

Crop protection equipment — Field measurement of spray distribution in tree and bush crops

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National foreword

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A list of organizations represented on AGE/15 can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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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 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.

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 22522 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 6, *Equipment for crop protection*.

Crop protection equipment — Field measurement of spray distribution in tree and bush crops

1 Scope

This International Standard is applicable to the field measurement of quantities of spray deposit, applied using ground sprayers, on tree and bush crops.

It covers measurements of the volume or mass of spray deposits (both absolute and distribution) on target structures such as leaves, fruits and ground losses.

It does not deal with spray drift measurements. However, its use in combination with the protocol for field measurements of spray drift given in ISO 22866 can result in a good evaluation of spray mass balance in tree or bush spraying when measuring airborne drift.

This International Standard allows for flexibility in the arrangement of field tests, specifying standardized measurement procedures that are useful for comparison of the results from different field experiments or laboratory tests, for example, using a vertical patternator.

2 Normative references

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 9898, *Equipment for crop protection — Test methods for air-assisted sprayers for bush and tree crops*

ISO 10627-1, *Agricultural sprayers — Data sheet — Part 1: Typical layout*

ISO 10627-2, *Hydraulic agricultural sprayers — Data sheets — Part 2: Technical specifications related to components*

3 Terms and definitions

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

3.1

plot

one or several adjacent rows to be sprayed

3.2

tracer

traceable material representing a plant protection product formulation

4 Elements of a test

A spray distribution test comprises the application of a tracer to the canopies by travelling at a measured forward speed along defined tracks, and the measurement of spray deposit on the target canopy (leaves and/or fruits), if available and/or appropriate structures (artificial targets), to determinate the spray cover and collectors for the measurement of ground losses.

An appropriate tracer in a water solution may be used for field measurements. Where possible, all measurements shall use a tracer of low toxicity that can be safely applied with no associated risks of environmental contamination. The spray liquid shall have physical properties representative of liquids typically used in the application of plant protection products. Other products that can be added to more closely mimic an actual pesticide solution, such as surfactants, should be described in the test report.

Tracers that allow several applications on the same target can be used to decrease variability attributable to structural changes within the sampled biological targets.

5 Trial design

The plots shall be located inside a uniform, representative and well cared for orchard.

In order to prevent interactions with other treatments and/or edge effect, at least two further rows of trees or bushes shall be present on each side of the plot.

An appropriate length of rows shall be sprayed, on one or both sides. This length shall ensure the output of the intended spray volume over the plot.

Details of the spraying layout shall be fully reported within the results.

6 Description of sprayer settings

At least the following items shall be described.

a) Sprayer:

- manufacturer;
- type and model;
- travel speed (km/h);
- overall liquid flow rate (l/min).

b) Nozzles and liquid distribution:

- one side (left or right) or two-sided application;
- working pressure (MPa);
- nozzles characteristics and positions (see Table 1 and Figure 1);
- position of nozzles in relation to the air stream (in or out);
- nozzle flow direction (front, central or rear);
- droplet size data (D_{v10} , D_{v50} , D_{v90}) for hydraulic nozzles (including the measuring system).