

---

---

**Crop protection equipment —  
Traceability — Spray parameter recording**

*Matériel de protection des cultures — Traçabilité — Enregistrement des  
paramètres liés à la pulvérisation*

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ISO/TS 11356:2011](https://standards.iteh.ai/catalog/standards/sist/e5060cf8-73c1-48e1-8d2d-198e6ab42274/iso-ts-11356-2011)

<https://standards.iteh.ai/catalog/standards/sist/e5060cf8-73c1-48e1-8d2d-198e6ab42274/iso-ts-11356-2011>



## iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO/TS 11356:2011

<https://standards.iteh.ai/catalog/standards/sist/e5060cf8-73c1-48e1-8d2d-198e6ab42274/iso-ts-11356-2011>



### **COPYRIGHT PROTECTED DOCUMENT**

© ISO 2011

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

## Contents

Page

Foreword .....	iv
Introduction.....	v
1 Scope .....	1
2 Normative references .....	1
3 Terms and definitions .....	1
4 Spray operation parameters.....	2
4.1 General .....	2
4.2 Field identification .....	3
4.3 Crop .....	6
4.4 Reason for treatment .....	7
4.5 Spray liquid .....	8
4.6 Dose .....	10
4.7 Application technique .....	11
4.8 Date and time of treatment .....	12
4.9 Weather.....	13
4.10 Handling of product for treatment by spraying.....	14
4.11 Operator .....	15
Annex A (informative) Example of structure of records .....	16
Bibliography.....	17

[ISO/TS 11356:2011](https://standards.iteh.ai/catalog/standards/sist/e5060cf8-73c1-48e1-8d2d-198e6ab42274/iso-ts-11356-2011)

<https://standards.iteh.ai/catalog/standards/sist/e5060cf8-73c1-48e1-8d2d-198e6ab42274/iso-ts-11356-2011>

## 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 2.

The main task of technical committees is to prepare International Standards. 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.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

- an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;
- an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

<https://standards.iteh.ai/catalog/standards/sist/e5060cf8-73c1-48e1-8d2d-108e64422748/iso-ts-11356-2011>

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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

ISO/TS 11356 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 6, *Equipment for crop protection*.

## Introduction

This Technical Specification presents a list of spray operation parameters that can be used for traceability in the food chain, for the health of livestock, operators and bystanders, for environmental regulations and contract policies, for policy control by authorities and other relevant areas.

Target plants or organisms, as well as non-target objects in the treated field or outside the field, can be relevant for traceability.

NOTE ISO 22005<sup>[1]</sup> gives related traceability principles and requirements.

Although the content of this Technical Specification received sufficient internal support to conclude that there is the future possibility of agreement on an International Standard, at the time of its publication there remained the need for

- more information on the parameters to be collected to cover local and regional requirements, such as the European Community Directive 2009/128/EC establishing a framework for Community action to achieve the sustainable use of pesticides,
- identification of the specific data to be recorded and the mode of collection for a number of the parameters, and
- results from technical developments within ISO/TC 23/SC 19 (*Agricultural electronics*) related to ISO 11783-10.

[ISO/TS 11356:2011](https://standards.iteh.ai/catalog/standards/sist/e5060cf8-73c1-48e1-8d2d-198e6ab42274/iso-ts-11356-2011)

<https://standards.iteh.ai/catalog/standards/sist/e5060cf8-73c1-48e1-8d2d-198e6ab42274/iso-ts-11356-2011>

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ISO/TS 11356:2011](#)

<https://standards.iteh.ai/catalog/standards/sist/e5060cf8-73c1-48e1-8d2d-198e6ab42274/iso-ts-11356-2011>

# Crop protection equipment — Traceability — Spray parameter recording

## 1 Scope

This Technical Specification specifies the relevant spray operation parameters for recording information necessary for traceability, and provides a basis for the development of systems for automatically collecting and reporting agricultural production data. The parameters can also be valid for other records, such as those related to spraying in amenities.

Spray operation parameters for traceability can be required for different reasons, including approval, quality labelling, national or international directives, local regulations on food security, environmental protection or simply for identifying the treatment, machine or user. The extent to which these traceability parameters can be used will be dependent on the reasons and need for them identified by the intended users of this Technical Specification, who include machine manufacturers, farmers, the food industry and regulators.

## 2 Normative references

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 11783-10:2009, *Tractors and machinery for agriculture and forestry — Serial control and communications data network — Part 10: Task controller and management information system data interchange*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### buffer zone

distance between a **protected area** (3.4) and a **treated area** (3.8)

NOTE It is recorded in metres.

### 3.2

#### global navigation satellite system

#### GNSS

generic term for satellite navigation systems that provide autonomous geospatial positioning with global coverage

### 3.3

#### pre-harvest interval

time between the treatment and the harvesting of a crop

### 3.4

#### protected area

sensitive zone that can be adversely affected by spray treatment

**3.5**

**spray operation**

action made with a sprayer before, during and after treatment

**3.6**

**spray record**

data collected about the spray operation or information needed to qualify traceability

**3.7**

**traceability**

ability to trace the history, application or location of that which is under consideration

[ISO 9000:2005, definition 3.5.4]<sup>[2]</sup>

**3.8**

**treated area**

specified zone of the field which was intentionally treated with a product by a spray operation

## **4 Spray operation parameters**

### **4.1 General**

Records of all the spray operations made by an individual sprayer for each field may be collected by the operator on paper or computer, or by sprayer computer — if possible, in the ISO BUS form defined by ISO 11783-10.

Spray operation parameters shall be recorded in accordance with 4.2 to 4.11, as applicable.

Parameters that are not applicable for the situation may be excluded.

Each recorded parameter shall be documented at least at the first of the following three levels:

- 1: required information (basic);
- 2: complementary information (optional);
- 3: more detailed information, generally collected automatically by computer (automatic/computer).

For each spray operation parameter recorded, the precision of measurement shall be considered and shall be proportionate to the importance, or relevance, of the particular parameter. If the recording of any spray operation parameter is required by legislation, for compliance with quality assurance schemes, etc., the precision of measurement required shall be specified and guidance shall be given on the means of measurement to achieve this.

An example of the structure of records is given in Annex A.



## 4.2 Field identification

### 4.2.1 Producer identity

The producer is responsible for spray operations on land or agricultural products that influence quality or the environment.

The data to be recorded and the mode of collection shall be in accordance with Table 1.

**Table 1 — Producer's identity**

Level	Data recorded	Mode of collection
1	Name of producer: farmer, company or organization Name of contact person Address Phone number	Manual
2	E-mail Web site	Manual
3	Identification number of farm  EXAMPLE SIAN ( <i>Sistema Informativo Agricolo Nazionale</i> ), SIREN ( <i>Système Informatique pour le Répertoire des Entreprises et des Établissements</i> ), LPIS (Land Parcel Identification System) geographical coordinates.	Manual/automatic
For the recording format of the parameter, see ISO 11783-10:2009, D.13, Customer (CTR), D.23, Farm (FRM).		

### 4.2.2 Field identity

ISO/TS 11356:2011  
<https://standards.iteh.ai/catalog/standards/sist/e5060cf8-73c1-48e1-8d2d-198e6ab42274/iso-ts-11356-2011>

The identity of the field is needed for environmental reasons (drift or leakages from the field) and for food traceability to ensure that previous treatments do not affect the present crop(s).

The data to be recorded and the mode of collection shall be in accordance with Table 2.

**Table 2 — Field identity**

Level	Data recorded	Mode of collection
1	Identification number or identification name of the field, given by the farmer	Manual
2	Field name with geographical coordinates LPIS	Manual
3	Boundary of the field, limited by coordinates Identification GNSS	Automatic
For the recording format of the parameter, see ISO 11783-10:2009, D.41, Treated zone (TZN).		

### 4.2.3 Treated area

The size of the treated area may be given as the unit area (e.g. m<sup>2</sup> or ha) or the number of treated rows or plants for bush and tree crops.

The data to be recorded and the mode of collection shall be in accordance with Table 3.

Table 3 — Treated area

Level	Data recorded	Mode of collection
1	Treated area: field size, non-treated area	Manual
2	Registration of the sprayed area	Automatic
3	Registration of sprayer passes on the treated area Graphically presented treated area (area recorded by GNSS)	Automatic

For the recording format of the parameter, see ISO 11783-10:2009, D.30 Partfield — PTN, D.41 Treatment zone — TZN.

#### 4.2.4 Protected areas

Protected areas can be in the treated field or outside it.

EXAMPLE Streams, wells, drainage wells, ditches, neighbouring crops downwind, greenhouses, kindergartens, residences, bees, bystanders.

Neighbouring crops can be sensitive to the product (e.g. organic crops) or there could be a risk of exceeding residue levels.

The data to be recorded and the mode of collection shall be in accordance with Table 4.

Table 4 — Protected area

Level	Data recorded	Mode of collection
1	Type of sensitive object (biological or environmental) and its location and distance to the treated area — defined by operator, farmer/producer in records or on a map	Manual
2	Aerial photo of the field and its protected area(s)	Manual
3	GNSS representation of the field and surroundings	Automatic

For the recording format of the parameter, see ISO 11783-10:2009, D.30 Partfield — PFD.

#### 4.2.5 Windbreaks

Vegetation or other objects can offer protection against spray drift. The presence of windbreaks can be relevant to determining the size of buffer zones and may be specified in local regulations.

The data to be recorded and the mode of collection shall be in accordance with Table 5.

Table 5 — Windbreaks

Level	Data recorded	Mode of collection
1	If present, location and vegetation type and height	Manual
2	Location registered via GIS (geographical information system)	Automatic
3	GNSS identification in spraying computer protocol to calculate buffer zones	Automatic

For the recording format of the parameter, see ISO 11783-10:2009, D.30 Partfield — PFD, D.33 Position — PTN.

#### 4.2.6 Buffer zones

Spray drift and surface run-off of plant protection products can cause unwanted effects in neighbouring crops or protected areas, such as crop damage, detectable levels of non-approved products or an excess of maximum residues levels. Depending on local conditions, it might be necessary to ensure safety distances from the treated zone to protected areas.

Required buffer zones can be specified by local regulations, on product labels or by demands in the grower's contract.

The size of buffer zones (as defined in 3.1) can be affected by weather conditions such as wind speed or wind direction. Applied buffer zones can therefore be wider than local regulations and may in practice be chosen with regard to the characteristics of the sprayer, e.g. boom section width. Other factors such as applied dosage and vegetation strips may also need to be considered.

The data to be recorded and the mode of collection shall be in accordance with Table 6.

**Table 6 — Buffer zones**

Level	Data recorded	Mode of collection
1	Size of required buffer zone(s) (see 3.1) Self-engagement in the respect of buffer zone(s)	Manual
2	Respect of buffer zone(s) ensured by GNSS system	Manual/automatic
3	Respect of buffer zone(s) by the sprayer controller system based on Table 2, level 3	Automatic
For the recording format of the parameter, see ISO 11783-10:2009, D.30 Partfield — PFD, D.33 Position — PTN.		

ISO/TS 11356:2011

<https://standards.iteh.ai/catalog/standards/sist/e5060cf8-73c1-48e1-8d2d-198e6ab42274/iso-ts-11356-2011>

#### 4.2.7 Soil type

Depending on the properties of the soil type, products can be absorbed or degraded in different ways. The product used could have an effect on crops grown in the soil and present a risk of leakage through the soil. Restrictions of use on specified soil types can be found on product labels.

The data to be recorded and the mode of collection shall be in accordance with Table 7.

**Table 7 — Soil type**

Level	Data recorded	Mode of collection
1	Soil parameters (sandy soil, clay soil, etc.) determined and expressed in accordance with good agricultural practices (GAP)	Manual
2	Results of soil analysis EXAMPLE Clay content, organic matter, pH.	Manual
3	Using GIS (geographical information system) database information	Automatic

#### 4.2.8 Field surface geometry

Slope and other factors in the field can be relevant for protection against surface run-off according to good agricultural practices (GAP)<sup>1)</sup>.

1) Food and Agriculture Organization of the United Nations (FAO)