

SS 689:2022
(ICS 13.020.20; 65.020.20; 65.150)

SINGAPORE STANDARD

**Specification for clean and green urban farms
— Aquaculture**

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Contents

	Page
Foreword _____	3
0 Introduction _____	5
1 Scope _____	5
2 Normative references _____	5
3 Terms and definitions _____	6
4 Principles _____	7
5 General requirements _____	8
6 Farm characteristics _____	12
7 Farm operations and practices _____	14
8 Farm environment management _____	17
9 Resource management _____	19
10 Harvesting and post-harvest handling _____	21
11 Farm waste management and circularity _____	22
12 Farm product specifications _____	23
13 Key performance indicators _____	23
 Annexes	
A Best practices on surface runoff discharge into watercourses _____	25
B Best practices on water conservation _____	29
 Tables	
1 SOPs and records _____	10
2 Maximum allowable limit for stormwater discharge _____	18
3 Farm waste categorisation _____	22
4 Farm waste diversion _____	23
5 Performance levels of key indicators _____	24
A.1 Typical wetland plants suitable for use in treatment ponds _____	28
 Figures	
A.1 A typical cut-off drain and treatment pond for agricultural runoff management _____	26
A.2 A typical treatment pond _____	27
B.1 The PDCA cycle adapted to water efficiency management _____	29
B.2 Water efficiency management planning process conceptual diagram _____	30
Bibliography _____	31

Foreword

This Singapore Standard was prepared by the Working Group on Clean and Green for Urban Farm (Aquaculture) set up by the Technical Committee on Agritech and Agrifood Production under the purview of the Food Standards Committee.

As Singapore aims to raise local food production with the '30 by 30' goal (i.e. to produce 30% of Singapore's nutritional needs locally by 2030), the local agri-food industry needs to transform itself into a highly productive and resilient supply source of safe and nutritious food. To achieve this with the constraints of limited land and sea space for agricultural use, and to move towards a more sustainable way of production, farms shall embrace practices that are resource-efficient and environmentally friendly while providing assurance of food safety and quality.

The intent of this standard is to set out requirements to help aquaculture farms in establishing a clean and green urban production system with focus on safe food production and sustainability. The guiding principle is to achieve these goals through the efficient use of natural resources to minimise farm wastage and optimise operational efficiency, protection and preservation of farming ecosystem, and traceability of farm processes and products. This standard enables farms to adopt sustainable production and differentiate their farm produce as clean and sustainably farmed.

It is presupposed that in the course of their work, users will comply with all relevant regulatory and statutory requirements. Some examples of relevant regulations and acts are listed in the Bibliography. The Singapore Standards Council and Enterprise Singapore will not be responsible for identifying all of such legal obligations.

In preparing this standard, reference was made to the following publications:

1. SS 670:2021 Specification for good aquaculture practice
2. SS 668 Cold chain management of chilled and frozen foods – Part 1: General requirements
3. SS 668 Cold chain management of chilled and frozen foods – Part 4: Code of practice for fish
4. SS ISO 46001:2019 Water efficiency management systems – Requirements with guidance for use

Permission has also been sought from the following organisations for the reproduction of materials from their publications into this standard:

1. International Organization for Standardization (ISO)
 - ISO 46001:2019 Water efficiency management systems – Requirements with guidance for useISO standards can be purchased from Enterprise Singapore.
2. The Southeast Asian Fisheries Development Center
 - Regional guidelines on traceability system for aquaculture products in the ASEAN region (2017)
3. World Organisation for Animal Health (WOAH)
 - Aquatic animal health code (2022), available at: www.woah.org/en/what-we-do/standards/codes-and-manuals/aquatic-code-online-access

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

NOTE

1. *Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions. Where SSs are deemed to be stable, i.e. no foreseeable changes in them, they will be classified as "mature standards". Mature standards will not be subject to further review unless there are requests to review such standards.*
2. *An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore and the Singapore Standards Council shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR. Although care has been taken to draft this standard, users are also advised to ensure that they apply the information after due diligence.*
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Specification for clean and green urban farms – Aquaculture

0 Introduction

0.1 The phenomenal expansion of aquaculture production worldwide is a testimony to the increasingly important role of fish farming in providing a good and reliable source of protein for the rapidly growing world population. Besides contributing to food security, aquaculture has also played an important role in the economic and social development of many countries that rely heavily on their freshwater and marine resources to feed their people. However, as the industry continues to expand and intensify, there is increasing pressure for the sector to recognise the concerns of the continued sustainability of aquaculture practices with respect to its impact on the environment as well as in meeting the increasing demand for safe and quality seafood.

0.2 In the pursuit of “cleaner” and “greener” aquatic produces, farms need to improve productivity and maximise resource utilisation, while at the same time ensuring food safety and quality through best industry practices. It is important to harness the power of technology and innovation to make more efficient use of natural resources to reduce wastage and enhance operational efficiency which translates to farm productivity. With customers’ preferences moving beyond basic quality and safety concerns and shifting towards sustainable and environmentally friendly practices, it is imperative for the aquaculture industry to re-look at its whole production process in order to address its business resilience.

0.3 Although a significant amount of food is imported into Singapore through diversified sources, local supply plays a critical role in contributing to the nation’s food supply resilience and mitigating unexpected disruptions in agri-food supply from overseas. Singapore’s aquaculture sector has great potential to grow further as it has adopted cutting edge technologies and innovative practices. However, it is set in a highly urbanised landscape with limited water/sea space and natural resources which it needs to continue to innovate in order to be productive and sustainable. This standard provides guidance on best practices and performance indicators for local aquaculture businesses to “produce more with less” and to achieve a sustainable production of safe and clean aquatic produces, while mitigating potential farming impacts to humans and the environment.

1 Scope

This standard sets requirements for the operation of sustainable aquaculture in terms of techniques, practices and management to ensure the quality and safety of products, while optimising resource utilisation and farm waste circularity to minimise the impact to the environment. Performance indicators are listed to help farms achieve goals for environmental sustainability, high quality and safe food. This standard applies to open-cage, pond, tank, raceway and closed containment farming systems for fish, crustaceans and molluscs in freshwater, brackish and marine environments through all phases of farm production.

2 Normative references

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

SS 670	Specification for good aquaculture practice
SS 668-1	Cold chain management of chilled and frozen foods – Part 1: General requirements

SS 668-4	Cold chain management of chilled and frozen foods – Part 4: Code of practice for fish
Codex CXS 292-2008	Standard for live and raw bivalve molluscs