INTERNATIONAL STANDARD

ISO 11788-2

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Electronic data interchange between information systems in agriculture — Agricultural data element dictionary —

Part 2: Dairy farming

Échange de données informatisé entre systèmes d'information en agriculture — Dictionnaire de données agricoles —

Partie 2: Exploitation laitière

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO/IEC 11788 may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 11788-2 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 19, *Agricultural electronics*.

ISO 11788 consists of the following parts, under the general title *Electronic data interchange between information systems in agriculture — Agricultural data element dictionary*:

— *Part 1: General description*

— *Part 2: Dairy farming*

— *Part 3: Pig farming*

— *Part 4: Poultry farming*

— *Part 5: Non-animal stationary application*

Annexes A and B form a normative part of this part of ISO 11788.

Introduction

Stand-alone computers on farms require that the same data be manually entered into and collected from the different computers. This is a laborious task which becomes superfluous when the computers are interconnected and able to communicate with each other automatically to share and exchange information. Information exchange means data transport between the management computer on one side and each process computer on the other side.

An agricultural data element dictionary (ADED) consists of data elements that may be used in the agricultural sector to exchange data electronically. ADED is closely linked to agricultural data interchange syntax (ADIS). It is a syntax that may be used in the agricultural sector to exchange data electronically. ADED in combination with ADIS makes electronic data interchange possible.

In a data element dictionary all data elements are described in a unique way. Each element is uniquely identified by a data dictionary number (DD number). Data dictionaries for data exchange between management computers and process computers may be subsets of larger data dictionaries.

The standardization of on-farm data interchange between management computer and stationary process computers consists of an interchange syntax, ADIS, and an agricultural data element dictionary, ADED. The ADIS syntax is described in ISO 11787:1995, *Machinery for agriculture and forestry — Data interchange between management computer and process computers — Data interchange syntax*. A general description of ADED is given in ISO 11788-1; the other parts of ISO 11788 describe data dictionaries for different fields of application.

This part of ISO 11788 describes the agricultural data dictionary elements in the field of dairy farming.

Electronic data interchange between information systems in agriculture — Agricultural data element dictionary —

Part 2: Dairy farming

1 Scope

This part of ISO 11788 specifies how the agricultural data element dictionary (ADED) can be used in on-farm data exchange between management systems and stationary computers in dairy farming. Stationary computers in dairy farming are for example feeding computers, milk yield registrators and animal weighing computers.

This part of ISO 11788 describes the data elements and entities in the field of dairy farming in accordance with the rules given in ISO 11788-1.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 11788. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 11788 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 11784:1996, *Radio frequency identification of animals — Code structure*.

ISO 11788-1:1997, *Electronic data interchange between information systems in agriculture — Agricultural data element dictionary — Part 1: General description*.

3 Terms and definitions

For the purposes of this part of ISO 11788, the terms and definitions given in ISO 11788-1 and the following apply.

3.1
entity relationship diagram
visual presentation of the possible relationships between entities

4 Abbreviations

ADED: Agricultural Data Element Dictionary

ADIS: Agricultural Data Interchange Syntax

AN: Alphanumeric

C: Conditional

DD: Data Dictionary

EDI: Electronic Data Interchange

ERD: Entity Relationship Diagram

K: Key data element

M: Mandatory

N: Numeric

O: Optional

Obl: Obligation

5 ADED dairy farming

5.1 Code sets

In this part of ISO 11788, code sets are added to the data element. When a data element has a code set, it can be a normative or an informative code set. A normative code set is specified in an International Standard; an informative code set only gives an example of possible values.

When there is agreement on the data element description, but the values of the code set differ between countries, the code set must be defined at the national level. The national code set can be found in the national data dictionary.

5.2 Entity relationship diagram

The relationship between two entity types can have the characteristics/cardinalities shown in Figure 1. The entity relationship diagram shown in Figure 2 shows the entity types (rectangles) and their relationship types (lines with certain characteristics).

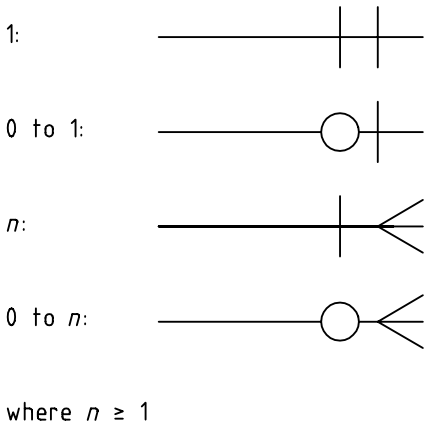
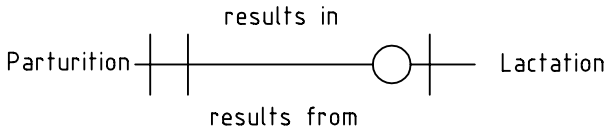


Figure 1 — Relationships between entity types

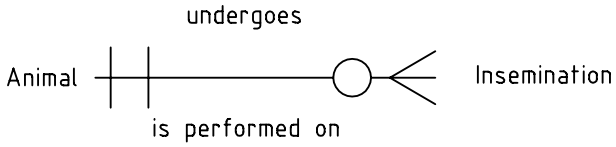
EXAMPLE 1



The cardinalities show that one occurrence of an entity type has a relationship to zero or one occurrence of another entity type. The relationship names have to be read clockwise.

In this case: A parturition may result in a new lactation. The other way around: a lactation results from one parturition. The relationship to parturition is used for identifying the lactation.

EXAMPLE 2



The cardinalities show that one occurrence of an entity type has a relationship to zero or more occurrences of another entity type.

In this case: An animal may undergo several inseminations, an insemination is performed on one animal. The relationship to the animal is used for identifying the insemination.

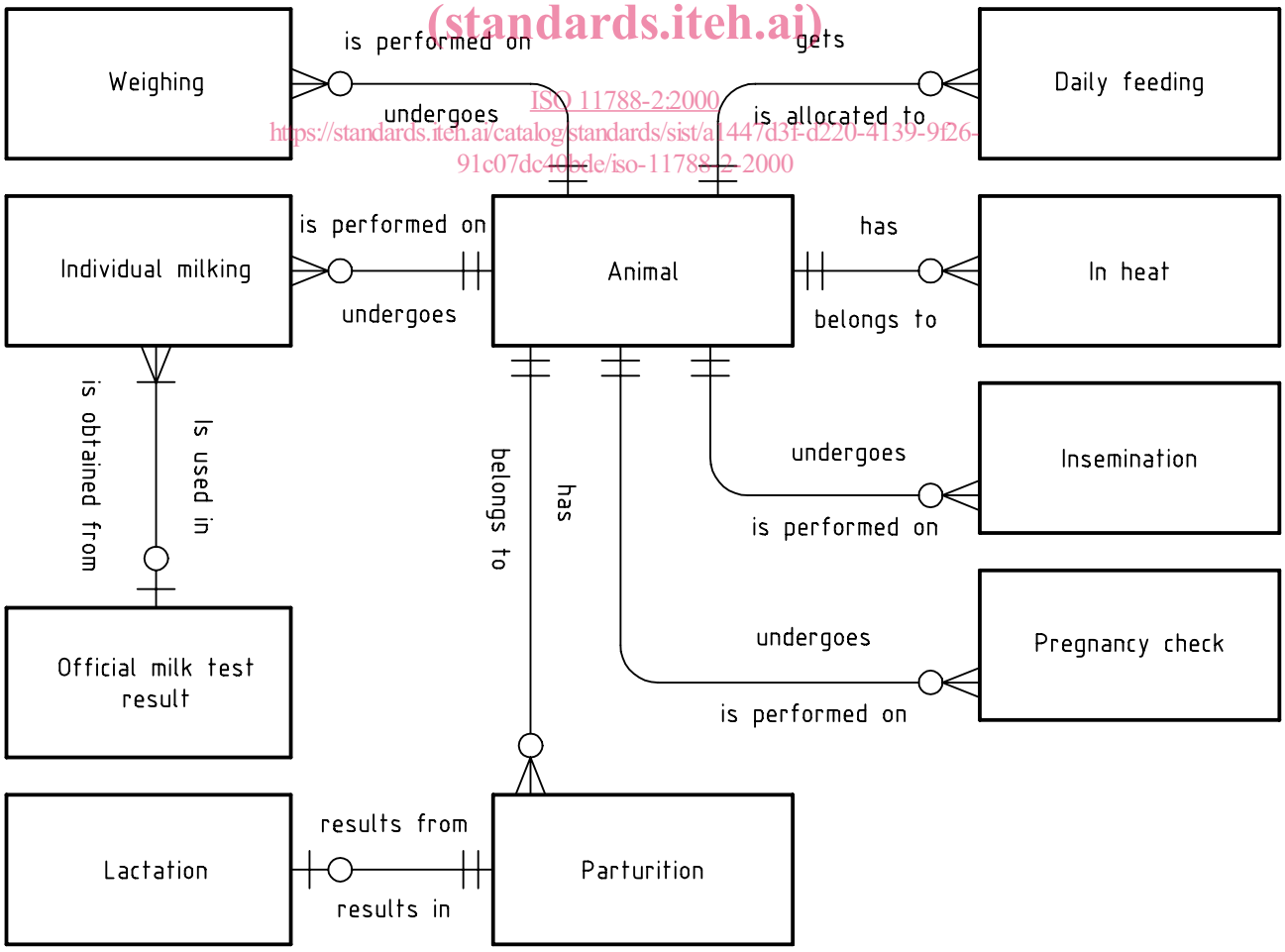


Figure 2 — Entity relationship diagram

5.3 Entities

The entities for the field of dairy farming are given in annex A.

5.4 Data elements

The data elements for the field of dairy farming are given in annex B.

Annex A
(normative)

Entities

990002 Animal

In this entity the data elements describe characteristics of an animal.

O	ADED-nr	Name
K	900070	Animal number
	900033	Group number
	900034	Date entered herd
	900035	Parity
	900038	Date left herd
	900045	Animal name
	900046	Animal sex
	900053	Birth date
	900056	Electronic ISO ID number
	900080	Identification number
	900081	Left herd reason
	900082	Sire registration number
	900083	Dam identification number
	900092	Animal status
	900097	Herd-specific electronic ID number

990003 Individual milking

In this entity the data elements give information about one milking session of an animal.

O	ADED-nr	Name
K	900070	Animal number
K	900054	Date of milking session
K	900078	Time of milking session
	900024	Box number for sample bottle
	900025	Sample bottle number
	900027	Method of performance recording
	900042	Individual milk weight
	900051	Average flow rate during individual milking
	900057	Milking error flag
	900062	Maximum flow rate for individual milking
	900068	Stall or unit number for individual milking
	900079	Milking duration

990004 Lactation

In this entity the data elements give information about the lactation period and the (calculated) production in the current lactation of an animal.

O	ADED-nr	Name
K	900070	Animal number
K	900028	Parturition date
	900021	Projected/planned date to turn dry
	900044	Date turned dry
	900058	Lactation number
	900072	Amount of protein in lactation
	900073	Amount of protein 305 days
	900074	Amount of fat in lactation
	900075	Amount of fat 305 days
	900084	Amount of milk in lactation
	900086	Days in lactation
	900087	Amount of milk 305 days
	900090	Lactation calculation method

990005 Official milk test result

In this entity the data elements describe the official results of a milk test, based on one or more individual milkings.

O	ADED-nr	Name
K	900070	Animal number
K	900032	Milk test date
	900023	Somatic cell count linear score
	900026	Urea percentage milk
	900031	Percent protein
	900047	Somatic cell count
	900048	Percent lactose
	900077	Percent fat

990006 Daily feeding

In this entity the data elements describe the daily feed for an animal during a specific feed cycle.

O	ADED-nr	Name
K	900070	Animal number
K	900067	Feed type identifier
K	900088	Feed cycle start date
	900060	24 hour feed consumption
	900061	24 hour feed allocation
	900063	24 hour feed remainder

990007 Weighing

In this entity data elements are listed for describing the result of one weighing of an animal.

O	ADED-nr	Name
K	900070	Animal number
K	900039	Date of body weight measurement
K	900050	Time of body weight measurement
	900040	Body weight

990008 In heat

In this entity data elements for describing heat detection are listed.

O	ADED-nr	Name
K	900070	Animal number
K	900055	Heat detection date
	900095	Heat detection method

990009 Insemination

In this entity data elements belonging to a specific insemination, artificial or natural, are listed.

O	ADED-nr	Name
K	900070	Animal number
K	900030	Insemination date
	900076	Registration number service sire
	900094	Insemination status
	900096	Performing insemination

990010 Pregnancy check

In this entity data elements of a pregnancy check are listed.

O	ADED-nr	Name
K	900070	Animal number
K	900059	Pregnancy check date
	900085	Pregnancy check result
	900091	Pregnancy checking person

990011 Parturition

In this entity data elements describe one parturition. In case of multiple offspring, only the values for the firstborn offspring are sent.

O	ADED-nr	Name
K	900070	Animal number
K	900028	Parturition date
	900022	Offspring survival code
	900029	Offspring number
	900036	Weight at birth
	900037	Sex of offspring
	900052	Parturition ease
	900071	Number of offspring
	900098	Identification number offspring