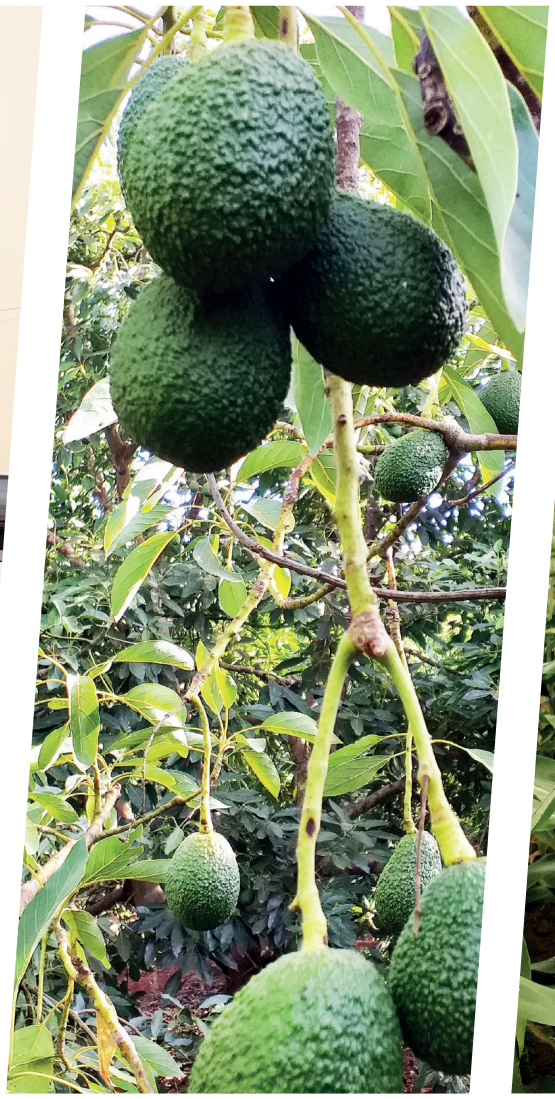
KENYA PLANT HEALTH INSPECTORATE SERVICE

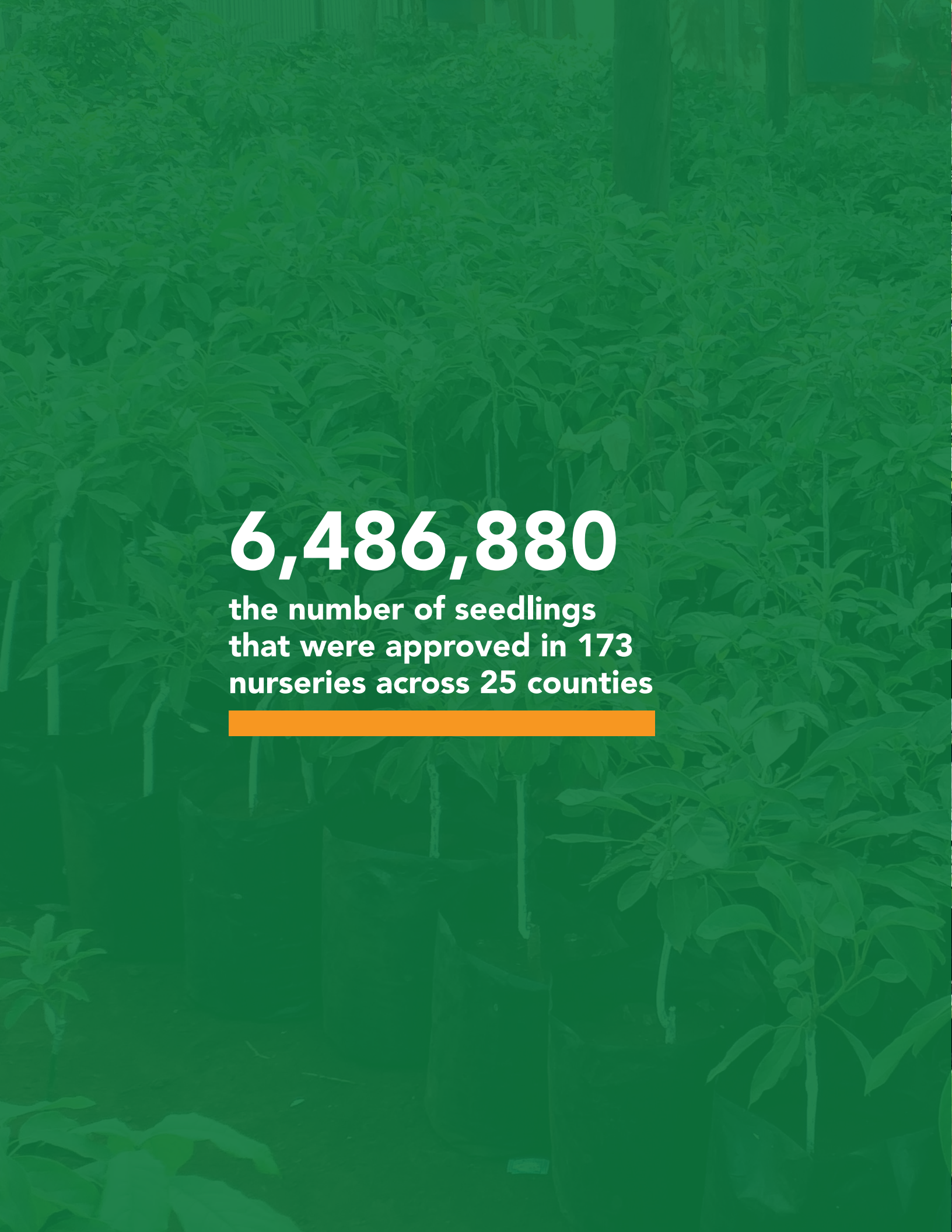
KEPHIS

Quality Assurance of Agricultural Inputs & Produce



Annual Report & Financial Statements for the Year **Ended 30th June 2019**

www.kephis.org



6,486,880

the number of seedlings that were approved in 173 nurseries across 25 counties

CORPORATE INFORMATION

Our Headquarters: Oloolua Ridge, off Ngong Road, Karen, Nairobi

Our Auditors: Kenya National Audit Office, P.O. Box 30084 - 00100 Nairobi

Our Vision:

Healthy plants, safe trade and sustainable agro-environment for a prosperous Kenya.

Our Mission:

To provide a science based regulatory service by assuring plant health, quality of agricultural inputs and produce for food security, globally competitive agriculture and sustainable development.

Our Core Values:

In providing services, KEPHIS is committed to good governance guided by:

ISO POLICY STATEMENT

KEPHIS is a regulatory body mandated to assure plant health, quality of agricultural inputs and produce for food security, globally competitive agriculture and sustainable development.

The Board of Directors, management and staff are committed to compliance to applicable statutory and regulatory requirements. KEPHIS also commits to satisfy customer and organizational requirements in service delivery.

In pursuit of the above commitment, KEPHIS shall:

- Endeavour to determine, understand and address the dynamic needs and requirements of its interested parties in line with its mandate
- Provide and manage resources needed to satisfy applicable requirements and continual improvement
- Provide a framework for setting organizational quality objectives
- Determine, plan and implement actions to address risks and opportunities to achieve intended and improved results

The quality policy shall be communicated, understood and applied within the organization. This policy shall be availed to all interested parties as deemed necessary.

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LIST OF ABBREVIATIONS

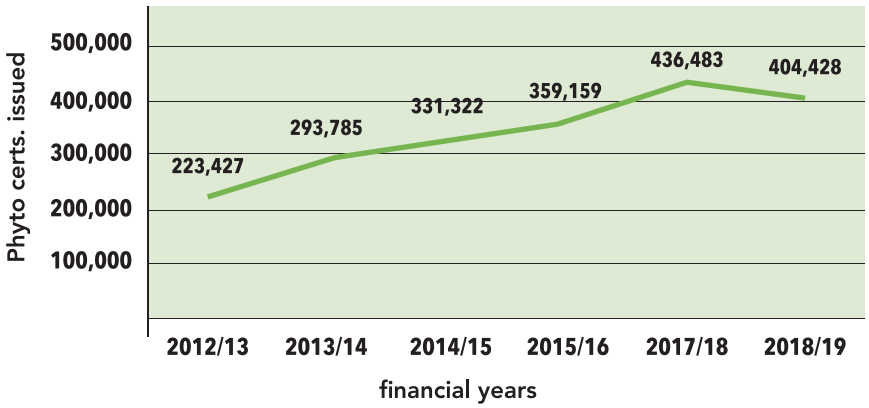
ACL & FS	Analytical Chemistry Laboratory and Food Safety
AGRA	Alliance for a Green Revolution in Africa
AFA	Agriculture and Food Authority
AGOA	African Growth Opportunity Act
ASTGS	Agriculture Sector Transformation and Growth Strategy
AU - IASPSC	African Union - Inter African Phytosanitary Council
AU - IBAR	African Union - Inter African Bureau for Animal Resources
BECA	Biosciences Eastern and Central Africa
BSP	Budget Strategy Paper
CABI	Centre for Agriculture and Biosciences International
CIAT	International Centre for Tropical Agriculture
CIMMYT	International Maize and Wheat Improvement Centre
CIP	Centro Internacional De La Papa (International Potato Centre)
COMESA	Common Market for Eastern and Southern Africa
COPE	Centre of Phytosanitary Excellence
CPM	Commission on Phytosanitary Measures
CPVO	Community Plant Variety Office
CSS	Corporate Social Sustainability
DAAD	German Academic Exchange Service
DUS	Distinctness, Uniformity and Stability
EAC	East African Community
EAC-SPS	East African Community –Sanitary and Phytosanitary
ECS	Electronic Certification System
EPZ	Export Processing Zone
EU	European Union
FAW	Fall Army Worm
FCM	False Codling Moth
FMCGs	Fast Moving Consumer Goods
FPEAK	Fresh Produce Exporters Association of Kenya
FtF	Feed the Future programme
GACC	General Administration of Customs of the People's Republic of China
GAP	Good Agricultural Practices
GCMS	Gas Chromatography Mass Spectrometry
GIZ	German Society for International Cooperation / The Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH

GoK	Government of Kenya
HCAS	Horticulture Competent Authority Structure
HCD	Horticultural Crops Directorate
IAEA	International Atomic Energy Agency
ICPAK	Institute of Certified Public Accountants of Kenya
ICP-OES	Inductively Coupled Optical Plasma Spectroscopy
ICRISAT	The International Crops Research Institute for the Semi-Arid Tropics
ICS	Import Certification System
ICT	Information, Communication and Technology
IFS	International Foundation for Science
ILRI	International Livestock Research Institute
ISO	International Organization for Standardization
ISO/IEC	International Organization for Standardization/International Electrotechnical Commission
ISTA	International Seed Testing Association
IPPC	International Plant Protection Convention
ISPMs	International Standards for Phytosanitary Measures
IYPH	International Year of Plant Health
JKIA	Jomo Kenyatta International Airport
JKUAT	Jomo Kenyatta University of Agriculture and Technology
KALRO	Kenya Agricultural and Livestock Research Organisation
KEBS	Kenya Bureau of Standards
KENAS	Kenya National Accreditation Service
KENTRADE	Kenya Trade Network Agency
KIPI	Kenya Industrial Property Institute
KNBS	Kenya National Bureau of Statistics
KNSWS	Kenya National Single Window System
KFC	Kenya Flower Council
KSTCIE	Kenya Standing Technical Committee on Imports and Exports
LCMSMS	Liquid Chromatography Mass Spectrometry
MEPST	Micro Enterprises Support Programme Trust
MLND	Maize Lethal Necrosis Disease
MOALFC	Ministry of Agriculture, Livestock, Fisheries and Cooperatives
MOU	Memorandum of Understanding
MRLs	Maximum Residue Levels
MTP	Medium Term Plan
MUAT	Meru University of Agriculture and Technology
NPPO	National Plant Protection Organization

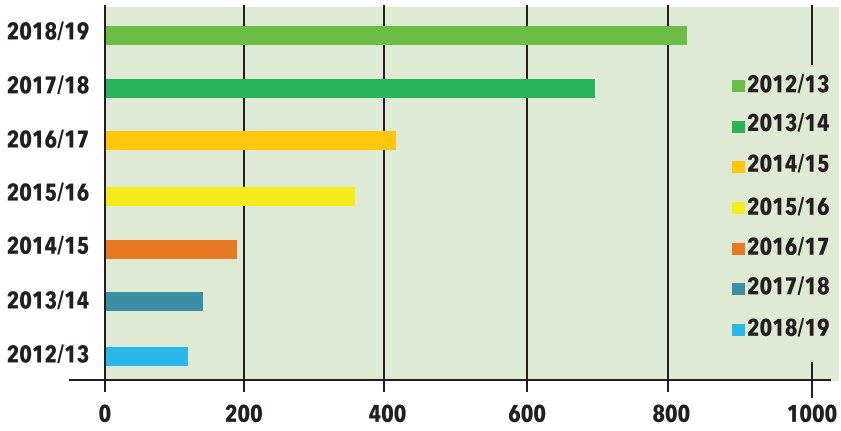
NPRMP	National Pesticide Residue Monitoring Plan
NPTC	National Performance Trials Committee
NPTs	National Performance Trials
NVRC	National Variety Release Committee
OECD	Organization of Economic Cooperation and Development
OSD	Other Seed Determinants
PQBS	Plant Quarantine and Biosecurity Station
PBR	Plant Breeders Rights
PCN	Potato Cyst Nematode
PCPB	Pest Control Products Board
PIP	Plant Import Permit
PPB	Pharmacy and Poisons Board
PRA	Pest Risk Analysis
PWD	Person(s) with Disabilities
QMS	Quality Management Systems
RASFF	Rapid Alert System for Food and Feed
SANAS	South African National Accreditation System
SASHA	Sweet Potato Action for Security and Health Africa
SMAP	Standards and Market Access Programme
SPS	Sanitary and Phytosanitary Standards
STAK	Seed Testing Association of Kenya
TMEA	Trade Mark East Africa
UNECE	The United Nations Economic Commission for Europe
UNIDO	United Nations Industrial Development Organization
UoN	University of Nairobi
USAID	United States Agency for International development
USDA APHIS	United States Department of Agriculture- Animal and Plant Health Inspection Service
UPOV	The International Union for the Protection of New Varieties of Plants
WTO	World Trade Organization
WTO - SPS	World Trade Organization - Sanitary and Phytosanitary Standards

HIGHLIGHTS FOR THE YEAR 2018 - 2019

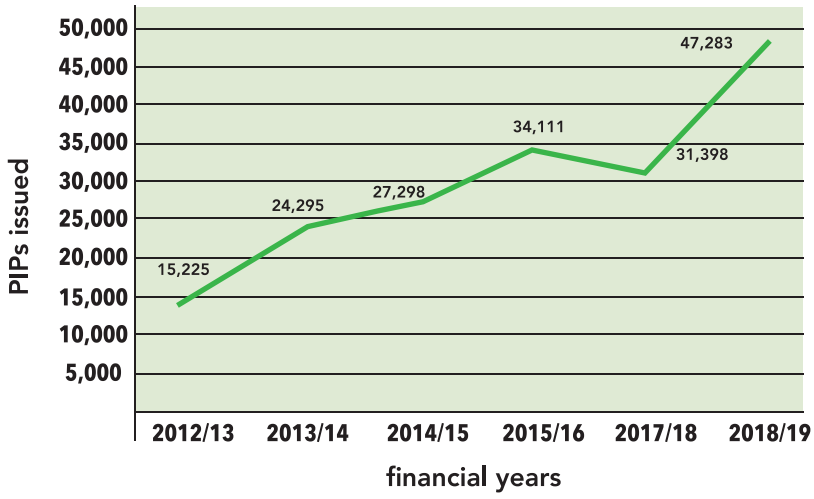
Trends in number of Phytosanitary Certificates issued from 2012-2019



COPE - Number of Practitioners Trained



Trends in the number of Plant Import Permits issued



STATEMENT FROM THE CHAIRPERSON OF THE BOARD OF DIRECTORS

The Board of Directors is pleased to present the 2018-2019 annual and financial statement report. During the period under review, KEPHIS focused and aligned its activities towards implementation of the Kenya Government Vision 2030 and Big Four Agenda economic blue prints by aligning its 2017/2018-2021/22 Strategic Plan to the MTP III and the Agriculture Sector Transformation Strategy (ASTGS). Key strategic thrusts going forward for the Corporation will be geared towards enhanced plant bio-security, strengthened legal and regulatory framework, agricultural productivity, capacity development and enhanced resource mobilization.

The Kenya National Economic survey 2019 (KNBS) indicated growth in agriculture value added at constant prices increased to 6.6 per cent in 2018 from 1.8 per cent recorded in 2017. The improved performance was attributed to favourable weather conditions for crop production occasioned by the long rains in 2018. Maize production increased by 26.0 per cent from 35.4 million bags in 2017 to 44.6 million bags in 2018. Similarly, production of tea, coffee and sugarcane increased by 12.1, 7.0 and 10.4 per cent respectively in 2018. The quantity of horticulture produce exported increased by 6.1 per cent to 322.6 thousand tonnes with the value of the horticulture exports increasing by 33.3 per cent to KShs.153.7 billion in 2018 on account of higher production and improved international prices. However, earnings from tea and coffee decreased by 5.3 per cent and 7.5 per cent to Kshs. 127.7 billion and Kshs. 14.8 billion respectively, in 2018, despite increased production volumes.

KEPHIS plays a key role in Kenya's agricultural sector through its mandate and regulatory function. Through various activities, the Corporation ensured quality assurance of agricultural inputs and produce. Facilitation of agricultural producers to maintain set market requirements and standards has made it possible for Kenya's fresh agricultural produce to sustain its competitiveness at local and international

"Through various activities, the Corporation ensured quality assurance of agricultural inputs and produce. Facilitation of agricultural producers to maintain set market requirements and standards has made it possible for Kenya's fresh agricultural produce to sustain its competitiveness at local and international markets."

markets. This has translated to increased income and wealth for farmers and foreign exchange for the economy.

Despite the growth in key indicators mentioned above, the Board is cognizant of the challenges facing the sector and the Corporation as it executes its mandate. During the period under review, the country experienced challenges in emerging pests and diseases that affected productivity and markets for various crops. The False Codling Moth (FCM) in roses greatly impacted the flower industry and this necessitated concerted effort by KEPHIS and other stakeholders to ensure proper management of the pest. The pest also resulted in more stringent requirements being imposed on exports of chilies from Kenya to the EU. Other pests like the Fall Army Worm (FAW) in maize and Potato Cyst Nematode (PCN) in potatoes continued to be managed during the period through a collaborative approach by all stakeholders.

The Corporation also made major strides toward support of the agriculture sector. The opening of the China market for avocado was a great milestone for Kenya during the year. This is expected to open up new opportunities for our local farmers and enhance trade between Kenya and China.

In conclusion, the KEPHIS Board takes this opportunity to thank all our partners and stakeholders who supported the Corporation during the year. This made it possible for KEPHIS to implement its mandate for the benefit of the Kenyan farmer and the economy as a whole.

Robin M. Achoki
Chairperson, Board of Directors
Kenya Plant Health Inspectorate Service (KEPHIS)

STATEMENT FROM THE MANAGING DIRECTOR

The management takes great pleasure to present to you the financial statement report for the year ended 30th June 2019. During the period, KEPHIS experienced key milestones and challenges which mirrored the overall outlook of the agricultural sector. The declining effect of emerging pests and diseases such as the FAW had impact on local maize output, with the country registering a 26.0 percent increase in production. During the period, KEPHIS directed more efforts towards capacity building for farmers and market players to ensure management practices are adopted and pests were adequately identified and detected early in order to reduce crop losses. KEPHIS undertook surveillance activities for pests and diseases to check on prevalence and map out affected areas. A total of 22 surveillances were completed during the period across the country.

The Corporation implemented its Strategic Plan (2017/18-2021/22) which is aligned to the Kenya government's key economic blue prints. This was enabled by the provisions of the KEPHIS Act 2012, the Plant Protection Act Cap 324, the Seeds and Plant Varieties Act Cap 326, International Standards for Phytosanitary Measures (ISPMs) and other relevant laws and treaties.

Also, the Corporation undertook activities in plant variety protection and issued 40 Plant Breeder's Rights (PBRs) in line with its key mandate of assuring the quality of agriculture inputs and produce for the Kenyan farmer. The floriculture sub-sector leads in the number of PBRs issued with roses taking up 50% of PBRs issued.

The seed sector plays a key role in improving agricultural productivity for local farmers. During the period under review, the Corporation facilitated release and gazettement of 56 varieties for various crops whose majority were maize, sorghum, wheat and potato. These varieties included 29 drought tolerant crop varieties. Demand for resilient crop varieties against a back drop of climate change has led to plant breeders and merchants focusing on drought, pest and disease tolerant varieties. The seed business also grew significantly with the Corporation overseeing the activities of 159 active seed merchants. This is indicative of a robust seed industry and confidence in the regulatory regime. KEPHIS recognizes and appreciates the role the seed

“To support food safety issues in the country, KEPHIS will also play a facilitative role and undertake surveillance activities for the local produce market in the next financial year.”

sector plays in improving agricultural productivity for local farmers.

In the year under review, the Corporation issued 6,557 seed sellers' licenses. Seed testing was also undertaken at the Corporation's Nakuru and Kitale seed testing laboratories to confirm the quality of seed released to the market in compliance to International Seed Testing Association (ISTA) requirements. During the period 13,513 seed samples were tested. The enhanced number of samples was due to more stringent measures on Maize Lethal Necrotic Disease (MLND) testing for seed prior to release in the market. The Corporation also implemented the self-regulation model for seed certification by developing regulations and training curriculum for private inspectors. During the period, 10 private seed inspectors were trained for the various seed merchants. This is expected to strengthen the seed sector regulatory space and further enhance self-checks among stakeholders in the industry.

During the year, KEPHIS ensured the quality of agricultural produce for both the domestic and export markets. Continued participation in international trade agreements and bodies has ensured that Kenya complies to set regional and international standards. These included OECD Fruit and Vegetable Schemes, the OECD Seed, OECD Forestry Seed Schemes and the Commission on Phytosanitary Measures (CPM). KEPHIS is fully engaged in standards setting activities under the World Trade Organisation Sanitary and Phytosanitary (WTO-SPS), International Plant Protection Convention, Codex Alimentarius Commission, COMESA and EAC standard setting and standard harmonization meetings. This guarantees that Kenyan interests are taken into account when setting these standards.

Diagnostic and analytical work by KEPHIS laboratories has made it possible to assure the quality of inputs and produce destined for all markets. The Corporation implemented the national residue monitoring program for Maximum Residue Levels (MRLs). This ensured that Kenyan fresh produce met minimum standards for the export market. In the current period, 2,119 samples were analyzed by the Analytical Chemistry Laboratory for pesticide residues in fresh produce, heavy metals and mycotoxins in cereals. To support food safety issues in the country, KEPHIS will also play a facilitative role and undertake surveillance activities for the local produce market in the next financial year.

In terms of enabling trade across our borders, KEPHIS undertook inspection of plant import material consignments at points of entry and issued 47,283 Plant Import Permits (PIPs). The Corporation facilitated export of plant produce by inspecting consignments at exit points and issued 400,501 phytosanitary certificates in the year.

As a regulator, the Corporation values working with its stakeholders. During the year, the Corporation partnered with the Government through the Ministry of Agriculture, Livestock, Fisheries and Cooperatives,

other government bodies and international partners that included the European Union (EU), USAID (United States Agency for International Development), United Nations Industrial Development Organization (UNIDO), Centre for Agriculture and Biosciences International (CABI), the International Potato Centre (CIP), among others. KEPHIS implemented a number of projects like the USAID FOODSCAP under the Feed the Future Programme, COMESA RIIP and CIP/GIZ. The projects mainly focused on capacity building within the sector, equipment purchases, surveillance and creation of awareness on current and emerging market requirements.

KEPHIS developed linkages and partnerships with the private sector to ensure effective delivery of its services. Umbrella organizations in the seed and horticultural sub-sectors were engaged and participated in key KEPHIS activities. These included Seed Traders Association of Kenya (STAK), Kenya Flower Council (KFC) and Fresh Produce Exporters Association of Kenya (FPEAK). One major collaborative efforts pursued during the year was the Horticulture Competent Authority Structure (HCAS) comprising of both the private and public sector (KEPHIS, PCPB, FPEAK, HCD/AFA, KALRO, KFC) that met quarterly to deliberate on issues affecting horticulture under the leadership of KEPHIS.

Under the new constitutional dispensation of devolved governments, KEPHIS partnered with county governments in various stakeholder forums to ensure local farmers benefited from its services. Stakeholder engagements included farmer trainings, field days, conferences and exhibitions. Interventions at the county level included capacity development of county extension staff and farmers, support of the horticultural crops value chain for select crops and enhanced seed certification systems for potato.

The Corporation recognizes the important role played by its staff and has put up measures to ensure staff productivity is enhanced and maintained. An employee satisfaction carried out during the period resulted in overall Employee Satisfaction Index of 72%. This level has been made possible through consistent efforts towards staff motivation, development and growth.

On behalf of the management and staff, I take this opportunity to thank all our partners for the support given during the year. The Corporation commits to continue delivering its regulatory mandate and facilitate players in the agricultural sector towards attaining its vision of "Healthy Plants, Safe Trade and Sustainable Agro-environment for a Prosperous Kenya."

Esther Kimani, PhD
Managing Director
Kenya Plant Health Inspectorate Service (KEPHIS)

THE BOARD OF DIRECTORS

Mr. Robin Manono Achoki - Chairperson

Appointed on 15th May 2019

Mr. Achoki has over 20 years experience in public finance having served in the Ministry of Finance and Planning and the Ministry of Planning and National Development. In the ministries he served as the Head of Economic Unit of Budgetary and Supply Department. He has also served as a member of the Presidential Taskforce on the Coffee Sub-Sector Reforms; as Secretary to the Panel of Experts on the Review of Performance Contracting in the Public Sector; as Alternate Director to the Permanent Secretary/Treasury in the Board of Directors of the National Council for Science and Technology and as Alternate Director to the Permanent Secretary/ Treasury in the Board of Directors of the Kenya Marine and Fisheries Research Institute. Presently, he serves as a member of the Kisii University Council. Mr. Achoki holds a post graduate diploma in integrated rural regional development planning from Development Study Centre, Rehovot, Israel; Bachelor of Philosophy in Economics from the University of Nairobi and Bachelors of Arts(Honours) in Economics from Panjab University, India. He has also undertaken courses in planning and budgeting among them, Country Focused Training in Project Planning and Management for AICAD and JICA in Kyoto University, Hitotsubashi University and other related institutions; Public Budgeting and Fiscal Management in Georgia State University, Andrew Young School of Policy Studies, Atlanta, USA and International Course for Budget Officers in Glasglow Caledonian University, Scotland. In addition, he attended a workshop on Budgeting and Financial Management in the Public Sector at Harvard Institute for International Development.

Dr. Esther Kimani – Managing Director

Dr. Kimani has held various positions at KEPHIS: Managing Director from August 2014 to date; General Manager Phytosanitary Services (2011 to August 2014); Head Phytosanitary and Biosafety Services (2008 to 2010) and Officer in Charge – Plant Quarantine and Bio Safety Station Muguga (2001 to 2008). She holds a PhD in Crop Protection, an MSc in Plant Pathology and a BSc in Agriculture from the University of Nairobi. She is pursuing a Masters of Business Administration (Strategic Management) at Jomo Kenyatta University of Agriculture and Technology. Dr. Kimani has been instrumental in the development of standards under the IPPC where she has been serving as a standards committee member since 2012. She coordinated the activities for the establishment and operationalization of the Centre for Phytosanitary Excellence (COPE) at KEPHIS, which to date has trained over 3000 participants from Africa.

Prof. Anne W. T. Muigai – Member

Appointed on 14th December, 2018

Prof. Muigai is a molecular population geneticist with over 15 years' experience in the field of Genetics and Biotechnology. She holds a doctorate degree in Biochemistry and a Master of Science in Genetics. She joined Jomo Kenyatta University of Agriculture and Technology - JKUAT in 1992 as a teaching assistant and has risen to the position of a Professor of Genetics in the Department of Botany. She has held several academic and administrative positions within JKUAT including being the pioneer Chairperson of the Department of Botany. She has served as the Director of the Institute for Biotechnology Research, member of the JKUAT Senate and has also served in the JKUAT University Council. Currently she is the Editor in Chief of the Journal of Agriculture Science and Technology, and is the Coordinator of the postgraduate programmes in the Department of Botany.

She has also served as a Visiting Scientist at ILRI in Nairobi, Kenya where she was the coordinator of a research project on the characterization of indigenous sheep genetic resources of Kenya. She has also carried out several consultancies for ILRI. Currently, she is a member of the Technical Advisory Group on Animal Genetics to the African Union Inter-African Bureau on Animal Genetics (AU-IBAR). At the KEPHIS Board, she serves as the Chairperson of the Technical Committee and as a member of the Audit Committee.

Mr. Julius Mutua – Member (Rep. PS, The National Treasury)

Appointed on 16th May 2017

Mr. Mutua is the Alternate Director to the Principal Secretary at The National Treasury. He is a seasoned civil servant with over 20 years' experience in economic and financial policy formulation at The National Treasury. He has served in the National Fiscal Budget Preparation Team for many years and participated in regional integration issues including the negotiation of the East African Community Monetary Union Protocol. He is currently the Programme Co-ordinator for the Public Finance Management Reforms. Mr. Mutua holds a Bachelors degree in Economics from Kenyatta University and a Masters degree in Economics from the University of Dar es Salaam.

He also holds certificates in Fiscal Decentralization and Financial Institutions for Private Enterprise Development from Duke and Harvard Universities respectively. He is a member of the Finance and Administration committee at KEPHIS.

Prof. Julius Wanjohi Mwangi, EBS – Member

Appointed on 3rd May 2019

Prof. Mwangi is a pharmacognosist with well over 20 years' experience in the field of pharmacognosy and pharmacology. He holds a doctorate degree in Pharmacy and a Master of Science in Pharmacy. He joined the University of Nairobi (UoN) in 1981 as a Graduate Assistant and has since risen to the position of Professor of Pharmacognosy in the Department of Pharmacognosy and Pharmacology.

Presently he is a Professor of Pharmacognosy and Intellectual Property Coordinator/ Director at UoN. He was listed as one of the IBC Outstanding Scientists of the 21st Century and Outstanding Scientists Worldwide by the International Biographical Centre, England.

In addition to the practice of pharmacy and pharmacognosy, he serves as board member in the Pharmacy and Poisons Board and the Kenya Copyright Board. He also serves in various committees at UoN namely the Senate Committee, Dean's Committee and the Health Sciences Academic Board.

He has previously served as a Board member in the Kenya Industrial Property Institute (KIPI), Member of Program Advisory Committee where he represented Kenya in East Africa (Kenya, Uganda, Tanzania and Ethiopia).

Prof. Paul Kimurto – Member

Appointed on 6th June 2018

Prof. Kimurto is Associate Professor at Egerton University, Faculty of Agriculture and currently the Director of Agro-Science Park (GOK, Vision 2030 Flagship Project) and Head of Egerton University Seed Unit and Team Leaders Seeds of Gold communication platform. He has over 15 years experience in academia and research. He is a Professionally Dryland research and drought stress physiology/Breeding specialist with enormous experiences in dryland development and validation of breeding and variety development techniques, Application of molecular breeding techniques, Irrigation, fertility and water use and management and seed systems in ASALs, Training and curricula development, scientific writing and reporting. He has attended several international courses offered by ICRISAT, CIMMYT, Generation Challenge Program-GCP, International Atomic Energy Agency (IAEA), IFS, BECA/ILRI and Germany-DAAD in breeding, Genetics, Application of molecular breeding techniques, Bio-Saline and Drought Technology and Seed systems. He holds a PhD in Crop Science (Crop Physiology/ Breeding) and a Master of Science in Crop Science and a Bachelor of Science in Agriculture. He has authored/ co-authored over 20 papers in refereed journals and over 50 conference proceedings in various fields, production, application of biotechnology and molecular breeding in agriculture, climate change resilience, modelling, among others. He is/has been supervisor of several MSc & PhD students in local and other universities. He has won several grants in research in development of resilient high yielding crop varieties of Beans, Chickpea, Finger millet, Wheat and Sorghum funded by several international donors like Gates Foundation, AGRA, CIAT and ICRISAT.

Ms. Lucky J. Litole – Member

Appointed on 6th June 2018

Ms. Litole is currently coordinating a woman and youth empowerment programme in West Pokot with Konrad Adenuor Foundation. She was previously with Kenya Utalii College until 2016 when she left to join the Konrad Adenuor Foundation. She is a holder of a Bachelor of Business Administration degree (Procurement and Supply Chain Management Option) and is currently pursuing a Masters Degree in Logistics and Procurement Management. She also holds certificates in Food and Beverages, Business Management and Customer Service.

Mr. Moses Merkalei Atuko – Member

Appointed on 6th June 2018

Mr. Atuko is currently a consultant with the United Nations. Previously, he worked as County Executive for Health Services and Environment-Mining-Energy, both for Baringo County Government; Country Director for Mentor Initiative, Kenya; Regional Manager for Kenya Red Cross, North Rift; Deputy Country Director for Mentor Initiative, Liberia; Emergency Health Manager for Kenya Red Cross, Nairobi; Project Officer with Aga Khan Foundation, Mombasa; and has been a Public Health Consultant for over 6 years. He is a graduate of Public Health, Moi University, 2004.

Mr. Mugambi Angaine – Member

Appointed on 3rd May 2019

Mr. Angaine is an experienced manager and leader at national and county government levels with vast experience and exposure in institutional development and growth for social and economic benefits for the Kenyan people and the International Community. Previously, he has worked in the Ministry of Tourism as well as the Ministry of Public Works. He is involved in private business which entails managing large scale horticultural farming for export; managing zero grazing dairy farming; managing wheat farming for commercial and seed production and managing petroleum products in partnership with Total Kenya.

In his leadership role, he has participated in management at national and community levels which entails planning and development of strategic interventions, educating county employees and the general public on national values and principles stipulated in The Constitution; he has organized and supported youth projects on social and economic empowerment; he has organized and advised women groups for preparation and formulation of project proposals for funding and he also serves as a church elder for the Methodist Church of Kenya. Mr. Angaine was awarded by the retired President H.E. Mwai Kibaki, a Presidential Farmers' Competition Award Scheme National Large Scale Farm Competition as the Farmer of the Year during the Agricultural Society of Kenya Show in Nairobi.

Dr. Rose Njeru – Member

Appointed on 6th June 2018

Dr. Njeru holds a Doctorate degree in Plant Sciences from Murdoch University, Australia and a Masters degree in Plant Pathology from The University of Nairobi. Dr. Njeru has wide experience in the field of plant health having served as a senior lecturer at the Faculty of Agriculture, University of Nairobi for over 15 years. She has also served as a Senior Scientist with the Ministry of Agriculture in Rwanda under a World Bank funded Rural Sector Support Program for a period of four years. During the subsequent four years, she was a director in charge of Capacity Building and Technology Deployment with an international Non-Governmental Organization.

Dr. Njeru has published widely in peer reviewed journals, participated in international conferences and supervised PhD students in the field of agronomy, plant breeding, biotechnology and plant health in general.

She has international experience as an educator, trainer, researcher, in proposal development and capacity development with a focus on plant health, biotechnology, capacity building, documentation, communication, science, technology and innovation systems. Currently, Dr. Njeru is an independent international consultant in the field of plant health with an interest in plant health systems, compliance to international treaties especially the World Trade Organization Sanitary and Phytosanitary Agreement. She has been a consultant with several organizations including Food and Agriculture Organization of the United Nations, International Fund for Agriculture Development, Technical Centre for Agricultural and Rural Cooperation, Regional Universities Forum for Capacity Building in Agriculture which is a consortium of over 33 Universities in Africa, International Potato Centre and International Centre for Tropical Agriculture, among others. She serves the KEPHIS Board as a member of the Technical Committee.

Mr. David K. Mwangi

He is the Alternate Director to the Principal Secretary, State Department for Crops Development in the Ministry of Agriculture, Livestock and Fisheries. He is an experienced civil servant with 26 years experience in the agriculture sector. He has worked in various places and capacities in the Ministry and is currently the Head of the Plant Protection Services Division. He coordinates the management of transboundary and emerging pests and diseases in the country and is the chair of the Multi- Agency team on Fall Armyworm and other invasive pest species. He represents the country, as an Executive Committee member, in two UN affiliated regional organizations that deal with management and control of transboundary pests; Desert Locust Control Organization of Eastern Africa (DLCO-EA) and International Red Locust control Organization of central and Southern Africa (IRLCO-CSA). Mr. Mwangi holds an Msc. in Agricultural Resources Management from the University of Nairobi and a Bsc. in Horticulture from Egerton University. In the KEPHIS board he is a member of the Technical and Audit Committees.

Mr. George O. Mogaka – Corporation Secretary and Head, Legal Affairs

Appointed on 2nd July, 2018

Mr. Mogaka is a holder of an MBA degree (Strategic Management), an LLB degree and a post graduate Diploma in Law. He is an Advocate of the High Court of Kenya and a registered Certified Secretary of Kenya. He also holds certification in governance audit, corporate governance, board evaluation, strategic leadership and quality management. He is a member in good standing of both the Institute of Certified Secretaries of Kenya and the Law Society of Kenya. He is also a Kenya Bureau of Standards certified Lead Auditor on Quality Management Systems as well as Certified Trustee on retirement benefits scheme matters. He has over 22 years post qualification experience having previously been with National Oil Corporation of Kenya, Kenya Sugar Research Foundation and Kenya Revenue Authority before joining KEPHIS in July, 2018.

MANAGEMENT TEAM

1. Mr. James Ang'awa

General Manager, Finance & Administration

James joined KEPHIS on 1st April 2017. A Certified Public Accountant of Kenya, he has risen through corporate ranks to become a Senior Finance Executive, Controller, Manager and Trainer. James has extensive experience in corporate governance, strategy formulation, financial control policy development and implementation; intensive Board and Executive Committee contribution; facilitation as well as the administration and coordination of internal and external audits.

His experience spans public and private sectors in various industries and services emphasizing; Higher Education, Research & Technology Transfer, FMCGs, water sector, manufacturing, financial consulting, professional practice, automobile dealerships, insurance and national budget strategy paper (BSP) resource allocation. It also includes organization re-engineering, development growth and sustainability, executorships of public trust, public sector accounting, staff management, administrative and commercial support. Some of the companies he has worked for include Jubilee Insurance, SsangYong Motors (K) Ltd, Kuguru Food Complex Group, KALRO's Sugar Research Institute and Kisumu Water and Sewerage Company Limited. James is a holder of a Bachelors Degree in Accounting and an MBA in Finance and is a member of ICPAK. He has lectured in Accounting & Finance at Maseno University and is currently pursuing a PhD at the University of Nairobi.

2. Mr. Simeon Kibet

General Manager, Quality Assurance

Mr. Kibet joined KEPHIS in October 2000. He has held various senior positions which include Liaison Officer for Quality Assurance Division, Regional Manager Nakuru and Head, Seed Certification and Plant Variety Protection. He has served as the General Manager-Quality Assurance since 2010.

Mr. Kibet holds an MPhil degree in Crop Production and Seed Technology from Moi University and a BSc in Agriculture from The University of Nairobi. He has extensive experience in seed quality assurance and has been trained in Seed Technology in Japan, The Netherlands and South Africa.

3. Dr. Isaac Macharia

General Manager, Phytosanitary Services

Dr. Macharia, the General Manager, Phytosanitary Services holds a PhD in Plant Virology from the University of New England in Australia and Master of Science in Plant Pathology from the University of Nairobi. He has worked at KEPHIS since 2002 where he has served in various capacities: Plant Inspector, Head, Phytosanitary Laboratories and Deputy Officer in Charge at the Plant Quarantine and Bio Security Station and finally as the Regional Manager-KEPHIS Mombasa. He has undergone extensive phytosanitary training on Pest Risk Analysis and Diagnosis from USDA APHIS and Ohio State University in the USA. During the course of his work he has spearheaded diagnostic services, pest risk analysis, surveillance, import certification and development of phytosanitary policies. This has led to significant growth of the institution and has enabled the industry to access and retain foreign markets.

REGIONAL MANAGERS AND OFFICERS IN CHARGE

Regional Manager, Mombasa	Mr. Josiah Syanda
Regional Manager, Nakuru	Mr. James Kefa Oganda
Regional Manager, Kitale	Mr. Charles Onyango
Officer in Charge, Kisumu	Mr. Geoffrey Malemba
Officer in Charge, Plant Inspection Unit – JKIA	Mr. James Wahome
Officer in Charge, Plant Quarantine & Bio-security Station, Muguga	Ms. Florence Munguti
Officer in Charge, Embu	Mr. Ephraim Wachira
Officer in Charge, Naivasha	Ms. Hilda Miranyi

HEADS OF DEPARTMENTS

Corporate Secretary and Head, Legal Affairs	Mr. George Mogaka
Technical Personal Assistant to the MD	Ms. Mellon Kabole
Head, Seed Certification & Plant Variety Protection	Mr. Simon Maina
Head, Phytosanitary & Bio-security Services	Ms. Hellen Mwarey
Head, Analytical Chemistry Laboratory and Food Safety	Ms. Lucy Namu
Head, Planning and Implementation	Mr. Nicholas Tunya
Coordinator, Trade and Standards	Mr. Phillip Njoroge
Head, Finance	Mr. Bartonjo Cheptarus
Head, Human Resource and Development	Ms. Beth Mburai
Coordinator, Projects	Mr. Joseph Kigamwa
Head, Procurement	Mr. Charles Kamau
Head, Internal Audit	Mr. Hassan Alhaji Yusuf
Head, Information Communication and Technology	Mr. James Aboge
Head, Transport	Mr. Benson Utali
PR and Communications Officer	Ms. Catherine Muraguri

REPORT ON THE ACTIVITIES FOR THE PERIOD JULY 2018 – JUNE 2019

1.0 PHYTOSANITARY SERVICES

KEPHIS implements phytosanitary measures that ensure protection against introduction and spread of foreign plant pests while facilitating trade in plants, plant products and regulated articles. The Corporation is also Kenya's National Plant Protection Organization (NPPO) recognized under the International Plant Protection Convention (IPPC). During the period under review, KEPHIS implemented policies and measures that ensured imported and exported plant materials and products met stipulated phytosanitary standards as outlined in Kenyan laws, market destinations and international bodies which Kenya is a signatory. KEPHIS participated in the IPPC meetings where various global issues on plant health and phytosanitary standards were discussed.

During the year, KEPHIS also supported crop production through enhanced diagnosis of plant pathogens and offered advise to various stakeholders through meetings and awareness forums. In collaboration with stakeholders, the Corporation contributed to the government's Big Four Agenda through virus cleaning and multiplication of sweet potato vines which were distributed to farmers.

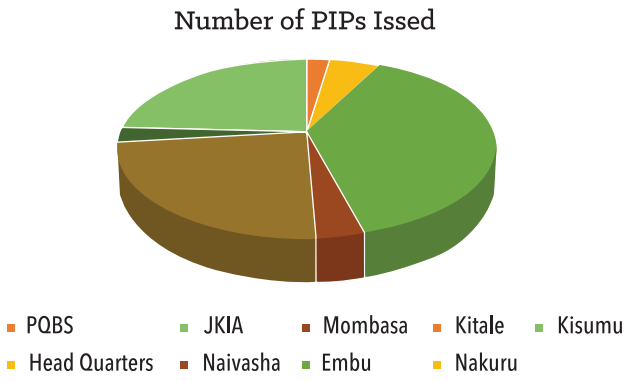
1.1 IMPORTS

A total of 47,283 Plant Import Permits(PIPs) were issued at various KEPHIS stations from July 2018 to June 2019 compared to 31,398 PIPs issued in the previous financial year. This 50% increase was attributed to the KEPHIS Import Certification System integration with the Kenya Single Window that formalised and enhanced service delivery for imports. **Table 1** and **Figure 1** summarizes the PIPs issued during this period.

Table 1: Number of PIPs issued at KEPHIS stations

Station	No. of Plant import permits issued
PQBS	1,108
Headquarters	2,343
JKIA	18,246
Naivasha	1,608
Mombasa	11,195
Embu	1,226
Kitale	31
Nakuru	98
Kisumu	11,428
Total	**47,283**

Figure 1: Number of PIPs issued per region

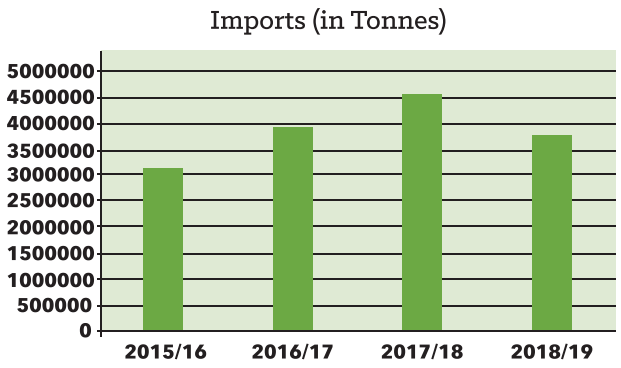


During this period, **3,764,803.77** tonnes of plants, plant products and regulated articles were imported into Kenya. The imports were cleared through JKIA, Namanga, Kitale, Kisumu and all other border point offices. **Table 2** and **Figure 2** outline the quantity and four-year import trends cleared by the entry points.

Table 2: Quantities of imports cleared into Kenya through various entry points manned by KEPHIS

Station	Total Imports (tons)
Namanga	239,514.241
JKIA	12,945.652
Oloitokitok	21,814.721
Kisumu	265,215.533
Embu (Moyale)	36,471.62
Kitale	13.036
Mombasa	3,188,828.97
Total	**3,764,803.77**

Figure 2: Trends in imports for 2015/2016-2018/2019 FY



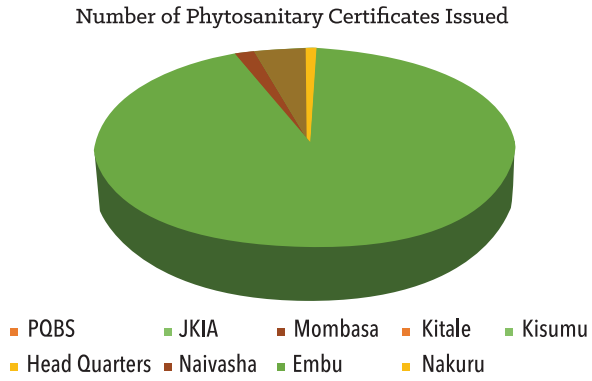
1.2 EXPORTS

KEPHIS facilitated plant and plant material exports during the financial period by inspecting consignments of crops, plant products and regulated articles in accordance with the provisions of the Agricultural Products (Export) Act (Cap 319), international standards and phytosanitary requirements of the importing states. Over the period, a total of 404,428 Phytosanitary Certificates were issued compared to 436,483 issued the year before. **Table 3** and **Figure 3** summarize the number of phytosanitary certificates issued at the various KEPHIS regional offices during the year.

Table 3: No. of Phytosanitary Certificates issued at KEPHIS offices

Station	No. of Phytosanitary certificate issued
PQBS	182
Headquarters	1,898
JKIA	378,250
Naivasha	6,720
Mombasa	16,458
Embu	67
Kitale	384
Nakuru	112
Kisumu	357
Total	**404,428**

Figure 3: Number of Phytosanitary Certificates issued in the KEPHIS offices

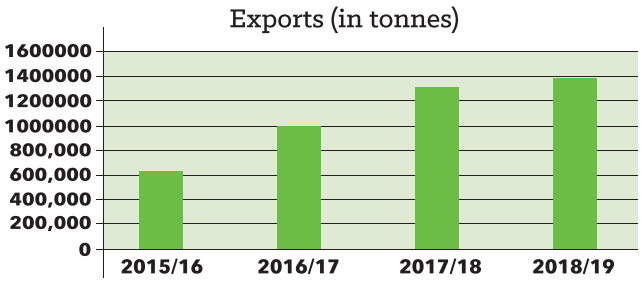


A total of 1,393,089.36 tonnes of plant material were cleared for export. They included cut flowers, vegetables, fruits and various plant species for planting. Although the number of phytosanitary certificates decreased during the year under review compared with the previous year, there was an increase in the quantity of products exported indicating growth in the export industry. The quantities cleared for export and trends for the past four years are shown in **Table 4** and **Figure 4.**

Table 4: Quantities of exports cleared out of Kenya through KEPHIS regional offices

Station	Total exports (tons) cleared
Mombasa	908,013.50
JKIA	476,423.19
Naivasha	6.72
Embu	641.39
Kisumu	5,553.11
Nakuru	627.87
Kitale	1,823.58
Total	**1,393,089.36**

Figure 4: Trends on exports for 2015/2016-2018/2019 FY



1.3 FARM FACILITIES INSPECTED

During the period under review, a total of 1,125 inspections were conducted mainly under the routine inspections for compliance with phytosanitary requirements of USDA and EU regulations. There was an increase in audits for compliance with Australia's market requirements due to the changes in the country's regulations. **Table 5** summarizes the reason and number of farm facilities inspected during the period.

Table 5: Number and reason for inspection conducted in the financial year

No	Reason for Inspection	Total
1	Plants for planting – EU	722
2	Geranium for export to USA	34
3	Systems audit for SPS compliance	173
4	Follow-up for interceptions and rejections	95
5	Devitalization audits for Australia market	63
6	Tissue culture laboratory audits	19
9	Audit on compliance to standard on treatment for wood packaging material (ISPM 15)	19

1.4 NURSERY CERTIFICATION

A nursery of certified avocado seedlings in Embu County

In order to enhance access of quality seedlings by farmers, KEPHIS conducted phytosanitary certification of nurseries. In the period under review, a total of 173 nurseries were approved across 25 counties. These included Bomet, Bungoma, Busia, Elgeyo Marakwet, Embu, Homa Bay, Kajiado, Kakamega, Kericho, Kiambu, Kilifi, Kirinyaga, Kwale, Meru, Murang'a, Nairobi, Nakuru, Nandi, Narok, Nyamira, Nyeri, Siaya, Taita Taveta, Trans Nzoia and Uasin Gishu. Murang'a County led with a total of 84 certified nurseries.

6,486,880 seedlings were certified seedlings as follows: - avocado (5,272,840); macadamia (715,780); mango (276,460); cashew nuts (104,000), citrus (87,800) and coconut (30,000).

1.5 QUARANTINE FACILITIES INSPECTED

During the period under review, quarantine facilities were established prior to issuance of quarantine permits. This was in support of post entry controls for imports and compliance with national bio-safety and plant bio-security requirements. A total of 43 quarantine facilities were inspected and approved for various plant species as shown in **Table 6.**

Table 6: Quarantine facilities inspected

No	Plant material under quarantine	No. of facilities inspected
	Rosa spp	10
	Potato	7
	Alstromeria and Statice	1
	Astrantia plants	1
	Banana plants	1
	GMO cassava	1
	GMO bananas for resistance to BXW	1
	GMO potato	1
	Chrysanthemum	1
	Coconut	1
	Coffee	1
	Delphinium	1
	Dianthus	3
	Grapes	1
	Gypsophilla	1
	Insects	1
	Passion fruit	1
	Peat moss	1
	Pelargonium	1
	Pyrethrum	1
	Maize	1
	Rice	1
	Strawberry/Raspberry	1
	Tomato	1
	Zantedeschia	1
	Assorted bedding plants	14

1.6 PEST RISK ANALYSIS

In the year under review, KEPHIS undertook 15 Pest Risk Analyses (PRAs) to facilitate imports of various plants, plant products and regulated articles into Kenya. A number of trading partners requested for PRA information to facilitate importation of Kenyan produce into their countries. 15 sets of PRA information were compiled and provided to the requesting countries. This subsequently led to access of new markets and negotiations with the potential of opening new markets. **Tables 7** and **8** summarize the plant species, reasons for evaluation and type of information provided.

Table 7: PRAs conducted

No	Plant species evaluated	Country of Import
1	Fennel (Foenicum vulgare)	All parts of the world
2	Avocado seedlings	Israel
3	Purple Star Apple (Chrysophyllum cainito) seeds	USA
4	Prunus Persica Var. nucipersica (Nectarine)	South Africa
5	Cotton seed (Gossypium hirsutum)	All parts of the world
6	Macadamia scions (Macadamia sp)	South Africa
7	Dragon eye (Dimorcarpus longan) seeds	USA
8	Streptomyces scabiei (potato scab)	Pest Risk Analysis for Streptomyces scabiei (potato scab)
9	Cucumber/Pickle Tree (Averrhoa Bilimbi) seeds	USA
10	Pomegranate, Punica granatum cuttings and fruits	India
11	Annona reticulator seeds	USA
12	Garcinia mangostana (mangosteen) seeds	USA
13	Myrica Morella (Rubra) seeds	USA
14	Myrciaria cauliflora (jaboticaba)	USA
	Carnations	Colombia

Table 8: Pest Risk Analysis information provided to potential export markets

No	Plant species evaluated	Type of Information provided
1	Avocado	Provision of PRA information to facilitate market access for avocado fruits from Kenya into the Peoples Republic of China
2	Avocado	Provision of PRA information to facilitate market access for avocado fruits from Kenya to India
3	Basil, Mint, Chives, Rosemary, Thyme, Tarragon, Dill, Coriander, Oregano, Sage and Parsley	Provision of PRA information for export of fresh herbs to the USA
4	Tomato	Provision of PRA information for tomato seeds to Colombia

1.7 PEST SURVEILLANCE

KEPHIS continued to implement the early warning and rapid alert strategy for pests by carrying out surveillance for 22 emerging pests. The surveillances conducted and findings are summarised in **Table 9.**

Table 9: Pest surveillances conducted

	Surveillance	Key findings
1	Spider mites on roses	Only Tetranychus urticae, the two spotted red spider mite was observed in the rose production in Kenya. This is consistent with the molecular analysis done by the Australian NPPO
2	Asian citrus psyllid	Surveillance indicated that the Asian Citrus Psyllid first reported in Kwale county has spread further to Kilifi county compared to the previous year's data
3	Coconut Lethal Yellow Disease	Positive samples were identified in Vanga in Kwale in the last financial year
4	Survey of Ralstonia solanacearum race 1 in roses Kenya	No symptoms of Ralstonia were observed during the surveillance and collected samples tested negative.
5	False Codling Moth in roses	Presence of FCM in rose production with variation based on agro-ecological conditions
6	Bactrocera dorsalis monitoring survey at Makueni Pest Free Area	Initial monitoring indicated presence of Bactrocera dorsalis on mangoes in Kibwezi. This is the baseline data before initiating creation of pest free area
7	Maize Lethal Necrosis surveillance in Maize production systems	There was reduced incidence of the disease in seed production farms compared to the commercial maize production farms.
8	Detection surveillance on FAW in rose cut flower production facilities in Kenya	No FAW was found in the rose production facilities.

	Surveillance	Key findings
9	Surveillance for potato pests in Nyeri, Murang'a and Meru	High incidence of Bacterial wilt, PCN and viruses were observed. There is need for delimiting survey to establish seed production areas
10	Passion fruit disease and other pests in major production areas in Kenya	Collected samples tested were positive for poty viruses. Elgeyo Marakwet and Uasin Gishu had the highest incidences
11	Yellow Sugarcane aphids in Kakamega	Yellow sugarcane aphids were observed in parts of Kakamega county, but not in Likuyani sub-county and parts of Lugari sub county.
	Scale Insects pest surveillance	Out of the sites surveyed, scale insects were observed in 51.8% of the sites. Identification is ongoing
12	Incidence and distribution of sweet potato diseases in Western Kenya	SPFMV, SPMSV and SPCSV tested positive in the samples collected in Busia, Kakamega and Bungoma counties. Cucumber mosaic virus and SPVG were not detected in any of the samples tested.
13	Surveillance for Fusarium oxysporum f.sp cubense TR4 in Bananas in Kenya.	FOC TR4 strain is absent in surveyed banana growing areas.
15	Surveillance for Banana Xanthomonas Wilt of Bananas in Kenya	Presence of the disease was noted in two counties: Vihiga and Kakamega.
16	Surveillance for Banana Ralstonia solanacearum (Moko disease) in Kenya	Bacterial wilt caused by Ralstonia solanacearum Race 1 in bananas is absent in Bananas in Kenya.
17	Surveillance for pests of Bananas in Kenya	The survey indicated occurrence of fungi, bacterial, nematode, and viral diseases. Weevil damage was higher in Nyamira, Bungoma and Taveta counties.
18	Surveillance for PCN in Central, Western and Rift Valley in Kenya	PCN is spread across major potato production areas sampled.
19	Pectobacterium and Dickeya spp in potato in Central, Western and Rift Valley in Kenya	Pectobacterium carotovorum was detected in Muranga-5%, Nyeri-12%, Meru-2%, Narok-2%, Nyandarua - 8%, out of 34 samples that presented symptoms of soft rots.
20	Oxalis sp surveillance in cut flower production areas in Kenya	Oxalis stricta was not found in the surveyed farms
21	Surveillance of Bakanae disease of rice	Bakanae disease was observed in all surveyed rice fields.
22	Surveillance of Thrips and related viruses	Frankliniella occidentalis and Frankliniella tritici were found in some farms. Thrips related viruses were not found during the survey.

1.8 LABORATORY ANALYSIS

The plant health laboratories conducted various tests during the period under review. These tests were either in supporting compliance to import and export requirements or as a service to the public. A total of 4,761 samples were tested in the Plant Quarantine and Biosecurity station at Muguga and Nakuru, Mombasa and Headquarters plant health laboratories. These are summarized in **Table 10**. In addition, 16 isolates of potato pathogens were acquired by the laboratories for use as reference collections for quality control during the period.

Table 10: Types of samples analysed

S. No	Category	Type of pathogen tested	No. of samples
1	Bacteria	Ralstonia solanacearum, Ralstonia solanacearum race 1, Erwinia, Dickeya, Pectobacterium, Curtobacterium flaccumfaciens, Pseudomonas syringae, Pseudomonas oryzae, Pseudomonas lachrymans Citrus greening, Rhizobia and clavibacter, Xanthomonas campestris, Cassava bacteria bright, bacterial wilt	936
2	Viruses	Maize Chlorotic Mottle Virus (MCMV) and Sugarcane Mosaic Virus (SCMV), chrysanthemum virus B, Cucumber Mosaic Virus, Cucumber Green Mottle Virus and Prunus Necrotic Ringspot Virus, chrysanthemum stunt viroid-CSVD, chrysanthemum stem necrosis virus- CSNV, alfalfa mosaic virus-AMV, pelargonium flower break virus- PFBV in flowers and plants for planting, citrus greening in citrus, Cassava Mosaic Disease in cassava, Wheat streak mosaic virus, Impatiens Necrotic Stem Virus, Carnation Mottle Virus, passion fruit woodiness virus in passion fruit, TSWV- tomato spotted wilt virus, INSV- Impatiens Necrotic Spot Virus.	4760
3	Nematodes	Potato Cysts nematodes and other nematodes	918
4	Fungi	Fusarium spp, Trichoderma spp, Choanephora cucurbitarum, Puccinia horiana, Aspergillus flavus, oxysporum f. sp. Cubense, oxysporum f. sp. Lycopersici, oxysporum f. sp. Melonis,	2404
5	Phytoplasma	Coconut lethal yellow necrosis and other phytoplasma	16
6	Barcoding	Insects, plants, bacteria, fungi	75
7	GMO analysis	TNOS, P35s	248
8	Insects	Bemisia tabaci, sipha flava, Bactrocera dorsalis, Ceratitis cosyra, Spodoptera frugiperda, Aphis gossypii, Aphis craccivora.	227

1.9 KENYA STANDING TECHNICAL COMMITTEE ON IMPORTS AND EXPORTS

During the year, 59 applications for bio-controls, organic fertilisers, bio-fertilisers and related articles were discussed at the KSTCIE meetings. Eight meetings were held during the year and 15 products given approval for commercialization. These products were followed up through field trials and final reports discussed by the KSTCIE sub and main committees. **Table 11** summarizes the applications done during the year.

Table 11: Summary of products approved for commercialization under KSTCIE

No.	Product name	Product type	Crop families approved for	Client Name
1	Rizoliq top pea	Bio fertilizer	Legumes	Rizobacter Argentina
2	Zytonic M	Bio fertilizer	Legumes and solanaceae	Kenind Agro Limited
3	Dhrani Groomer Herbal Powder	Organic Fertilizer	Tea	Antrix International Ltd
4	Humic acid – Ha6	Humic acid	Graminae Vegetables and Legumes	Leo-Lin International Kenya Ltd
5	Sifa	Organic fertilizer	Graminae Vegetables and Legumes	Legorn Feeds International
6	Penergetic K	Organic fertilizer	Graminae and Legumes	Nelion Trading Ltd
7	Penergetic P	Organic fertilizer	Graminae and Legumes	Nelion Trading Ltd
8	Mona Foliar Feed	Biostimulant	Graminae	Dudu East Africa
9	Water Retainers	Water use efficiency product	Legumes	Twiga Chemicals
10	Max-Yield	Humic Acid	Graminae	Ken and Tech Kenya Ltd
11	Mycoup	Biofertilizer	Watermelon	Kenya Biologics Ltd
12	Activ80	Soil Conditioner	Legumes	International Partnership Services East Africa Limited
13	Harmony	Organic Fertilizer	Legumes	Cooper K-Brands Ltd
14	Rizoliq top beans	Biofertilizer	Legumes	Fresh Care East Africa Limited
15	Rhizoflo Premium Corn	Biofertilizer	Graminae	Fresh Care East Africa Limited

1.10 GERMPLASM EXCHANGE

KEPHIS hosts tissue culture and virus cleaning laboratories to facilitate research, germplasm cleaning and exchange. During the year, germplasm for cassava, potato and sweet potato were cleaned. A total of 125,237 clean potato and sweet potato vines were distributed to farmers in the country. The varieties of sweet potato distributed were *Vitaa, Kabode, Chebolol, Gweri, Kenspot 3, Kenspot 5, Carrot c, Sumaiya* and *Mugande.* The varieties of Irish potato cleaned and distributed were *Shangi, UNICA* and *Dutch Robjin.*

Tissue culture laboratory audited

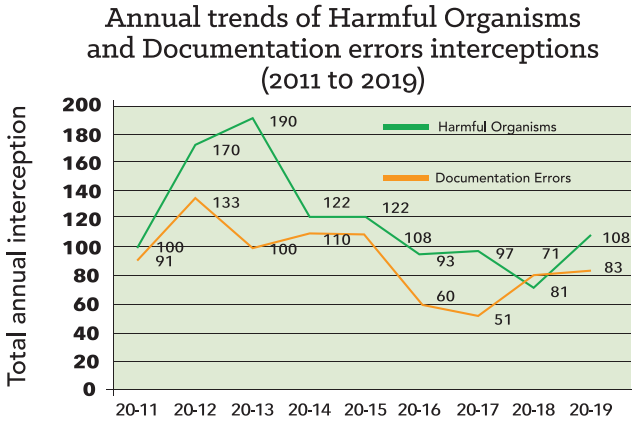
A number of tissue culture laboratories have been set up in Kenya to provide enhanced production of clean planting material.

During the period, 12 laboratories in Nairobi, 2 in Kisii, 1 in Kakamega, 1 in Naivasha and 2 in Nakuru were audited by KEPHIS for compliance. Crops under these tissue culture laboratories were banana, bamboo, pyrethrum, coffee, sweet potato, khat, moringa, vanilla, passion fruit, aloe vera, cassava, macadamia, eucalyptus, yams, sisal, ginger, kiwi, roses, Irish potato, limonium, and enset.

1.11 INTERCEPTIONS AND REJECTIONS

Interception of Kenya's produce abroad remained a challenge during the period under review. A total of 191 interceptions were notified by various markets during the year due to the presence of harmful organisms and documentation errors. **Figure 5** summarizes the trends in interceptions from the year 2011/12 to 2018/19.

Figure 5: Interception trends for 2011/12 to 2018/19 financial years



Interceptions increased slightly during the financial year. This can be attributed to the changing requirements in the EU where the pest, ***Thaumatotibia Leucotreta*** (FCM) on roses (Kenya's main export cut flower) was brought under regulation in January 2018. Kenya was notified of 38 interceptions attributed to FCM on roses in the financial year translating to 46% of the total interceptions due to harmful organisms. 38% of the notifications due to documentation errors were attributed to exporters presenting to the importing country authorities' phytosanitary certificates that had not been endorsed by KEPHIS. Other causes of interceptions included missing or inadequate additional declarations, prohibited products being exported and wrong information being documented on the phytosanitary certificate.

Addressing interceptions on harmful organisms

KEPHIS instituted the following measures to enhance compliance following the increase in interceptions due to presence of harmful organisms in roses and basil:

i. Capacity building for inspectors and exporters on pest identification and management of quarantine pests in the EU.
ii. Institution of quarterly farm audits to address the challenge at the farm level.
iii. Enhanced inspections at the exit point especially for roses and basil after review of the status of the product on the risk profile.

Addressing interceptions on documentation errors

To address the challenge of interceptions due to documentation, KEPHIS instituted several measures to ensure compliance as below:

i. Regular consultative meetings with stakeholders to create awareness and appraise the industry of any new EU market requirements.
ii. Enhanced private public partnerships and interactions through the Horticulture Competent Authority Structure.
iii. Enhanced training and capacity building on use of the ECS

Rejections at points of exit

A total of 283 tonnes of cut-flowers, vegetables and herbs destined for external markets were rejected at JKIA due to the presence of various species of harmful organisms before export, while 114,922 tonnes of various plants and plant products were rejected due to the presence of live pests, documentation errors and absence of documents.

1.12 ISO ACCREDITATION AND AUDITS

ISO 17025:2005 audit

The Plant Health Laboratories are accredited to ISO 17025:2005. During the period under review, the laboratories successfully underwent re-certification by KENAS. In the same regard, the laboratories received certification for two additional diagnostic methods.

USDA Pelargonium facility inspection

The USDA Pelargonium Facility inspections were carried out in December 2018 to verify compliance of the production facilities to the USA export requirements for Pelargonium cuttings. Six facilities were inspected and approved to export the cuttings to USA in the 2019 season.

Chinese NPPO official visit for market access for Avocado

The Governments of Kenya and China, on the basis of Pest Risk Analysis, signed an SPS protocol for frozen avocado exports to China on 25th April 2019 in China. A compliance audit was carried out at a Kenyan facility in Naivasha by the General Administration of Customs of the People's Republic of China (GACC) and Kenya was allowed to export frozen avocado.

KEPHIS MD Dr.Esther Kimani with inspectors from the General Administration of Customs of the People's Republic of China on their visit to Kenya to inspect several avocado orchards and nurseries to check on compliance to the Chinese conditions of export

1.13 TRADE AND STANDARDS

During the year, KEPHIS participated in the development of various national, regional and international standards as well as harmonization of the various standards with the aim of trade facilitation. KEPHIS participated in the following activities during the same year:-

DEVELOPMENT OF INTERNATIONAL STANDARDS FOR PHYTOSANITARY MEASURES.

KEPHIS participated in the development of International Standards on Phytosanitary Measures (ISPMs) at the national and regional consultative meetings.

The following draft ISPMs and documents were discussed at the national level and findings submitted to IPPC for consideration:

- Revision of DP2: ***Plum pox virus*** (2016-007)
- Draft DP for ***Bactrocera dorsalis*** complex (2006-026)
- Draft DP for ***Conotrachelus nenuphar*** (2013-002)
- Draft DP for ***Austropuccinia psidii*** (2006-018)
- Draft DP for Ips spp. (2006-020)
- Draft DP for ***Xylella fastidiosa*** (2004-024)
- 2018 First Consultation: Draft Specification on use of systems approaches in managing the pest risks associated with the movement of wood commodities (2015-004)
- Draft International Plant Protection Convention (IPPC) Strategic Framework for 2020 – 2030. Protecting the World's Plant Resources from Pests. Developed by the Commission on Phytosanitary Measures
- 2018_Consultation-Draft Terms of Reference for the Implementation and Capacity Development Committee (IC) Sub-group on IRSS (as revised by IC May 2018)
- 2018_Consultation-Draft Rules of Procedure for the Implementation and Capacity Development Committee (IC) Sub-groups (as revised by IC May 2018)
- 2018_Consultation-Draft Terms of Reference for the Implementation and Capacity Development Committee (IC) Sub-group on Dispute Avoidance and Settlement (as revised by IC June 2018)
- Draft Rules of Procedure for the Implementation and Capacity Development Committee (IC) Sub-groups (as revised by IC May 2018) 2015-004_Draft Specifications-_ Systems Approaches

WTO-SPS NOTIFICATIONS

Under the transparency provision of the WTO-SPS, WTO members are obliged to notify other members through the WTO secretariat of any amendments or new laws of SPS nature that has an effect on trade. KEPHIS and the key stakeholders participated by commenting on the proposed amendments and communicated to the concerned WTO members. Kenya's enquiry point for plant health based in KEPHIS ensures that these notifications are downloaded monthly from the WTO website (http//spsimis.wto.org) circulated to the stakeholders for comments and any substantial comments sent to the member country for consideration. The notifications were also discussed during National SPS committee meetings and posted on the KEPHIS website **(www.kephis.org).**

UNECE& OECD FRUIT AND VEGETABLE SCHEME

KEPHIS has continued to participate in the development of quality standards in both the OECD and UNECE schemes by providing necessary comments to standards on the online system. This directly supports Kenya's horticultural industry and allows the member countries to participate in the creation and updating of new and existing quality standards, brochures and inspection methods.

The 7th Kenya Technical Working Group meeting on OECD Standards on fresh fruits and vegetables was held in April 2018 at KEPHIS Headquarters. Various activities were carried out including the development of the OECD Passion Fruit brochure which was presented at the OECD plenary meeting in Paris, France in December 2018. The brochure will be considered for adoption in subsequent meetings.

BILATERAL TRADE NEGOTIATIONS

To gain market access for agricultural products and ensure food security in the country, Kenya has initiated trade negotiations with other countries such as South Africa, USA, Mauritius and China, among others. KEPHIS has been involved in the negotiations to ensure phytosanitary provisions are taken care of. The negotiations aim at increasing trade of agricultural produce under favourable yet safe conditions thus ensuring increased food security in the country.

Kenya – South Africa

The governments of Kenya and South Africa in 2018 agreed on a protocol to facilitate Kenya to export fresh avocadoes to South Africa. The agreement requires KEPHIS to audit exporters and undertake pre-harvest surveillance and monitoring of pests with special attention to pests of concern.

During the period under review, KEPHIS in accordance with the agreed protocol vetted and cleared three companies to export to South Africa effective November 2018. The companies were however not able to export due to logistical challenges. KEPHIS continues to offer support to exporters to ensure that those who meet the South African market requirements are able to access the market.

CENTRE OF PHYTOSANITARY EXCELLENCE (COPE)

The Centre of Phytosanitary Excellence (COPE) was launched in October 2010 and has trained over 3,000 sanitary and phytosanitary practitioners. The objective of COPE is to enhance the capacity of Africa's national sanitary and phytosanitary systems to protect national agriculture and increase ability to compete in international markets by meeting market requirements. COPE is positioned to serve as a sub-regional virtual centre and is already recognized by Regional Plant Protection Organizations such as AU-IAPSC and COMESA. A number of courses have been conducted on areas of phytosanitary concern like Application of Phytosanitary Measures, Introduction to the IPPC and its International Standards for Phytosanitary measures(ISPMs), Phytosanitary Inspection and Certification Systems, Pest Risk Analysis, Pest Surveillance, Laboratory Pest Diagnosis, Pest Identification, Documentation in Phytosanitary Systems, Risk Based Inspection at Border Points and others. The trainees are drawn from Kenya, Malawi, Uganda, Tanzania, DRC, Rwanda, Burundi, Zambia, South Africa, Ethiopia, Eswatini, Zimbabwe, Ghana, Botswana, Nigeria, Lesotho, Somali, among others. In addition, COPE has developed a curriculum and tailor made programs, supported work on regional PRA for Maize, Beans and Rice and in-country training and consultancy. COPE has also successfully hosted the Phytosanitary Conferences in 2016 and 2018.

ACHIEVEMENTS FOR THE YEAR 2018 - 2019

A. TRAINING

In the period July 2018 to June 2019, 825 were trained as follows:

a. 45 Nursery operators on nursery management and grafting fruit trees

b. 53 participants from Kenya, Ethiopia, Uganda and Tanzania on Maize Lethal Necrosis (MLN) disease Rapid Diagnostic Kits and MLN-Free Seed Production 30th to 31st July 2018)

c. 101 farmers from Kirinyaga County on clean sweet potato planting material awareness

d. 2 KEPHIS staff on GIS training (Regional Centre for mapping for resource development in Nairobi in August 2018)

e. 27 nursery operators on Nursery Management and Certification (KEPHIS and KALRO from 30th to 31st August 2018)

f. 18 participants from Mozambique, Malawi, Zambia and Zimbabwe on Training of Trainers on VCU and DUS under the Southern Africa Seed Trade Project Held (Kenya from 17th to 21st September 2018)

g. 43 participants from Kenya, Tanzania, Uganda and Burundi attended the 5th Regional workshop on application of international quality standards for fresh fruits and vegetables (17th to 21st September 2018-Kenya)

h. 9 participants on Cassava Virus Diagnostics Training Workshop (Plant Quarantine & Biosecurity Station 26th - 28th September 2018)

i. 20 participants trained on method validation and uncertainty of measurements (15th to 18th October 2018 at PQBS by KENAS)

j. 64 seed growers training (1st November 2018 at Little Nile Hotel, Homa Bay County)

k. 112 personnel trained on FCM & FAW (Agriflora (k) limited - Nakuru on 30th November 2018)

l. 10 Inspectors on identification of potato pests and diseases during seed certification (KEPHIS HQ from 14th -18th January 2019)

m. 92 horticultural exporters on management of FCM, FAW and other horticultural pests (Nanyuki on 10th January 2019)

n. 8 inspectors on MLND assessment and testing with rapid diagnostic kits held (29th to 30th January 2019) at Maize Lethal Necrosis Screening Facility in Naivasha)

o. 13 Kapsoit youth training on nursery management and certification training (KEPHIS HQ Nairobi-Kenya from 21st to 22nd February, 2019)

p. 8 Malawi Ministry of Agriculture staff learning visit to KEPHIS HQ and KEPHIS Nakuru 24th to 30th March, 2019

q. 10 Somalia Ministry of Agriculture staff study tour to KEPHIS HQ and Nakuru group 1 on 25th and 26th March 2019

r. 50 technical staff and sprayer operators in the horticulture industry (26th to 29th March, 2019)

s. 8 Somalia Ministry of Agriculture staff study tour to KEPHIS HQ group 2 on 8th April, 2019

t. 1 Uganda Ministry of Agriculture staff training on pesticide formulation and pesticide residue analysis (3rd to 17th April 2019 at KEPHIS ACL HQ)

u. 2 Tanzania Ministry of Agriculture staff hands on training on Pest Risk analysis (4th to 25th April 2019 at KEPHIS HQ)

v. 11 inspectors training on accreditation of pest risk analysis phytosanitary practitioner

w. 11 Inspectors training on plants for planting certification (Plant Quarantine & Biosecurity Station Muguga from 8th – 10th April 2019

x. 22 county information officers and agricultural reporters forum (2nd and 3rd May 2019 at KEPHIS HQ)

y. 30 participants on hands on training on field deployable LAMP assay for Ralstonia diagnosis (13th to 14th May 2019 at KEPHIS Kenya)

z. 11 KEPHIS inspectors on GIS and Mapping (3rd to 7th June, 2019)

aa. 15 officers taken on study tour for the Uganda High level to bench mark KEPHIS with the export horticulture sector in Kenya (7th June 2019 at KEPHIS HQ)

ab. 17 persons trained in annual branding and customer satisfaction training for KEPHIS staff (10th to 15th June 2019 at KEPHIS Headquarters)

ac. 12 private seed inspectors and analysts training (KEPHIS HQ and KEPHIS Nakuru on 17th to 28th June 2019)

B. THE 3RD PHYTOSANITARY CONFERENCE 2020

The UN General Assembly adopted in December 2018 the resolution proclaiming 2020 as the International Year of Plant Health(IYPH). The IYPH is expected to increase awareness among the public and policy makers of the importance of healthy plants and the necessity to protect them in order to achieve the Sustainable Development Goals and push the global food security and nutrition agenda which is in line with the Government of Kenya ***Big Four Agenda*** on food security and nutrition. The IYPH is a key initiative to highlight the importance of plant health to enhance food security, protect the environment and biodiversity and boost economic development. Despite the increasing impact of plant pests and diseases, resources are limited to address the problem. We hope the IYPH will trigger greater global collaboration to support plant health policies at all levels, which will contribute significantly to the Sustainable Development Agenda.

Kenya therefore plans to host the 3rd Phytosanitary Conference to be held from 14th to 18th September 2020 as way to celebrate the IYPH 2020. The conference's theme is ***Enhancing Phytosanitary Systems for Healthy Plants, Safe and Sustainable Trade.*** The venue will be KEPHIS headquarters in Nairobi. This will be the 3rd phytosanitary conference which will allow phytosanitary practitioners in Africa and beyond to share their own phytosanitary experiences and challenges.

The scope of this conference will cover the following themes:

1. International Year of Plant Health
2. Pest Surveillance in Phytosanitary Systems
3. Import Control and Quarantine Regulations
4. Pest Diagnostics in Phytosanitary Systems
5. Export Certification in Phytosanitary Systems
6. Emerging Innovation in Phytosanitary Systems
7. Industry as key drivers of agricultural systems for successful trade
8. Capacity building, regulatory framework, trade negotiations and communication in phytosanitary systems

Photos for various departmental activities


1


2


3


4

5

1. ***Pelargonium inspection for USDA compliance***
2. ***Samples for MLN testing***
3. ***Examination of insect trap during FAW on rose's surveillance.***
4. ***Symptoms of potato weevil damage during pathogens on sweet potato surveillance***
5. ***Test for plant pathogens is internationally bench marked***

2.0

SEED CERTIFICATION AND PLANT VARIETY PROTECTION

2.1 PLANT VARIETY PROTECTION

2.1.1 Plant Breeders' Rights (PBR)

Plant breeding is an intensive and long process that takes a lot of resources and time. Developing new varieties suitable and accepted in the market takes years of research and development. Bearing this in mind, there is need for plant breeders to protect their varieties against intellectual property theft and/or commercial exploitation of their varieties without their consent.

Under CAP 326 of the laws of Kenya, KEPHIS has the mandate to protect new plant varieties in the country by granting Plant Breeders' Rights to the owners/breeders of the varieties. Kenya became a member of the International Union for the Protection of New Varieties of Plants (UPOV) in May 1999 and became party to the 1991 Act of the UPOV Convention in May 2016.

The Convention offers guidance on the protection of new varieties of plants and conditions to be fulfilled by a variety seeking protection. Varieties have to undergo exhaustive Distinctness, Uniformity and Stability (DUS) testing to ascertain the variety is new from other varieties of common knowledge, pass the novelty criteria and have no objections to registration from the public and other parties.

In Kenya, new varieties of plants are protected for a period of 20 years except for trees and vines that are protected for 25 years. During this period, 3rd parties can grow these protected varieties under license of the title holder.

Protection of intellectual property encourages innovations in plant breeding, encourages breeders to develop new varieties that are of great benefit to the farmer and improves on food security and the economy in general through trade. Variety protection has enabled breeders to recover their research and development costs and profit from their breeding initiatives. Granting PBR had enabled breeders commit to the breeding process and gives recognition to the breeders themselves.

To date, the KEPHIS PBR office has received 1,650 applications for new varieties of plants. In the year 2018-2019, 78 PBR applications were received.

The distribution and number of annual PBR applications for the last 10 years received by KEPHIS from local and international breeders are summarised in **Table 12** and **Figure 6.**

Table 12: Plant Breeders Rights Applications

Species	Common Name	No. of applications	Origin
Triticum aestivum	Wheat	2	Kenya
Solanum Glaucophyllum	Waxyleaf NightShave	1	Switzerland
Camellia sinensis	Tea	5	Kenya
Fragaria ananassa L.	Strawberry	9	USA, Mexico, UK
Rosa L.	Rose	23	The Netherlands, Kenya, France, China, Ecuador
Rubus Ideeus L.	Raspberry	2	USA
Solanum tuberosum L.	Potato	3	Netherlands
Zea mays	Maize	4	Zimbabwe, South Africa, Kenya
Limonium L.	Limonium	8	Colombia
Lepidium L.	Lepidium	1	Israel
Hydrangea Macrophylla	Hydrangea	2	Japan
Phaseolus vulgaris L.	French Beans	1	Belgium
Eryngium L.	Eryngium	2	Kenya
Lablab Purpureus L.	Dolichos	3	Kenya
Caccinium Corymbonium L.	Blueberry	9	USA
Alstroemeria L.	Alstromeria	3	The Netherlands

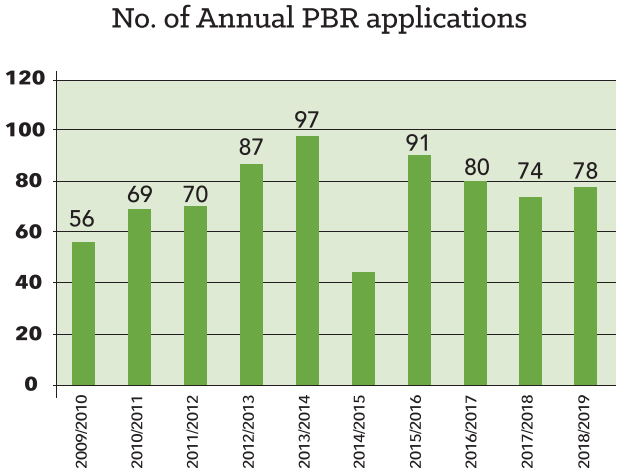


Figure 6: Trends in PBR Application – 2009 - 2019

Majority of the applications in 2018-2019 was on rose flowers from The Netherlands; this serves as an indicator of the importance of the flower industry in the country and validates Kenya's position as a top flower exporter in the world. This is as illustrated in **Figure 7.**

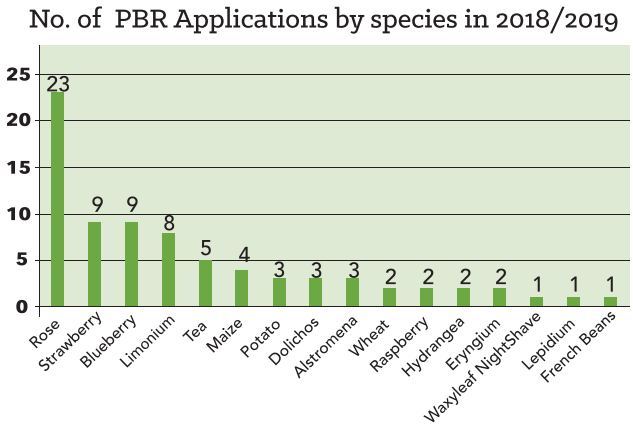


Figure 7: Number of PBR applications by plant species

Countries of origin included The Netherlands, Kenya, USA and Mexico among other nations. This is summarised in **Figure 8.**

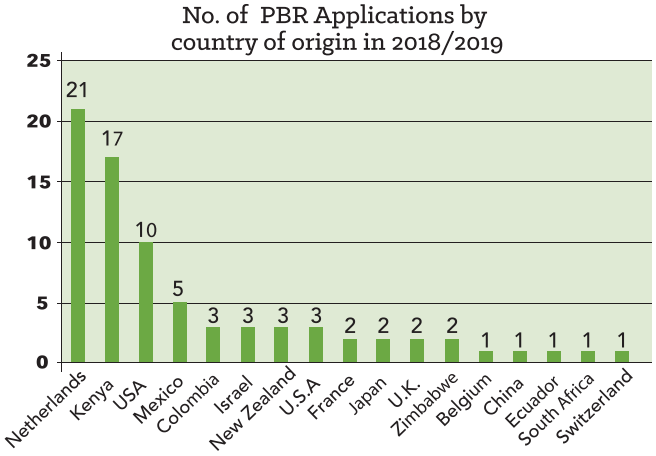


Figure 8: Number of PBR Applications by country of origin

During the period under review, 44 PBR grants were issued. The varieties underwent thorough DUS testing and test results indicated that the varieties were clearly distinguishable from any other existing varieties, sufficiently uniform and stable. Rose flowers constituted 68% of the total grants in the year while French beans constituted 9%. The number of titles issued during the period are summarized in **Figure 9.**

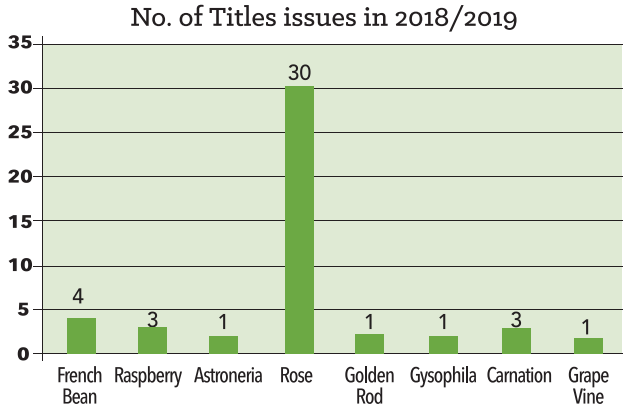


Figure 9: Number of titles issued

Varieties of roses for export: rose flowers constituted 68% of the total grants in the year

2.1.2 National Performance Trials (NPTs)

During the year, the long rain season began in March 2018 while the short rains season commenced in September/October 2018 for most of the sites when trials are conducted. NPTs were carried out to ascertain the potential yield of new varieties before release to the market.

In testing new varieties, candidate (new) varieties were planted alongside existing varieties already being produced by farmers in the suitable agro-ecological zones. Data was collected throughout the growing cycle and analyzed. The reports were forwarded to the National Performance Trials Committee (NPTC) for deliberations and varieties that passed the set criteria were recommended for release.

In the year 2018 - 2019, KEPHIS conducted two types of trials namely:

i. Client Managed Trials

In client managed trials, the client was responsible for the overall running of the trial with KEPHIS playing a defined supervisory role and collecting the required data at intervals.

The client had to have technical capacity and knowledge to perform best cultural practices on the trial, agronomic management and site selection.

ii. KEPHIS Managed Trials

On behalf of the NPTC and clients, KEPHIS fully managed these trials from site selection, planting, agronomic management and ensured security of the trials. The clients were involved in undertaking the NPT tour to evaluate the work done by KEPHIS on the trials.

During the reporting period, 251 varieties were taken through NPT. Of these, 73% were KEPHIS managed while 27% were client managed. **Figure 10** shows the trial management summary.

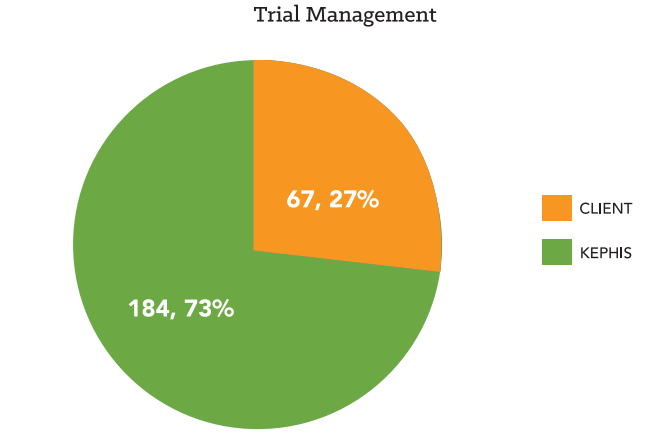


Figure 10: Summary of NPT trial Management in the year

In the year, under the NPT programme, maize had the highest number of submissions with 103 entries followed by Irish Potatoes with 29 entries. Other species included triticale, barley, brachiaria, sweet potato and garden pea. **Figure 11** shows the species under NPT trials in 2018-2019.

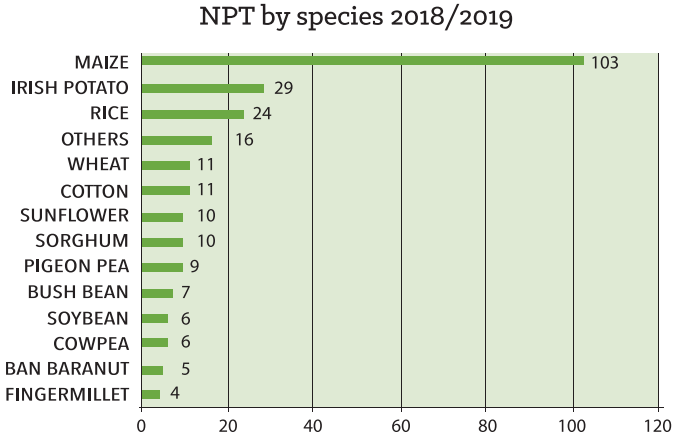


Figure 11: Summary of NPT candidates by species

Pioneer Hi-bred had the highest number of submissions (40) followed by Syngenta East Africa (28). Other seed companies that submitted varieties for NPT included KALRO Muguga, KALRO Tigoni, Hygrotech, University of Eldoret and individuals including Narayani Ramantarana.

The distribution of NPT candidates by source is summarized in **Figure 12.**

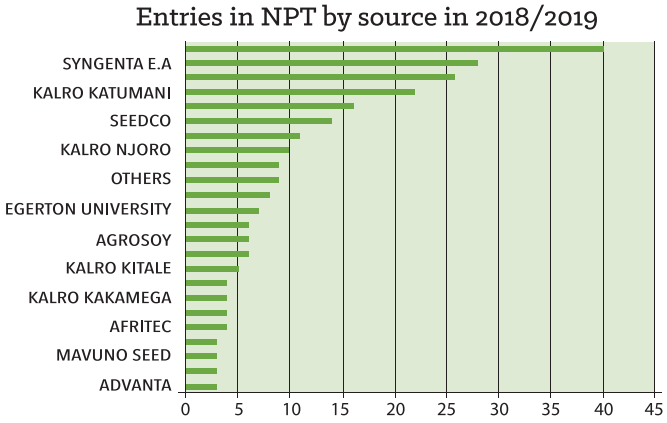


Figure 12: Summary of NPT candidates by source

In the year, KEPHIS established trial sites in various parts of the country in suitable agro-ecological zones for the varieties under trial to express themselves fully. These were established under the various KEPHIS regional offices as shown in the **Figure 13.**

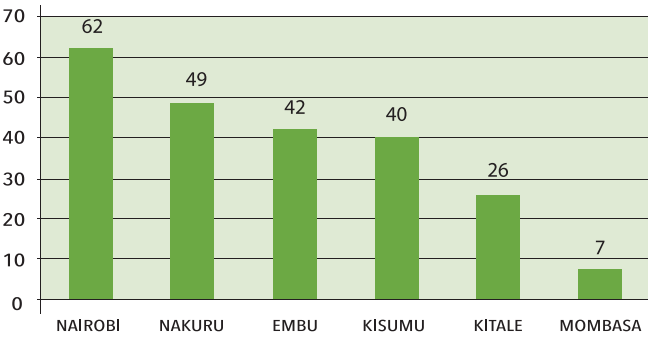


Figure 13: Summary of the number of NPT sites per region

Nairobi region had the highest number of trial sites for both seasons of the year with a total of 62 NPT sites; Nakuru had 49 sites while Mombasa had the least number of sites at 7. Site selection was based on the recommendations of the breeder/seed company who specified the kit (agro-ecological zone) for the variety.

National Performance Trials Committee (NPTC)

During the period under review, the NPTC as the technical committee reviewed the data collected and analyzed from NPT trials. It deliberated on the reports done and recommended for release varieties that had passed two seasons of NPT against the set criteria.

In the year, the NPTC recommended for release 37 new varieties as summarized in **Figure 14.**

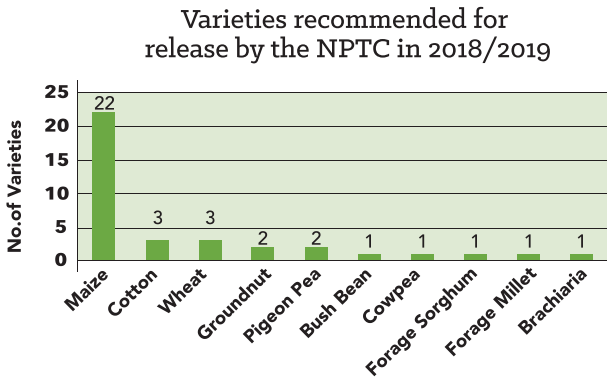


Figure 14: Summary of varieties recommended for release

Maize formed 59% of the varieties recommended for release followed by cotton at 8%. This supported the ***Big Four Agenda*** on food security that has identified maize, potatoes and rice as the crops to shore up food and nutrition security in the country; thus greater effort was required by all stakeholders to facilitate the growing of new superior varieties.

*A ripened cob of maize: Maize formed 59% of the varieties recommended for release followed by cotton at 8%. This supported the **Big Four Agenda** on nutrition and food security that identifies maize, potatoes and rice as the crops to shore up food and nutrition security in the country*

Other varieties recommended for release were wheat, bush bean, cowpea, forage sorghum, forage millet, groundnut, maize, brachiaria, pigeon pea and wheat.

The National Variety Release Committee (NVRC)

The National Variety Release Committee (NVRC) approved all varieties recommended for release by the NPTC and considered the DUS reports for the varieties before eventual release and publishing the variety names in the **Kenya Gazette.** The NVRC approved for release 35 new varieties that had undergone NPT and DUS evaluation. These variety names were published in the **Kenya Gazette** and the seed companies allowed to commercialize the varieties. Forty percent of the varieties gazetted were maize, 14% consisted Irish potato and 11% Sweet potato. The varieties were distributed as shown in **Figure 15.**

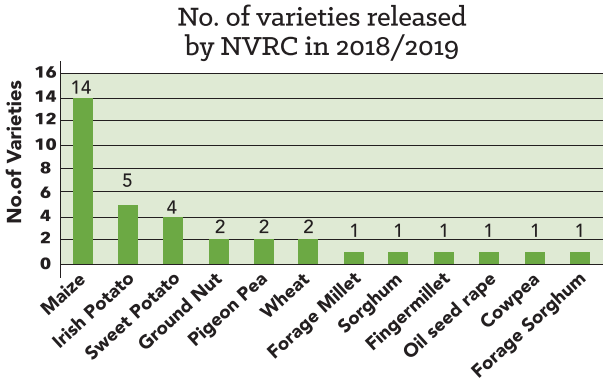


Figure 15: Summary of number of varieties released by NVRC

Trends in release of varieties over the past 10 years indicate mixed results. The varieties released in 2018 - 2019 represented a 30% decline from the varieties released by the NVRC in the 2017 - 2018 period. This was attributed to existence of superior high yielding varieties already in the market and available to farmers. The trends are as shown in **Figure 16.**

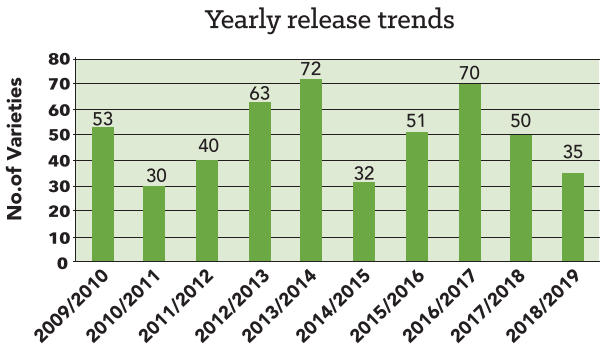


Figure 16: Summary of trends in variety release from 2009/2010 – 2018/2019

Distinctness, Uniformity & Stability (DUS) Trials

During the period, 122 varieties were put under DUS examination. Maize constituted the highest number of varieties under DUS examination in three sites namely Kitale for the late kit, Kiboko for the early kit and Embu for the medium altitude kit. Other varieties under DUS examination included barley, cowpea, pigeon pea and triticale.

DUS examination was conducted for two purposes mainly: for varieties to be granted PBR and to generate official descriptors for the varieties used in carrying out field inspection in seed growing. All varieties that were approved for release by the NVRC underwent DUS testing for two seasons/cycles. This testing was done for characterization of the varieties.

Kenya, being a member of UPOV adhered to the UPOV Technical Guidelines when conducting the DUS testing. **Figure 17** summarizes the entries in DUS testing during the year.

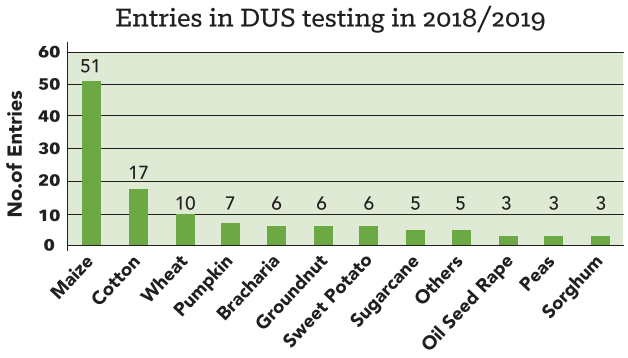


Figure 17: Summary of entries in DUS testing

Trends in DUS testing over the past 10 years indicate mixed performance as shown in **Figure 18.**

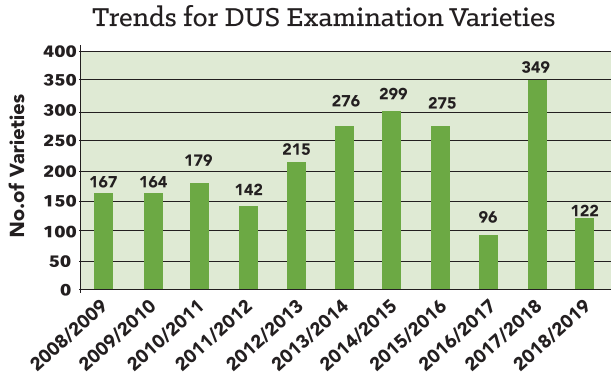


Figure 18: Summary of trends in DUS testing between 2009/2010 – 2018/2019

International Cooperation in DUS Testing

UPOV has developed guidelines for DUS testing promoting harmonization between members of the Union and/or authorities thereby facilitating exchange of information and reports of DUS testing. In the year, KEPHIS requested from the EU's office for plant variety protection, the Community Plant Variety Office (CPVO) for DUS reports for several varieties bred outside the country seeking PBRs in Kenya. 57 reports were received at KEPHIS thereby enabling a timely and cost effective way of granting PBRs.

2.2 SEED CERTIFICATION

The objective of seed certification is to supply high quality seed to farmers which is true to identity, high in purity and germination capacity and free from certain pests and diseases. Seed quality is the most important aspect in crop production, as high quality seed is essential for good yields and good returns, and minimizes the likelihood of crop failure. It is achieved through field inspection of seed crops during active growth stage, processing inspection, sampling and testing in the seed laboratory. Certified seed must meet the minimum quality standards as stipulated in the Seeds and Plant Varieties (Seeds) regulations of CAP 326.

> "Certified seed must meet the minimum quality standards as stipulated in the Seeds and Plant Varieties (Seeds) regulations of CAP 326."

Seed field inspections

Field inspections of seed crops were done to verify conformance to their description factors that could have caused irreversible damage to the genetic purity or seed health. In the period under review, 30,884.6 hectares of seed crops were registered for field inspection compared to 25,421.1 hectares in the 2017/2018 financial year, signifying an increase of 21.5 %. Out of the total hectares registered for inspection, 18,087.6 hectares were approved, 579.8 hectares rejected, 212.1 hectares withdrawn and 11,988.8 hectares were still pending inspection by the close of

the 2018/2019 financial year. This is summarized in **Table 13**. The hectares of rejected fields increased from 516.6 Ha in 2017 - 2018 to 579.8 Ha in 2018 - 2019 translating to 12.2 %. The major reasons for rejection of the seed crops were off types, selfing in maize, varieties being not true to type and admixtures.

Table 13: Results of hectares of seed crops inspected per species

Botanical Name	Common Name	Ha planted	Ha Approved	Ha Rejected	Ha Withdrawn	Ha Pending
Hordeum vulgare	Barley	654.1	571.6	66.5	0.0	16.0
Phaseolus Vulgaris	Beans	1551.84	759.99	59.35	85.6	840.99
Solanum nigrum	Black nightshade	4.2	1.7	0.0	0.0	2.5
Chloris gayana	Boma Rhodes	281.2	353.7	0.0	0.0	76.5
Brassica oleracea	Collards	134.4	134.4	0.0	0.0	0.0
Brachiaria ruziziensis	Congo Signal	7.2	2.0	0.0	0.0	0.0
Coriandrum sativum	Corriander	20.0	18.0	2.0	0.0	0.0
Gossypium hirsutum	Cotton	2.7	0.0	1.5	0.0	1.2
Vigna unguiculata	Cow pea	261.2	247.6	10.0	2.0	2.0
Lablab purpureus	Dolichos	1.6	0.0	0.0	1.6	0.0
Solanum melongena	Egg plant	7.3	5.7	0.0	0.0	1.6
Eleusine coracana	Finger millet	12.1	10.0	0.0	0.0	2.1
Vigna radiata	Greengrams	535.5	500.0	20.4	15.1	0.0
Arachis hypogaea	Groundnuts	3.2	3.2	0.0	0.0	0.0
Zea mays	Maize	22,523.5	12,055.9	297.4	106.8	9,831.2
Cucumis melo	Melon	0.6	0.6	0.0	0.0	0.0
Avena sativa	Oats	187.4	40.0	0.0	0.0	84.8
Panicum coloratum	Coloured Guinea grass	67.1	0.0	0.0	0.0	27.9
Pennisetum glaucum	Pearl Millet	34.2	31.4	2.8	0.0	0.0
Pisum sativum	Peas	20.9	15.5	0.0	0.0	6.4
Capsicum Spp	Pepper	32.1	31.5	0.0	0.0	0.6
Cajanus cajan	Pigeo peas	18.6	6.0	0.0	0.0	12.6
Amaranthus spp	Pigweed	13.4	5.7	0.0	0.0	3.5
Solanum tuberosum	Potato	792.7	675.2	21.8	1.0	94.7
Curcurbita spp	Pumpkin/ Squash	7.4	6.2	0.8	0.0	0.4
Chloris gayana	Rhodes grass	634.1	617.9	4.0	0.0	12.2

Oryza sativa	Rice	169.4	134.3	47.0	0.0	12.9
Setaria sephacelata	Foxtail Millet	57.4	21.0	0.0	0.0	39.2
Sesamum indicum	Simsim	0.8	0.8	0.0	0.0	0.0
Sorghum bicolor	Sorghum	474.1	292.3	37.7	0.0	156.7
Sorghum sudanense	Sudan grass	42.4	18.2	0.0	0.0	14.2
Sorghum almum	Columbus grass	18.2	0.0	0.0	0.0	18.2
Glycine max	Soybean	102.4	41.0	8.7	0.0	55.9
Cleome gynandra	Spider Plant	6.2	9.6	0.0	0.0	0.4
Helianthus annuus	Sunflower	235.8	93.9	0.0	0.0	166.2
Solanum lycopersicum	Tomato	40.0	40.0	0.0	0.0	0.0
Citrullus lanatus	Watermelon	0.1	0.1	0.0	0.0	0.0
Triticum aestivum	Wheat	1,929.3	1,342.6	0.0	0.0	508.1
	Grand Total	**30,884.6**	**18,087.6**	**579.8**	**212.1**	**11,988.8**

Seed Processing and Sampling

In the period under review, the total lot weight of seed sampled was 58,198,909.0 kilogrammes compared to 65,281,400.85 kilogrammes in the previous year which was a decrease of 10.8% This is summarized in **Table 14.**

Locally produced seed and imported seed total lot weights were 43,380,820.4 kilogrammes and 11,996,024.9 kilogrammes respectively. The total lot weight for the seed that was resampled after expiry of certification validity was 2,822,063.7 kilogrammes. The locally produced seed accounted for 74.5%, imported seed 20.6% while resampled seed accounted for 4.9% of the total weight sampled.

Table 14: Total seed lot weight sampled

Botanical Name	Common Name	Local sampled(kg)	Imports sampled(kg)	Re-sampled (kg)	Totals
Agrostis stolonifera	Bent grass	-	133.6	33.6	167.2
Arachis hypogea	Groundnuts	700.0	-	-	700.0
Avena sativa	Oats	71,550.0		34,690.0	106,240.0
Bracharia spp	Congo Signal		4,242.0		4,242.0
Carica papaya	Pawpaw	-	339.2	4.5	343.7
Chloris gayana	Rhodes grass	91,670.0	300.0	22,061.0	114,031.0
Cynodon dactylon	Bermuda grass	-	1,000.0	330.0	1,330.0
D.asper	Bamboo		35.0		35.0
Desmodium Spp	Desmodium	-	8,000.0	6,641.8	14,641.8

Eleusine Coracana	Finger millet	93,030.0		810.0	93,840.0
Festuca spp	Fescue grass	-	3,366.0	2,935.0	6,301.0
Flowers	Flowers	-	7.2	290.0	297.2
Glycine max	Soybean	6,825.0	-	23,658.0	30,483.0
Gossypium hirsutum	Cotton	300.0	-	3,200.0	3,500.0
Helianthus annuus	Sunflower	90,287.0	1,907.8	15,193.0	107,387.8
Hordeum vulgae	Barley	868,540.0	2,000.0	-	870,540.0
Lablab purpureus	Dolichos	3,870.0	-	1,334.0	5,204.0
Lolium perenne	Rye grass	-	1,000.0	333.0	1,333.0
Medicago sativa	Lucerne	-	12,500.0	1,439.5	13,939.5
Nicotiana tabacum	Tobaco		60.1		60.1
Oryza sativa	Rice	160,865.0	1,419.1	24,992.0	187,276.1
Panicum coloratum	Coloured Guinea Grass	2,197.0		247.0	2,444.0
Pennisetum clandestinum	Kikuyu grass			475.0	475.0
Phaseolus vulgaris	Beans	890,411.7	1,124,898.8	11,992.0	2,027,302.4
Setaria sphacelata	Foxtail Millet	381.0			381.0
Solanum tuberosum	Potato	1,794,800.0	207,250.0	-	2,002,050.0
Sorghum bicolor	Sorghum	77,925.0	11,000.0	19,084.1	108,009.1
Sorghum sudanense	Sudan grass	4,502.0			4,502.0
Triticum aestivum	Wheat	2,548,970.0	-	50.0	2,549,020.0
Vegetables	Vegetables	88,267.0	1,686,564.8	639,045.2	2,413,877.1
Vigna radiata	Greengrams	507,516.0	-	21,953.0	529,469.0
Vigna unguiculata	Cowpea	342,141.0	-	600.0	342,741.0
Zea mays	Maize	35,736,072.8	8,930,001.3	1,990,672.0	46,656,746.0
TOTALS		**43,380,820.4**	**11,996,024.9**	**2,822,063.7**	**58,198,909.0**

Seed Testing

During the year, seed sampled during processing was tested at the Nakuru and Kitale seed testing laboratories to determine the germination and purity capacities. The laboratories tested a total of 4,843 samples as summarized in **Table 15.** Samples tested increased from 4,611 in the 2017/2018 financial year to 4,843 indicating an increase of 5%.

Samples for the lots that complied to quality standards were labeled and allowed to the market by the respective seed companies. Seed lots that failed to meet the quality standards were issued with stop sale orders to await appropriate disposal by concerned seed merchants.

Table 15: Seed samples tested

Crop	No. Fail	Total No.	Weight fail (kg)	Weight passed(kg)	Total weight
Barley	6	31	150,000.0	679,540.0	829,540.0
Fibre	5	7	4,120.0	420.0	4,540.0
Flowers	1	5	2.0	787.0	789.0
Herbs	-	3	-	55.7	55.7
Maize	142	1642	2,254,537.2	42,367,976.4	44,622,513.5
Millet	-	3	-	3,270.0	3,270.0
Oats	7	14	39,660.0	30,720.0	70,380.0
Oil Crops	14	30	107,368.4	89,803.0	197,171.4
Pasture Legumes	2	13	107.0	20,039.5	20,146.5
Pasture/Lawn	207	326	61,941.3	59,726.4	121,667.7
Pulses	61	331	486,699.9	1,909,241.0	2,395,940.8
Pyrethrum	12	12	0.0		0.0
Rice	3	18	397.0	178,332.0	178,729.0
Sorghum/Millet	15	62	130,059.0	577,137.2	707,196.2
Tobacco		1		38.0	38.0
Trees	2	7	1.2	15.2	16.4
Vegetables	312	2217	192,937.7	1,603,335.3	1,796,273.9
Wheat	5	121	106,650.0	2,566,620.0	2,673,270.0
TOTALS	**794**	**4843**	**3,534,480.5**	**50,087,056.6**	**53,621,538.0**

ISTA Samples Tested (Proficiency Test)

Proficiency testing is mandatory for seed laboratories accredited by ISTA. The test is one of the types of programs that allow the performance of a laboratory to be determined by comparing the use of measurements in materials that are homogeneous or similar in at least two ISTA laboratories under pre-determined conditions. During the year, the seed laboratory in Nakuru received three seed species and scores obtained for the tests are shown in the **Table 16.**

Table 16 : Proficiency test Scores

Crop	No.of samples	Test done	Score
Carrot	3	Purity, germination, OSD	'A' in germination, 'A' in Purity, 'B' in Other Seed Determination (OSD)
Fodder galega	6	Purity, germination, Moisture	Not yet received
Rice	3	Purity, germination, OSD	'A' in germination, 'A' in Purity, 'A' in Other Seed Determination (OSD)

ISTA Certificates Issued

During the year, 346 ISTA certificates were issued as shown in **Table 17.**

Table 17 : ISTA Certificates issued

Crop	Number issued	Weight (Kg)
Barley	4	120,000
Maize	192	4,460,987
Oats	1	5,000
Oil Crops	2	11,194
Pasture Legumes	2	1,840
Pasture/Lawn	21	9,656
Pulses	5	1,902.2
Sorghum/Millet	1	682.8
Vegetables	87	79,516.82
Wheat	31	86,5490
Grand Total	**346**	**5,556,268.82**

Post Control Tests

In the period under view, 1,284 seed samples were post controlled. Out of this 96.9% passed while the rest failed mainly due to lack of trueness to type, diseases, off-types, mixtures and selfing. **Table 18** gives a summary of the post control tests undertaken.

Table 18: Post control testing

Botanical Name	Common name	No of samples planted	Passed	Failed
Zea mays	Maize	833	818	15
Triticum aestivum	wheat	134	133	1
Hordeum vulgare	Barley	34	33	1
Sorghum bicolor	Sorghum	22	22	0

Sorghum sudanensis	Sudan grass	1	1	0
Eleusine coracana	Finger millet	2	2	0
Helianthus annus	Sunflower	3	2	1
Abelmoschus esculentus	Okra	20	18	2
Phaseolus vulgaris	Beans	42	34	8
Phaseolus vulgaris	French beans	107	102	5
Pisum sativum	Peas	37	33	4
Phaseolus coccineus	Runner Beans	3	3	0
Glycine max	Soybean	6	6	0
Spinacea oleracea	Spinach	30	27	3
Cucurbita spp	Butternuts	10	10	0
Totals		**1,284**	**1,244**	**40**

Seed Post Certification Surveys and Licencing of Seed Stockists

During the year, seed post certification surveys were carried out. 5,726 seed sellers were licensed to sell certified seed as summarised in **Table 19,** signifying an increase of **33.9%** from the previous year.

Table 19: Seed sellers licences issued

KEPHIS office	No. of seed sellers
Nairobi Headquarters	637
Embu	1271
Nakuru	902
Kitale	1206
Kisumu	866
Mombasa	222
Naivasha	470
JKIA	152
Totals	**5,726**

Seed Merchant Registration

In the period, 15 new seed merchants were registered to undertake seed business as summarized in **table 20.**

Table 20: Seed Merchants Registered

Reg. No	Name	Address	Registration Date
1021	Aberdare Technologies Ltd	P.O. Box 418-01020 KENOL	11-Mar-19
1022	Clapham Investments Ltd	P.O. Box 28969-00200 NAIROBI	10-Apr-19
1023	Kirinyaga Seeds	P.O. Box 25290-00603 NAIROBI	11-Apr-19

1024	Pearl Agro Services Enterprises Co. Ltd	P.O Box 23584-00100 NAIROBI	07-Jun-19
1010	BASF East Africa Ltd	P.O. BOX 24271-00100 NAIROBI	09-Aug-18
1009	Lucsom Services Ltd	P.O. BOX 2101-00606 NAIROBI	17-Aug-18
1011	MRG Trading Company	P.O. BOX 53983-00200 NAIROBI	24-Sep-18
1012	Africa Grains & Pasture Limited	P.O. BOX 45026-00100 NAIROBI	03-Oct-18
1014	Mellifera Limited	P.O. BOX 24397-00502 NAIROBI	12-Oct-18
1016	Zero Two Heroes Ltd	P.O. BOX 1815-30200 KITALE	15-Nov-18
1015	GAL Limited	P.O. BOX 8776-00300 NAIROBI	02-Nov-18
1017	Agriside Solutions Limited	P.O. BOX 42480-00100 NAIROBI	20-Dec-18
1020	BT Agricultural Ltd	P.O. BOX 1222-00502 NAIROBI	09-Jan-19
1018	Frontier Farms Limited	P.O. BOX 2684-00200 NAIROBI	20-Dec-18
1019	Frontier Fruit Limited	P.O. BOX 67-10406 TIMAU	20-Dec-18

Variety Maintenance Inspections

In the year, varieties under maintenance program were inspected at various stages of the breeder's seed multiplication stage. During these inspections, rows, plots and/or acres of varieties that did not conform to the variety description and/or had off-types were rejected. **Table 21** gives a summary of variety maintenance inspections undertaken during the year.

Table 21: Variety maintenance inspections

Botanical Name	Common Name	Stage	Rows/Plots/Acres	Approved	Rejected
Solanum nigrum	African night shade	3	0.04	0.04	0
Hordeum vulgare	Barley	3	27	27	0
Phaseolus vulgaris	Beans	1	11	11	0
Phaseolus vulgaris	Beans	2	20.31	20.31	0
Phaseolus vulgaris	Beans	3	9.498	6.21	1.75
Gossypium spp	Cotton	3	0.02	0.02	0
Gossypium spp	Cotton	I	32	23	9
Vigna unguiculata	Cowpea	3	3.02	2.72	0
Lablab Purpureus	Dolichos	3	15.49	15.49	0
Eleusine coracana	Fingermillet	3	0.3	0	0.3
Vigna radiata	Greengrams	3	0.49	0.49	0
Zea mays	Maize	2	1.11	1.11	0
Zea mays	Maize	3	63.44	52.94	7.5
Cajanus cajan	Pigeon Pea	3	0.13	0.13	0

Amaranthus spp	Pigweed	2	0	0	0
Solanum tuberosum	Potato	3	3.34	3.34	1
Oryza sativa	Rice	3	3.5	3.5	0
Sorghum bicolor	Sorghum	3	2.5	2.5	0
Glycine max	Soybean	3	0.8	0.8	0
Cleome gynandra	Spider plant	2	0	0	0
Helianthus annuus	Sunflower	3	2.4	2.4	0
Triticum aestivum	Wheat	1	5010	4140	870
Triticum aestivum	Wheat	2	3167	2952	215
Triticum aestivum	Wheat	3	97	97	0

Key: Stage I Rows

Stage II Plots

Stage III Acres

3.0

ANALYTICAL CHEMISTRY AND FOOD SAFETY LABORATORY SERVICES

The Analytical Chemistry and Food Safety Laboratory (ACL&FS) offers a range of analytical and advisory services to customers and the government on the quality of agricultural inputs and produce. As part of its mandate, KEPHIS through the ACL&FS supports administration and enforcement of food safety measures. It monitors the quality and levels of toxic residues in agro inputs, irrigation water, plants, soil and plant produce. This is implemented through analyses of customers samples and samples collected by KEPHIS through the annual risk based surveillance and monitoring programmes for fertilizers and fresh produce.

During the year, the ACL&FS continued with its efforts in implementation of food safety programmes targeting the horticultural sub-sector dealing with beans and peas in pods for export and other locally consumed produce. This coupled with farm audits and inspection, awareness trainings for farmers, brokers, sprayers and fresh produce exporters has showed tremendous improvement by the farmers and stakeholders in compliance to food safety and market requirements. The number of RASSF notifications has also been reduced over the years since the year 2013.

During the year, the laboratory analyzed 4,434 samples for both customers and monitoring programs. This was a 14% increase from the 2017 - 2018 financial year. For both enforcement and monitoring of MRLs of pesticides, the laboratory analyzed 899 for beans and peas with pods from exit points, farms and local markets; 190 samples were analyzed from local open air markets and supermarket chains. The samples included tomatoes, passion fruits, capsicum, kales, avocado and grapes. 770 samples were analyzed for heavy metal contaminants and 450 for mycotoxins analysis.

To enable Kenya's fresh produce exports to comply with the EU and other market requirements on food safety and reduce the number of notifications, the laboratory carried out a total of 78 food safety audits. Out of these, 36 companies were audited and registered to export, six companies had positive detections of pesticides above MRL, 14 companies had detections below MRL while two companies were due to RASFF notifications. The exercise ensured there was establishment and maintenance of a sustainable food safety system which gave assurance on food safety to consumers.

The laboratory with support from the USAID - FOODSCAP project acquired a new GC-MS/MS equipment and ICP-OES. There are now 10 state of the art equipment in the laboratory complex thereby enhancing the laboratory capacity to analyze a wide range of pesticides and heavy metal contaminants in food and environmental pollutants. The laboratory has two high-end LC-MS/MS and one GC-MS/MS (Triple quad) with classical GC, HPLC and GC-MS single quad all with capacity to analyze over 300 pesticides in a single run. In addition, the laboratory has an ICP-MS and ICP-OES for elemental analysis including heavy metal contaminants. The two equipment have the ability to cover a wide spectrum of other elements at trace (ppb) levels. The laboratory was therefore able to expand its scope of accreditation which is key in trade facilitation for Kenyan fresh produce.

Awareness Trainings

To create awareness on the benefits of using quality agro inputs and compliance to food safety and market requirements, the ACL&FS in collaboration with stakeholders from the Horticultural Competent Authority Structure (HCAS) and other departments trained 161 farmers and exporters in Makueni and Narok counties. The trainings targeted areas with high production of beans with pods and also considered the risk profile. Smallholder farmers and exporters with organized groups were involved in the program. The program focused on training in GAP, export requirements as well as benefits of KEPHIS services in agricultural production systems.

Samples Analyses

The laboratory received a range of samples which included pesticide residues and heavy metals analysis in food and environmental samples, soil fertility evaluation and fertilizer recommendations, irrigation water suitability, manure and fertilizer analysis, mycotoxin analysis in cereals and agrochemical analysis. A three-year trend of samples analyzed is shown in **Table 21.**

Table 21: Summary of total number of samples analysed in past three years.

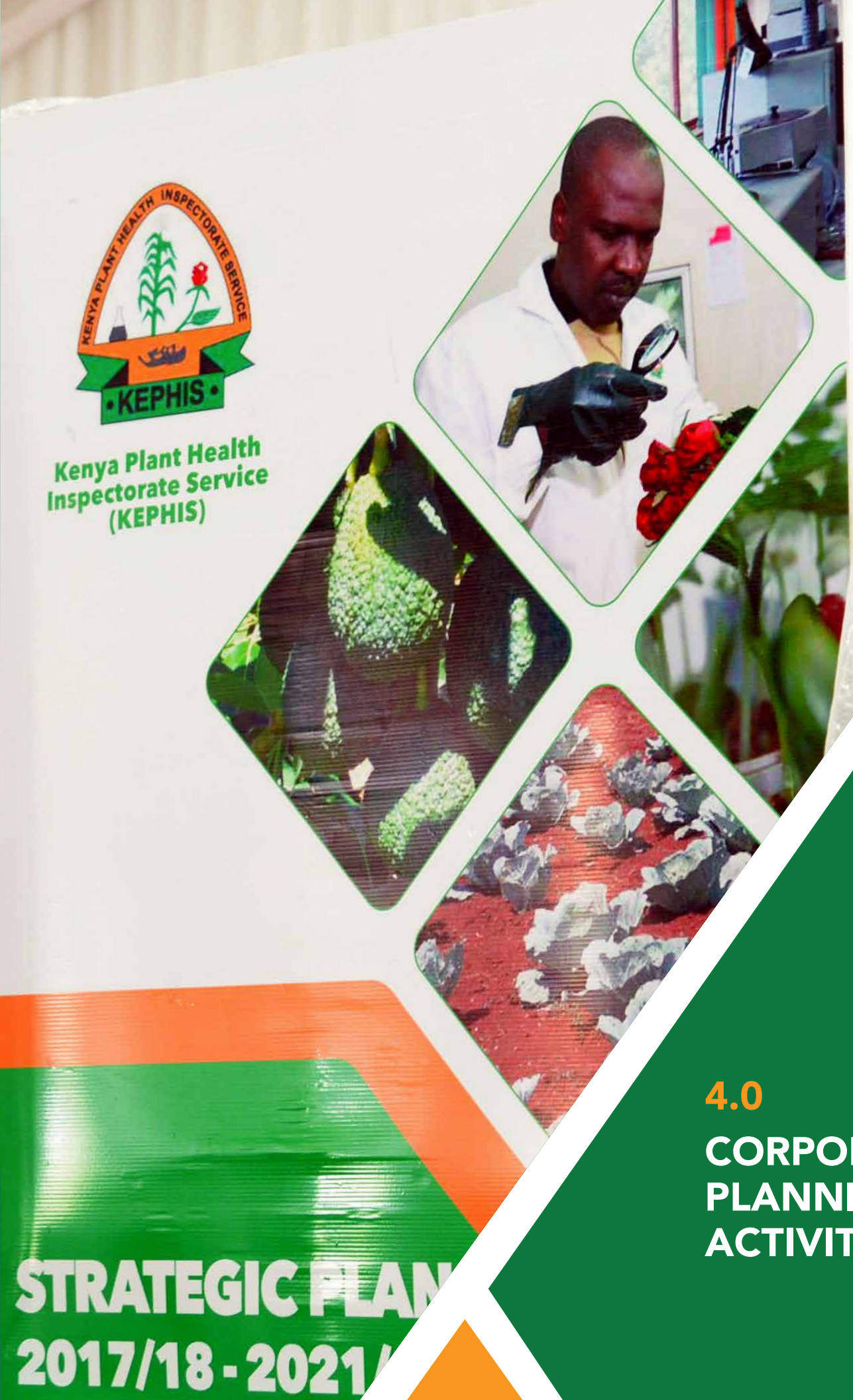
Sample category	2016/2017	2017/2018	2018/2019
Agricultural Samples PRA	1579	1822	2147
Environmental samples PRA	164	107	91
Soil	234	302	258
Water for Irrigation suitability	52	64	76
Fertilizer	319	437	567
Manure/organic compost analysis	7	12	5
Agrochemical pesticide formulations	23	27	49
Heavy metal contaminants	418	642	770
Foods and feeds	19	44	10
Plant tissue	51	226	11
Contaminants(Mycotoxin)	0	206	450
Total samples	**2866**	**3889**	**4434**

The ACL&FS has continuously maintained its accreditation status by the SANAS to the requirements of ISO/IEC 17025:2005 Standard. In order to assure its customers of the reliability of its test work and cover the dynamic requirements of analytical work the laboratory has always worked towards continuous improvement through expansion of scope and development of new methods. In the year, the laboratory submitted data to SANAS for evaluation of two new methods and an increased accreditation scope was granted in September 2018 through a rigorous assessment process by SANAS.

The laboratory also initiated the process of transition from the 2005 version to 17025:2017 by training of key personnel on the requirements of the new version.

LCMSMS for testing pesticide residues in food and environmental matrices

ICP-MS and ICP-OES for heavy metal and other elemental analysis



4.0 CORPORATE PLANNING ACTIVITIES

4.1 Strategic Focus

In the year, the Corporation implemented the second phase of the 2017/18 - 2021/22 Strategic Plan. The Corporation also aligned its strategy to the MTP III and the Agricultural Sector Transformation and Growth Strategy (ASTGS). The Corporation also ensured programmed activities were aligned to the government's ***Big Four Agenda*** with special focus on food and nutrition security.

4.2 Performance Contracting

KEPHIS supports the Kenya government's policy on Performance Contracting and implemented the system as per the 15th cycle guidelines. In the year, the Corporation implemented its Performance Contract and performed exemplarily in the set targets achieving a composite score of 2.59 which was a significant improvement from the previous year's score of 2.69. A summary of the key performance drivers that attained an exemplary performance are summarized in **Table 22.**

Table 22: KEPHIS key performance drivers

	Performance Indicator	Achievement
1	A-in-A	Ksh. 1,230.3M
	Pending Bills	0.04
2	Resolution of Public Complaints	93%
3	Youth Internship/Attachment	185
4	Access to government procurement opportunities (AGPO)	Ksh. 149.4M
5	Promotion of local content in procurement	Ksh. 255.4M
6	E-government systems developed	3
7	Stress tolerant varieties released	29
8	New varieties evaluated and released	10
9	Horticultural growers and extension staff trained on new market requirements	422
10	Number of phytosanitary practitioners trained by the COPE	825
11	Monitor fertilisers for guaranteed analysis: Number of samples analysed	567
12	Food contaminants monitored for food safety: Number of samples analysed	2,119
13	Post entry quarantine controls undertaken: Number of samples analysed	2,560
14	Pest surveillance conducted and emergency response reported	21
15	SMAEs developed	17

4.3 Quality Management Systems

During the year, the Corporation maintained its certification to ISO 9001:2015. KEPHIS has now fully embraced risk based thinking in its activities and processes and conforms to the ISO 9001:2015 requirements.

In addition, the Corporation continues to maintain accreditation for its laboratories to ISO 17025:2005. These include the Seed Testing Laboratory at the Nakuru regional office accredited by ISTA, the Analytical Chemistry Laboratories at KEPHIS Headquarters accredited by SANAS and the Plant Health Laboratory at KEPHIS Plant Quarantine and Bio-Security station, Muguga accredited by KENAS. Accreditation and certification to these systems has enhanced confidence in the analytical services and test results by clients and stakeholders at local and international levels.

In addition, the Corporation initiated the process towards certification to ISO 27001 on Information Security.

4.4 Corporate Social Sustainability

Kakamega - Lunza Primary School has 812 students, many of whom walk barefoot to and from school. Recently, the school produced the first pupil to go to a national school, Alliance High School. The school is also in an agriculturally rich area that has plenty of rain and fertile soils. Agricultural production is the main economic activity with maize and grass dotting many homesteads. What stands out is that there is a 4K club made up about 100 students that tend the fields where food such as maize and sweet potatoes are grown.

It is here that KEPHIS chose to conduct its Corporate Social Sustainability Initiative for the 2018-2019 financial year. We donated a greenhouse for growing tomatoes, a water tank that can hold up to 5,000 litres of water and capacity building for the school's agriculture patron Mr. Bernard Imbaye as well as the students. We also donated 10 avocado seedlings which if well managed well will start producing fruits after 3 years. The 4K Club has so far harvested one and half crates of tomatoes and sold them to clients. The proceeds have gone towards purchasing uniforms for needy students to go to secondary school.

Going forward, KEPHIS aims to build capacity for the 4K Club on our mandate, i.e. seed certification and protection of plant varieties, management of pests such as white flies which are common in tomatoes as well as management and care of the certified seedlings.

While touring the demonstration plots planted by KEPHIS stakehoders, Kakamega County Women Representative Hon. Elsie Muhanda advised the students to take agriculture seriously.

"If you practice agriculture well, there is no need for you to work in an office," she said. She added that people everywhere have to eat thus the importance of agriculture to a country's economy.

We hope that our sustainability initiative will go a long way in uplifting the living standards of students at the school as well as their families.

Left: Kakamega Women Rep Hon. Elsie Muhanda (centre) when she toured the rice demonstration plots during the Corporate Social Sustainability initiative at Lunza Primary School, Butere sub-county, Kakamega County

Right: The amazing, multi-talented and hardworking 4K Club at Lunza Primary School

Water tank and greenhouse donated by KEPHIS to Lunza Primary School

4.5 Public Relations and Communications

Field Days

Field days provide opportunities for KEPHIS to engage with farmers at the grassroots in the counties on the Corporation's mandate and tackle issues that affect the farming community. In the year, KEPHIS organized and took part in 12 field days in Uasin Gishu, Samburu, Meru, Nandi, Bomet, Nyamira, Laikipia, Kirinyaga, Makueni, and Kirinyaga.

Table 23 gives a summary of the field days, the focus crops and number of farmers that attended the events.

Table 23: Summary of field days undertaken in the year

No.	Field day	Focus crop(s)	Number of farmers reached
1	Cheplaskei, Moiben - Uasin Gishu	Potatoes (Shangi, Tigoni, Rumba, Asante, Challenger, Sagitta, Jelly and Dutch Robjin, horticultural produce	1,000
	Lodokejek, Samburu County	Pastures suitable and pasture seed certification; certified pasture seeds; pasture management and how to manage pests and diseases in wheat, barley and maize; pasture varieties included Pokot Rhodes, Boma Rhodes, Sudan grass, SC Sila, Cenchrus Ciliaris, Cobra, Mulato II and Cayman.	500
2	Marimba, North Imenti, Meru County	Potato varieties and seed potato	350
3	Kapsabet, Nandi	Potato varieties-Sherekea, Voyager, Unica, Panamera, Dutch Robjin, Sagitta and Challenger	500
4	Konoin, Bomet County	Avocado and seed potato	500
5	Nyansiongo, Nyamira	Avocado production; use of certified seed; clean banana planting materials	500
6	Ngobit, Laikipia East, Laikipia County	Potato production; potato varieties	500
7	Thiba, Mwea, Kirinyaga County	Use of certified rice seed	500
8	Kambi Mawe, Makueni County	Green grams, cowpeas, nightshade, pigeon peas, pearl millet, sorghum, dolichos, amarathus;	600
9	Meru University of Agriculture and Technology(MUAT), Meru County	Maize, sunflower, onion, green grams; beans, tomatoes, cabbage, Kale, spinach, capsicum, orange fleshed sweet potato	1,000
10	Sultan Hamud field day(supported by the FOODSCAP Project)	Sorghum, green grams, cowpeas, pearl millet, pigeon peas, amaranthus, nightshade, dolichos, cabbages, spinach, potatoes, maize, onions, cowpeas, sorghum, tomatoes, pastures, pumpkins and capsicum (for salad and for cooking)	700
11	Kirinyaga County	Avocado and sweet potato	500

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1. *Agriculture, Livestock and Fisheries CS Hon. Mwangi Kiunjuri, Meru County Governor H.E. Kiraitu Murungi and KEPHIS MD Dr. Esther Kimani at the Marimba, Meru field day whose focus was on potato production*
2. *Chief Administrative Secretary (CAS) in the Ministry of Agriculture, Livestock and Fisheries Dr. Andrew Tuimur during the Moiben, Uasin Gishu field day which focused on potatoes.*
3. *Crop Development and Agricultural Research PS Prof. Hamadi Boga(right), Makueni Governor Prof. Kivutha Kibwana (2nd right), KEPHIS Director Ms. Lucky Litole(left, partly hidden) and MD Dr Esther Kimani paying a courtesy call to Prof. Kibwana before the start of the Sultan Hamud field day*
4. *Prof. Boga and Prof. Kibwana during the Sultan Hamud farmers field day where farmers were urged to embrace orphan crops which are not only healthy but contribute to food security and nutrition*
5. *Konoin MP Hon. Brighton Yegon with members of his constituency during the KEPHIS organized field day that targeted women and the youth. The recipients were taught how to cultivate avocado and sweet potato for their nutrition and to improve their living standards*

Wins at Agricultural Shows

Kisii show – KEPHIS took first position in the category of Best Regulatory Authority and Corporation Stand.

KEPHIS took 1st position in the **Regulatory Authority and Corporation Stand** at the 2018 Mombasa International Show.

During the 2018 Nairobi Show, KEPHIS took first position in the Best Regulatory Authority and Corporation stand. The winning trophy was awarded by H.E. the Deputy President William Ruto to KEPHIS MD Dr Esther Kimani.

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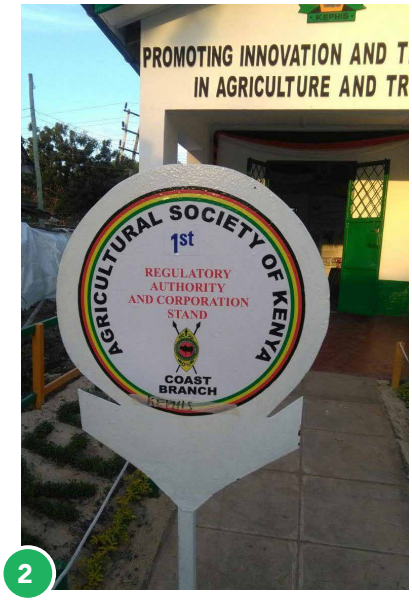

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1. ***CS Agriculture, Livestock and Fisheries Hon. Mwangi Kiunjuri (3rd left) presenting the trophy for 1st position in the Best Innovation and Invention Stand to KEPHIS MD Dr Esther Kimani at the 2019 Eldoret National Show. Looking on is Uasin Gishu Governor H.E. Jackson Mandago (2nd left)***
2. ***Winning trophy during the 2018 Mombasa International Show***
3. ***Top: Deputy President H.E. William Ruto at the KEPHIS stand during the 2018 Nairobi Show; Bottom: Presenting the trophy for Best Regulatory Authority and Regulation stand to KEPHIS MD Dr Esther Kimani***

Social Media Engagements

KEPHIS undertook 3 campaigns on its social media platforms as summarized on **Table 24.**

Table 24: Social media campaigns

Campaign awareness	Topic/Messaging
The rains planting season	For farmers to use certified seed and to check their agricultural inputs and produce
Avocado	Planting requirements, markets requirements, varieties for international markets
Soil testing	The importance of soil testing and its importance to food security and to the farmer

KEPHIS AND TMEA INAUGURATE THE AUTOMATION OF THE SEED CERTIFICATION AND PLANT VARIETY PROTECTION SYSTEM

KEPHIS and TMEA began the process of automating the seed certification and plant variety protection system. Stakeholder engagements were done in Nairobi, Nakuru, Kitale, Meru, Taveta and Hola to introduce the system and get feedback from the intended recipients of the system.

Head of ICT Mr. James Aboge (standing) explaining the importance of automating the seed certification and plant variety protection system in Taveta, Taita Taveta County

Other Corporate Pictorials

Matuga, Kwale County - February 2019 marked a momentous occasion for the coconut industry in Kenya, especially to Kenya's coastal communities as the first hybrid coconuts were transplanted from a KEPHIS managed quarantine nursery to the field in Matuga, Kwale County. The hybrid - a cross between the tall, conventional tall coconut variety and the dwarf variety - is bound to change the fortunes of families at the coast as the hybrid takes approximately 3 years to mature and produces 250 - 300 nuts annually as compared to the conventional variety which takes 5 – 7 years to mature and produces an average of 100 nuts annually. 5,000 seed nuts were imported from India in December 2018 and planted in a quarantine site under KEPHIS supervision at KALRO Matuga in Kwale County. To date, 2,137 have germinated and are ready for transplanting to open quarantine at the research station while others shall be distributed to selected farmers in Taita Taveta, Kwale and Kilifi Counties. A technical committee comprising KEPHIS, MEPST, NOCD, Pwani University and KALRO have been steering the process to ensure safe introduction of improved hybrid in the region.

Left: Hybrid coconut under quarantine in Matuga, Kwale County; (centre)the short coconut hybrid; (right) the conventional tall coconut variety that is well known by the coastal communities

Corporate Visitors

Left: Rongai MP Hon. Raymond Moi being shown a grafted avocado seedling by KEPHIS MD Dr. Esther Kimani

Right: Hon. Njeru Ndwiga of the Senate Agriculture Committee at the KEPHIS avocado nursery during a courtesy call to the Institution

Most Preferred Government Institution on Avocado Regulation:

Left: Left: The CEO of the Avocado Society of Kenya Ernest Muthomi presents the trophy of the Most Preferred Government Institution to MD Dr Esther Kimani.

Right: Dr. Kimani posing with managers after being presented with the award

Press Relations

KEPHIS trained 15 journalists and correspondents from around the country on its mandate. The members of the fourth estate also toured the globally acclaimed laboratory complex at headquarters, the Plant Quarantine and Biosecurity Station at Muguga and the avocado orchard at KEPHIS Headquarters.

5.0
PROJECTS

During the year, the Corporation continued to work closely with various domestic and international partners and stakeholders in the implementation of project activities. Projects implemented during the period included the USAID-FOODSCAP Project, RIIP-COMESA-NT, SASHA (CIP/Bill and Melinda Gates Foundation), Agri-experience, Danish-Kenya Strategic Sector Cooperation Programme on Food Safety (Dairy and Horticulture) and the Seed Certification and Plant Variety Protection Automation Project (TMEA) with possible new projects called AGRIFI and MARK-UP.

KEPHIS continued to implement the "Feed The Future Kenya Agriculture Regulatory Capacity Building" Program (FOODSCAP). The FOODSCAP project is being supported under USAID feed the future (FtF) program. It focuses on providing supportive seed production systems services to farmers growing orphan crops to assure availability of seeds; mitigating against crop losses through plant health management strategies and diagnostics and monitoring food safety through checking for food contaminants and implementing a program focused on generation of suitable pesticide residue limits. The Corporation also implemented the RIIP project that supported PRA activities, creation of awareness on market standards, creation of areas of low pest prevalence and surveillance activities through field days and training stakeholders and KEPHIS staff.

Under the SASHA project, KEPHIS was able to build capacity to staff and stakeholders on sweet potato production, virus cleaning and multiplication of potato vines. It included revision of seed standards for sweet potato; organizing stakeholder awareness; marketing and maintenance of pre-basic seed under tissue culture and greenhouse; net tunnel constructions and follow up inspections.

The Seed Certification & Plant Variety Protection Automation Project is focusing on Automation of the KEPHIS seed certification process, and also to link the import and export systems to a common User Identity Access Management (UIAM) platform for effective service to customers; the system is expected to be launched in August 2020.

The Danish-Kenya Strategic Sector Cooperation Programme on Food Safety for Dairy and Horticulture has been undertaking capacity building activities such as training in laboratory techniques in Kenya and Denmark and the development of residue/ contaminant plan was concluded within the year and another project supported by the Royal Danish Embassy was initiated called AGRIFI which involves capacity building of staff and stakeholders on issues of food safety.

6.0 SUPPORT SERVICES

6.1 Information Communication & Technology

During the year, KEPHIS continued to implement the seed certification system for small labels system, the ECS for exports, e-phyto for electronic exchange of phytosanitary certificates and the ICS for imports. KEPHIS also made significant strides in linking its certification systems to the KENTRADE Kenya National Single Window System (KNSWS).

6.2 Procurement

In the period under review, KEPHIS empowered women, youth and PWDs through procurement opportunities. KEPHIS awarded a total of Ksh. 149.4 million worth of tenders to the AGPO and PWD groups. The Corporation also supported the government policy on promotion of local content in public procurement. KEPHIS procured goods and services worth Ksh. 255.4 million out of a total procurement of Ksh. 488 million.

6.3 Human Resource Development

During the year, the Corporation was able to contribute towards human resource development by building capacity to its staff through various training programs. This was guided by its annual training assessment and programme. In addition, the Corporation empowered Kenya's youth by engaging 185 interns and attachees from local universities and colleges.

7.0
FINANCIAL STATEMENTS

STATEMENT OF FINANCIAL PERFORMANCE

FOR THE YEAR ENDED 30 JUNE 2019

	2018-2019 (Un-Audited) Kshs '000'	2017-2018 Audited Kshs '000'
Revenue from non-exchange transactions	**Shs '000'**	**Shs '000'**
Public contributions and donations	179,984	97,237
Transfers from other governments–gifts and services-in-kind	245,914	271,633
	425,898	**368,870**
Revenue from exchange transactions		
Rendering of services	1,046,911	883,468
Hire of Facilities	7,386	5,726
Finance income-external investments	3,404	1,491
Other income	1,471	5,639
	1,059,172	896,324
Total revenue	**1,485,070**	**1,265,194**
Expenses		
Employee costs	634,293	524,784
Board Expenses	26,124	17,726
Depreciation and amortization expense	88,658	86,847
Repairs and maintenance	80,911	74,240
Grants and subsidies	125,178	80,082
General expenses	523,184	457,158
Total expenses	**1,478,348**	**1,240,837**
Other gains/(losses)		
Gain on sale of assets	1,080	-
Gain on foreign exchange transactions	272	378
Increase/Decrease in provision for doubtful debts	904	(3,699)
Total other gains/(losses)	**2,256**	**(3,321)**
Surplus/Deficit for the period	**8,978**	**21,036**

STATEMENT OF FINANCIAL POSITION

AS AT 30 JUNE 2019

	2018-2019 (Un-Audited) Kshs '000'	2017-2018 (Audited) Kshs '000'
Assets		
Current assets		
Cash and cash equivalents	125,716	104,258*
Receivables from exchange transactions	105,134	118,047
Receivables from non-exchange transactions	6,876	3,860
Inventories	44,692	36,072
Prepayments	56,668	44,287
Total Current Assets	**339,086**	**306,524**
Non-current assets		
Property ,plant and equipment	1,110,595	1,086,717
Investments	60,000	60,000
Total non - current assets	**1,170,595**	**1,146,717**
Total assets	**1,509,681**	**1,453,241**
Liabilities		
Current liabilities		
Trade and other payables from exchange transactions	88,771	78,444
Provisions	961	961
Deferred income	190,626	152,352
Payments received in advance	7,388	8,526
Total current liabilities	**287,746**	**240,283**
Net assets	**1,221,840**	1,212,958
Reserves	451,194	451,194
Accumulated surplus	770,741	761,763
Total net assets and liabilities	**1,221,935**	**1,212,958**

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