



KEFRI *Newsletter*

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TREE CLIMBER DEMONSTRATING SEED COLLECTION METHOD

KEFRI is ISO 14001:2004 EMS and 9001:2008 QMS Certified

CONFERENCES AND TRAININGS



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KEFRI Scientists participate in IUFRO Congress - Germany

KEFRI scientists led by Director Dr. Ben Chikamai presented scientific papers in different sessions during International Union of Forestry Research Organization (IUFRO) 125th Anniversary Congress held in Freiburg, Germany from 17th to 23rd September, 2017.

Dr. Chikamai also attended the IUFRO Board Meeting whereas Dr. Mercy Gichora, Roxventa Odhim, Pauline Bala, Leila Akinyi and Moreen Kabasa attended the Pre-Congress Training Sessions organized by IUFRO SPDC as well as FORNESSA side event.

IUFRO is the leading global network for forest science cooperation. It is the only world-wide international organization devoted to forest research and related sciences.

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The unique network brings together research organizations, universities and individual scientists as well as decision-making authorities and other stakeholders with an interest in forests and trees.

The IUFRO mission is to advance research excellence and knowledge sharing to foster the development of science-based solutions to forest-related challenges for the benefit of forests and people worldwide. IUFRO recently marked its 125th Anniversary since it was founded on 17th August, 1892.

KEFRI is one of the most active members of IUFRO from Africa. KEFRI Director Dr. Chikamai has been a Board member since 2010 as IUFRO President's Nominee for Africa.

The current IUFRO President is Prof. Mike Wingfield, a renowned forest pathologist from FABI, University of Pretoria, South Africa. Their term has seen great strides in membership, and organizing the first Regional Congress for Africa co-hosted by KEFRI and ICRAF in June 2012.

In the current IUFRO 2015 - 2019 Strategy, Dr. Chikamai has facilitated the nomination of 12 scientists from all over Africa to join different task forces to the network and to contribute their expertise in offering solutions for global forestry challenges.

IUFRO World Congress, held at 5-year intervals, is one of the largest global forest events attended by more than 2,000 participants. It is a great opportunity to network in one's chosen field of specialization in forestry. Look out for calls for abstracts for this and other meetings in between by visiting the IUFRO website www.iufro.org.

The next World Congress will take place in Curitiba, Brazil from 29th September to 5th October, 2019. All scientists are encouraged to follow developments posted on <https://www.iufro.org/events/congresses/2019/>.



KEFRI participants who attended the Congress

Farmers Visit to Makueni County

By S. Gitonga and J. Otwoma

Climate change is threatening the livelihoods of many residents in Kajiado South sub-county. Mr. John Mbugua, a small-scale holder farmer near Loitoktok town has watched crops on his farm including recently planted fruit trees and Boma Rhodes grass wither due to extreme drought.

Similarly, Siana Women Group at Imbirikani faces comparable climatic challenges as they undertake horticulture and pasture improvement in their 200 acres community ranch over the recent years. Fortunately, KEFRI Knowledge Management team which is implementing component four of the Integrated Programme to Build Resilience to Climate Change and Adaptive Capacity of Vulnerable Communities in Kenya (KCCAP) in collaborating with Ministry of Agriculture and other relevant departments in Kajiado County is to build farmers capacity by organizing farmer's field visit to strengthen adaptive capacities to climate change. In this regard, members representing 19 community groups, including youth and women visited Makueni County on 3rd and 4th July 2017 specifically to learn more about pasture improvement and integration of high value trees and food crops on-farm, value addition and marketing.

The 38 farmers who were majorly agro-pastoralists drawn from Kuku, Kimana, Rombo, Entonet and Imbirikani wards, accompanied by seven officers from partner institutions that are implementing the programme, visited Mr. Jeremiah Ngaya's farm in Makindu as well as Mr. Jonathan Mung'ala Kituku's farm in Kibwezi both in Makueni County.

Pasture Improvement

Mr. Jeremiah Ngaya practices agri-business specializing in growing perennial native rangeland grass species. He grows four varieties of grass namely; *Cenchrus ciliaris* also known as buffel-grass or African foxtail grass, *Chloris roxburghiana* common known as Horsetail grass, *Eragrostis superba* commonly known as Masaai love grass and *Echinopogon macrostachyus* also known as Bush rye.

Mr. Ngaya encouraged farmers to invest in grass farming terming it a profitable venture. These grasses adopt well in many rangelands in Kenya for seed and hay production, grazing as well as soil erosion control.

“An acre of grass can produce 200 bales on average and 150-200kg of seed grass which he sells between KSh.500-650 per kilo depending on demand. However grazing alters the productivity of hay and seed quality,” he cautioned.



Mr. Jeremiah Ngaya demonstrating type of grass he grows on his farm for pasture improvement

Tree Growing Onfarm

Mr. Jonathan Mung’ala Kituku is an environmentalist and agribusiness farmer in West Kibwezi Sub-County.

Mr. Kituku with assistance from KEFRI experts adopted tree farming specializing on *Melia volkensii*. Since 2001, he has planted over 11,060 *Melia* trees on his farm and many more together with neighbors.

As a result, he has gained experience in propagating *Melia* and various fruit tree, a move that has enabled him expand his farm to 300 acres and awarded with presidential recognition in 2005.

“*Melia volkensii* is indigenous drought tolerant tree species with high quality termite resistant timber that sells between Ksh.50 to 70 per foot.” Kituku said.

Mr. Kituku in 2006, planted 1, 336 grafted mango trees which included various mango varieties namely; Ngoe, Sensation and Apple for export on a 16 acre farm. The mango farming is mainly rain fed giving him about Ksh.400 000 per year.

“Much of the benefits are now derived from pasture and food crops in the short term plan, fruit trees and livestock in the mid-term and commercial tree crops in the long term plan arrangement,” said Kituku.

The grass is harvested, baled and reserved for use during the dry spell. Likewise, the grass seed are harvested and conserved for sale and re-seeding during the rainy season. Incorporating the grass in

his farming practice has encouraged him to convert to modern high breed livestock to maximize on returns.

At the end of the farm visits, the farmers shared their experiences and explored the feasibility and challenges of adopting new approaches that can necessitate building resilience to climate change.

Some key practices learnt at both farms were pasture improvement, tree growing on farm, water harvesting from rooftops and seasonal rivers, integration of drought tolerant crops, value addition and improved access to markets, beekeeping among other alternative livelihood opportunities.



Mr. Jonathan Kituku addressing farmers from Loikotkitok

The farmers agreed that native grass is disappearing at an alarming rate in Kajiado and Makueni counties due to overgrazing and change in land use systems, therefore the exchange was essential in understanding implementation of best practices being promoted by KCCAP project.

KCCAP project aims at creating awareness and supporting communities in Kajiado to adopt initiatives that will improve environmental conservation, sustainable management of forests and increasing forest cover, crop diversification and catchment and riverbank protection.

These farmers appreciated the visit and showed interest in procuring grass seed, adopting on their farms fruit trees and water harvesting technologies displayed in Makueni to conserve the environment, rehabilitate degraded landscapes and improve their livelihood.

Workshop on Combating Desertification in Africa

By S. Gitonga

A workshop on collection, documentation and sharing good practices for combating desertification in the Sahel and Horn of Africa was held at KEFRI headquarters from 25th September to 6th October, 2017.

Cabinet Secretary for Environment and Natural Resources Prof. Judi Wakhungu opened the 2-wk regional workshop attended by 19 participants from 7 countries namely Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan and Sudan.

“The major output of the workshop is to strengthen capacity of the participants to formulate action plan detailing strategies to combat land degradation and desertification in their respective countries,” said Prof. Wakhungu.



Prof. Wakhungu greeting Mr. Abdinur Yakub from Somalia (IGAD Member) soon after opening the workshop

“The major objective of the workshop is to create awareness of the African Initiative, build capacity for the participating countries in collecting, documenting and sharing good practices to combat desertification and mitigate climate change,” added Wakhungu.

“African Initiative for Combating Desertification to Strengthen Resilience to Climate Change in the Sahel and Horn of Africa was initiated following the TICAD IV Conference for Africa nations held in Nairobi in August 2016,” said Ms. Keiko Sano, Chief Representative of Japan International Corporation Agency (JICA).

So far, the participating countries have shown high level commitment and great progress in

the implementation of this initiative whose key objectives are to create awareness, develop useful tools to promote networking, knowledge sharing and explore ways to access finances.

The participants were expected to understand applications of Capacity Development Project for sustainable forest management in Kenya eventually contribute to the sustainable development of the region through promoting measures for combating desertification and strengthening resilience to climate change.

The CS commended the progress and achievements made under this initiative and urged the Environment Ministers in participating countries to place efforts against desertification at the top of their agenda. keep future political commitments in their respective countries.

Prof. Wakhungu advised the participants to network with other stakeholder in their respective countries and share knowledge widely.

During the plenary sessions the participants were introduced to the role of trees and forests in combating desertification in Africa, status of land degradation and desertification in Africa - activities and objectives of UNCCD - Focal Point, African Initiative and CADEP-SFM Project, and the good practices in natural resource management to be replicated in their respective countries of origin.

The plenary discussions were supported by farm visits in parts of the drylands in Eastern Kenya for familiarization of good practices and testing tools for data collection.

The participants visited Mr. Jeremiah Ngaya’s farm in Makindu to learn more on natural pasture development and improvement; On-farm melia woodlot development in Kibwezi at Mr. Jonathan Kituku’s farm; and soil and water conservation at Mr. Johnston Mulinge farm in Kibwezi.

Participants of the forum highlighted the importance of political commitments, strong ownership and political leadership by the Horn of Africa in the fight against desertification.

ASK SHOWS

KEFRI exhibits at the Agricultural Society of Kenya shows and other exhibitions in order to disseminate proven technologies with impact and innovations to stakeholders and beneficiaries of research findings for socio-economic development.

The ASK show remains a very important forum that brings together farmers, agri-based entrepreneurs and statutory bodies from Kenya as well as regionally and internationally to display agricultural technologies, products, services and establish collaborative networks.

Under its current show theme 'Promoting Innovation and Technology in Agriculture and Trade', KEFRI has exhibited at various shows country-wide as follows.

Mombasa show



KEFRI stand at Mombasa ASK showgrounds

Coast Eco-region Research Programme (CERP) participated in Mombasa International show from 29th August to 3rd September 2017, displaying and disseminating information on tree growing, forest resources management and sustainable utilization of forest products and services among others.

The CERP collaborated with the KEFRI National Forest Products Centre- Karura, African Plantation Capital a collaborator, SIFOR farmers, Msitu Women group and Msambweni Charcoal Producer group who have benefited in adopting Energy Services and Conservation technology.

KEFRI stand was ranked the best in the energy conservation category and position two best in trade - small stand.

Nyeri show

The Central Highlands Eco-Region Research Programme (CHERP) participated in the National Agricultural Society of Kenya (ASK) Central region Show at Kabiruini grounds in Nyeri County from 11th to 16th September, 2017.



ASK National Chairperson Mrs Annabel Kirinya handing over the trophy to Mr. Joram Kagombe, Deputy Regional Director - CHERP for being the best in seed production and marketing

Technologies, products and services displayed during the show included: seed collection techniques, high quality tree seeds and seedlings production, propagation techniques of highly valued *Osyris lanceolata* (East Africa Sandalwood), propagation and utilization of Bamboo, and forest health touching on tree diseases, symptoms and management. Value added non-timber forest, briquettes, on-farm timber sawing and dissemination methods. KEFRI stand was awarded trophy for displaying seed production technologies and marketing, and third position in Research and Development. KEFRI collaborators; Koriema bee keepers and Nobert herbal product showcased their products.

Kisumu Regional Show

(By R. Mokaya and M. Njenga)

Lake Victoria Basin Eco-region Research Programme (LVBERP) participated in the Kisumu Regional show from 24th to 29th July, 2017 at Mamboleo grounds in Kisumu County, showcasing various forest technologies and innovations with economic impacts to stakeholders.

The beneficial technologies displayed ranged from; high quality tree seeds for better forests, propagation and utilization of bamboo, tissue culture of trees, forest health and management, best tree on-farm practices, identification of tree species, rehabilitation of forests and degraded sites, soil analysis and fertility improvement.

In addition, wood and non-wood forest products were exhibited and other value addition products.

KEFRI publications with relevant information and technologies within each region were distributed to show-goers to reinforce understanding of information and technologies displayed.

The publications included 'Guidelines for wood preservation using diffusion, High yielding Eucalyptus grandis as a commercial crop in Kenya, Vegetative propagation of Pinus patula, Pests and diseases associated with eucalyptus in Kenya'.

The show attracted large number of visitors at the KEFRI stand providing an opportunity and a cost effective way of sharing information.

Farmers Field Day at Central Highlands

(By Samuel Wakori)

Central Highlands Eco-Region Research Programme (CHERP) participated at the farmer's field day on 28th and 29th July 2017, at Wambugu Farmers Agricultural Training College in Nyeri County,

This is an annual event organized by both Government agencies and private sector where exhibitors showcase agricultural related technologies, products and services.



Students from Central highlands fascinated by the scientific names of trees seedlings

KEFRI officers exhibited: assorted high quality tree seeds, seed pre-treatment; tree improvement techniques using East African Sandalwood (*Osyris lanceolata*), propagation of *Melia volkensii* and bamboo; forest health touching on tree diseases and pests.

Many farmers sought KEFRI's intervention to overcome challenges they face while growing trees on farm and during conservation and protecting natural forests.

KEFRI Displays Bamboo in

Tanzania By J. Amwattah and G. Etindi



Dr. Amwattah briefing Hon. Makamba (centre), Minister for Environment in Tanzania while on visit to KEFRI stand

KEFRI attended the 6th Mara Day Celebrations in Tarime, Tanzania on 15th September, 2017 where it displayed bamboo products. KEFRI stand was the only one exhibiting such products thus attracting the interest of many people.

Inquiries about bamboo propagation, processing and markets in Kenya were raised by a number of individuals and representatives of various institutions. In addition, representatives from the Ministry of Environment and Natural Resources and Kenya Forestry Service who shared the stand gave information and publications including, brochures and posters detailing activities to increase the forest cover, rehabilitation of water catchments and riparian areas in Kenya.

Dr. Amwattah, on behalf of the Kenyan Team, briefed the Chief Guest, Hon. January Makamba, Minister for Environment in Tanzania, who was accompanied by Principal Secretary in Kenya Dr. Charles Sunkuli, the Executive Secretary for the Lake Victoria Basin Commission, Dr. Ally-Said Matano during the visit to KEFRI stand.

Mara Day was adopted by the 10th Sectorial Council of Ministers for Lake Victoria Basin on 4th May 2012 in Kigali. The Ministerial Council made the decision to emphasize the importance of Mara ecosystem to economies and about one million people deriving livelihood from the shared Mara ecosystem between Kenya and Tanzania.

The objectives of Mara Day Celebration at its inception in 2012 were to create awareness among key stakeholders of the importance of Mara River Basin and its resources; to recognize and involve the contributions of different private and public sector in the management of Mara River Basin Resources, and to promote public and private partnerships to improve management of Mara's water and biodiversity resources.

Consequently, Mara Day Celebration has achieved increased citizen awareness and participation (about 17,500 people); high level commitment and political will from the two Republics (Kenya and Tanzania) to sustainably conserve Mara ecosystem.

Enhanced ownership of the Mara conservation processes and the future outcomes by multiple actors (state and non-states), joint cooperation framework and change in practices from illegal squatting, conversion of forest space for self-interests to conservation good practices.



Mara River as it meanders in Kenya towards Lake Victoria in the United Republic of Tanzania

The Mara River runs through the Masai Mara Game Reserve on the Kenyan side and the Serengeti National Park on the Tanzanian side, and eventually flows into Lake Victoria. Communities living along the Mara River and its basin area are increasingly facing water shortages, poor water quality and environmental degradation as a result of pollution, agricultural runoff, large-scale irrigation projects, and mining and other industrial activities.

KEFRI Commissions Hay balers in Loitokitok sub-County

(By John Otwoma)

KEFRI under the Integrated Programme to Build Resilience to Climate Change and Adaptive Capacity of Vulnerable Communities - Loitokitok Project donated hay balers to community groups in Kajiado South sub-County.

The Deputy Governor for Kajiado County, H.E. Hon. Martin Mwirisho commissioned the balers in the event held on 25th September 2017 at Noomayianat Community hall. Sixty five farmers and government agencies including the sub-County agriculture and livestock officers, County Administrators, and NGOs attended the event.

Hon. Mwirisho thanked KEFRI and the stakeholders for being in the forefront and proactive in assisting communities in Kajiado to mitigate the negative effects of climate change.

Ten farmer groups from Kimana, Kuku, Imbirikani, Entonet and Rombo wards would benefit with the hay baler and trainings on range rehabilitation and livestock improvement



(Left): H.E Hon. Mwirisho (2nd from right) commissioning balers to farmers at Kimana. (Right): Staff from Steve King Limited demonstrating to farmers how the baler machine operates

The larger baler compacts up to 37 kilograms of grass whereas the small one holds 18 kilograms.

Speaking at the same event, Dr. Gabriel Muturi, Project coordinator - encouraged the communities to adopt drought tolerant food crops and tree on farm, embrace best practices such as pasture improvement to improve the livelihood of the communities in loitokitok sub- county.

“So far, representatives from all the groups were exposed to pasture improvement and water harvesting, good practices in Makeni County,” said Dr. Muturi.

KEFRI Board Tours Forest Products Programme

By R. Shanda



Mr. Robinson Ng'ethe observing specimen using a scientific microscope at the Wood Analysis Laboratory

KEFRI 9th Board of Directors led by the acting Chairman Mr. Robinson Ng'ethe visited the National Forest Products Research Programme-Karura on 29th September, 2017 to familiarize themselves with the research activities undertaken by the programme.

The Deputy Programme Director Mrs. Nellie Oduor, led scientists and technical staff in hosting the Board members who toured the workshop, wood Chemistry laboratory, energy section and bamboo processing unit.



Board members visiting the main log conversion workshop newly installed Woodmizer machine has been installed

The board was briefed on the operation of the newly installed Woodmizer machine which is more efficient in timber sawing as well as the High Performance Liquid Chromatography (HPLC) equipment at the Wood Anatomy Laboratory.

The Board members who accompanied the Chairman during the visit were Ms. Maureen Mwangovya, Ms. Margaret Maimba, Mr. Felix Ateng' and Dr. Abdullahi Jillo.

Workshop on Forest Protection

By S. Kamonde



MERCFA and facilitators in a group photograph during validation workshop

Muguga Ecosystem Research Community Forest Association (MERCFA) participated in a validation workshop on Status of Social Protection for Forest Dependent Communities (FDCs) in Kenya held at the KEFRI headquarters, Muguga.

The Centre for Natural Resources Management (CINAREMA) organized the workshop on 3rd July, 2017 to share findings of its study on 'social protection needs and opportunities for forest dependent communities and assessment of social protection provided for forests in Kenya.

The Deputy Director, Conservator of Forests Ms. Charity Munyasya - noted that it is through such studies that successes, challenges, and way forward especially in participatory forest management (PFM) process are evaluated for livelihood improvement.

Implementation of such findings is meant to cushion the poor and vulnerable from the hard socio-economic risks, shocks and build resilience to poverty.

The CFA collaborates with KEFRI, KFS, and other stakeholders in protection and conservation of Muguga forests. The group also showcased its products and services such as conservation initiatives (energy saving activities), livelihood improvement (honey production) and information sharing.

Intergration Of Iso 9001: 2008 Qms And 14001:2004 Ems

By (M. Njenga)

KEFRI is in the process of integrating both International Standards (ISO) 9001:2008 QMS and ISO 14001: 2004 EMS systems for effective implementation during the transition into the new ISO standard version 2015, before September 2018.

Bureau Veritas a consulting firm held a training at Marigat sub-centre from 24th to 27th September, 2017, where 52 ISO champions from all regions in KEFRI participated.

The champions will oversee implementation, maintenance and monitoring of the integrated systems in their respective regions or sections.

The 3-day training was to empower ISO champions with skills to oversee environmental management, products and services offered to the clients at each centre conform to International standards. The integrated quality and environmental system will enable the institute achieve the intended outcomes of the system with less resources and ease of implementation and maintenance as compared to separate systems.

The requirements of the new version of ISO standard is based on high level structure where all the ISO standards starting from 2015 will have aligned similar structure with ten (10) clauses.

The basis for the approach underlying management systems is founded on the concept of Plan-Do-Check-Act (PDCA) cycle. The PDCA model provides an interactive process used by organizations to achieve continual improvement through planning, implementing, monitoring measuring, analyzing and acting on required corrective actions.

Some of the benefits of implementing ISO standard in an institution include:

- Increased leadership involvement and engagement of employees for efficiency
- Improved company reputation and the confidence of stakeholders
- Incorporating environmental issue in business management
- Provision of the services through improved efficiencies and reduced costs
- Attracting better suppliers into the organization's business systems.

During the training, the participants were taken through the ten clauses of the new standard version which highlighted the following ;

- The organization and its context; pointing the needs and expectations of interested parties, determining the scope of the quality management system and its processes, the top management commitment to customers, organizational roles, responsibilities and authorities.
- Planning institutional actions to address risks and opportunities, environmental aspects, compliance obligations and actions to established, implemented and maintained the system.
- Support through provision of resources needed for establishment, implementation, maintenance and continual improvement of quality products and service and environmental management system.

Acquisition of competence of person(s) appropriate education, training or experience; awareness on the EMS and QMS policies, significant environmental aspects, benefits of enhanced performance and implications of not conforming to system's requirements including compliance to legal and other statutory requirements

Improvement of products and services and environmental aspects through measurements, monitoring, analysis and maintenance through internal and third party audits

The Champions training was followed by a 5-day documentation workshop which took place in Kitui to review both existing EMS and QMS certified system documents in earlier version into new procedure documents in line with the current ISO standard requirements and re-develop as per the specifications and requirement of the new ISO version 2015 standard.

Farm Forestry Evolution in Kenya

By S. Gitonga



Farm forestry scenario at the slopes of Aberdare Ranges in Central Highlands of Kenya

A study to review the evolution of tree growing in Kenya indicates that factors such as population density, climatic conditions and access to market niches for surplus products especially for short rotation tree crops, policy and legislative framework are key in the development of farm forestry in developing countries.

The study published in the Journal of Natural Sciences Research in 2016 was conducted by KEFRI and SEKU scientist. Dr. Joshua K. Cheboiwo led the study which explores the chronology of farm forestry, grounded on forest resource management and land use systems from pre-colonial to present day.

The researchers used desktop literature reviews citing various studies done in the country over the years in addition to the authors' experiences.

The study defined farm forestry as the practice of growing trees on privately owned agricultural land, for household use and surplus for sale (FAO, 1989). Valuable information on forestry resource stocks, ownership and management practices in pre-colonial Kenya was cited from archival reports by early European explorers, missionaries, administrators, agricultural and forest officers.

During pre-colonial period forest resources management were based on individual communities' traditional structures that ensured that members had abundant supplies of land and resources to support their socio-economic activities. Forest lands were

reserved for future agricultural expansion depending on community population growth and settlement patterns. Under traditional African land use systems, cultivated land area was directly related to the farming household food demand. Similarly, for pastoral communities the land was directly related to grazing resources demanded by its members.

During colonial period settlers changed land ownership through displacement and concentration of indigenous populations. Population growths further shrunk available productive land and forest resources to levels that could not adequately accommodate traditional land uses. As a result, serious land degradation occurred in reserves prompting the Colonial Government to initiate agricultural and land use transformations that included afforestation in highly populated areas for environmental conservation. Forest department initiated planting of fast growing exotic species that diffused to neighbouring farms, missionary centres, schools and emerging elite Africans for amenity and social status.

Tree planting as a commercial venture started with the introduction of *Acacia mearnsii* (Black Wattle) into Kenya by Reverend Stuart Watt who planted the black wattle in Ngelani Machakos in 1880's from where it spread to other parts of the country.

By 1920's it was widely grown by both African and Europeans farmers because of its low labour requirement and high demand for its bark for production of tannin. The adoption of *Acacia mearnsii* changed the land use in Uasin Gishu plateau whose profitability has been enhanced through inter-cropping with maize and wheat at early stages of establishment and silvo-pastoralism at later stage.

Acceleration of rural tree planting activities is founded on Kenya Forest Policy of 1968, which rolled out Rural Afforestation and Extension Services Division (RAES) in 1971 to facilitate implementation of public forest management and training of forestry professionals and farmers, establishment of tree nurseries countrywide and deployment of extension staff to offer technical services to rural farmers.

By 1990, through RAES and Local Afforestation Programmes (LAP), there were about 370 Local Chiefs Nurseries (LCN) out of 850 administrative locations in the country (GOK, 1989) and tree seedling production was over 100 million seedlings per annum reflecting an equivalent area of between 53,000 and 84,000 hectares.

Several NGO's in collaboration with government agencies and farmers have expanded tree-planting activities in the country. Private nurseries both in rural and urban areas and recently seed collection and vending have over-time flourished as an important business for farmers and commercial operators thus making the activities more market and need driven.

Forestry resource management on farms has evolved through several stages in terms of planting patterns, species mix, density, utilization and marketing which has been shaped by local biophysical, institutional and socio economic conditions through some definable common stages.

These stages evolved from common resource extraction to planting in compound, boundary and windbreaks, intercropping and lately intensive mono-cropping in form of woodlots for commercial purposes. These factors have also shaped some regional dominance of some species in the country, for example *Grevillea robusta* and *Cupressus lusitanica* in Central; *Casuarina equisetifolia* in

Coastal strip and *Acacia mearnsii* and *Eucalyptus spin* Western Kenya. However, most farmers in Kenya grow mixture of these species in their agricultural land. The trees are grown for various purposes such as fencing, timber, posts, fodder, food, poles, fuelwood and bark. Farm forestry also provide vital environmental goods and services to the households and society such as windbreaks/shelter belts, water catchment protection, shade, soil conservation, boundaries markers and enhancement of scenery.

Kenya Forestry Master Plan Project (KFMP, 1994) reports that trees on farms and settlements in the high and medium potential ecological zones contain an average of 9.3 m³/ha and is projected to grow to 27m³/ha by 2020

Various farm forestry products such as firewood, polewood, sawnwood, sawlogs, charcoal are consumed or marketed by households is estimated to have generated up to USD 170 million in the year 2000 and predicted to expand to USD 372 million by 2020.

The success has been due to government and NGO's farm forestry promotion strategies that ranged from direct packages such as subsidies in provision of seedlings to farmers, promotion of private nurseries and seed vending and provision of technical and research services.

The study concludes that history of farm forestry in Kenya was shaped by various colonial and post-colonial factors mostly related to land scarcity, population density and market based incentives.

The study indicates that there are some necessary conditions for farm forestry to thrive as a subsistence land use and as a business enterprise.

These factors include population density, climatic conditions and access to lucrative market niches for surplus products especially for short rotational tree crops.

Therefore policy and legislative framework have to take into account these factors in order to facilitate vibrant farm forestry development in developing countries like Kenya.

Performance of Agroforestry Trials in Turkana

By J. Owino

Result from trials established by KEFRI to evaluate suitable agroforestry tree species for incorporation into irrigation farming system in Turkana County has found *Grevillea robusta* and *Melia volkensis* performance is superior compared to other exotic tree species like *Eucalyptus camaldulensis*, *Croton megalocarpus* and *Acacia faidhabia*.

Mr. Jeseo Owino, a scientist at KEFRI-Turkana station affirm that the two species are adapting well to the environment according to data collected from measurements of DBH and height during the regular annual monitoring of the selected agro-forestry tree species at Katilu irrigation scheme.

Many farming households in the irrigation schemes have seen the potential of these agroforestry tree species and KEFRI is now keen on upscaling them on-farm.

KEFRI technologists have received skills on permaculture which will be demonstrated at the tree nursery for wider application by farmers in the region. This training was as a result of intensified partnerships with agricultural organisations that are promoting agroforestry practices in the region.

KEFRI in collaboration with the Turkana County Government is training Ward Environment Officers and selected community groups in the use of modern kilns for production of charcoal, specifically from *Prosopis juliflora* (Mathenge). The County Government through its Ministry of Energy Environment and Natural Resources procured the kilns which will benefit the communities in areas heavily invaded by prosopis. The initiative is anticipated to manage the spread of *Prosopis juliflora*, improve livelihoods and generate revenue for the county.



Environment officers in Turkana undergoing training on production of *Prosopis* charcoal using metal kiln



Mr. John Epodo a KEFRI technologist at Turkana station taking measurements of *Melia volkensis*. (Below) *Grevillea robusta* planted as boundary marker



Farm forestry scenario at the slopes of Aberdare Ranges in Central Highlands of Kenya

Directors Staff Forum

By: S. Gitonga

The Board of Directors appointed Dr. Jane Njuguna as the Senior Deputy Director Research and Development, Mr. George Otieno as the Senior Deputy Director Finance and Administration, Commissioner Rose Osoro as Deputy Director Finance.

Dr. Njuguna and Mr. Otieno replaced Dr. Bernard Kigomo and Mr. Patrick Omesa who retired from service.



Dr. Jane Njuguna and Ms. Rose Osoro during the staff forum

KEFRI Director Dr. Ben Chikamai announced the appointment of the three senior managers during the quarterly staff forum held on 29th September, 2017.

In their maiden speech the trio thanked the Board of Directors for granting them an opportunity to serve in their new positions and promised to use their capacities to enhance service delivery in the institute. Both Senior Deputy Directors had the commitments and focus in their work

“KEFRI is a reputable institution which is well focused on fulfillment of its key mandate: research and development,” said Dr. Njuguna.

Mr. Otieno called upon the staff to embrace teamwork, exercise diligence in the use of funds to enable the management improve on delivery of credible services and products.

Secretarial Workshop

By: Margaret Njenga

The Kenya National Secretaries Association (KENASA) organized a two-day workshop on Leadership and Governance in Naivasha on 7th to 8th September 2017.

Ms. Ann Indimuli, Mr. Vincent Agui and Ms. Margaret Njenga represented the Institute in the workshop.

Ms Esther Omoko, the Head of Secretarial Professional body officially opened the function on behalf of Hon Hassan Wario, the Principal Secretary Ministry of Sports, Youth and Gender.

The workshop deliberated on standards, ethics and professionalism in the secretarial profession and the Secretarial Professional Bill 2017 which will soon be anchored into law.

The Secretarial Professional Bill, 2017 objective is to nationally regulate, coordinate and govern the practice of the secretarial profession in Kenya.

It will be implemented using the state regulation model and provision for standards and accreditation of secretarial training standards, registration and licensing of secretarial profession, capacity building and disciplinary mechanism.

Dimensions of personal empowerment was also emphasized where by self awareness, personal values, building of skills and career, search for information for knowledge purposes, having realistic goals and use of positive and active language to define your space and identity were among the areas covered.

Other important attributes worth emulating included; being a good listener, dependable, flexible, patient, respectful, willingness to learn, good sense of humor, able to follow instructions, trustworthy, honesty, thinking big and eliminating small people syndrome and general guidelines on etiquette.

PENSION SCHEME UPDATE

The following former KEFRI staff have ceased to be members of Pension Scheme due to the mentioned reasons:

Name	P/ No.	Exit mode	Date
Joyce A. Sayah	5351	Rt	5. 9. 2017
Bernard N. Kigomo (<i>Dr</i>)	5388	Rt	9.9.2017
Leilah A. Mohamed	7072	Rg	1.1.2017
Priscila Chepkemo	6916	Dt	22.7.2017

(*Rt* = Retirement, *Rg* = Resignation, *Dt* = Death)

Additional Voluntary Contributions

Surveys conducted in the country on retired senior citizens 32.9% indicated that pension income was the only source of income during their retirement. The findings indicate the critical place pension scheme savings ranks among other incomes received by retired citizens.

According to AoN Consulting Limited, one of the best ways for members to boost their pension's savings is by taking additional contributions commonly known as Additional Voluntary Contributions (AVC's). Both The Regulations through The Retirement Benefits Act, Regulation 14 section 2 and The Scheme Rules allows members to make Additional Voluntary Contributions.

Remarks	Without AVC	With AVC
Gross Pay	93,573.00	93,573.00
Contributions @ 5%	4,679.00	4,679.00
AVC - 5%	0.00-	4,679.00
Taxable Pay	88,894.00	84,216
Tax Payable	17,262.60	15,859.20
Tax Savings		1,403.40

The Pension Scheme has therefore set out a strategy of ensuring members replace 40%-60% of salary, with their retirement income. This is underpinned on optimising scheme performance to ensure members earn positive inflation-beating performance as they approach their retirement.

In addition to reaping and locking in the benefits of the positive scheme performance, members will, additionally enjoy savings on the tax payable from their salaries taking into account contributions are tax deductible up to a maximum of Kshs. 20,000.00. The following illustration will help in understanding this concept better;

Important points to Note


The Sponsor does not participate in the AVC AVC's are paid out as a lump sum at retirement, incorporated as part of the one third of the cash lump sum derived from mandatory contributions; it forms part of commuted lump sum benefit.

A Member, through the Secretariat Office, signs a form authorizing the deductions of AVC, indicating either, a percentage of basic salary or a fixed amount to be deducted as AVC.

It is highly advisable that members should allow the selected basis of deduction of the AVC, to hold for at least a period of 12 months, running in line with the scheme financial year.

Deduction are made from the payroll and remitted to the custodian; the AVC's are credited to the individual member's account, distinguished from the Mandatory regular contribution.

The income earned by the scheme is distributed equally to all contributions received from and in respect of the member, including AVC



DEMISE

The late Priscilla Chepkemoi

KEFRI fraternity console with the family of the late Priscilla Chepkemoi Yegon which occurred on 22nd July, 2017 at PCEA Kikuyu Hospital

Priscilla served at KEFRI Headquarters in various departments before she passed on. Her body was laid to rest at Kaptumo, Kapletito Village Nandi County on 29th July, 2017

May the lord rest her soul in eternal peace.



Participants display their certificates awarded after completion of the training




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