STRATEGIC ROAD MAP

FOOD AND AGRICULTURE DIVISION COUNCIL

EXECUTIVE SUMMARY

The Food and Agriculture Division Council (FADC) under BIS formulates national standards in the field of food, feed and agriculture covering the entire food supply chain. The scope of FADC is as under:

Scope - Standardization in the field of food, feed and agriculture produce covering food and feed chain from primary production to consumption. This also includes soil management, organic farming and products, agricultural inputs, agricultural machinery, farm management, animal keeping and husbandry, fisheries and aquaculture, food processing, food additives, food and feed safety management, biotechnology for food and agriculture, beverages, drinking water and AYUSH.

28 Sectional Committees work under the supervision of FADC and a total of 2100 Indian Standards have been published on date under FADC. These Sectional committees comprise of technical experts comprising of relevant stakeholders who work through a process of consensus to formulate Indian Standards. The committees are of two types – vertical and horizontal. The vertical committees are product-oriented committees on food grains, fruits & vegetables, dairy, meat etc. Horizontal committees, on the other hand cut across food categories and deal with topicssuch as food safety systems, methods of test, food additives etc. Out of 2100 standards formulatedunder FADC, around 90 percent comprise product specification and methods of test, which enable objective assessment of products or processes. The scope of work of the 28 Sectional Committees under FADC and the corresponding ISO Technical Committees/Sub-committees with which these committees have a liaison are given in **Annex A** of this document.

The food supply chain comprises a series of activities starting from farming, pre-processing, processing, storage, transport, distribution to consumption. Integrity of the food across the whole supply chain is important to ensure that the food is safe for human consumption. The annual value of trade in agricultural products has grown almost three-fold over the past decade, largely in emerging economies and developing countries, reaching USD 1.7 trillion (*WTO International Trade Statistics 2015*). Over the past two decades, the reduction in tariffs through global and regional trade agreements has provided greater opportunities for the expansion of global food trade. However, in order to trade internationally and access global markets for high-value products, producers must be able to meet food standards. Governments apply food standards to ensure that food is safe for consumption, and meets quality and labelling requirements. The use of national food standards harmonized with international standards help reduce trade costs by making trade more transparent and efficient, allowing food to move more smoothly between markets.

The objective of this road map is to provide a strategy for strengthening the standardization process in the food and agriculture sector in the country in view of fast changing economic and social scenario. This road map conceptualizes one nation- one standard and lays stress on the elimination of multiplicity of standards. It also gives emphasis on the preparedness of various stake holders to increase their involvement. This road map will be reviewed from time to time to evaluate the progress as well to formulate new strategies to deal with new challenges. This will enable India to establish itself as a major player in the food and agriculture sector.

It covers an up-to-date overview of the Division Council's work that would form the basis for the Sectional Committees working under the Division Council to in turn develop their respective standardization plan and can be shared with all interested stakeholders.

1 INTRODUCTION

1.1 This Strategic Road Map of the Food and Agriculture Division Council has been developed as a document which would reflect its vision of national standardization policy in the field of food and provide a broad standardization roadmap with a five-year perspective. The aim is to align the standardization work with expressed business environment needs and trends and to allow sectional committees to prioritize among different projects, to identify the benefits expected from the availability of Indian Standards, and to ensure adequate resources for their development.

1.2 An Indian Standard embodies the essential principles of national openness and transparency, consensus and technical coherence. These are safeguarded through its development in the sectional committees, representative of all interested parties, supported by a public comment phase.

1.3 The Road Map covers the main objectives and current strategies taking into consideration the economic, social, regulatory or other environment in which the Division Council operates.

a) To provide a national framework for the development of unambiguous and reliable market/society driven standards in the areas of economic and social activity.
b) To review the standards for their efficacy and relevance to market / societal needs for their continuance or revision / amendment.
c) To emphasize safeguards in the areas affecting environment, health and safety for overall community benefit.
d) To identify and formulate emerging areas in which standards needs to be developed
e) Contribute to the United Nations Sustainable Development Goals (SDGs) through its standards
f) To harmonize the standards developed or under development with International Standards (Codex, ISO and other international standard setting bodies).

2 BUSINESS ENVIRONMENT OF THE DIVISION COUNCIL

The following political, economic, technical, regulatory, legal and social environment make up the business environment of the industry sector, products, materials, disciplines or practices related to the scope of FADC, and they may influence how the relevant standards development processes are conducted and the content of the resulting standards:

2.1 Market Size

Now India is a global agricultural powerhouse. It is the world's largest producer of milk, pulses, and spices, and has the world's largest cattle herd (buffaloes), as well as the largest area under wheat, rice and cotton cultivation. India is the second largest producer of rice, wheat, cotton, sugarcane, farmed fish, sheep & goat meat, fruit, vegetables and tea. The country has some 195 m ha under cultivation of which some 63 percent are rainfed (roughly 125m ha) while 37 percent are irrigated (70m ha). (*source : Feature Story "India: Issues and Priorities for Agriculture", The World Bank*).

Agriculture is the primary source of livelihood for about 58% of India's population. Gross Value Added by agriculture, forestry, and fishing was Rs. 19.48 lakh crore (US$ 276.37 billion) in FY2020. Share of agriculture and allied sectors in gross value added (GVA) of India at current prices stood at 17.8 % in FY2020.

The Economic Survey of India 2020-21 report stated that in FY2020, the total food grain production in the country was recorded at 296.65 million tonnes—up by 11.44 million tonnes compared with 285.21 million tonnes in FY2019. Production of horticulture crops in India was estimated at a record 326.6 million metric tonnes (MMT) in FY2020 as per third advance estimates, an increase of 5.81 million metric tonnes over FY2020. India has the largest livestock population of around 535.78 million, which translates to around 31% of the world population. Milk production in the country is expected to increase to 208 MT in FY2021 from 198 MT in FY2020, registering a growth of 10% y-o-y. Area under horticulture is projected to rise by 2.7% in FY2021. India also produced 25% of the world's pulses, as of last decade, until 2019.

The Indian food industry is poised for huge growth, increasing its contribution to world food trade every year due to its immense potential for value addition, particularly within the food processing industry. At present Indian food and grocery market is the world's sixth largest, with retail contributing 70% of the sales. The Indian food processing industry accounts for 32% of the country's total food market, one of the largest industries in India and is ranked fifth in terms of production, consumption, export and expected growth.

The organic food segment in India is expected to grow at a CAGR of 10% during 2015-25 and is estimated to reach Rs. 75,000 crore (US$ 10.73 billion) by 2025 from Rs. 2,700 crore (US$ 386.32 million) in 2015.

With the current turnover of US$ 18.1 billion, the market size of Indian AYUSH industry as a whole has grown by 17 per cent during 2014-2020. Plant derivatives experienced 21 per cent growth in the period 2014-2020 followed by nutraceuticals (20.5 per cent), pharmaceuticals (15.8 per cent), plant extracts 14.7 per cent and herbal plants (14.3 per cent). The AYUSH industry is projected to reach US$ 20.6 billion in 2021 and US$ 23.3 billion in 2022.

2.2 Exports

India is among the 15 leading exporters of agricultural products in the world. The total agricultural and allied products including dairying and food processing exports stood at US$ 41.25 billion in FY21. Agricultural export from India reached US$ 35.09 billion in FY2020.

Between April 2020 and February 2021, the total value of processed food products exports was Rs. 43,798 crore (US$ 6.02 billion). India exported key processed food products such as pulses, processed vegetables, processed fruits and juices, groundnuts, guar gum, cereal preparations, milled products, alcoholic beverages and oil meals.

2.3 Challenges

However, India still has many growing concerns. As the Indian economy has diversified and grown, agriculture's contribution to GDP has steadily declined from 1951 to 2011. While achieving food sufficiency in production, India still accounts for a quarter of the world’s hungry people and home to over 190 million undernourished people. Incidence of poverty is now pegged at nearly 30 percent. As per the Global Nutrition Report (2016), India ranks 114th out of 132 countries on under-5 stunting and 120th out of 130 countries on under-5 wasting and 170th out of 185 countries on prevalence of anaemia. Anaemia continues to affect 50 percent of women including pregnant women and 60 percent of children in the country. Now we are aiming to to meet these challenges through food supplements and fortification.

While agriculture in India has achieved grain self-sufficiency but the production is, resource intensive, cereal centric and regionally biased. The resource intensive ways of Indian agriculture has raised serious sustainability issues too. Desertification and land degradation/soil quality also pose major threats to agriculture production in the country.

2.4 Recent or expected technological changes and major innovations related to the agri-food sector

An important trend is the rapidly changing global market. Food products have always traveled globally – but the amount and the scope of their global trade have increased substantially over the years. There is an extensive movement among countries as businesses take steps to become more innovative and competitive. Products formulated and manufactured in one country may act as raw material in another country, further processed in a third and marketed in the originating country. This has highlighted the question of food and feed safety and criteria are being developed, for example, the absence of a microorganism or the maximum tolerated number of microorganisms per quantity of product, in order to ensure the exchange of food products without endangering the health of the consumers. In order to check these criteria, test methods need to be developed.

Standards act as the common language for communicating the buyer's requirement to his suppliers. To ensure a food product meets the desired requirements, the food business in turn shall ensure the whole of the food supply chain, from the farmer through to consumer, knows what is required.Each part of the supply chain may in turn be specifically responsible for certain aspects of the desired standards.

Over the last decades the use of fertilizers, pesticides, herbicides, veterinary drugs and other chemicals has increased significantly in the food and feed industry in particular to meet the increasing demand for food. The use of additives and processing aids and at the same time the occurrence of several illnesses, e.g. allergy or hypersensitivity to certain food constituents (for example lactose – in dairy products; gluten – in wheat, etc.), made people become more and more worried about their health and the environment.

Therefore, new technologies are being developed to ensure sustainable development in agriculture, feed and food sectors (for example development of more effective agricultural and food technologies which are also less detrimental to the environment like organic farming, vertical farming, hydroponic and aquaculture), and also, for example, to answer a request from the consumers for the maintenance of the nutritive value and taste of the products.

A major recent innovation in the food and feed sectors is the increased use of transgenic materials that implies the need to develop new methodologies, both qualitative and quantitative, for the detection and identification of genetically modified (GM) materials due to the demands of the consumers. It is foreseeable that the development of biotechnology-derived crops will be followed by the development of similar approaches in food for animals.

Possible increases in quantities of food and feed by the use of chemicals are getting exhausted, some undesirable effects of their overstrained use have already appeared and therefore people are becoming more and more concerned with chemicals. Demand for the development of Indian Standards specifying reliable, sensitive and selective methods for the detection and determination of residues of the above-mentioned materials is increasing. Indian Standards are used by both public and private laboratories, food and feed producers and official government laboratories. This means, for example, that thousands of analyses per day are conducted in accordance with Indian Standards.
From a general point of view, it should be noted that the Indian population is increasing and this trend generates bigger needs in terms of food and feed. Together with the increase in demand, is a modification of the expectations due to the ageing of the population and the increased concern with obesity in the country. This has resulted in:

- the development of a request for bio-products and special food products satisfying different dietary purposes,
- a tendency to make agriculture more environmentally friendly and,
- a need for food safety.

In a nutshell, it can be said that following social, safety, health, environmental or cultural issues related to the industry sector have an impact on the work of FADC and thus need to be addressed:

- increase of the world population,
- increased needs for food and feed products and change in the demand due to the ageing

of the population (tailored and dedicated nutrition, fulfilment of special nutritional demands, increasing trend for vegan products),
• more results oriented requirements and less means oriented requirements,
• request for more information on the products (labelling, communication, certification,
• waste reduction, and recycling, towards preservation of the environment
• increasing speed of the launching of new food products.

2.5 Categories of relevant stakeholders

The span of stakeholders concerned with the work of FADC, either directly or indirectly, is very wide and include :

- government including the regulator
- Academic and research institutes under Indian Council of Agriculture Research, CSIR and other premier national institutes etc
- farmers (private, state-owned and co-operatives), farmer producer organizations
- food manufacturers,
- animal feed producers,
- testing laboratories,
- retailers,
- exporters/importers,
- consumers and consumer organizations.

In the field of activity of FADC, the Food Safety and Standards Authority of India (FSSAI) as the food regulator is an important stakeholder and coordination of work between the two bodies is paramount. Through the Food Safety and Standards Act, 2006, FSSAI is mandated to make regulations in the area of food for protecting the health of consumers and ensuring fair trade practices. FSSAI sets provisions with respect to the safety and nutritional quality of food, including microbiological standards, limits for food additives, pesticide residues, contaminants, etc. These have to be followed by all operators in the food and feed chain in order to provide the consumer with an acceptable product. In the interest of public safety and health, the FSS Regulations have made compliance to Indian Standards mandatory for products like packaged waters, infant foods, dairy products and animal feeds. Directorate of Marketing and Inspection under the Ministry of Agriculture and Farmers' Welfare sets standards for grading and quality control of agriculture produce, popularly known as AGMARK standards. A number of other Government Departments and Ministries including Ministry of Agriculture and Farmers' Welfare, Ministry of Fisheries, Animal Husbandry and Dairying, Ministry of Food Processing Industries are responsible for running various schemes wherein subsidy is given to farmers or support the industry for implementation of Indian Standards. It is thus important that the Ministries as well as regulating authorities should work in sync while drafting the policies and regulations so that the same can be implemented smoothly enabling the growth of Indian Industry. BIS ensures this through adequate representation of the concerned Ministries and the regulator in the relevant technical committees of FADC.

There is a need for a roadmap/strategy for the sector for the coming years that would continue and hasten the process of standardization in the food-agri sector, by prioritizing standards from the point of view of health, hygiene, environment and safety.

3 BENEFITS EXPECTED FROM THE WORK OF DIVISION COUNCIL

3.1 Sectional Committees under Food and Agriculture Division Council are structured to develop the specifications and test methods for the variety of food and agri products which provide the means to enable objective assessment of process and product. In recognition of this responsibility, the work programme includes standards that pertain to practically the whole supply chain from farm to fork. In addition, the diverse range of FADC standards also include terminology standards as well as standards on hygiene practices and management systems. FADC contributes to the building of confidence among the different stakeholders operating in the agriculture, feed and food sectors. For example:

- Product specifications harmonized with international standards ensure that the minimum requirements are the same all over the world and facilitate fair practices in international trade of commodities,
- Methods of test and analysis ensure that the test results provided are reliable and comparable
- Good hygiene practices, good manufacturing practices, HACCP and management systems standards ensure that the foods are safe at the time of consumption
- Standardized terminology ensures that different stakeholders communicate without any risk of misunderstanding
- Furthermore, with the easy and free public availability of all indigenous and up-to-date standards, it reduces the cost of the development of products thus contributing to cost saving.

During the past five years, several new standards have been developed as well as updation of existing standards totalling more than 350 has been carried out under the aegis of FADC. Different technical committees constituted under FADC include domain experts who have a rich experience of research and industry. FAD has been continuously trying to improvise upon the existing standards, bringing the required revisions and also creating new standards wherever required. While doing so, it is taking into account the new developments with regards to technology, how new technology can be used so as to facilitate the industry and at the same time satisfy the requirements of consumers. For this, the technical committees under FADC while developing any Indian Standard try to align the standard with international standards, namely ISO and Codex, to the extent possible keeping in view the specific Indian conditions particularly with respect to technology, geographical and climatic considerations.

3.3 The UN Sustainable Development Goals (SDGs) calls on the contribution of society, including national and local governments, business, industry and individuals to achieve the targets set through a process of consensus, innovation and collaboration. The standards developed under FADC are built through a process of consensus and collaboration of relevant stakeholders and provide a solid foundation on which innovation can thrive and are essential tools to help government, industry and consumers to contribute in the achievement of the SDGs. The agriculture and food standards developed under FADC contribute to achievement of a number of SDGs but are directly responsible for achieving SDG 1 (No poverty), SDG 2 (Zero hunger), SDG 3 (Good health and wellbeing), SDG 6 (Clean water and sanitation), SDG 11 (Sustainable cities and communities), SDG 12 (Responsible consumption and production), SDG 14 (Life below water) and SDG 15 (Life on land).

4 STAKEHOLDER REPRESENTATION

4.1 The Food and Agriculture Division Council (FADC) and all its Sectional Committees as adequately represented by all important stakeholders in a balanced way. They include manufacturers, consumers, organized buyers, scientific and technical organizations, academic and research institutions, government and regulatory bodies, NGOs etc. In some cases, eminent scientific persons with established credentials have also been given representation in personal capacities. The composition of each sectional committee is reviewed every three years by the Division Council based on their participation in the work of the committee. The recommendations of the sectional committees on co-options and withdrawals are also considered and approved by the Division Council.

4.2 Each sectional committee under FADC functions as the national mirror committee of one or more of the corresponding ISO technical committees and works in close liaison with them. The list of such committees are given in Annex A.

4.3 In order to encourage participation in the committee meetings, it is ensured that meetings are organized at a place that would ensure maximum participation. The meetings are also organized through virtual mode for the convenience of members so as to avoid travel by the members.
FADC would strive to:

a) Grow participation of stakeholders in the standards development activities
b) Increase use of virtual meetings to enable increased participation from all members
c) Encourage consumers and MSME sector to participate in FADC's work to a greater degree
d) Attract more and more domain experts to participate in the work program

e) Strengthening the interface platform with testing laboratories for validation of test methods to be adopted
f) To organize workshops and training programmes to increase awareness.
g) To encourage wider participation of industries in the committees by rotation of membership of industry representatives.

5 OBJECTIVES OF THE STRATEGIES

5.1 Defined Objectives of Food and Agriculture Division Council (FADC)

a) To elaborate standards within the scope of committee to ensure quality and safety of food products, fair practices in trade and sustainable development.
b) To develop Indian Standards covering all aspects of standards including product specifications, test methods, hygiene codes, terminologies and management system standards for the industries as well as for the consumers and concerned parties.
c) To adjust the existing programme of work to be relevant to the stated needs of the industries including the MSME sector as well as the consumers and concerned parties and elaborate a coherent library of standards.
d) To make standards more relevant to the needs of the industries as well as of the consumers and concerned parties by ensuring timely delivery.
e) To continue working in close liaison with ISO, the regulatory body and other liaison committees to avoid repetition and conflict.
f) Strategically position India's participation at the ISO level so as to influence international standards to the best of our interests to gain competitive advantage.

5.2 Identified Strategies to Achieve the Defined Objectives of FADC

FADC will employ the following strategies to achieve the preceding objectives:

a) Continually monitor the structure of the Division Council to accurately reflect the changing work programme and the needs of the industries as well as the consumers and the concerned parties.
b) Follow-up of the activities of the Sectional Committees to ensure coordination and in order to avoid, in particular overlaps and parallel projects
c) Give priority to the timely development and circulation of documents and adherence to target dates.
d) Limit physical meetings to when necessary and encourage more and more virtual meetings to enable timely decisions and faster progress in standards development.
e) Increase participation of all stakeholders particularly testing laboratories, MSME and academia in Sectional Committees.
f) Continue close liaison with the corresponding ISO committees as well as the regulator and other Ministries/SDOs.

g) Identify committees where regular contribution and participation in ISO and IEC committees is required and ensure participation of right people/domain experts. Strive to take leadership positions at the working group level

h) Promote setting up of standardization cells within industry associations and recognizing their efforts towards standardization

i) Strengthening liaison in standard setting with testing laboratories including BIS laboratories and other NABL accredited food laboratories

6 IMPLEMENTATION OF THE STRATEGIC ROAD MAP

6.1 The strategic roadmap of FADC will be implemented in the next five years and the progress to be monitored periodically. Focused approach towards development of action plans, key milestones, defined tasks, and timelines will be adopted. The implementation of this Road Map should address the following points to achieve the targeted benefits.

6.2 Implementation of standards is the spirit behind their formulation. FADC envisages to continue organizing webinars, seminars, orientation programmes and virtual meets to effectively engage with the stakeholders. Participation in various forums and conclaves organized by like-minded organizations both at National and International level is to be encouraged for dissemination of Indian Standards as well as foster exchange of knowledge with other Standards Developing Organizations (SDOs). Special emphasis is envisaged on organization of such programmes in educational institutions with a view to sensitize the students regarding the science and sanctity of Standards.

6.3 Harmonization of Standards: It shall be the endeavour of FADC to promote harmonization with ISO Standards, wherever feasible and implementable in the National Scenario. The mapping of Indigenous Standard with corresponding ISO and Codex Standards will be undertaken for harmonization, wherever International Standard is existing or feasible.

6.4 Participation in International Standardization: Expert members associated with FAD sectional committees have been actively contributing in the formulation of standards in ISO Technical Committees. With a view to engage in formulation of international standards in the prioritized areas especially the emerging technologies, FADC envisages to encourage more rigorous participation of its officers and experts in the ISO standards activity especially in areas of national interest and international relevance as well.

6.5 New Subjects:

It is intended to identify the broad areas of priority in which standardization work need to take place, keeping into consideration the technologies, innovations, Government policies, regulatory requirements, environmental and social aspects. Importance of keeping pace with the upcoming technological innovations in the field of food and agriculture and related domains is well understood and FADC looks forward to working in collaboration with experts and stakeholders in the identified areas The priority areas where FADC intends to formulate standards is listed in **Annex B**. In addition to the identified priority areas, FADC is committed towards formulating

standards commensurate to the evolving needs of Indian consumers and food and agri sector.

6.6 Review of Standards: The existing number of over 2100 standards under the FADC and its Sectional Committees needs regular review/ confirmation/ amendment/ revision, to ensure their relevance and to meet pace with evolving technology. A time bound action plan will be devised for each sectional committee for in depth review of each standard which are more than 5 years old.

The Road Map would form the basis for the Sectional Committees under the FADC to frame their individual Standardization Plans.

7 REVIEW OF PLAN

The Strategic Road Map of the FADC shall be approved by the Council. The plan would be reviewed from time to time to evaluate the progress as well to formulate new strategies to deal with new challenges. It shall also be reviewed in every meeting of the FADC which is normally held once in a year. Any changes proposed shall be discussed in the meeting and approval of the Council shall be obtained before incorporation. All stakeholders shall also recommend appropriate actions required for further progress and to analyze whether new situations call for any strategic revision for treading on new opportunities.

Annex A
Sectional Committees under FADC

FAD Sectional Committee	Scope	Liaison ISO Committees
Pesticides Sectional Committee, FAD 1	a) Pesticides, pesticidal formulations, and other items relating to pest control including safety b) Biopesticides c) Plant growth regulators.	ISO/TC 81 'Common names for pesticides and other agrochemicals Technical Committee' – P member
Sugar Industry Sectional Committee, FAD 2	Sugars and by products of sugar industry; their laboratories and sugar laboratories and sugar godowns; sugar machinery, equipment and its components, Molasses tanks and other such items. Layout plans for sugar factories including a) General layout for sugar factories, b) Quality Control Area & c) Sugar handling and Packing area, test methods of sugar products, sweeteners produced by the sugar industries and Speciality sugars such as golden brown sugar, sulphur less sugar etc.	-
Apiary Industry Sectional Committee, FAD 3	Apiary products and equipment, code for conservation and maintenance of honey and honey bees.	ISO/TC 34/SC 19 'Bee Products Sub committee' – P member
Tobacco And Tobacco Products Sectional Committee, FAD 4	Standardization in the field of a) Tobacco (excluding specifications), tobacco products; codes for seaworthy packing of tobacco and construction of tobacco barns and farming practices b) Physical and chemical methods of test for tobacco and tobacco products.	ISO/TC/126 'Tobacco and Tobacco Products Technical Committee' – P member ISO/TC 126/SC 1 'Physical and dimensional tests Sub committee' – P member ISO/TC 126/SC 2 – 'Leaf tobacco Sub committee' – P member

Animal Husbandry, Feeds and Equipments Sectional Committee, FAD 5	a) Animal husbandry (management practices, welfare and transport) for livestock, poultry, pet and laboratory animals b) Equipment for livestock, poultry, pet and laboratory animals c) Code for breeding, housing and transport of the laboratory and other animals d) Animal feedstuffs, mineral mixtures, compounded feeds and feed supplements. e) Physical, chemical and microbiological methods of analysis.	ISO/TC 34/SC 10 'Animal Feeding Stuffs Sub Committee' – P member ISO/TC 191(*Standby*) 'Animal (mammal) traps Technical Committee' – O member
Stimulant Foods Sectional Committee, FAD 6	Standardization in the field of: a) Tea, coffee, cocoa and their products b) Physical, chemical and microbiological methods of test pertaining to this committee c) General methodology for sensory evaluation including nutritional aspects.	ISO/TC 34/SC 8 – 'Tea Sub committee' – P member ISO/TC 34/SC 15 – 'Coffee Sub committee'- P member ISO/TC 34/SC 18 – 'Cocoa Sub committee ' – P member
Soil Quality and Fertilizers Sectional Committee, FAD 7	a) Soil Sampling, Testing and Analysis b) Reclamation of acid and salt affected Soil c) Improvement of soil qualities and nutrient status, representative samples for fertilizer recommendations and mapping purposes d) Soil amendments including compost e) Fertilizers (including primary, secondary and micronutrients), plant hormones and related products f) Agriculturally useful microorganisms and bio-inoculant technologies g) Handling storage and packaging of fertilizers h) Nano Fertilizers, Bio-Stimulant, Amino Acid, Humic Acid	ISO/TC 190 'Soil Quality Technical Committee'– P member ISO/TC 190/SC 3 'Chemical methods and soil characteristics Sub committee' – P member ISO/TC 190/SC 4 'Biological methods Sub committee'– P member ISO/TC 134 'Fertilizers and soil conditioners Technical Committee'– P member
Food Additives Sectional Committee, FAD 8	a) Food additives (colours- Synthetic & natural, preservatives/mould inhibitors, acidity regulators, Improvers, flour treatment agent, artificial sweeteners, nutrients, yeast, jellifying agents, antioxidants, synergists, emulsifying and stabilizing agents, flavours, flavouring agents, leavening agents, surface/coating agents, encapsulation agents & dough conditioners, etc) permitted under the Food Safety & Standards Regulations	-

	b) Their methods of test in food products; and food additives produced through the application of biotechnology c) Physical and chemical methods of test pertaining to this committee including microbiological aspects d) General methodology for sensory evaluation including nutritional aspects.	
Spices and Condiments Sectional Committee, FAD 9	Standardization in the field of a) Spices, Culinary Herbs and Condiments b) General methodology for quality evaluation including nutritional aspects.	ISO/TC 34/SC 7 'Spices, Culinary herbs & Condiments Sub committee' – P member
Fruits, Vegetables, and allied Products Sectional Committee, FAD 10	Formulation of Indian Standards for processed fruits and vegetables; dried fruits and nuts, coconut, bamboo, mushroom, edible fungus, processed aloevera and their products. Coconut milk powder, coconut vinegar, packed tender coconut water and packed matured coconut water. Physical and chemical methods of test pertaining to this committee including microbiological aspects. General methodology for sensory evaluation pertaining to this committee including nutritional aspects. Requirements for packaging, storage and transportation of products pertaining to this committee.	ISO/TC 34/SC 3 'Fruits and vegetables and their derived products Sub committee' – P member
Agricultural Machinery and Equipment Sectional Committee, FAD 11	Machinery and Equipment used in agriculture, gardening and forestry operations including agricultural tractors, power tillers and their attachments.	ISO/TC 23 'Tractors and machinery for agriculture and forestry Technical Committee' – P member ISO/TC 23/SC 2 'Common Tests Sub committee' – O member ISO TC 23/SC 3 'Safety and comfort Sub committee' – P member ISO/TC 23/SC 4 'Tractors Sub committee' – P member

		ISO/TC 23/SC 6 'Equipment for crop protection Sub committee'- P member ISO/TC 23/SC 7 'Equipment for harvesting and conservation Sub committee' – P member ISO/TC 23/SC 13 'Powered lawn and garden equipment Sub committee' – P member ISO/TC 23/SC 14 'Operator controls, operator symbols and other displays, operator manuals Sub committee' – O member ISO/TC 23/SC 15 'Machinery for forestry Sub committee' – O member ISO/TC 23/SC 19 'Agricultural electronics Sub committee' – P member
Fish, Fisheries, and Aquaculture Sectional Committee, FAD 12	Standardization in the field of a) Fresh and processed fish, fisheries and aquaculture products including fish feed and feed ingredients not covered by FAD 5 b) Fisheries and Aquaculture, including, but not limited to, terminology, technical specifications for equipment and for their operation, characterization of aquaculture sites and maintenance of appropriate physical, chemical, and biological conditions, environmental monitoring, data reporting, traceability and waste disposal c) Physical, chemical, microbiological and organoleptic methods of test pertaining to this committee.	ISO/TC 234 'Fisheries and aquaculture Technical Committee' – P member
Oils and Oilseeds Sectional Committee, FAD 13	Standardization in the field of: a) Terminology, methods of sampling and test, codes of practice for handling, storage and packaging b) Specifications for oleaginous seeds and fruits, oils and fats, blended oils and fortified oils	ISO/TC 34/SC 2 'Oleaginous Seeds and Fruits Sub committee' – P member

	(including animal fats and marine oils but excluding oils covered by other Sectional Committees), fatty acids, vegetable tallow and bleaching earths and equipment used for handling, processing, packaging, storage & transportation.	ISO/TC 34/SC 11 'Animal and Vegetable Fats & Oils Sub committee' – P member
Drinking Water and Carbonated Beverages Sectional Committee, FAD 14	Standardization in the field of: a) Drinking water, packaged or supplied in unpackaged form through organized water supply b) Water used in any food processing industry for the manufacture, processing, preservation, or marketing of products or substances intended for human consumption c) Carbonated beverages d) Physical, chemical and microbiological methods of test pertaining to this Committee including sensory evaluation.	-
Food Hygiene, Safety Management and other Systems Sectional Committee, FAD 15	Standardization in the field of a) Food hygiene including codes of hygienic practices applicable for food products in general (except subject/ product specific codes covered under other Sectional Committees of FAD) b) Food safety management systems c) Food Labelling d) Microbiological methods of tests and specifications for ingredients used in media for microbiological work.	ISO/TC 34/SC 9 'Microbiology Sub committee' – P member ISO/TC 34/SC 17 'Management systems for food safety Sub committee' – P member
Foodgrains, Allied Products, and Other Agricultural Products Sectional Committee, FAD 16	Standardization in the field of: a) Foodgrains, allied products (including edible oilseed flour and excluding ready-to-eat foods) and agricultural produce except those covered under the scope of FAD 4, FAD 6, FAD 9, FAD 10 and FAD 13 b) Starches (including derivatives and by-products) c) Storage of Foodgrains d) Physical, chemical and microbiological methods of test and general methodology for sensory evaluation including nutritional aspects pertaining to this committee	ISO/TC 34/SC 4 'Cereals and pulses Sub committee' – P member ISO/TC 93 'Starch (including derivatives and by-products) Technical Committee' – O member
Farm Irrigation and Drainage System Sectional Committee, FAD 17	a) Methods of evaluation and adoption of quality of irrigation water, efficiency of irrigation, water requirement of crops and guidelines for various practices associated with soil water management as well as various irrigation equipment and	ISO/TC 23/SC 18 'Irrigation and drainage equipment and systems Sub committee' – P member

	systems (excluding centrifugal and hand pumps), soil conservation practices b) All types of farm drainage practices, design, material, drainage and sub-surface drainage systems and equipment, all types of on farm water management practices including construction and improvement of water distribution systems, land levelling & all equipment &machinery dealing with command area development.	
Slaughter House and Meat Industry Sectional Committee, FAD 18	a) Equipment, materials used in slaughter house and slaughter house layouts, flow sheet categorization b) Meat, meat products, poultry, poultry products and other by-products from abattoir; codes for ante-mortem and post-mortem examination; meat stalls c) Physical, chemical and microbiological methods of test pertaining to this committee.	ISO/TC34/SC6 'Meat, poultry, fish, eggs and their products Technical Committee' – P member.
Dairy Products and Equipments Sectional Committee, FAD 19	Standardization in the field of dairy and dairy products covering the dairy chain from primary production to consumption, in particular: a) Product specifications including milk based infant foods b) Specifications for dairy equipment c) Methods of test and analysis including sampling d) Codes of hygienic practices	ISO/TC 34/SC 5 'Milk and Milk Products Sub committee' – P member
Agriculture and Food Processing Equipments Sectional Committee, FAD 20	a) Equipment for primary processing operations like cleaning, grading, shelling, washing, polishing, drying and testing for food grains, seeds & horticulture produce b) Equipment and system for secondary processing like milling, expelling, extraction, crushing of food grains, oil seed & horticulture produce c) By product handling and processing equipments d) Equipment for value addition to agricultural product and by products including packaging e) Equipment and materials for protected cultivation f) Crop residue utilization.	ISO/TC 376 'Machinery intended for use with foodstuffs Technical Committee' – P member

Agricultural Systems and Management Sectional Committee, FAD 22	a) Systems approach to Agricultural Management including Good Agricultural Practices (GAP) b) Hi-Tech agricultural practices viz. plasticulture, protected agriculture and precision farming c) Agricultural production systems including crop, horticulture, livestock, medicinal and aromatic plants, aquaculture and organic production systems. d) Post harvest management system for loss free packaging, storage and transport, and value addition related aspects E) Agricultural marketing viz. contract, corporate marketing and direct marketing relating aspects F) Other miscellaneous activities related to agricultural resource management	-
Biotechnology for Food and Agriculture Sectional Committee, FAD 23	To formulate standards for: i) food and agricultural products derived from modern biotechnology, or traits introduced by modern biotechnology into food and other articles of human and animal consumption, on the basis of scientific evidence, risk and analysis and having regard, where appropriate, to other legitimate factors relevant to the health of consumers, biosecurity, and the promotion of fair practices in the food and agricultural products trade; and ii) terminology, codes of practice/guidelines, methods of sampling and test, etc., thereof.	ISO/TC 276 'Biotechnology Technical Committee'- P member ISO/TC 34/SC 16 'Horizontal Methods of Molecular Biomarker Analysis Sub committee' – P member
Ready to eat food and Specialized Products Sectional Committee, FAD 24	Special purpose foods# and specialized products, processed nutritious food, snack foods, protein isolates, bakery, confectionery products and all types of ready-to-eat foods $ (excluding ready to eat fish products and ready-to-eat meat products), their equipments and related items. #Special purpose foods are foods that have been designed to perform a specific function, such as to replace a meal which necessitates a content of essential nutrients which cannot be achieved except by addition of one or more of these nutrients. These foods include but are not limited to foods for special dietary use. $ Ready-to-eat-food is food that is ready for consumption and includes food that may be re-heated, portioned or garnished or food that undergoes similar finishing prior to being served.	-

Ayush Sectional Committee, FAD 26	Standardization in the field of AYUSH in terms of terminology and quality of standards of ingredients, plant extracts, accessories	ISO/TC 249 'Traditional Chinese Medicine Technical Committee'- O member
Pesticide Residue Analysis Sectional Committee, FAD 27	Methods of test for estimating the residues of different pesticides in various agricultural and food products.	-
Test Methods for Food Products Sectional Committee, FAD 28	To formulate standards on; Horizontal methods of test for food products including physical, chemical and sensory evaluation excluding the microbiological methods of test covered under the scope of FAD 15 and methods of test for estimation of pesticide residues covered under the scope of FAD 27.	ISO/TC 34/SC 12 'Sensory Analysis Sub Committee' – P member ISO/TC 34 'Food Products – Principle Technical Committee' – P member
Alcoholic Drinks Sectional Committee, FAD 29	Standardization in the field of: a) Alcoholic drinks and its fermenting agents b) Physical, chemical and microbiological methods of test pertaining to this Committee c) General methodology for sensory evaluation of alcoholic drinks.	-
Water Purification Systems Sectional Committee, FAD 30	Standardization in the field of: a) Water Purification Systems for drinking purposes in domestic (point-of-use) as well as industrial sector b) Methods of test pertaining to this committee.	-

Annex B

POTENTIAL AREAS OR NEW AREAS

FADC will work on following priority areas/technologies where efforts would be made to develop standards as per Market needs and business requirements.

1.	Sustainable agriculture through standardization of bio pesticides and Biofertilizers, Nano fertilizers, organic production systems
2.	Smart agriculture
3.	Fortified/ Enriched foods
4.	Storage and transportation codes of agriculture produce
5.	Advanced instrumental test methods for testing of contaminants like heavy metals, pesticide residues, aflatoxins etc in various food matrices.
6.	Advanced instrumental test methods for testing of micronutrients in various food matrices.
7.	Utilization of various industrial byproducts for use in agriculture
8.	Post-harvest agriculture equipment
9.	Hygienic design of food processing machinery
10.	Feed for various aquatic species
11.	Good aquaculture practices for seaweed farming
12.	Fermented fish
13.	Requirements for used cooking oil for biodiesel purpose
14.	Enhanced shelf life milk
15.	Food serving utensils made from agri by-products
16.	Point of Use (POU) water purifier that reduces Arsenic in water to safe level for potable application
17.	Standardization in the AYUSH sector
18.	Nutraceuticals and Food Supplements
19.	Vegan Foods