										25
26			21																										26
27			21																										27
28																													28
29			21																										29
30			21																										30
31			21																										31
32			21																										32
33			21																										33
34			21																										34
35			21																										35
36			21																										36
37			21																										37
38			21																										38
39			21																										39
40			21																										40

FIGURE 8.2 CARD 21. Quality of feed, soil, and fertilizer.

CARD 22	1–8 Source form number	9	10–11 Card number	12–15 Height when cut (cm)	16–19 Stubble height (cm)	20–21 Storage facility	22–23 Kind of building material	24–25 Kind of covering or lock	26–29 Number of days stored	30–32 Temperature (C) in storage container	33–34 Humidity in container (%)	35–36 Light and Air in container	37–80
1			22										
2			22										
3			22										
4			22										
5			22										
6			22										
7			22										
8			22										
9			22										
10			22										
11			22										
12			22										
13			22										
14			22										
15			22										
16			22										
17			22										
18			22										
19			22										
20			22										
21			22										
22			22										
23			22										
24			22										
25			22										
26			22										
27			22										
28			22										
29			22										
30			22										
31			22										
32			22										
33			22										
34			22										
35			22										
36			22										
37			22										
38			22										
39			22										
40			22										

FIGURE 8.3 CARD 22. Plant height and feed storage.

CARD 24	1–8 Source form number	9	10–11 Card number	12–14 Pollution source	15–17 Pollution substance	18	19–20 State of substance Distance between source & receptor	21 Wind direction	22 Pollutant code	23–29 Pollutant quantity in relation to unit .decimal	30 Intensity of traffic	31–33 Time exposed to pollutant: days	34 Damage symptoms	35–37 Plant protection – pesticide (brand)	38 Class of pesticide	39 Form of pesticide	40–41 Active ingredients (%)	42 Application method	43 Application type	44 Unit for pesticide	45–50 Pesticide in relation to unit .decimal	51–52 Number of applications	53–55 Days between last application and harvest	56 Pesticide in diet unit	57–62 Pesticide quantity in relation to unit .decimal	63–67 Daily intake of pesticide (mg) .decimal	68–70 Feeding periods days	71–78 Weight of animals at beginning (kg) .decimal	79–80
1			24																											1
2			24																											2
3			24																											3
4			24																											4
5			24																											5
6			24																											6
7			24																											7
8			24																											8
9			24																											9
10			24																											10
11			24																											11
12																														12
13			24																											13
14			24																											14
15			24																											15
16			24																											16
17			24																											17
18			24																											18
19			24																											19
20			24																											20
21			24																											21
22			24																											22
23			24																											23
24			24																											24
25			24																											25
26			24																											26
27			24																											27
28			24																											28
29			24																											29
30			24																											30
31			24																											31
32			24																											32
33			24																											33
34			24																											34
35			24																											35
36			24																											36
37			24																											37
38			24																											38
39			24																											39
40			24																											40

FIGURE 8.4 CARD 24. Environment pollution and pesticides.

CARD 30	1–8 Source form number	9	10–11 Card number	12–14 Animal kind	15–17 Animal breed	18 Sex	19–20 Animal requirements	21–22 Year	23–24 Month	25 Weeks	26–27 No. animals in treatment	28–35 Average weight of animals in kg (decimal)	36 Non-pregnant pregnant first 2/3 pregnant last 1/3	37 Losing wt. maintaining wt. gaining wt. fattening	38 Lactating, laying eggs, working	39 Very thin, thin, thrifty, fat, very fat	40–41 % test ingredient in ration fed	42 Ad libitum or controlled feeding	43 Feed fed alone or not fed alone, or gestion difference	44 Total feces collected or feces indicator	45–46 Length of Trial Preliminary Days	47–48 Length of Trial Collection Days	49–55 Daily Dry Matter Consumed in kg (decimal)	56–62 Weekly Dry Matter Consumed in kg (decimal)	63–73
1			3 0																							1
2			3 0																							2
3			3 0																							3
4			3 0																							4
5			3 0																							5
6			3 0																							6
7			3 0																							7
8			3 0																							8
9			3 0																							9
10			3 0																							10
11			3 0																							11
12			3 0																							12
13			3 0																							13
14			3 0																							14
15			3 0																							15
16			3 0																							16
17			3 0																							17
18			3 0																							18
19			3 0																							19
20			3 0																							20
21			3 0																							21
22			3 0																							22
23			3 0																							23
24			3 0																							24
25			3 0																							25
26			3 0																							26
27			3 0																							27
28			3 0																							28
29			3 0																							29
30			3 0																							30
31			3 0																							31
32			3 0																							32
33			3 0																							33
34			3 0																							34
35			3 0																							35
36			3 0																							36
37			3 0																							37
38			3 0																							38
39			3 0																							39
40			3 0																							40

FIGURE 8.5 CARD 30. Digestion trial.

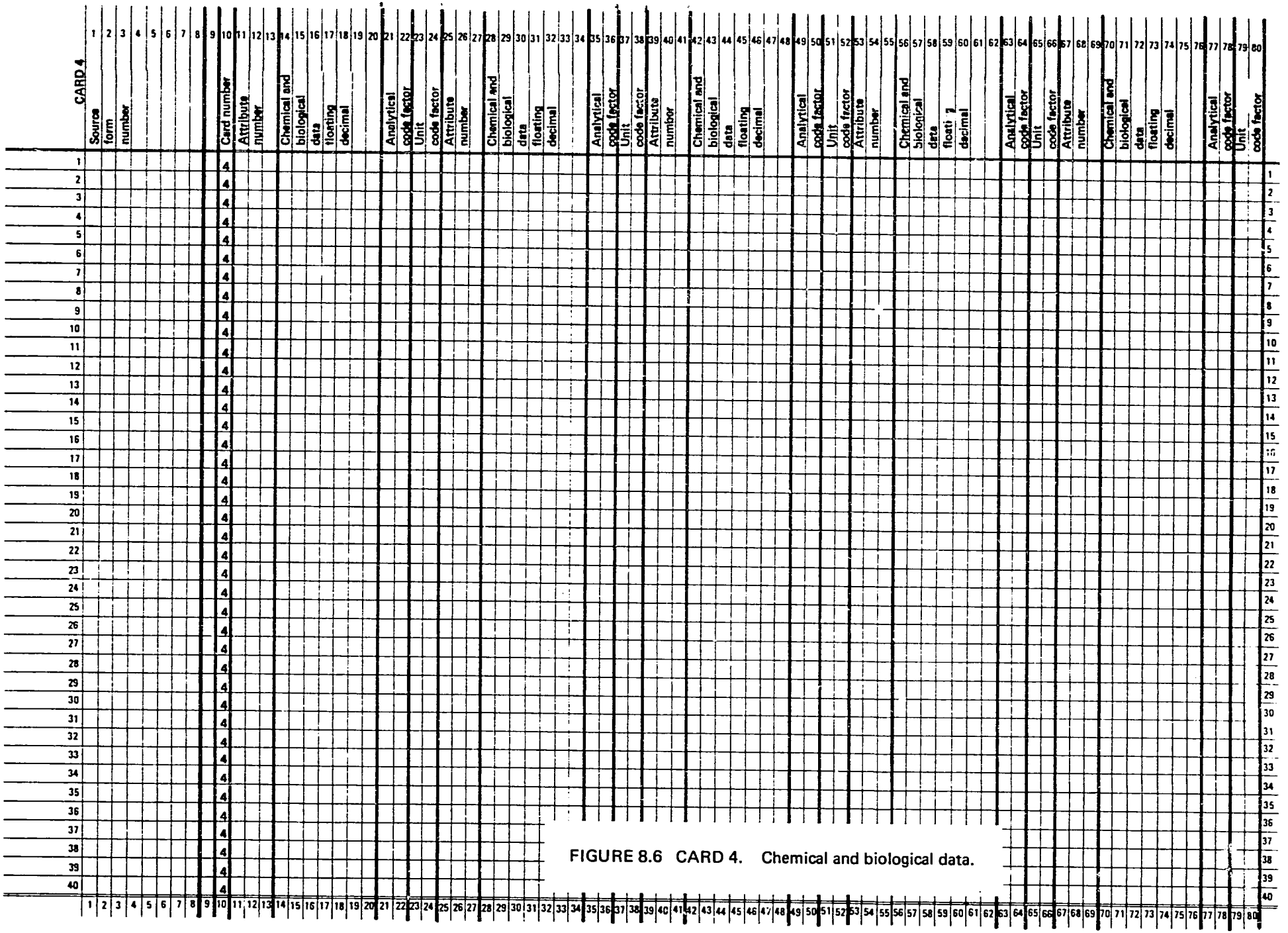

FIGURE 8.6 CARD 4. Chemical and biological data.

BIBLIOGRAPHIC REFERENCE FORM

TAG

001 **Bibliographic Reference Number:** 80[illegible]0493

100 **Personal Names and Affiliation:** Bell, J. M. (Department of Animal Science)

110 **Corporate Name:** University of Saskatchewan

200 **English Title:** Unpublished data

230 **Original Title – Main Title:**

401 **Imprint – Place and Country of Publication:** Saskatoon, Saskatchewan, (CANADA S7N OWO)

402 **Imprint – Publisher:**

403 **Date of Publication:** 1974

500 **Collation:**

610 **Notes:**

FIGURE 9.1 This bibliographic reference form contains information on original (unpublished) data received from an analytical laboratory. To identify this as such, a 1 is placed in the third space of the bibliographic reference number.

CARD 10

Card	Source form number	Card number	Project number	Country	State	Laboratory	Sample number	Year	Month	Day	Country or Region	Climatic zone	Fishing area	State or Province	County	Bibliographic reference number	International feed number	Plant cross	Additives	Weight code	Weight per metric ton	Season	Fertilizer
1		10	BRASSICA NAPUS, RAPE, SEEDS OIL RESIDUE, SOLVENT EXTRACTED GROUND																				
2	7412276B	10				02RSA	1127460000216									80/0493	08135						
3		10																					
4		10																					
5		10																					
6		10																					
7		10																					
8		10																					
9		10																					
10		10																					
11		10																					
12		10																					
13		10																					
14		10																					
15		10																					
16		10																					
17		10																					
18		10																					
19		10																					
20		10																					
21		10																					
22		10																					
23		10																					
24		10																					
25		10																					
26		10																					
27		10																					
28		10																					
29		10																					
30		10																					
31		10																					
32		10																					
33		10																					
34		10																					
35		10																					
36		10																					
37		10																					
38		10																					
39		10																					
40		10																					

FIGURE 9.2 Card 10 provides a means for recording information on where a sample was analyzed, where it came from, the feed name and description. (The International Feed Description is entered for illustrative purposes only.)

CARD 30	Source form number (1–8)	Card number (10–11)	Animal kind (12–14)	Animal breed (15–17)	Sex (18)	Animal requirements (19–20)	Year (21–22)	Month (23–24)	Weeks (25)	No. animals in treatment (26–27)	Average weight of animals in kg (28–31)	.decimal (32–35)	Non-pregnant, pregnant first 2/3, pregnant last 1/3 (36)	Losing wt., main., gaining wt., gaining wt. fattening (37)	Lactating, laying eggs, working (38)	Very thin, thin, thrifty, fat, very fat (39)	% test ingredient in ration fed (40–41)	Ad libitum or controlled feeding (42)	Feed fed alone or not fed alone, digestion difference (43)	Total feces collected or feces indicator (44)	Length of Trial Preliminary Days (45–46)	Length of Trial Collection Days (47–48)	Daily Dry Matter Consumed in kg (49–51)	.decimal (52–55)	Weekly Dry Matter Consumed in kg (56–58)	.decimal (59–62)	63–73	
1	7412768	30	120	950	1		00	03	0		30	.0		3			13	1	2	2	4	3	2	.11				1
2		30																										2
3		30																										3
4		30																										4
5		30																										5
6		30																										6
7		30																										7
8		30																										8
9		30																										9
10		30																										10
11		30																										11
12		30																										12
13		30																										13
14		30																										14
15		30																										15
16		30																										16
17		30																										17
18		30																										18
19		30																										19
20		30																										20
21		30																										21
22		30																										22
23		30																										23
24		30																										24
25		30																										25
26		30																										26
27		30																										27
28		30																										28
29		30																										29
30		30																										30
31		30																										31
32		30																										32
33		30																										33
34		30																										34
35		30																										35
36		30																										36
37		30																										37
38		30																										38
39		30																										39
40		30																										40

FIGURE 9.3 Card 30 provides a means for recording information concerning digestibility trials. These include animal specie and sex, number and weight of animals, and specific physiological condition the animals are in, length of trial and feed consumed.

CARD 4

Source form number	Card number	Attribute number	Chemical and biological data floating decimal	Analytical code factor	Unit code factor	Attribute number	Chemical and biological data floating decimal	Analytical code factor	Unit code factor	Attribute number	Chemical and biological data floating decimal	Analytical code factor	Unit code factor	Attribute number	Chemical and biological data floating decimal	Analytical code factor	Unit code factor	Attribute number	Chemical and biological data floating decimal	Analytical code factor	Unit code factor	Attribute number	Chemical and biological data floating decimal	Analytical code factor	Unit code factor
74127688	4	10189.2				10289.2				10566.3				10612.1				10772.5							
74127688	4	10829.3				10939.0				10978.0			472	2136.24				2136.25							
74127688	4	92119220.				92132992.				5300.58				532.010				5330.51							
74127688	4	53400.97		12		53500.97				8460.14				8430.32				5425.0							
74127688	4	54580.0				65021 7.0				65115.8				6522.5				7631.89							
74127688	4	7642.50				7652.78				7670.44				7696.46				7702.09							
74127688	4	7711.02				7731.34				7742.79				7752.14				7760.60							
74127688	4	7771.43				7782.95				7791.95				7801.87				7810.48							
74127688	4	7821.08				7831.81																			

FIGURE 9.4 Card 4 provides a means for recording attribute values, digestion coefficients, method of analysis, and unit code factors.

BIBLIOGRAPHIC REFERENCE FORM

TAG

001 **Bibliographic Reference Number:** 8020225

100 **Personal Names and Affiliation:** Fonnesbeck, Paul V. (Department of Animal Science)

110 **Corporate Name:** Rutgers University

200 **English Title:** Digestion of soluble and fibrous carbohydrate of forage by horses.

230 **Original Title – Main Title:**

401 **Imprint – Place and Country of Publication:** New Brunswick, New Jersey 08902 (USA)

402 **Imprint – Publisher:** J. Animal Sci.

403 **Date of Publication:** 1968

500 **Collation:** v.27(5) p. 1336

610 **Notes:**

FIGURE 9.5 This bibliographic reference form contains information on data taken from a publication where the information is presented for the first time. To identify this as such, a 2 is placed in the third space of the bibliographic reference number.

CARD 10

Source form number	Card number	Project number	Country	State	Laboratory	Sample number	Year	Month	Day	Country or Region	Climatic zone	Fishing area	State or Province	County	Bibliographic reference number	International feed number	Plant cross	Additives	Weight code	Weight per metric ton	Season	Fertilizer
	10	MEDICAGO SATIVA. ALFALFA, AERIAL PART, FAN AIR DRIED, LATE																				
	10	VEGETATIVE, CUT 1 (ALFALFA)																				
68111878	10				06		67	00	00930				29		8020225	19914						
	10																					
	10	BROMUS INERMIS. BROME, SMOOTH, AERIAL PART, FAN AIR DRIED, LATE																				
	10	VEGETATIVE (LINCOLN BROMEGRASS)																				
68111879	10				06		67	00	00930				29		8020225	08746						
	10																					
	10	PHALARIS ARUNDINACEA. CANARYGRASS, REED, AERIAL PART, FAN AIR DRIED,																				
	10	LATE VEGETATIVE (REED CANARYGRASS)																				
68111876	10				06		67	00	00930				29		8020225	19912						
	10																					
	10	FESTUCA ARUNDINACEA. FESCUE, ALTA, AERIAL PART, FAN AIR DRIED, LATE																				
	10	VEGETATIVE (ALTA FESCUE)																				
68111877	10				06		67	00	00930				29		8020225	19911						
	10																					
	10	CYNODON DACTYLON. BERMUDAGRASS, AERIAL PART, FAN AIR DRIED, LATE																				
	10	VEGETATIVE (MIDLAND BERMUDAGRASS)																				
68111875	10				06		67	00	00930				29		8020225	19915						
	10																					
	10	DACTYLIS GLOMERATA. ORCHARDGRASS, AERIAL PART, FAN AIR DRIED, LATE																				
	10	VEGETATIVE (ORCHARDGRASS)																				
68111874	10				06		67	00	00930				29		8020225	08750						
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					

FIGURE 9.6 Card 10 provides a means for recording information on where a sample was analyzed, where it came from, the feed name and description. (The International Feed Description is entered for illustrative purposes only.)

CARD 30

	Source form number (1–8)	Card number (10–11)	Animal kind (12–14)	Animal breed (15–17)	Sex (18)	Animal requirements (19–20)	Year (21–22)	Month (23–24)	Weeks (25–26)	No. animals in treatment (27)	Average weight of animals in kg (28–31)	.decimal (32)	Non-pregnant pregnant first 2/3 pregnant last 1/3 (36)	Laying wt. maintaining wt. gaining wt. fattening (37)	Lactating, laying eggs, working (38)	Very thin, thin, ¢ ¼ty, fat, very fat (39)	% test ingredient in ration fed (40–41)	Ad libitum or controlled feeding (42)	Feed fed alone or mixed feeds, dif. ration difference (43)	Total feces collected or feces indicator (44)	Length of Trial Preliminary Days (45–46)	Length of Trial Collection Days (47–48)	Daily Dry Matter Consumed in kg (49–50)	.decimal (51–55)	Weekly Dry Matter Consumed in kg (56)	.decimal (57–62)
1	68111878	30	420	8403			09	00	06	6	429	.0		2		3		2	1		8	6	10	.55		
2	68111877	30	420	8403			09	00	06	6	429	.0		2		3		2	1		8	6	9	.78		
3	68111876	30	420	8403			09	00	06	6	429	.0		2		3		2	1		8	6	9	.64		
4	68111877	30	420	8403			09	00	06	6	429	.0		2		3		2	1		8	6	9	.43		
5	68111875	30	420	8403			09	00	06	6	429	.0		2		3		2	1		8	6	9	.44		
6	68111874	30	420	8403			09	00	06	6	429	.0		2		3		2	1		8	6	9	.56		
7		30																								
8		30																								
9		30																								
10		30																								
11		30																								
12		30																								
13		30																								
14		30																								
15		30																								
16		30																								
17		30																								
18		30																								
19		30																								
20		30																								
21		30																								
22		30																								
23		30																								
24		30																								
25		30																								
26		30																								
27		30																								
28		30																								
29		30																								
30		30																								
31		30																								
32		30																								
33		30																								
34		30																								
35		30																								
36		30																								
37		30																								
38		30																								
39		30																								
40		30																								

FIGURE 9.7 Card 30 provides a means for recording information concerning digestibility trials. These include animal specie and sex, number and weight of animals, and specific physiological condition the animals are in, length of trial and feed consumed.

CARD 4

	Source form number	Card number	Attribute number	Chemical and biological data floating decimal	Analytical code factor	Unit code factor	Attribute number	Chemical and biological data floating decimal	Analytical code factor	Unit code factor	Attribute number	Chemical and biological data floating decimal	Analytical code factor	Unit code factor	Attribute number	Chemical and biological data floating decimal	Analytical code factor	Unit code factor	Attribute number	Chemical and biological data floating decimal	Analytical code factor	Unit code factor	Attribute number	Chemical and biological data floating decimal	Analytical code factor	Unit code factor
1	68111878	4	104100.0				42144 20.				42151.0			47	11091.5				11058.0							47
2	68111878	4	10631.2				10636.0			47	27337.1				27340.0			47	32948.8							
3	68111878	4	32940.0			47	32737.1				32748.0			47	31777.5				31737.0							47
4	68111878	4	32329.6				32350.0			47	27007.5				27016.0			47	10841.8							
5	68111878	4	10874.0			47	32535.7				32577.0			47	32851.1				32875.0							47
6	68111878	4	32128.2				32197.0			47	10972.6				10916.0				10958.5							
7	68111879	4	104100.0				42144 90.				42143.0			47	11092.2				11047.0							47
8	68111879	4	10637.9				10649.0			47	27340.7				27343.0			47	32976.0							
9	68111879	4	32951.0			47	32764.4				32753.0			47	31728.0				31757.0							47
10	68111879	4	32336.3				32348.0			47	27004.4				27007.0			47	10839.2							
11	68111879	4	10846.0			47	32537.0				32553.0			47	32824.0				32841.0							47
12	68111879	4	3218.9				32136.0			47	10911.7				10557.8				10572.8							
13	68111876	4	104100.0				42144 50.				42144.0			47	11091.7				11046.0							47
14	68111876	4	10634.9				10647.0			47	27336.6				27338.0			47	32970.5							
15	68111876	4	32944.0			47	32761.9				32745.0			47	31728.2				31747.0							47
16	68111876	4	32333.7				32343.0			47	27002.8				27000.0			47	10841.7							
17	68111876	4	10843.0			47	32540.1				32551.0			47	32829.5				32854.0							47
18	68111876	4	3211.9				32160.0			47	10911.8				10558.3				10573.3							
19	68111877	4	104100.0				42144 20.				42141.0			47	11093.3				11046.0							47
20	68111877	4	10637.4				10643.0			47	27340.0				27334.0			47	32969.3							
21	68111877	4	32939.0			47	32762.3				32742.0			47	31726.6				31745.0							47
22	68111877	4	32335.6				32339.0			47	27004.4				27014.0			47	10844.9							
23	68111877	4	10848.0			47	11056.7				32830.7				32864.0			47	32116.2							
24	68111877	4	32177.0			47	11098.4				32592.9				32557.0			47	10972.1							
25	68111875	4	104100.0				42145 40.				42143.0			47	11092.9				11045.0							47
26	68111875	4	10630.6				10640.0			47	27336.3				27335.0			47	32973.5							
27	68111875	4	32942.0			47	32763.8				32746.0			47	31731.9				31751.0							47
28	68111875	4	32331.8				32341.0			47	27004.5				27012.0			47	10857.3							
29	68111875	4	10848.0			47	32545.6				32554.0			47	32826.5				32851.0							47
30	68111875	4	32113.6				32170.0			47	11098.3				10557.1				10572.7							
31	68111874	4	104100.0				42144 40.				42142.0			47	11092.6				11044.0							47
32	68111874	4	10634.5				10645.0			47	27340.3				27340.0			47	32971.8							
33	68111874	4	32944.0			47	32763.3				32747.0			47	31727.2				31749.0							47
34	68111874	4	32336.1				32345.0			47	27004.1				27014.0			47	10846.1							
35	68111874	4	10848.0			47	32539.8				32554.0			47	32829.2				32854.0							47
36	68111874	4	32112.6				32164.0			47	11099.0				10557.4				10573.4							
37		4																								
38		4																								
39		4																								
40		4																								

FIGURE 9.8 Card 4 provides a means for recording attribute values, digestion coefficients, method of analysis, and unit code factors.

BIBLIOGRAPHIC REFERENCE FORM

TAG

001 Bibliographic Reference Number: 8030426

100 Personal Names and Affiliation: Allen, R.D.

110 Corporate Name: Feedstuffs Yearbook

200 English Title: Feedstuffs ingredient analysis table

230 Original Title – Main Title:

401 Imprint – Place and Country of Publication: Minneapolis, Minnesota 55440 (USA)

402 Imprint – Publisher: Miller Publishing Co., 2501 Wayzata Blvd.

403 Date of Publication: 1974

500 Collation: v. 46(38) p. 33

610 Notes:

FIGURE 9.9 This bibliographic reference form contains information on data taken from books and miscellaneous publications. The source of this information is unknown, therefore, it is used with caution and in some cases may be discarded. To identify this as such, a 3 is placed in the third space of the bibliographic reference number.

CARD 10

Source form number	Card number	Project number	Country	State	Laboratory	Sample number	Year	Month	Day	Country	Climatic zone	Fishing area	State or Province	Country or Region	Bibliographic reference number	International feed number	Plant cross	Additives	Weight code	Weight per metric ton	Season	Fertilizer
	10	LYCOPERSICON ESCULENTUM. TOMATO, POMACE, DEHYDRATED																				
76008020	10						741001930						22		8030426	05041						
	10																					
	10	ZEA MAYS. MAIZE, GLUTEN WITH BRAN, WET MILLED DEHYDRATED GROUND																				
76008020	10						741001930						22		8030426	02903						
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					
	10																					

FIGURE 9.10 Card 10 provides a means for recording information on where a sample was analyzed, where it came from, the feed name and description. (The International Feed Description is entered for illustrative purposes only.)

CARD 30

	Source from number	Card number	Animal kind	Animal breed	Sex	Animal requirements	Year	Month	Weeks	No. animals in treatment	Average weight of animals in kg	.decimal	Non-pregnant pregnant first 2/3 pregnant last 1/3	Losing wt. maintaining wt. gaining wt. lactating	Lactating, laying eggs, working	Very thin, thin, thrifty, fat, very fat	% test ingredient in ration fed	Ad libitum or controlled feeding	Feed fed alone or not fed alone, or gavage difference	Total feces collected or feces indicator	Length of Trial	Preliminary Days	Length of Trial	Collection Days	Daily Dry Matter Consumed in kg	.decimal	Weekly Dry Matter Consumed in kg	.decimal
1	76008022	30	140		2		00	30	1	24		2.0		3		3		1	2	1	14	07						
2	76008220	30	140		2		00	40	2	24		2.2		3		3		1	2	1	14	07						
3		30																										
4		30																										
5		30																										
6		30																										
7		30																										
8		30																										
9		30																										
10		30																										
11		30																										
12		30																										
13		30																										
14		30																										
15		30																										
16		30																										
17		30																										
18		30																										
19		30																										
20		30																										
21		30																										
22		30																										
23		30																										
24		30																										
25		30																										
26		30																										
27		30																										
28		30																										
29		30																										
30		30																										
31		30																										
32		30																										
33		30																										
34		30																										
35		30																										
36		30																										
37		30																										
38		30																										
39		30																										
40		30																										

FIGURE 9.11 Card 30 provides a means for recording information concerning digestibility trials. These include animal specie and sex, number and weight of animals, and specific physiological condition the animals are in, length of trial and feed consumed.

CARD 4

	Source form	Card number	Attribute number	Chemical and biological data floating decimal	Analytical code factor	Unit code factor	Attribute number	Chemical and biological data floating decimal	Analytical code factor	Unit code factor	Attribute number	Chemical and biological data floating decimal	Analytical code factor	Unit code factor	Attribute number	Chemical and biological data floating decimal	Analytical code factor	Unit code factor	Attribute number	Chemical and biological data floating decimal	Analytical code factor	Unit code factor	Attribute number	Chemical and biological data floating decimal	Analytical code factor	Unit code factor
1	7600802	4	10193.0				10410	0.0			54250	.5			42418	92.			10833	.3						
2	7600802	4	10626.9				10922	.6			10710	.8			10763	.			10556	.5						
3	7600802	4	5300.43		02		5340	.61		12								47								
4	7600820	4	10188.0				10288	.0			10922	.0			1071	.5			10611	.0						
5	7600820	4	5300.30		02		5340	.70		12	1058	.5			54223	.8		02								
6	7600820	4	5330.29		02														42416	72.						
7		4																								
8		4																								
9		4																								
10		4																								
11		4																								
12		4																								
13		4																								
14		4																								
15		4																								
16		4																								
17		4																								
18		4																								
19		4																								
20		4																								
21		4																								
22		4																								
23		4																								
24		4																								
25		4																								
26		4																								
27		4																								
28		4																								
29		4																								
30		4																								
31		4																								
32		4																								
33		4																								
34		4																								
35		4																								
36		4																								
37		4																								
38		4																								
39		4																								
40		4																								

FIGURE 9.12 Card 4 provides a means for recording attribute values, digestion coefficients, method of analysis, and unit code factors.