ISO and agriculture

Great things happen **when the world agrees.**

We are ISO,
the International Organization
for Standardization

162[*] members

21500[*]
International Standards

100
new standards each month

297[*]
technical committees

We are an independent,
non-governmental organization.

We are a global network of
national standards bodies with
one member per country.

Our job is to make International
Standards.

We are coordinated by a Central
Secretariat in Geneva, Switzerland.

We are not for profit : selling our
standards allows us to finance
their development in a neutral
environment, to maintain them
and to make new ones.

ISO provides a platform for
developing practical tools through
common understanding and
cooperation with all stakeholders.

ίσος

Notice that our acronym
doesn't match our name ?
It's not meant to.
"ISO" is derived from
the Greek word *isos* (equal),
so that it's the same in
all languages.

Why do we need ISO standards for agriculture ?

Agriculture is the mainstay of life, feeding the world's populations and producing what we need to survive and thrive. Sustainable agriculture is achieved through efficient use of farmland. Standards can be valuable tools to bring this to fruition by providing guidance and best practice for machinery, tools and farming methods.

ISO standards for agriculture cover all aspects of farming, from irrigation and global positioning systems (GPS) to agricultural machinery, animal welfare and sustainable farm management. They help to promote effective farming methods while ensuring that everything in the supply chain – from farm to fork – meets adequate levels of safety and quality. By setting internationally agreed solutions to global challenges, ISO standards for agriculture also foster the sustainability and sound environmental management that contribute to a better future.

Who benefits from ISO standards for agriculture?
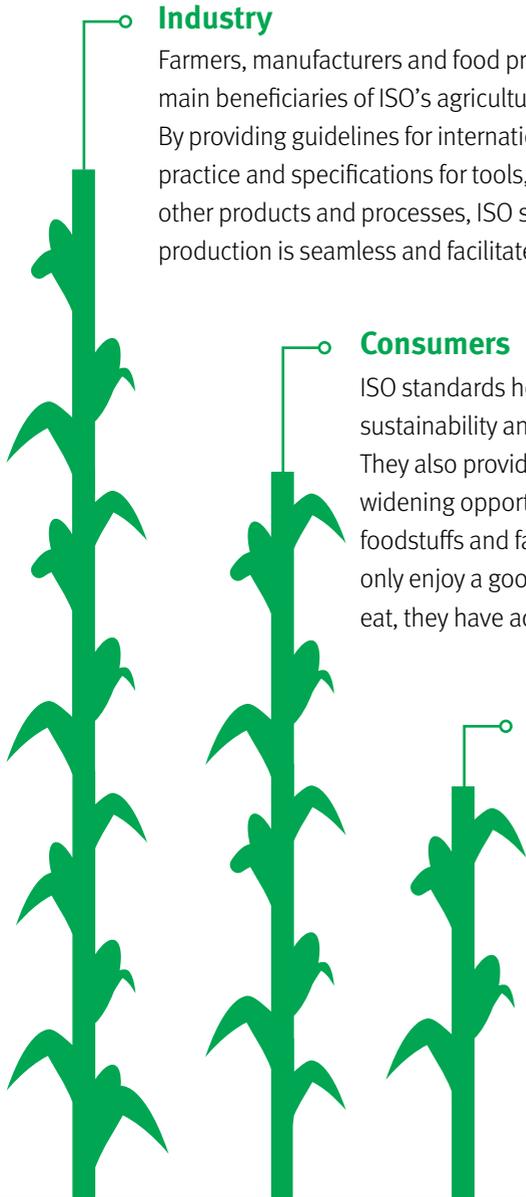
Industry

Farmers, manufacturers and food producers are the main beneficiaries of ISO's agriculture standards. By providing guidelines for internationally agreed best practice and specifications for tools, machinery and other products and processes, ISO standards ensure production is seamless and facilitate global trade.

Consumers

ISO standards help increase efficiencies, sustainability and traceability in food production. They also provide a common international language, widening opportunities for cross-border trade of foodstuffs and farm animals. Thus, consumers not only enjoy a good-quality end product that is safe to eat, they have access to greater choice as well.

Regulators

ISO standards help organizations meet legal and industry requirements by setting benchmarks for the functional safety, traceability and quality of everything from the machinery and materials used in agriculture to the final food products. Developed through international expertise and consensus, they provide a sound basis for implementing public policy.

What standards does ISO have for agriculture?

Out of a total of more than 21 500 International Standards, ISO has more than 1 000 related to agriculture, with many more in development. These cover the following domains.

Tractors and machinery for agriculture

Irrigation

Fertilizers and soil conditioners

Feed machinery and animal feeding stuffs

Environmental impact

Protective clothing

Agricultural electronics

Food products and safety

Below is a selection of ISO technical committees and ISO standards dedicated to agriculture, including sectors such as tractors and machinery, feed machinery and animal feeding stuffs, irrigation, environmental impact, food products and many more.

Tractors and machinery for agriculture

- **ISO 17989**, *Tractors and machinery for agriculture – Sustainability*

This standard gives manufacturers of tractors and agricultural machinery the guidance they need to integrate sustainability principles into the whole life cycle of their products. The standard applies specifically to equipment used in the production of food, fibres, fuel and lumber for humans and livestock.

- **ISO/TC 23**, *Tractors and machinery for agriculture and forestry*

Through its many subcommittees, this ISO technical committee covers a multitude of areas such as safety, testing, equipment for crop protection and harvesting, operator controls and symbols, machinery for forestry, irrigation and drainage equipment, and electronics. Other standards directly under the leadership of ISO/TC 23 include:

- **ISO 20966**, *Automatic milking installations – Requirements and testing*
- **ISO 4002**, *Equipment for sowing and planting*

Who develops standards?

ISO standards are developed by groups of experts within technical committees (TCs). TCs are made up of representatives from industry, non-governmental organizations, governments and other stakeholders who are put forward by ISO's members. Each TC deals with a different subject; when it comes to agriculture, for example, there are committees focused on farming equipment, irrigation, fertilizers and agricultural electronics, to name a few.

Visit our Website ISO.org to find out more about the standards developed in a particular sector by searching for the work of the relevant technical committee.

Irrigation

ISO's standards for irrigation and drainage equipment are developed by:

- **ISO/TC 23/SC 18**, *Irrigation and drainage equipment and systems*

Effective and efficient irrigation is essential for the smooth workings of any agricultural setting and ISO has more than 30 International Standards in this area, with some 15 more in development. These include:

- **ISO 15886**, *Agricultural irrigation equipment – Sprinklers*

- **ISO 8026**, *Agricultural irrigation equipment – Sprayers*

- **ISO 9635**, *Agricultural irrigation equipment – Irrigation valves*

This last standard specifies the performance requirements and test methods for different types of irrigation valves.

Treated wastewater reuse for irrigation

Treated wastewater is a smart, cost-effective option for recycling water. It reduces the environmental impact and provides a lifeline for many agricultural communities where water is scarce or limited.

Developed by ISO technical committee ISO/TC 282/SC 1, *Treated wastewater reuse for irrigation*, the ISO 16075 series of standards provides guidelines for the development and execution of treated wastewater projects, including specifications of design, materials, construction and performance. It also covers a wide range of issues such as water quality and associated risks.

Fertilizers and soil conditioners

- **ISO/TC 134**, *Fertilizers and soil conditioners*

ISO has a range of standards for measuring the content of fertilizers and assisting with the sampling process. These include standards for measuring levels of chemicals in fertilizers such as nitrogen, ammonium nitrate, phosphorus and potassium, as well as standards defining the basic terminology, sampling methods and test procedures for determining the bulk density of different types of fertilizer.

Feed machinery and animal feeding stuffs

Food safety is the aim behind many of ISO's standards for agriculture.

- **ISO 22000**, *Food safety management systems –Requirements for any organization in the food chain*

This management systems standard maps out what an organization needs to do to demonstrate its ability to control food safety hazards.

The ISO 22002 series of standards provides requirements for implementing and maintaining food safety prerequisite programmes (PRP), which address the basic conditions and activities for ensuring hygiene and safety throughout the food chain. Examples include:

- **ISO/TS 22002-3**, *Prerequisite programmes on food safety – Part 3 : Farming*

This ISO technical specification helps all farms involved in farming steps of the food chain, regardless of size, to implement PRPs in accordance with ISO's food safety management standard (ISO 22000).

- **ISO/TS 22002-6**, *Prerequisite programmes on food safety – Part 6 : Feed and animal food production*

This ISO technical specification is intended to assist farms in managing feed safety hazards associated with the production of feed and animal food.

Traceability is an important factor in controlling risk.

- **ISO 22005**, *Traceability in the feed and food chain – General principles and basic requirements for system design and implementation*

ISO 22005 helps farmers establish a feed and food traceability system that enables them to trace the flow of materials (feed, food, ingredients and packaging), identify the necessary documentation and tracking at each stage of production, while ensuring adequate coordination and communication between the different players in the supply chain.

In addition, ISO has a wide range of standards to determine the content of animal feed, including:

- **ISO 6492**, *Animal feeding stuffs – Determination of fat content*
- **ISO 6493**, *Animal feeding stuffs – Determination of starch content – Polarimetric method*

The health and security of humans and animals lie at the core of feed machinery standards, underpinned by a robust terminology base.

- **ISO/TC 293**, *Feed machinery*

This technical committee has eight standards under development aimed at harmonizing the extensive terminology linked to feed processing technology and equipment such as drying, cooling, pelleting and grading machines. They will help remove the barriers to international trade and technological communication, improve safety through design measures and develop solutions to address hygiene issues.

Animal welfare

Protecting the welfare of farm animals is key to effective and safe food farming. As consumer awareness of animal welfare issues continues to rise, the demand for products complying with animal welfare standards is growing, giving producers who maintain these high standards a competitive advantage.

ISO/TS 34700, *Animal welfare management – General requirements and guidance for organizations in the food supply chain*, is designed to help the food and feed industry develop an animal welfare plan that is in line with the principles of the World Organization for Animal Health (OIE) Terrestrial Animal Health Code (TAHC) to ensure the welfare of farm animals in livestock production systems.

Environmental impact

Sustainable agriculture is a key objective for ISO and we have standards to help make agriculture as green as the fields being tilled. Soil erosion, loss of fertility, declining biodiversity and reduced water supplies are all classic signs of land degradation and a significant proportion of the world's land is estimated to be negatively impacted. Land degradation affects everyone because it threatens our food safety and water supplies and has a significant impact on economies, most notably those in underdeveloped countries.

- **ISO 14055**, *Environmental management – Guidelines for establishing good practices for combatting land degradation and desertification*

This new standard in development gives guidance on establishing good practices to combat land degradation and assist in the rehabilitation of land that has been depleted.

Protective clothing

Pesticides are a reality of modern farming and protecting the farmer against toxicity is essential.

- **ISO 27065**, *Protective clothing – Performance requirements for protective clothing worn by operators applying liquid pesticides*

This standard helps safeguard agricultural workers against the risks of using pesticides. It specifies performance requirements enabling pesticide manufacturers to indicate the required protection levels on their product labels, while garment manufacturers can produce, certify and sell protective clothing with defined protection levels.

Agricultural electronics

Electronics have revolutionized agriculture in recent years by enabling different technologies and types of machinery to work effectively together and allowing for the accurate identification and tracking of livestock. Tracking livestock is one example of where ISO standards play an important role.

- **ISO 24631**, *Radiofrequency identification of animals*

The ISO 24631 series helps evaluate the conformance and performance of identification tags with ISO 11784, which contains the structure of the radiofrequency identification code for animals.

Tractors and trailers are another example of the use of electronics in farming. Where, in the past, a farmer was restricted to the same brand or type of trailer as his tractor, he can now mix and match as desired.

- **ISO 11783**, *Tractors and machinery for agriculture and forestry*

The ISO 11783 series of standards specifies the data interface between tractors and trailers.

- **ISO 15003**, *Agricultural engineering – Electrical and electronic equipment – Testing resistance to environmental conditions*

This important standard provides design requirements and guidance for manufacturers of electrical and electronic equipment for use in mobile agricultural machinery. It defines tests for specific environmental conditions, including the extremes that can be experienced in agricultural operation.

- **ISO/TC 23/SC 19**, *Agricultural electronics*

This ISO technical committee develops standards for electronics in agriculture.

Food products and safety

- **ISO/TC 34**, *Food products*

This ISO technical committee has more than 840 standards dedicated to every stage in the food production chain, from crops and animals to what lands on our plates. These include terminology, sampling, methods of test and analysis, product specifications, food and feed safety, and quality management and requirements for packaging, storage and transportation.

- **ISO/TC 34/SC 18**, *Cocoa*

This subcommittee is ISO's first committee for sustainably produced commodities. It is currently developing the ISO 34101 series.

- **ISO 34101**, *Sustainable and traceable cocoa beans*

This series of standards aims to address the challenges faced by the cocoa sector. It is designed for use by all those involved in the cocoa supply chain, from farmers to purchasers, to help with the implementation of good agricultural practices, environmental protection and the improvement of farmers' social conditions.

In addition, the following related standards for the cocoa industry

- **ISO 2451**, *Cocoa beans – Specification*
- **ISO 2292**, *Cocoa beans – Sampling*

specify the quality requirements for cocoa beans.

ISO/TC 34 has many other subcommittees dedicated to standardization in food products, including cereals and pulses, milk and milk products, fruit and vegetables, meat, eggs, tea and more.

Environmental management

ISO/TC 207

Tractors and machinery for agriculture and forestry

ISO/TC 23

Food products

ISO/TC 34

Fertilizers and soil conditioners

ISO/TC 134

Protective clothing

ISO/TC 94/ SC 13

Irrigation and **drainage** equipment and systems

ISO/TC 23/ SC 18

ISO/TC 34/ SC 10

Animal feeding stuffs

ISO standards foster the sustainability and sound environmental management for a better future.

Precision farming

Unmanned aircraft systems – or "drones" – have the potential to revolutionize farming, saving enormous amounts of time and money. Fitted with the latest technology sensors and cameras, they can traverse large areas of farmland rapidly, measuring such things as soil and crop conditions. This allows farmers to "map" their land accurately and ensure treatments like fertilizers are targeted to areas where they are really needed.

ISO technical committee ISO/TC 20/SC 16, *Unmanned aircraft systems*, is working on the world's first set of formalized International Standards in this area – the ISO 21384 series, which will define general specifications, product systems and operational procedures. They will support the development of safe and effective drones for use in all settings, including agriculture, providing a platform for even better technology in this area.

More information?

ISO Website
www.iso.org

ISO Website section : " Standards in action "
www.iso.org/standards-in-action

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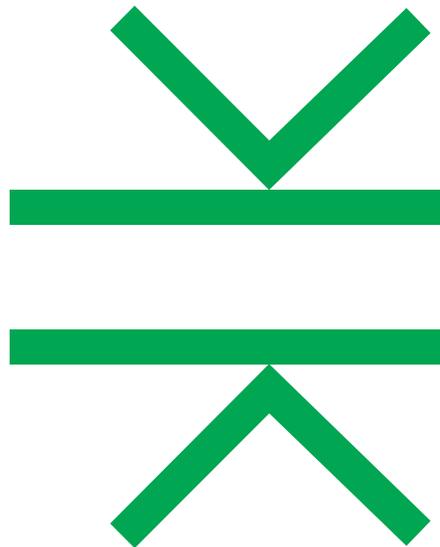**www.iso.org/facebook**

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The symbol on the cover comes from the International Standard **ISO 7000,** *Graphical symbols for use on equipment – Registered symbols*. It is used to identify the control for adjusting the distance between the rolls of a grain processing machine (for example, a kernel processor), or to indicate the specified or actual roll distance during operation.

Available on our Online Browsing Platform at:
gotoi.so/isosymbols.