



BSI Standards Publication

Agricultural irrigation equipment — Guidelines on the implementation of pressurized irrigation systems

Part 3: Sprinkler irrigation

National foreword

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A list of organizations represented on this committee can be obtained on request to its committee manager.

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**Agricultural irrigation
equipment — Guidelines on the
implementation of pressurized
irrigation systems —**

**Part 3:
Sprinkler irrigation**

*Matériel agricole d'irrigation — Lignes directrices relatives à la
mise en œuvre des systèmes d'irrigation sous pression —*

Partie 3: Irrigation par asperseurs

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 18, *Irrigation and drainage equipment and systems*.

A list of all parts in the ISO 24120 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The dwindling vital natural resources, such as land and water, as well as the rising world population, pose a constant threat that can develop into a future food and water crisis. Despite the limited availability of water and land resources, the amount of food grown today needs to be increased to meet the demands of tomorrow. Reduction of available water for human consumption needs to be addressed. As direct consumption of fresh water by the population cannot be decreased, the amount of water consumed for agricultural purposes needs to be reduced, and allocated for domestic or industrial use.

Sprinkler irrigation addresses water scarcity and other environmental considerations. It can significantly conserve water, compared to flood or furrow irrigation systems. Sprinkler systems allow for precise control over the amount and timing of water delivery to crops, thereby enhancing application efficiency and crop yield.

Sprinkler irrigation not only addresses the need to reduce water consumption and increase yield, but also requires less labour and energy for operation, leading to lower costs to farmers, due to reduced usage of labour, fertilizers and other chemicals.

Sprinkler irrigation relates to sustainable agriculture issues, and can be used in dry areas, in saline soil with saline water, and in steep-sloped topographies, where other irrigation methods cannot be practiced without using pressure compensated units.

Sprinkler irrigation is easy to manage and operate once installed. It is suitable for automation and remote operation by computer or mobile phone. The system's simplicity makes it easy to install, operate, maintain and repair.

Other than irrigation, the sprinkler irrigation method is used also as a delivery system for fertilizers and other agrochemicals. The sprinkler irrigation's advantage as a delivery system is its ability to optimize fertilizer usage, and distribute it just where it is needed - in the root zone, while minimizing its release to the environment.

Adoption of sprinkler irrigation can help achieve sufficient fresh water availability for domestic use and sufficient food quantity and quality for reasonable pricing, while increasing farmers' income through yield increase and cost reduction, and ensuring food security.

Sprinkler irrigation systems have limitations as well, mainly related to investment costs, runoff, and the following risks: soil erosion from high water application rates, soil sealing from excessively large droplets, canopy interception of water droplets, water evaporation, and wind drift of small droplets under severe weather conditions. Nevertheless, with proper design and operation, these potential drawbacks can be substantially minimized.

Although information and best practices in irrigation are already available, this document is beneficial, as it collects, in one single document, all relevant information for the entire system, and does not refer only to one specific aspect of the system, for example, the product itself.

Agricultural irrigation equipment — Guidelines on the implementation of pressurized irrigation systems —

Part 3: Sprinkler irrigation

1 Scope

This document provides guidelines for the implementation of pressurized sprinkler, micro-sprinkler and sprayer irrigation systems [hereinafter: system(s)]. It is applicable to both small-scale family agriculture and large-scale commercial agriculture, in open field or within protected crops structure (e.g., greenhouse, net-house or tunnel).

This document is intended for the use of agriculture ministries, agronomists, irrigation planners, farmers and end-users.

This document is not applicable to centre pivots, linear systems, travellers, and side roll sprinkler irrigation systems.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1 sprinkler

water distribution device of a variety of sizes and types, for example, impact sprinklers, fixed nozzle, sprayers and irrigation guns

3.2 micro-sprinkler

sprinkler that distributes water in a dynamic or static way, either in circular area or part circular area, with a flow rate not exceeding 200 l/h

3.3 sprayer

device that discharges water in the form of fine jets or in a fan shape, with or without rotational movement of its parts

3.4 riser

upright pipe, which is either rigid or flexible