SAEOPA
Southern African Essential Oil Producers' Association

Quality Infrastructure supporting essential and vegetable oils market access

Essential and Vegetable Oils

the dtic
Department:
Trade, Industry and Competition
REPUBLIC OF SOUTH AFRICA

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,
Education and Research EAER
State Secretariat for Economic Affairs SECO

UNIDO

GQSP
GLOBAL QUALITY AND STANDARDS PROGRAMME

Contents



Abbreviations/Acronyms

AB	Accreditation Body
AfCFTA	African Continental Free Trade Area
AFRAC	African Accreditation Cooperation
AFRIMETS	Intra-Africa Metrology System
AFSEC	African Electro-technical Standardization Commission
ARSO	African Organization for Standardization
AU	African Union
AUC	African Union Commission
B2B	Business to Business
BIPM	International Bureau of Weights and Measures
CAB	Conformity Assessment Body
CAC	CODEX Alimentarius Commission
CASCO	Committee on Conformity Assessment
EA	European Accreditation
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GAP	Good Agricultural Practice
IAF	International Accreditation Forum
IEC	International Electro-technical Commission
ILAC	International Laboratory Accreditation Cooperation
ISO	International Organization for Standardization
MDG	Millennium Development Goals
MLA	Multilateral Recognition Arrangement
MRA	Mutual Recognition Agreement
NMISA	National Metrology Institute of South Africa
NRCS	National Regulator for Compulsory Specifications
NTB	Non-Tariff Barrier
OIML	International Organization of Legal Metrology

PAQI	Pan African Quality Infrastructure
PTP	Proficiency Testing Providers
P2B	Producer to Business
P2C	Producer to Customer
QI	Quality Infrastructure
RMP	Reference Materials Producers
SADCA	Southern African Development Community Cooperation in Accreditation
SABS	South African Bureau of Standards
SANAS	South African National Accreditation System
SPS	Sanitary and Phytosanitary
SOP	Standard Operational Procedures
TBT	Technical Barriers to Trade
TFTA	Tripartite Free Trade Area
WHO	World Health Organization
WI	Work Instruction
WTO	World Trade Organization

Introduction

Importance of Quality Infrastructure (QI) in market access, the protection of human health, safety and the environment

Market access, brand loyalty, goodwill and profitability are rooted in delivering consistent, high-quality goods and services that meet the client's demands and expectations. This is no different for the essential and vegetable oils industry. Consistently producing high-quality products and services through applying standards, traceable measurements, accreditation and conformity assessment procedures form the basis for the global acceptance of products and services. Conformity assessment procedures include testing, calibration, inspection, certification, verification, and validation.

South Africa is endowed with more than 21000 plant species, making it the third most biologically diverse country globally. Thus, it has the potential to become a major global supplier of essential and vegetable oils. Increased trade leads to job creation and shared prosperity, which is aligned with the country's development objectives and the UN Sustainable Development Goals (SDGs),

Essential and vegetable oils are produced from crops and seeds that contain aromatic oils extracted through various methods, such as steam distillation, cold pressing, filtration, and chemical extraction. Despite South Africa's advantage to meet the growing global demand for essential and vegetable oils, only a fraction of South Africa's potential essential and vegetable oils are being exported to regional and international markets. Consistency of production volumes and the quality of the oils have been cited as key barriers to exploiting South Africa's essential and vegetable oil export potential.

Increasingly, internationally recognised acceptance of conformity assessment procedures and results is becoming a prerequisite for trade and protecting human health, safety, and the environment. Therefore, producing and delivering poor quality goods and services is a costly barrier to trade that should not be underestimated.

Meeting buyers' quality requirements and expectations can be achieved through an internationally recognised QI. A recognised QI provides access to competent monitoring, detection and prevention procedures that are enabled through competent conformity assessment bodies. Without proper monitoring, detection and prevention mechanisms, the cost of poor quality, which includes the failure to give confidence in health, the safety of goods and services and the environment's protection, can exceed the cost of meeting the buyer's quality requirements and assurance of the conformity of processes and production methods.

What is a Quality Infrastructure?

To understand QI, we turn to the global authoritative body, the International Network of Quality Institutions (INetQI). The INetQI defines QI as *"the system comprising the organisations (public and private) together with the policies, relevant legal and regulatory framework, and practices needed to support and enhance the quality, safety and environmental soundness of goods, services and processes"*. A QI system is implemented through metrology, standards, accreditation, conformity assessment and market surveillance.

> South Africa is endowed with more than 21000 plant species, making it the third most biologically diverse country in the world and thus has the potential to become a major supplier of essential and vegetable oils globally



Much attention is currently being paid to establishing the required QI, especially in developing countries, but what does a QI system do to promote the acceptance of goods and services nationally, regionally and internationally? It is claimed that QI is required for the effective operation of domestic markets, and its international recognition is important to enabling access to foreign markets. To understand the claims, clarifying the role of standards, metrology, accreditation and legal metrology is required. Although each QI function operates independently and has its distinctive mandate, they complement each other.

QI's role in Producer-to-Business, Business-to-Business and Business-to-Consumer models

Producer to business (P2B), that is, trade conducted between producers, such as producers of essential oils, supplying the pure oils to a business (buyer). In the P2B model, the business can then transact with secondary processors (e.g., cosmetic companies) in a B2B model. P2B is usually considered as B2B transactions. Typically, P2B transactions are concerned with quality, safety, production and supply consistency. In addition, B2B transactions are concerned with the specifications for branding, metrology for bottling, packaging labelling, and global provisions requirements for export.

Notwithstanding, the QI enables the producers and buyers to demonstrate that their products meet relevant requirements and quality expectations. Standards are the tool that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results. Conformity assessment bodies provide an independent demonstration that specified requirements (i.e., a need or expectation) have been fulfilled, and Accreditation Bodies assure that conformity assessment bodies (CABs) are competent to provide reliable conformity assessment results, generally in the form of a test report, inspection report or a certification certificate, for global acceptance of goods and services.

Business-to-Consumer (B2C) typically concerns the transaction between a business (seller) and a consumer. Various national legal instruments place the responsibility and accountability for product safety, adequate instructions and warnings for safe use on the person who put the product on the market. Thus, B2C is generally concerned with the product's safety, risk, and traceability, including the purpose of use and conditions of application. Demonstration that the obligations are fulfilled requires the support of the QI through providing and assuring product compliance and other relevant requirements, such as testing to support labelling claims and instructions.

The following section provides insight into the enabling components of the QI, namely metrology, standards, accreditation and market surveillance function.

To view a video about the **value of QI**, click on the QR code below or go to:
https://youtu.be/NEdgHL8cjvw

Metrology

The science of measurement, embracing both experimental and theoretical determinations at any level of uncertainty in any field of science and technology.

(International Bureau of Weights and Measures (BIPM))

Metrology

Metrology is defined as the "science of measurements". Principally, it focuses on providing confidence, reliability, and universality in measurement.[1]

Metrology classifies its measurements in seven international systems of units (SI) that we use in almost all our lives. These are length, luminous intensity, mass, temperature, time, ampere, and mole (amount of substance). These units form the basis of all measurements globally. For example, 100 ml of essential oils produced in South Africa needs to be the same if the same 100 ml is measured in an importing country, say the UK. This requires the same standard of measurement in both countries and, in fact, in the world. Thus, we know that 100 ml in South Africa will be 100 ml in the UK by using the same standard of measure.

Although commonly referred to as metrology, there are three types of metrology present in a country. Scientific Metrology, Industrial Metrology and Legal Metrology.

Scientific Metrology

Scientific Metrology, sometimes referred to as fundamental metrology, is considered the foundation of all branches of metrology. It concerns research and new technologies for the development of new measurement standards and their maintenance. These services are generally for industries concerning healthcare, government and the commercial sector.

Industrial Metrology

Industrial Metrology ensures that measurement instruments used in the commercial industry and academic research are functioning correctly. Thus, it ensures the quality of many industrial, research and quality of life-related activities and processes.[2] Traceability of measurements to national and international measures plays a major role in Industrial Metrology. For example, the calibration of testing equipment to ensure reliable results falls under this branch of metrology.

Legal Metrology

Legal Metrology concerns the regulatory requirements of measurements and measurement instruments to protect consumers, human health, safety and the environment, enabling taxation and fair trade. One example of Legal Metrology is the accuracy of weighing scales used in a commercial shop to ensure customers get what they pay for and are entitled to.

Legal metrology primarily operates within the regulatory domain. In some countries, legal metrology resides under the National Metrology Institution structure, whereas in other countries, such as South Africa, it is an autonomous structure. Either way, a large part of their responsibility includes pre-market approvals of manufactured or imported goods and market surveillance to ensure compliance with the relevant regulatory requirements.

Custodian of Metrology

In most countries, the custodian of the national reference standard of measurement is the national metrology institutes, such as the National Metrology Institute of South Africa (NMISA). In some countries, metrology resides under the National Standards Body. The primary reference standard (the SI unit) is held in France, and each country in the world compare/calibrate their national standard to the primary standard. In turn, calibration laboratories compare their standards to the national standards to ensure an unbroken chain of measurement traceability from the primary standard to the national standard to the shop floor.

Metrology, therefore, plays a crucial role in ensuring the reliability, universality and trust in test, inspection, calibration, verification and validation and certification results essential to trade and protecting human health, safety and the environment.

Role of Metrology within the QI Value Chain

Some contend that metrology is at the apex of the quality infrastructure. There is, however, no debate that metrology is an essential element of the quality infrastructure as it provides the basis for all accurate measurements, a function supporting standards, accreditation, market surveillance and is at the core of all scientific undertakings. Thus, it provides stable, comparable and accurate measurement capabilities to the QI, industry, conformity assessment bodies and government.[3]

Metrology is defined as the "science of measurements". Principally, it focuses on providing confidence, reliability, and universality in measurement

1 *http://bos.gov.vc/bos/index.php/services/metrology*

2 *https://www.sciencedirect.com/topics/earth-and-planetary-sciences/metrology*

3 *https://metrology.news/measuring-measurement-metrology-matters*
Liu. P. FAO, 2009. Private standards in international trade: issues and opportunities. www.fao.org

Standards

A document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in each context

(International Organisation for Standardisation (ISO))

Standards

Standards play a central role in the quality infrastructure. They provide a basis for elements, such as metrological references, specifications for conformity assessment, or accreditation requirements and are a basis for most technical regulations.

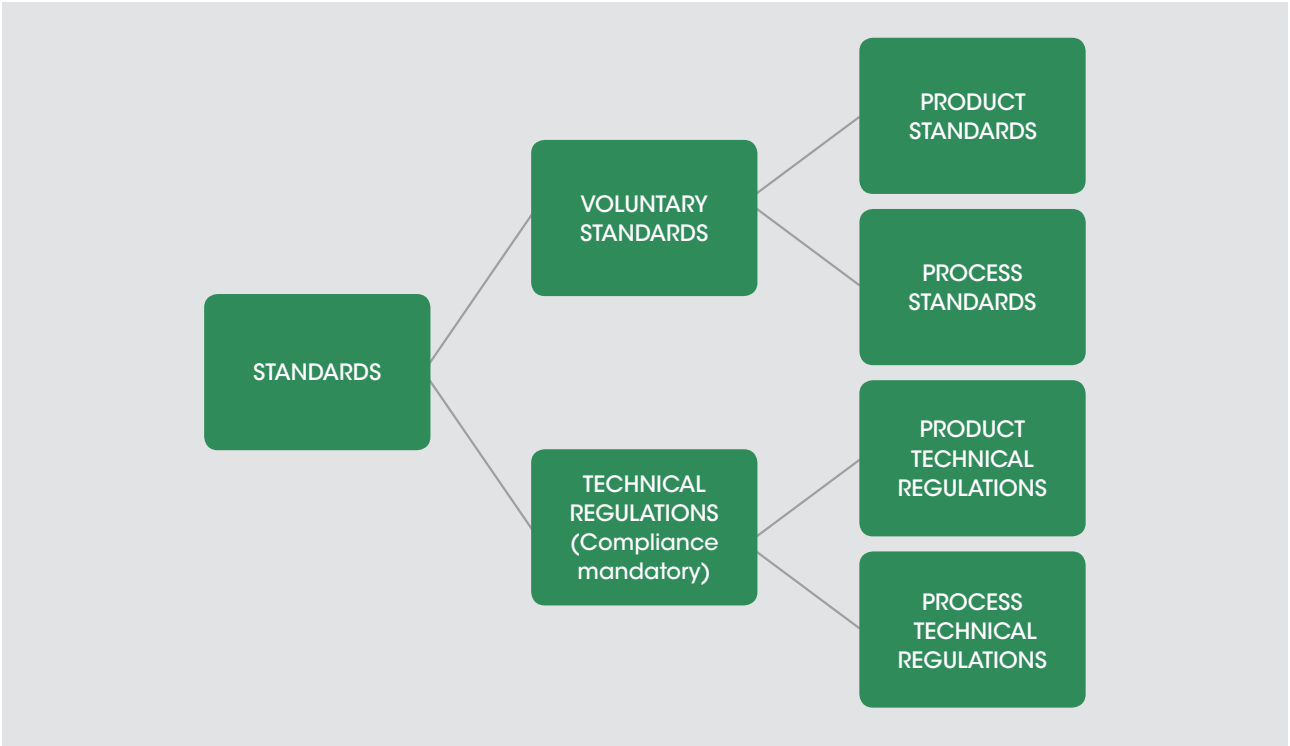
Application of Standards within value chains

Breaking into new export markets is one of the significant challenges experienced by new entrants. A new entrant, in most cases, does not have the time to gradually build a trust relationship with clients. A trust relationship requires a track record of consistently meeting their customer's demands and expectations.

Thus, two types of relationships can be observed in the various value chains. Recently, the distinction between the two types of relationships has blurred as buyers and the market insist on independent verification of compliance to their requirements. Nonetheless, the first relationship is primarily built on a track record of consistently meeting the buyer's expectations, resulting in a high trust relationship. A high trust relationship has positively influenced older, established brands and product acceptance. For example, the entry barrier is high in the essential and vegetable oils industry as buyers have built high trust relations with some suppliers who thus enjoy exclusive suppliers' status with their buyers. The second type of relationship is formed through an objective demonstration of compliance to the required standards and technical regulations. This relationship provides a globally accepted alternate for market entry. In global trade, compliance to the standards and other specific requirements set by the importing country or buyer, including the requirement for independent international compliance, is becoming the norm for international acceptance of goods and services and building high trust levels. The independent verification is globally accepted as being performed by internationally recognised and accredited conformity assessment bodies. Therefore, consistently meeting the buyer/user's quality demands is crucial for market access and buyer/users' loyalty.

Categories of standards

Although various standards exist, they can be divided into two categories. Firstly, **voluntary standards**, including international standards, national standards, private sector standards, and civil society sector standards. Secondly, **mandatory standards**; better known as technical regulations. Governments issue **technical regulations** to protect the health, safety of citizens and the environment. Technical regulations are becoming a major force in global trade value chains. Both voluntary standards and technical regulations typically focus on processes and products.



Standards categorisation

Standards

Product standards

Product standards set out the quality requirements defined by the standards-setting entity such as standards bodies, private sector, civil society, regulators, specifiers, etc. The standard is clear-cut, such as setting the maximum allowable residue limits for pesticides in agricultural goods. Product standards typically require a single conformity assessment intervention such as an inspection, verification, or validation at the end of the production process.[4]

Process standards

Process standards require the documentation of various stages of the production process. Some standards also set out the procedures and targets, such as minimising hazardous work practices verified throughout the process. Such standards include the various management systems standards such as ISO 9001, ISO 14001, private standards such as Good Agricultural Practice (GAP), social standards such as Fairtrade, etc.

Standards play an important role in trade facilitation and protecting consumer health, safety and the environment. It begs the question, who are the major role players in setting standards, and where do they derive their authority from?

Major players in Standards Development

Various national, regional and international standards organisations are involved in the development of standards. These include international standards organisations such as the International Organization for Standardization (ISO), regional standardisation bodies such as the African Standardisation Organisation (ARSO), national standards bodies such as the South African Bureau of Standards (SABS), governments, and private sector standards setters, including civil society organisations, industry bodies and companies.

International, Regional and National Bodies as standards developers

Internationally, various standards-setting bodies exist, focusing on the harmonisation of product standards. For example, in the food value chain, the Codex Alimentarius or "Food Code" adopted by the Codex Alimentarius Commission (CAC) governs most of the standards applicable to the food sector. The CAC was established by the World Health Organization (WHO) and the Food and Agriculture Organization of the United Nations (FAO) to protect consumers' health and promote fair trade.[5] Although compliance to these standards is voluntary, Codex recommends that its members apply the Codex standards, guidelines, and recommendations. In many countries, Codex standards serve as the basis for national legislation.[6] Various Codex standards cover vegetable oils. As an example, the Codex standard for named vegetable oils, CXS 210-1999, with the latest amendment in 2019, covers matters such as the essential composition, analysis, sampling, labelling, quality factors, etc., of more than 28 vegetable oils that are presented in a state for human consumption.

ISO is probably the most well-known international standards-setting body. Together with the International Electrotechnical Commission (IEC), they have developed various standards used globally. Member States of the World Trade Organization (WTO) must adopt as far as possible international standards as the basis for their trade-related requirements. To date, ISO Technical Committee (TC) TC 54 has published approximately 141 standards dealing with essential oils.[7]

Regional standards organisations, such as ARSO, focus on harmonising regional standards by coordinating the work of the National Standards Bodies.

National Standards Bodies, such as the SABS, are generally appointed by their national governments to respond to industry and the government's needs for standards. Compliance with these standards is voluntary. For example, in response to the need of the essential and vegetable oils industry, the SABS recently published the first geranium oil standard, the South African National Standard SANS 4731:2021. In many cases, voluntary standards form the basis for technical regulations issued and enforced by the government.

Government as standards/technical regulation setters

Although standards produced by the government primarily focus on protecting human health, safety and the environment, recent years have experienced increasing government involvement in the market by regulating the

4 *Liu. P. FAO, 2009. Private standards in international trade: issues and opportunities. www.fao.org*
5 *www.fao.org.fao-who-codexalimentarius, accessed 14 June 2021*
6 *http://www.fao.org/fao-who-codexalimentarius/about-codex/en/ accessed 16 September 2021*
7 *ISO, Essential Oils, ISO – ISO/TC 54 – Essential oils, https://www.iso.org/committee/48956.html, accessed July 2021*

trade in goods and services through technical regulations (sometimes referred to as compulsory specifications). Compliance with these standards is mandatory. In most cases, the government may adopt a voluntary or international standard or part thereof as a basis for its technical regulation. The government may also contract the National Standards Body to develop the required standards, whilst the government stipulate the essential requirements. As an example, the European Union (EU) Commission sets the essential safety requirements. However, the EU contracts the standards development process to public and private Standards Institutions such as the European Committee for Standardization (CEN), European Committee for Electrotechnical Standardization (CENELEC), and the European Telecommunications Standards Institute (ETSI).

The private sector as standard setters

The Food and Agriculture Organization (FAO), an organ of the United Nations, claims that the proliferation of private standards results from the globalisation of trade, advancements in technology, concentration, food processing and retail, changes in consumer preferences, and regulatory changes in major developed markets.[8] As with essential oils, various private standards such as the various standards and specifications published by the Essential Oils Association of the USA or other certification standards may be imposed by the buyer due to consumer preferences, greater commitment to the environment and human protection and prevention of exploitation. There is a place for private standards that are becoming more and more a prerequisite for trade. However, several issues regarding private standards usually are raised, such as ownership, development process, attainability, and the lack of transparency.

In addition to the formal options of national, regional, and international standards, standards can also be set at organisational level. These standards are usually in the form of standard operational procedures (SOPs), which are also known as work instructions (WIs).

Standard operating procedures

In the absence of formal standards, standardised specifications can support any operation.

Similar to formally published standards, which are developed according to distinct procedures (e.g., ISO/IEC directives or the requirements of the WTO's Technical Barriers to Trade (TBT) Agreement, Annex 3), any form of recording good practice or proven specifications helps to work more efficiently and reduce unwanted effects or incidents. Achieving the main benefits (i.e., consistency of the operations and confidence in the products) can begin with internally standardised procedures.

This includes adapting existing standard operating procedures (SOPs). For instance, procedures for large-scale testing can be adapted for individual selective sampling, or procedures for food production can be adapted for cosmetics. Developing standard operating procedures can help specify rules (e.g., for documentation of results or personnel training) and harmonise criteria (e.g., for selecting raw material).

An SOP can serve as a basis for drafting work instructions (e.g., handling equipment) and eventually recording successful practices (e.g., organising delivery, storing excess material). Standard operating procedures can be outlined for typical activities such as:

- consideration of the appropriate programme (e.g., conventional versus organic)
- identification of the appropriate procedure (e.g., extraction versus cold pressing)
- logistics management
- suppliers' management
- conditioning raw material
- processing oil
- chemical analysis of intermediates
- managing resources (e.g., monitoring competence of personnel, maintenance of equipment, choice of suppliers).

As standards play such an important role in trade facilitation and the protection of human health, safety and the environment, it begs the question: who are the major role players in setting standards, and where do they derive their authority from?

8 Liu. P. FAO, 2009. Private standards in international trade: issues and opportunities. www.fao.org

Accreditation

Third-party attestation related to a conformity assessment body conveying formal demonstration of its competence to carry out specific tasks.

(ISO/IEC 17000)

Accreditation

Accreditation is defined by the International Standards Organization (ISO) in its international standard ISO/IEC 17000; Conformity Assessment: Vocabulary and General Principles as a "Third-party attestation related to a conformity assessment body conveying formal demonstration of its competence to carry out specific conformity assessment tasks."

Principally, accreditation bodies verify the competence of Conformity Assessment Bodies (CABs) such as laboratories, inspection bodies, certification bodies, verification and validation bodies. If in agreement with the claimed competence of an organisation, the accreditation body provides formal recognition of the CABs' competence. Accreditation bodies further promote the acceptance of the results produced by the accredited CABs globally.

National and global acceptance of conformity assessment results

The acceptance of the CABs' results is facilitated through a Mutual Recognition Arrangement (MRA) and a Multi-Lateral Arrangement (MLA), managed by the International Laboratory Accreditation Cooperation (ILAC) and the International Accreditation Forum (IAF), respectively. Signatories to the ILAC and IAF MRA/MLA are obliged to recognise each other's accredited CAB results and promote the acceptance thereof within their economies. ILAC is responsible for laboratories, inspection bodies, proficiency testing providers and reference material for producers' accreditation, whereas the IAF focuses on certification bodies and verification and validation bodies. Currently, a single body for accreditation globally is under development.

Application of accreditation within the QI value chain

Accreditation answers the question of what competent and trustworthy conformity assessment is required and available to provide confidence in the quality, safety, and health of goods and services produced and consumed. Furthermore, whether such claims made by producers and manufacturers will be accepted within the importing country and by its consumers.

Accreditation provides the independent verification/ attestation of a testing laboratory, medical laboratory, inspection body, certification body, verification and validation body's competence, and independent confirmation of claimed competence. For example, testing laboratory X claims to be competent to test for Maximum Residue Limits in agricultural products, which meets the standard of the importing country. As importing countries cannot assess all claims of compliance to their standard or any other acceptable standard, the results of an accredited test laboratory for the specified test method by an internationally recognised accreditation body would generally be accepted as credible, thereby avoiding retesting of goods or services that accompany the test results.

Therefore, within the QI value chain, accreditation provides the required confidence that compliance to the customer's requirements have been competently verified and the results can be trusted. Furthermore, accredited CABs' results attest that the health, safety and functionality concerns meet the required standards.

Accreditation and supplier's declaration of conformity

The ISO/IEC 17050-1:2004, "Conformity assessment – Supplier's declaration of conformity – *Part 1: General requirements" and the ISO/IEC 17050-2:2004, "Conformity assessment – Supplier's declaration of conformity – Part 2: Supporting documentation* " international standard specify the requirements for the supplier's declaration and the associated documents required for proof of compliance.

The "supplier's declarations of conformity" (SDoC) is used where the supplier (the person who puts the product on the market) and the manufacturer provide written assurance of their product or service's conformity to specified requirements. The SDoC is used for low-risk product conformity assurance. When performing conformity assessment as first-party activity (e.g., in-house testing or verification), the resulting statement of conformity can be issued as a so-called "supplier's declaration."

Questions about the supplier's competence in making the compliance claim, the justification for claims and the credibility of the supplier highlight the weakness of this approach. Therefore, "supplier's declarations" according to ISO/IEC 17050, underpinned by results from accredited conformity assessment bodies, benefit from considerable acceptance in the market.

Accreditation Bodies provide formal recognition of the CABs' competence and promote the acceptance of the results produced by the accredited CABs globally.

Conformity Assessment and Conformity Assessment Bodies

Conformity assessment is a demonstration that specified requirements (i.e., a need or expectation) are fulfilled

Note 1: Conformity assessment includes activities such as, but not limited to, testing, inspection, validation, verification and certification

Note 2: Conformity assessment is a series of functions. Activities contributing to any of these functions can be described as conformity assessment activities. (ISO/IEC 17000:2020)

Conformity Assessment and Conformity Assessment Bodies

Conformity assessment demonstrates that a product or service fulfils the specified requirement. "Conformity assessment bodies" is the collective name given to bodies performing conformity assessments. These include inspection bodies, laboratories (i.e., testing and medical laboratories), certification bodies, verification and validation bodies, proficiency testing providers, etc.

Laboratories

The international standard ISO/IEC 17025 defines laboratories as organisations that can perform testing, calibration and sampling associated with subsequent testing or calibration. Testing is defined as the determination of characteristics by testing procedures. Testing covers a wide range of areas such as medical testing, chemical testing, mechanical testing, etc. Each area has its relevant scope of testing. For example, testing for pesticide residue for the agricultural sector follows the relevant standards or specifications. The testing output can include comments (e.g., opinions and interpretations) about the test results and fulfilment of specified requirements. With known threshold values, a test result can state conformity of the tested item (e.g., "test passed" or " test failed").

In-house laboratories of manufacturers or product providers perform testing as so-called first-party activity. Laboratories acting on behalf of a person or organisation with a buyer or user interest provide testing as a second-party activity. Only if testing is independent of the producer (the first party) or user interests, the laboratory provides its activities as a third-party activity.

Accreditation bodies grant formal recognition of laboratories' competence for a specific test/calibration scope. To obtain accreditation for a specific scope, laboratories must meet the requirements of the international standards ISO/IEC 17025: *General requirements for the competence of testing and calibration laboratories* (See the SANAS website, www.sanas.co.za for a list of accredited laboratories accredited for specific scopes).

Inspection Bodies

Inspection Bodies provide information about the conformity of inspected items with regulations, standards, specifications, inspection schemes or contracts. The items include materials, products, installations, equipment, processes, workflows, and services. They can be owned and operated by government, industry bodies or be an unaffiliated organisation. For example, inspection bodies may inspect product compliance with regulations or requirements prescribed by agricultural sector industry bodies. Inspection bodies must meet the requirements of the international standards ISO/IEC 17020 *"Conformity assessment — Requirements for the operation of various types of bodies performing inspection"* to obtain and maintain accreditation.

Proficiency Testing

Proficiency testing is the use of interlaboratory comparisons for the determination of laboratory performance.[9] The international standard applicable to proficiency testing is the ISO/IEC 17043 *"Conformity assessment — General requirements for proficiency testing"*. Artefacts are sent between laboratories participating in the proficiency testing scheme to perform testing according to a given set of instructions. The results produced are compared against a reference laboratory's values, or the average reported results. The outcome thus guides the participating laboratories, which might require them to take corrective action if their results fall outside the determined acceptable upper or lower range.

Reference Material Producers

Reference materials are a tool to obtain comparability of analytical results and accuracy and compatibility of measurements. Reference materials are mainly used by calibration and testing laboratories to ensure the validity and reliability of their measurement and test results. Thus, reference materials require a high level of confidence in the producers thereof. The international standard for these reference material producers must comply with is the ISO/IEC 17034. Thus, the testing results of essential oils will have an added level of confidence and assurance if the supplier of their reference materials is accredited to the national or international standard.

9 *ISO/IEC 17043 Conformity Assessment: General requirements for proficiency testing*

Conformity Assessment and Conformity Assessment Bodies

Certification Bodies

Certification is a "third-party attestation related to products, processes and systems or persons."[10] Increasing awareness of the impact of agriculture and wild harvesting on the environment, society and workers, bolstered the need for certification as a requirement for market access. International certification schemes include ISO 22000 *"food safety management"*, ISO 14001 *"environment management systems- requirements and guidance for use,"* management system accreditation to ISO/IEC 17021-1 *"Conformity assessment — Requirements for bodies providing audit and certification of management systems — Part 1: Requirements"*, ISO/IEC 17065 *Conformity assessment — Requirements for bodies certifying products, processes and services"*, and ISO/IEC 17024 *"General requirements for bodies operating certification of persons"*. Private certification schemes are also prevalent in the marketplace, such as FSSC 22000 *"Food Safety Management Systems"* for food manufacturing or GAP in the agricultural sector, and others covering Organic Certification, or FairWild certification, to mention a few.

Accreditation of the bodies providing these results can assure their reliability and facilitate acceptance without the need for a retest.

Product certification

The ISO/IEC 17065 *"Conformity assessment – Requirements for bodies certifying products, processes and services"*, international standard, specifies the requirements for product certification bodies.

Product certification is the attestation by an independent party that a product meets the specified requirements of the applicable programme (scheme), consisting of national or international standards.

Product certification can consider results from other conformity assessment activities, such as testing, inspection, auditing, or verification.

Management system certification

The ISO/IEC 17021-1, *"Conformity assessment – Requirements for bodies providing audit and certification of management systems – Part 1: Requirements"* international standard specifies the requirements for management system certification bodies.

Certification of a management system is one means of providing assurance by an independent party that an organisation has implemented a system for the management of the relevant aspects of its activities, products, and services, in line with the organisation's policy and the requirements of the respective international management system standard.

Examples of well-established management system standards are ISO 9001 *"quality management"* and ISO 22000 *"food safety management systems."*

Verification and Validation

The latest standard added to the conformity assessment family of standards is the ISO/IEC 17029: *Conformity assessment – General principles and requirements for validation and verification bodies"*. This standard focuses on the requirements of competence, consistent operation and impartiality of bodies performing verification and validation as conformity assessment activities.

Verification is the confirmation of a claim, through the provision of objective evidence, that specified requirements have been fulfilled. The confirmation criteria and requirements for the verification are specified in programmes. The outcome reflects only the situation at the point in time it is issued as a verification statement. Validation is a confirmation of a claim, through the provision of objective evidence, that the requirements for a specific intended use or application have been fulfilled. In other words, verification verifies objective evidence of what has already occurred, whereas validation validates the future intended.

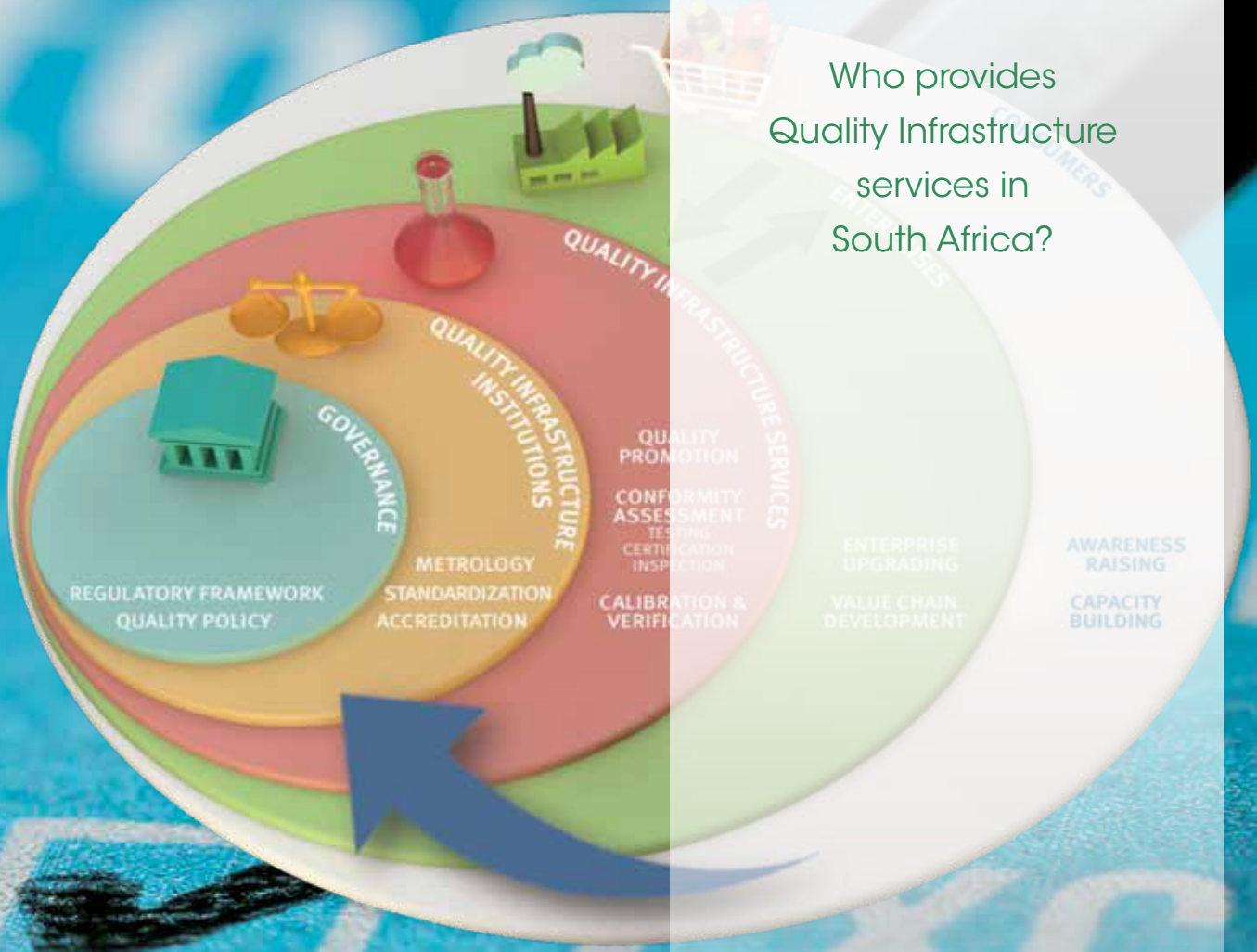
Verification bodies can act as in-house bodies, thus a first party verification services provider (e.g., producer provider). Verification bodies can act on behalf of a second party in the buyer or user's interest. Independent verification bodies are not involved with the first party declaring the information. They are not acting on behalf of a second party but provide verification services as a third-party (independent).

The standard has various applications, ranging from the verification and validation of claims related to construction technology, energy management, artificial intelligence, information technologies and social responsibilities, to name a few.

10 ISO/IEC 17000: Conformity Assessment – Vocabulary and General Principles

South African QI

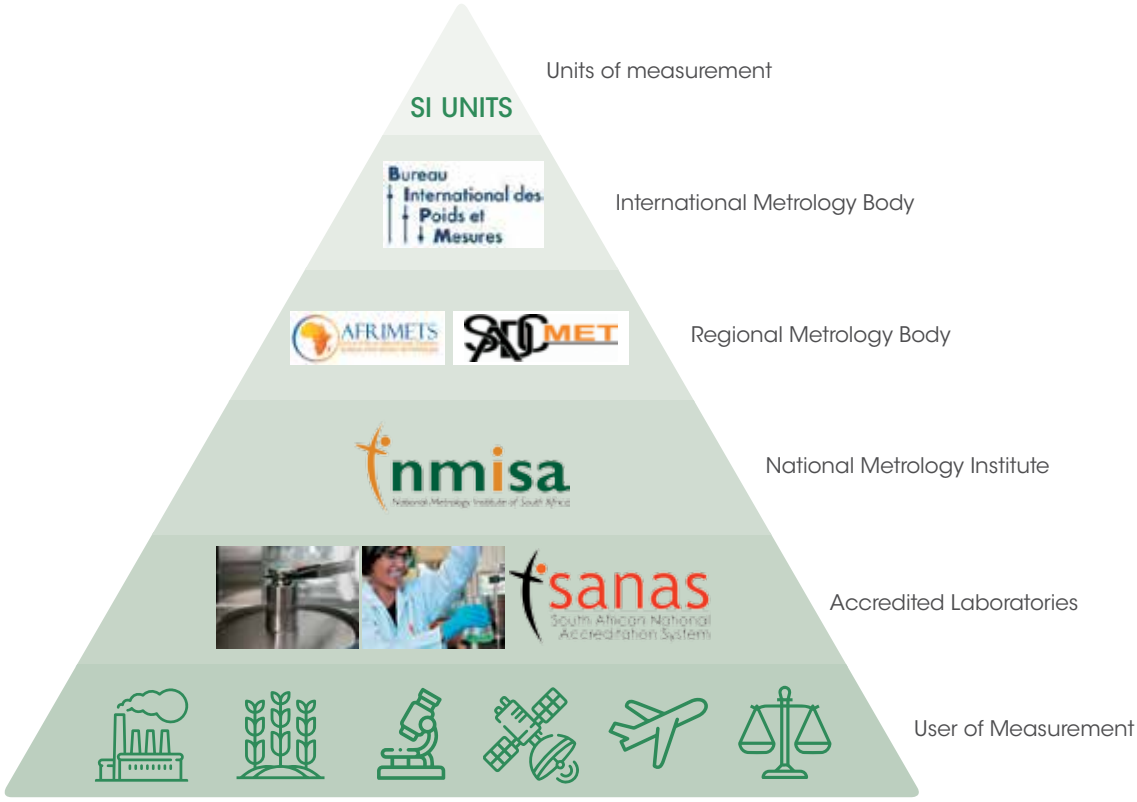
Who provides Quality Infrastructure services in South Africa?



South African QI

Who provides the QI services in South Africa?

The South African Quality Infrastructure, also referred to as the South African Technical Infrastructure or Standards, Quality Assurance, Accreditation and Metrology (SQAM), consists of the National Metrology Institute of South Africa (NMISA), the South African Bureau of Standards (SABS), the South African National Accreditation System (SANAS), and the National Regulator for Compulsory Standards (NRCS).



The National Metrology Institute of South Africa (NMISA) is the custodian of the national measurement units, such as time, mass, volume, length and National Metrology Standards (NMS). Thus, it is the highest level of traceability for such measures in South Africa.

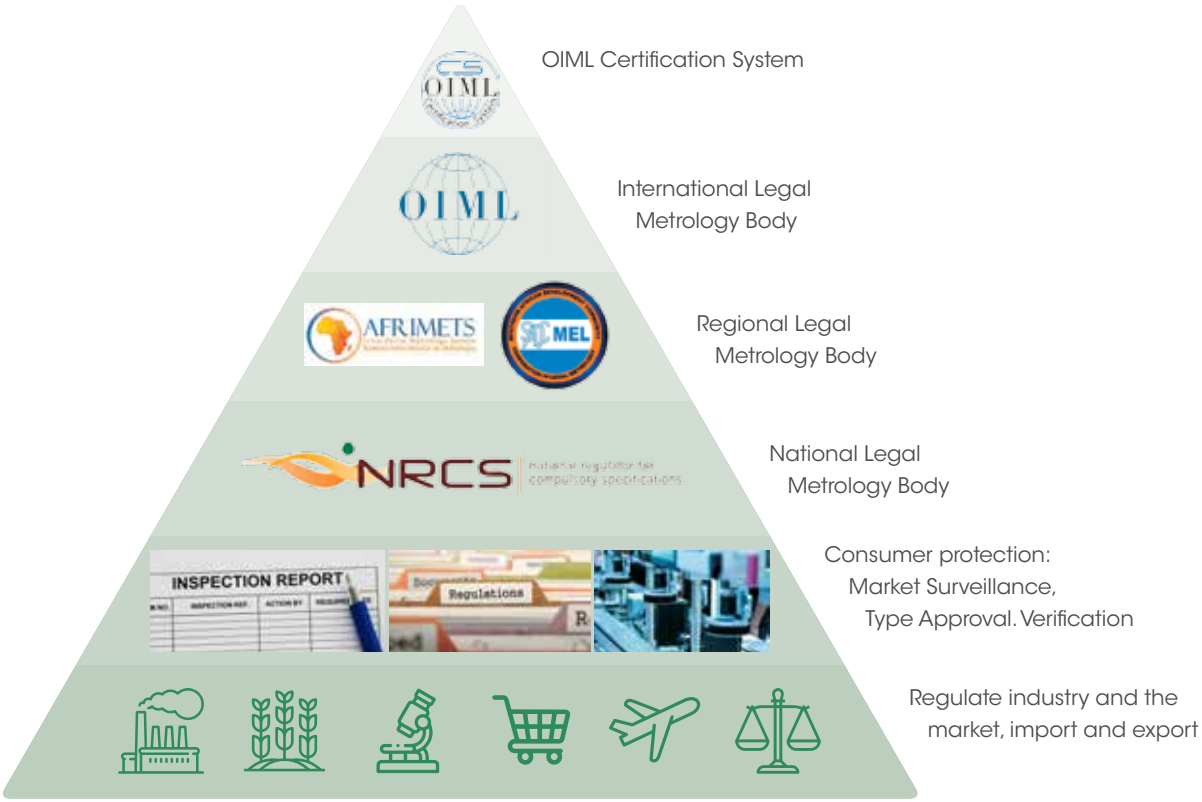
NMISA maintains and ensures the appropriate application of the International System of Units (SI) and other measurement units, as defined by NMISA, in consultation with the measurement community of the country.

The South African Bureau of Standards (SABS) is the government-appointed national standards body and the oldest QI institution. The SABS is responsible for the development, promotion and maintenance of the South African national standards.

In addition to its standards development role, the SABS also provides conformity assessment services, such as testing and certification services to the government and commercially. Some of its services compete with other conformity assessment bodies in the market.

South African QI

The South African National Accreditation System (SANAS) is the youngest of the QI institutions with the mandate to provide accreditation support for trade and the protection of the health and safety of consumers and the South African environment by promoting the acceptance of results issued by SANAS-accredited organisations nationally and amongst global partners, and by advancing trade and South Africa's economic development objectives.



The National Regulator for Compulsory Specification's (NRCS) mandate includes promoting public health and safety, environmental protection, and ensuring fair trade. The mandate is achieved through the development and administration of compulsory specifications, legal metrology, and market surveillance. These are aimed at ensuring compliance with the requirements of the specifications and technical regulations. The NRCS's stakeholders include the South African government, industry and citizens (NRCS, 2021).

South African QI

How can QI help improve quality, productivity, consistency and profitability?

It is common cause that consistently producing a high-quality product builds brand loyalty, goodwill and profitability. However, attaining quality through the application of standards, testing, inspection and certification in most cases is perceived as costly.

It is better to ask: what is the cost of poor quality? The answer to this question typically justifies the value of claimed gains introduced by applying QI services. The cost of poor quality can be defined as the cost generated due to producing low-quality products. For example, the cost of poor quality in the agricultural space includes all labour costs, materials such as pesticides, seed, water, cultivation, and processing up to the point of rejection or achieving a below-market value price.

QI provides the mechanism for ensuring acceptable quality by monitoring, detecting and preventing poor-quality goods from being released. It contributes to higher production output by preventing rejections or being offered below market value prices for goods. Without proper monitoring, detection and prevention mechanisms, the cost of poor quality can be very high and even detrimental to the sustainability of especially SMMEs due to the increased risk of rejection or offer of a below market value price of goods manufactured/produced. In addition, a QI that is linked to the global QI governance structures such as the ISO, ILAC, IAF, BIPM and OIML provides global acceptance of reports and results produced by accredited conformity assessment bodies.

Essential and vegetable oils value chains

A value chain is a set of activities to be performed to deliver a valuable product or service to the market.

Essential and vegetable oils value chains

QI supporting the essential and vegetable oils value chains

Although South Africa is blessed with an abundance of essential and vegetable oil plant material, the challenge is to consistently produce good quality oils and to ensure a constant supply. These challenges have been identified as critical technical barriers to international market access for South Africa's essential and vegetable oils.

Various definitions for essential oils exist; however, all definitions highlight that essential oils are volatile, derived from the oils of plants and generally extracted through distillation. The Merriam-Webster dictionary's definition highlights the application of an essential oil as follows: "any of a class of volatile oils that gives plants their characteristic odours and are used especially in perfumes and flavouring, and for aromatherapy."[11] The plant material for essential oils includes, but is not limited to, lavender, rose geranium, rosemary, basil, thyme, peppermint, chamomile, eucalyptus, buchu, as well as oils from vegetable seeds. In comparison, vegetable oils are of plant origin, especially fatty oils from seeds or fruits.[12]

The Quality Infrastructure and services are well-positioned to support the removal of the technical barriers to the trade of essential oils. The infographics below depict the critical conformity assessment interventions required to support the global acceptance of essential and vegetable oils.

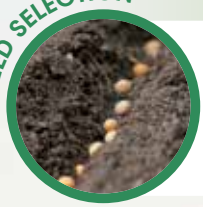
11 *Merriam- Webster, Definition of Essential Oil by Merriam-Webster, https://www.merriam-webster.com/dictionary/essential%20oil, accessed October 2021*

12 *Merriam- Webster, Definition of Vegetable Oil, https://www.merriam-webster.com/dictionary/vegetable%20oil, accessed October 2021*

Demistify Quality Infrastructure support for essential and vegetable oils

CULTIVATION

SEED SELECTION



Seed testing ISO/IEC 17025

Having the right seed genetics suitable for the climate, soil and environment is critical for the quality and yield of the crop. Seed testing play a major role in determining the seed genetics

SOIL COMPOSITION

Soil testing ISO/IEC 17025

Nitrogen (N), Phosphorus (P) and Potassium (K)

Soil preparation lays the basis for product quality, crop yield and resources utilisation. Soil sampling and analysis, therefore, require testing and procedures to ensure appropriate soil analysis. The soil analysis focuses on testing mineral deficiencies, excesses, carbon ratios and the organic status of the soil.

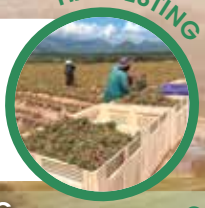
CULTIVATION AND WILD HARVESTING

CULTIVATION

Product Certification ISO/IEC 17065

Management system certification such as the various Good Agricultural Practices (GAP), environment and social standards focusing on sustainable farming, prevention of child labour, reduction in global warming and other environment and social protection matters. Accredited certification services provide the required confidence of compliance to management system requirements.

HARVESTING



Timing and correct harvesting is paramount to the character, quality and yield of the crop. Is some cases, testing may contribute to the decision of when to harvest.

PROCESSING

Calibration and testing ISO/IEC 17025

In general, the two prominent methods for processing are steam distillation for essential oil and cold pressing for vegetable oil. During the distillation process, the control of temperature, light and pressure is essential to the quality of the oil produced. Calibration of equipment and testing of the oil quality is essential.

PACKAGING & TRANSPORT

The quality of oils is judged by their colour, odour, relative density, refractive density, optical rotation and solubility in ethanol. Bottling and packing or oils require darkened glass bottles, galvanised iron or stainless-steel containers. The headspace in the containers should be minimal. Transportation and bottling need to ensure the quality remains intact.

APPLICATION

Therapy

Food

Fragrances

Essential and vegetable oils value chain

Climate and soil
- Testing
- Soil sampling and analysis
- Soil preparation

Seed Selection
- Testing
- Crop suitability
- Seed genetics

Production	Subject	Conformity Assessment	Accreditation Standard
Cultivation	Pesticides Control: • Max Pesticides Residue Limits	• Testing • GAP Certification • Good Cultivation Practice (GCP)	• ISO/IEC 17025 • ISO/IEC 17065
	Fertiliser	• Testing • GAP Certification / Organic certification • GCP	• ISO/IEC 17025 • ISO/IEC 17065
	Water quality	• Testing	• ISO/IEC 17025

Harvest Timing
- Testing
- Moisture

Drying

Production	Scope	Conformity Assessment	Accreditation Standard
Primary Processing: • Steam distillation • Cold pressing • Chem & CO^2 extraction	Temperature control	Calibration	ISO/IEC 17025
	Oil purity	Testing	ISO/IEC 17025
	Monitoring	Inspection	ISO/IEC 17020

Storage	
Temperature control/ monitoring	Calibration ISO/IE 17025
Moisture	Calibration ISO/IE 17025
Contamination	Calibration ISO/IE 17025\65

Production	Scope	Conformity Assessment	Accreditation Standard
Secondary processing	Additives	Testing	ISO/IEC 17025
	Labelling	Testing	ISO/IEC 17025, Classification, labelling and packing (CLP)
	Monitoring	Inspection	ISO/IEC 17020
	Volatility	Regulations (HAZMAT) CLP	ISO/IEC 17020 ISO/IEC 17065 Regulations

Transportation and documentation	
Temperature control/ monitoring	Calibration
Contamination	Certification ISO/IEC 7065
Volatility HAZMAT	Regulations CLP

Nature of essential and vegetable oils

Nature of essential and vegetable oils

Two methods of essential and vegetable oil farming are prevalent in the industry. These are wild harvesting and cultivated farming. Although both types of farming share various processes in the value chain, the significant difference is the way the crops are gathered and processed.

It is possible to obtain the plant material for essential oil production of some species through both wild harvesting and cultivated crops, e.g., buchu, Cape chamomile, and *Helichrysum.* An example of vegetable seed oils sourced from both wild harvesting and cultivation is Kalahari melon.

Wild harvested

Wild harvested is defined as "plants or portions of plants collected or harvested from defined areas of land that are maintained in a natural state and are not cultivated or otherwise managed."[13] Basically, they are plants or portions of plants gathered from the wild. Wild-harvested crops include Kalahari melon, buchu and marula.

Processing of wild-harvested crops for essential oils usually entails steam distillation. Mechanical extraction of vegetable oils involves the cold pressing of the seeds with equipment such as hydraulic presses, ram (screw) presses, etc., to produce the oils. For example, pressing the kernel from the marula nut to produce marula oil.

Cultivated crops

Cultivated crops are produced through systematic cultivation practices. These practices include optimum specific site identification, climate appropriateness, soil management and plant selection.

Climate, soil preparation and metrology

Climate

Temperature and rainfall play a significant role in the optimum yield obtained from the plant material suitable to the geographic location. The measurements and maintenance of rainfall statistics and temperatures are managed at a national level. Thus, calibration and maintenance of metrological measurements is the responsibility of the appointed government institution.

Soil preparation and testing

Soil preparation lays the basis for product quality, crop yield and resources utilisation. Soil samples for analysis are required to determine the appropriate fertilisation programme. The organic status of the soil can be established through a soil test as well.

Soil tests assist producers to manage the soil for optimum yields of the herbage and oil extracted. The optimum nutritional status of the soil provides for ideal growing conditions, thus optimal crop yield. Thus, it supports a viable essential oil enterprise by determining the soil's nutritional status and allows the producers to correct the status, such as balancing the mineral status and restoring the pH, where needed.

The accuracy and reliability of test results in soil preparation, soil optimisation, and product quality and yield are vital for a viable essential and vegetable oil farming business. Accredited testing laboratories, supported by accredited calibration laboratories, provide the necessary assurance of test results' accuracy and reliability. Calibration laboratories provide information on the accuracy of the measurement equipment used by the testing laboratories.

The soil test results allow for the necessary adjustment, if required, to ensure that no degradation occurs and allows for monitoring of the soil's suitability to the seeds and optimal crop yields.

To view a video about **matching crop to soil**, click on the QR code or go to: **https://youtu.be/ItkN9rdTVAo**

13 https://www.lawinsider.com/dictionary/wild-harvested

To view a video about the **importance of seed genetics,** click on the QR code below or go to:

https://youtu.be/712ze1lu-fg

Seed, seedling and cutting selection and quality

The preferred genetic chemotype to the climate, soil, and expected crop yield is critical for producing a high quality and quantity of essential and vegetable oils for cultivated crops. It is critical to ensure that the mother plant of the seed, seedling and cuttings has the preferred chemotype, i.e., the oil produced from the specific plant has been tested and found to have the chemical profile of the oil to be produced.

Cultivation

Good cultivation and agricultural practices set out the requirements for the controlled use of fertilisers, pesticides, and weed control. The Agricultural Research Council (www.arc.agric.za) and Forestry, Agriculture and Biotechnical Institute (www.fabinet.up.ac.za) provide comprehensive information on cultivation.

Integrated Pest Management (IPM) is an effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices. IPM programmes use current, comprehensive information on the life cycles of pests and their interaction with the environment, and are therefore recommended.

Fertilisation

Fertilisers provide the required nutrients to the soil, thus improving crop health and quality. Two types of fertilisers are typically used—natural or synthetic fertilisers. The choice of fertilisers should be determined according to the nature of the product; either inorganically or organically. Inorganic fertilisers include nitrogen fertiliser and phosphorus fertiliser. Organic fertiliser is typically derived from agricultural waste, livestock manure, and municipal sludge.

Pest Control

The use, quantities and selection of pesticides to control pests require careful attention. The use of pesticides can enhance product quality and quantity. However, although pesticides are beneficial for production, extensive pesticides pose a severe threat to consumer health, safety, and the environment as they can pollute the air, water, soil, and ecosystem.[14] Therefore, management control and record keeping of pest control and pesticide usage are usually a requirement of the various sound practices' principles, as presented by the applicable management certification standards and programmes, e.g., Good Agricultural Practices (GAP). Some of the most recognised certification schemes are ECOCERT and GLOBALG.A.P. Compliance is conferred through accredited certification bodies or private sector recognised certification schemes.

Cultivation and the QI support

The compliance and monitoring of adherence to the required human health and safety regulations and product standards are generally confirmed through testing. Testing results produced by accredited testing laboratories on soil analyses and labelling claims, such as organic products, provide confidence of compliance with the buyer, business and consumers, health, safety and quality expectations. Management system certification such as the various Good Agricultural Practices (GAP), environment and social standards such as ISO 26000: Guidance on social responsibility, etc., focus on sustainable farming, prevention of child labour, reduction in global warming and other environment and social protection matters. Accredited testing and certification services provide the required confidence of compliance to the various standards and technical regulations.

14 Sharma, A., Kumar, V., Shahzad, B. et al. Worldwide pesticide usage and its impacts on ecosystem. SN Appl. Sci. 1, 1446 (2019). https://doi.org/10.1007/s42452-019-1485-1

Nature of essential and vegetable oils

HARVESTING

The timing of harvesting essential oil crops differs from species to species. Most need to be in the onset of flower to full flower and no harvesting at the start of seed formation. The plants need to be harvested on a dry, sunny day. Vegetable oil seeds need to be harvested mostly when the fruit and seed have reached full maturity. If the fruit and seed are harvested too early or under unhygienic circumstances, the oil quality and yield can be severely impacted. Applying the correct harvesting methods is paramount to the character, quality and yield of oil production. Processing must preferably be done as soon as possible after harvesting, although wilting the essential oil plants before distillation is common practice.

Contamination through foreign matter, weeds, or other undesired plants can have a detrimental effect on the quality and acceptability of the final oils.

Drying and storage of harvested material

Although experiments on drying harvested vegetable seed oil material have been tried, it is not prevalent in South Africa. However, it is noteworthy to give attention to this option as it may lead to a higher yield. It is possible that drying the seeds for cold pressing might result in a better quality oil as the presence of moisture may increase the growth of fungi and bacteria.

Care must be exercised to store the harvested material under dry conditions to prevent the growth of micro-organisms on the seeds. Therefore, careful control of harvesting, sorting, storage and processing is essential.

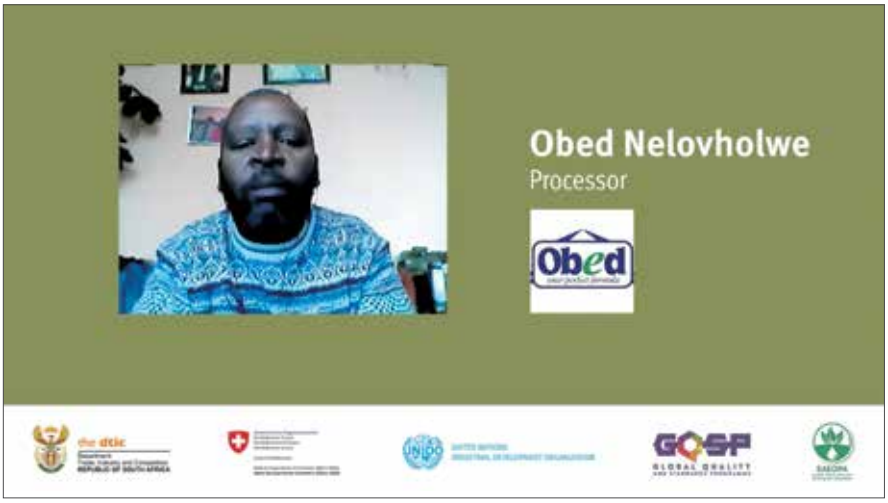
PROCESSING

Processing involves the drying, storage, extraction and packaging of essential and vegetable oils before making them available to the buyers/traders and consumers.

The essential oil distillation process and the vegetable seed oil cold pressing process result in oils in their purest form, free from additives. During the oil distillation and extraction processes, temperature, light, and pressure are essential to the quality and yield of the oil produced. For essential oils, species-specific temperature and the length of time of the distillation process are critical control points. On the other hand, heat control is essential when pressing seed oils as heat leads to the unwanted growth of fungi and bacteria and can lead to contamination.

To view a video about **processing**, click on the QR code below or go to:

https://youtu.be/tl0ckmnWSDY



QUALITY AND PACKAGING OF OILS

The correct bottling, packaging, labelling and storage of the essential and vegetable oils are essential to prove regulatory compliance and maintain the quality of the essential and vegetable oils.

Bottling and packaging

The bottling and packaging of oils require food-grade plastic containers, darkened glass bottles (small volumes and short distances), or stainless-steel containers. The headspace in the containers should be minimal, especially for the essential oils, due to the risk of oxidation.

Labelling

The buyer or regulators can impose labelling requirements. These requirements include the necessary testing and publication of the ingredients that appear on the product labels.These labelling requirements may differ depending on the buyer or regulator's requirement. As an example, should the oils make health claims, specific information should appear on the label. However, in general, labels should inform buyers and consumers about the composition, producer, storage method, origin of the oils, and preparation. Mandatory label content is usually applicable when health claims or safety concerns are present. For example, the USA's Food and Drug Administration (FDA) regulates all essential oils that can be classified as a drug, and thus requires FDA approval for safety and effectiveness before they can be placed on the market. Producers and exporters need to understand and comply with the buyers' and, where applicable, regulatory labelling requirements to avoid rejection of exported oils at international borders.

Storage of the processed oils

In most cases, oils are exported soon after packing. Therefore, calibration and certification play an essential role in ensuring the oil's quality after processing. However, storage conditions remain a critical part of maintaining the quality of the oils. Direct light and high temperatures can harm the quality of the oils.Therefore, temperature control of the storage is highly recommended.

Suppliers/Buyers

As in most economies, suppliers who put a product on the local, regional and international markets are responsible for the product's safety. Therefore, buyers will stipulate the requirements producers and processes should meet before they will consider buying the product. Furthermore, competitive advantage, product quality and consistency, custodianship of the environment, gender equality, no child labour, and compliance with other social demands are paramount to the brand integrity of the supplier/buyer. Therefore, compliance with product, system and social standards and certification has gradually become an additional requirement for market access in recent years.

Nature of essential and vegetable oils

FURTHER PROCESSING

Most exported essential and vegetable oils are exported in their purest form. Buyers and producers of products for specific applications containing essential or vegetable oils such as perfumes, aromatherapy oils, etc., may want to add their specific additives. Testing, product certification, and compliance to various regulatory requirements may be applicable when placing such adapted oils on the market, especially if they make any health claims or are used in goods to be consumed.

The essential and vegetable oils value chain is complex. It requires careful management and compliance through all its stages to ensure the required quality, oils yield and ultimately the acceptance of oils produced globally. Therefore, the QI support and compliance to the relevant conformity assessment requirements are indispensable in meeting market and customer expectations.

Moreover, the essential and vegetable oils industry faces various challenges that the support of the QI can address. The following section provides further insight into the mechanism for overcoming some of the essential and vegetable oils industry's challenges.

Overcoming challenges in essential and vegetable oils through QI support

Overcoming challenges in essential and vegetable oils through QI support

The essential and vegetable oils producers face various challenges, including access to new markets, obtaining a fair price for their product, meeting customer requirements, absorbing the cost of compliance, and human resource development.

These are the most pressing challenges highlighted by producers, processors, and buyers. Although these challenges can be challenging to overcome, the QI provides various opportunities to overcome some of them.The significant challenges can then be related to individual or several process steps in the value chain.

To view a video about **overcoming QI challenges**, click on the QR code below or go to:

https://youtu.be/Gpra5QUCExw

The table below maps typical process steps with corresponding QI elements as well as the associated benefits.

Essential oil production –> Producer conditions/procedures		
Process step	**Standardisation**	**Benefits**
Cultivation	Agricultural practice, conventional and/or organic farming programmes	Adaptation to local conditions, efficient yield, environmental protection, participation in global programmes
(Wild) harvesting	Selection criteria, sites, procedures	Reliable input material for processing
Sorting of harvest and, if applicable,selecting raw material suppliers	Selection criteria, procedures, applicable methods	Appropriate material for individual methods, identification of need for further conditioning or preparation
Pooling of raw material, e.g., from different sites, volumes, harvests, suppliers	Decision criteria for blending	Chain of custody
Conditioning	Methods, procedures, equipment, competence	Repeatable and reproducible processes, applicability for external conformity assessment
Processing	Methods, procedures, equipment, competence	Repeatable and reproducible processes, applicability for external conformity assessment
Monitoring of quality of the oil	Sampling, analysis and testing, maintenance and calibration of equipment, competence management of personnel	Assurance of repeatable and reproducible processes, continuous improvement of processes, assurance of conformity with customer specifications, basis for external conformity assessment
Packaging/bottling	Sizes, labelling, special conditions (sterile, UV protection, protection against) oxidation, type of quality of containers)	Repeatable and reproducible processes, maintenance of product characteristics, transparent product information
Storage	Storage conditions, identification of products	Maintenance of product characteristics, traceability, identification and bookkeeping/ documentation
Transportation/shipping	Transport conditions, container sizes, labelling, special conditions (cool chain, UV protection)	Maintenance of product characteristics, transparent product information, statements of conformity with customer requirements, chain of custody

Notes

About the project

This publication was sponsored by the project 'Strengthening the quality of essential and vegetable oils exports from South Africa,' within the framework of the UNIDO-SECO Global Quality and Standards Programme (GQSP).

The GQSP is a large-scale programme, which was designed to encourage systematic trade development along specific value chains by strengthening quality infrastructure institutions and service providers, enhancing the compliance capacity of private sector actors, particularly SMEs, and creating a culture of quality among all stakeholders. The GQSP is funded by the Swiss Confederation through the Swiss State Secretariat for Economic Affairs (SECO) and implemented by UNIDO.

The objective of the GQSP South Africa (GQSP-SA) project is to strengthen the quality and standards compliance capacity to facilitate market access for SMEs in the essential and vegetable oils value chain destined for the food, health and cosmetic markets.

One of the interventions under GQSP-SA is to promote a culture of quality by supporting SMEs and institutions to embed the need for quality at the individual, institutional and policy levels to build the reputation of the products and improve the productivity and quality along each stage of the value chain.

While the information is considered to be true and correct at the date of publication, changes in circumstances after the time of publication may impact on the accuracy of the information. The information may change without notice and UNIDO and SAEOPA are not in any way liable for the accuracy of any information printed and stored or in any way interpreted and used by a user.

UNIDO

Department of Trade, Investment and Innovation

Vienna International Centre

P.O. Box 300, 1400, Vienna, Austria

tii@unido.org

www.unido.org

SAEOPA

111 Coral Road, Lynnwood Glen

P.O. Box 462, Newlands, 0049

karen@saeopa.co.za / secretary@saeopa.co.za

www.saeopa.co.za

the dtic
Department:
Trade, Industry and Competition
REPUBLIC OF SOUTH AFRICA

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,
Education and Research EAER
State Secretariat for Economic Affairs SECO

UNIDO

GQSP
GLOBAL QUALITY AND STANDARDS PROGRAMME

SAEOPA
Southern African Essential Oil Producers' Association