Welcome to the 4th edition of the Aglink E-Newsletter for the year 2017 that highlights in general what is happening within the Agriculture Extension and Advisory services in Kenya.

This issue features content that make smallholder farmers play pivotal role towards attaining food security if supported and guided accordingly. The small holder farmers have limited access to appropriate knowledge and information and they therefore continue to practice agriculture as a traditional activity, rarely embracing new technologies and innovations. With the extension officer to farmer ratio continuing to diminish, information flow continues to be challenge. As a result, while we could potentially increase productivity in the precincts of reducing land sizes, this has not been the case. Instead, productivity has continued to decline reaching its worst ever.

In this issue Arid Lands Information Network (ALIN) highlights Joto Afrika as a platform to share information resources and knowledge on climate change issues in Kenya. The Farmer Field Schools (FFS) extension methodology has gained popularity as a successful approach to engage farmers and a team from FAO has summarized the origins and spread of FFS in Africa. Strawberries are nutritious when eaten fresh and an article by Mkulima Young highlights some basics and how easy it is to grow the fruit. Not to be left behind, the youth in Busia County are featured for successfully establishing gardens with technical support from Biovision Africa Trust in partnership with other collaborators.

This edition also features a continuation of technical information on hydroponics focusing on various daily feeding programmes of livestock and poultry. An article on women in agriculture emphasizes the role women play in ensuring food security at household level. The author focuses on the need for gender consideration in agricultural initiatives. The seed savers network in their article shares their extension model that involves capacity building of farmers at various levels and use of multimedia channels to reach more farmers. Lastly KeFAAS highlights key resolutions as a result of a successful Annual General Meeting held in December 2017.

Enjoy reading and the editorial board takes this opportunity to wish all our readers a merry Christmas and a happy new year 2018.

Editor
Access to relevant quality information and knowledge on low emission and climate change adaptation actions is imperative for people to understand the ever-changing climate and what they can do about it.

However, there is inadequate sharing of climate change information leading to a lack of timely and authoritative response to climate change. The Arid Lands Information Network (ALIN) and the Ministry of Environment and Natural Resources (MENR) through the Low Emission and Climate Resilient Development (LECRD) Project is addressing this information gap by drawing together and summarising lessons, experiences and practical information on low emission and climate change adaptation actions in Kenya through the Joto Afrika publication.

Joto Afrika, meaning “Africa is feeling the heat’ in Kiswahili is a series of printed briefings and online resources about low emission and climate change adaptation actions. The series helps people understand the issues, constraints, and opportunities that they face in adapting to climate change and escaping poverty.

ALIN started producing Joto Afrika in 2009 in an 8-page A4 format. The articles are not academic, but short and easy to read. They aim to inspire interest and motivation, to get people involved and help to share what is happening in Kenya to a wide readership.

Joto Afrika audience includes farmers, community groups, local NGOs, researchers and all the way to the global audience.

“We hope that through Joto Afrika, people in Kenya have better access to information on low emission and climate change adaptation and use this to inform decision making about how to cope with the effects of climate change,” said Mr. James Nguo, ALIN Regional Director.

Content for the series includes summaries of African research, community case studies and other relevant information, all presented in a clear, accessible style. The publication focuses on policy lessons and useful practical ideas for adapting to climate change. Each issue considers a different sector or research theme that is affected by climate change.

Joto Afrika provides opportunities for shared learning between organisations as it enables them to communicate with each other and share experiences while giving grassroots communities possible solutions on how to adapt to climate change and improve their livelihood. Many readers are now even using Joto Afrika as a training tool to pass information on climate change adaptation in Kenya.

Joto Africa has been instrumental in providing better information about low emission and climate change adaptation actions for communities, researchers, policymakers, government ministries and departments, County Governments, institutions of higher learning and Non-governmental organisations.

It has enhanced the communication between these groups, including the sharing of ideas, success stories, and on-the-ground challenges.

There is a wealth of knowledge and experience on low emission and climate change adaptation actions that are available and can be shared. The knowledge can help all stakeholders to connect, be inspired and learn from each other. Past issues of Joto Afrika can be accessed from http://www.alin.net/Joto%20Afrika.
The origin of FFS in Africa

FS was introduced in Africa in 1995 by FAO through the Global IPM Facility (GIF), in West Africa through Seasonal training of trainers (TOT). The first three FFS were implemented in Ghana. In the same year, the Special Programme for Food Security (SPFS) piloted four FFS in Western Kenya through the Ministry of Agriculture. Prior to this, the extension service providers had over the years used different approaches to pass technologies to farmers. These included demonstrations, model farmer and the training and visit system. Kenya was one of the 15 pilot countries under the SPFS.

In 1999, FAO global IPM facility launched an East Africa sub-regional pilot for FFS on Integrated Production and Pest Management (IPPM) covering three districts of western Kenya (Busia, Kakamega and Bungoma). Several initiatives followed the IPPM program, expanding the approach to new enterprises such as vegetables, poultry and forestry. In 2001, a major programme covering seven districts of Kenya and located in three provinces (Coast, Eastern, Rift valley) was initiated by FAO through the financial support of UNDP in partnership with the Government of Kenya (GOK). The pilot programme entitled Promoting Farmer Innovation through Farmers Field Schools (PFI-FFS) was a four-year project funded for the first two years, and then extended by five more years. The programme used the grant system to finance farmer groups.

Since 1995 to date, the spread of FFS in Kenya as contributed by farmers, donors, non-state actors and extension providers is likened to a “bushfire”. The “Schools without walls” aptly translated, as “Shamba darasa” in Swahili has increasingly become the frontier of participatory and demand-driven agricultural advisory and extension services. The FFS approach in Kenya has been adopted to suit the country’s diverse agro-ecological systems. This adaptation is through a wide range of crops and livestock enterprises and non-farm interventions such as reproductive health. It is estimated that there are over 90,000 farmer graduates from over 5,000 FFS spread all over Kenya.

To date the FFS approach is perceived to be very successful in Kenya, as reflected in the increasing efforts of various agencies and institutions adopting and testing the approach for various topics. Kenya boasts of a seasoned team of FS master trainers that have trained, established and backstopped field schools globally. Some of these countries include Afghanistan, Burundi, Burkina Faso, Rwanda, Somalia, South Sudan, Namibia, Mali, Mauritania and Zambia. The key to increasing farm productivity and improving national food security lies in the ability of farmers to select, adopt and apply from technologies, which are productive, profitable and sustainable.

For more information on FFS please contact Ambassador Benjamin Mweri on benjamin.mweri@gmail.com or Edwin Adenya or Edwin.Adenya@fao.org
Though women and men play complementary roles in agriculture, their social and economic relationships, roles, relations and access to various factors of production are impacted differently. Over the years, women have been noted to play a significant role in agricultural value chains. They comprise 70% of the agricultural workers providing 60-80% of the labour to produce food for household consumption and sale. They are also responsible for almost 100% of the processing of basic foodstuffs due to their engendered role which puts them in the kitchen. Further, they are involved in 80% of food storage and transportation from the farms.

Despite women’s hard work and efforts in the agricultural sector, they earn only 10% of the world’s income from the sector and less than 2% of the property, a characteristic that is common even in Kenya (FAOKE). They make up the majority of rural poor, comprising 70% of the poor population. They face agricultural development challenges including lack of access to factors of production including capital and land. As a result, while we rely on them for food and nutrition security in the country, they are incapacitated to engage optimally in agricultural production and commercialization due to the limitations they face.

The Kenyan constitution has eliminated gender discrimination in relation to land and property and gives everyone including women the right to inherit and unbiased access to land. This then gives the Kenyan women a better platform to enhance agricultural productivity. However, despite the fact that the constitution promotes gender equality, the Kenyan women only own one percent of the land yet they produce most of the food for the entire families nationwide. The law is far from reality.

Devolution is an opportunity for the women to rise above this unfortunate reality. The county governments should enforce this in their respective counties to eliminate discrimination, to promote equal access to the resources and opportunities, to ensure that agricultural projects and programmes are gender-sensitive and to make women’s voices heard as equal partners for sustainable development.

As gender issues in agriculture begins to be taken seriously, women farmers in Kenya need extensive support. This is because they are responsible for nutrition in most Kenyan homes, including the purchase and preparation of food. When given the opportunity to manage households’ finances, studies show that women are more likely than men to spend on their families’ nutritional needs, healthcare and school fees for children. Therefore empowering women through increased access to and control over resources is critical to attaining food security in Kenya.

Achieving gender equality and empowering women in agriculture is not only the right thing to do. It is also crucial for agricultural development and food security in Kenya.
Traditionally, agricultural extension personnel had the task of diffusing scientific knowledge to farm families in the farms and homes. This limited the farmers reached and geographical area of coverage. Despite its many benefits, the extension methods had limitations which require other approaches in service delivery.

Food and Agriculture Organization recommends a ratio of 1:400 (Extension officers to farmers). This is much below the reality in Kenya where the ratio is estimated to be 1:1500. As a result of this shortage, farmers are not able to keep pace with technology advances that can help increase their productivity. Integration of additional farmer outreach methodologies to train and enhance accessibility to agricultural information would benefit more farm households.

As Seed Savers Network, our extension staff reaches farmer groups’ directly for training and in setting up demonstrations. However, we have amplified our work by use of electronic media, forums, agricultural shows and exhibitions to diffuse the idea of saving local seeds for agrobiodiversity conservation. Through the interactions we have been able to expand our work and reach more small scale farmers.

Seed Savers Network has been hosted by Mulembe FM and Radio Amani on various farmers’ programmes where farmers have been trained on seed saving and ecological agriculture. Our presence in the media has helped farmers to inquire through phone calls and follow up on seed saving concept. This has also been the outcome of Inooro TV coverage in ‘Mugambo wa Murimi’ show. We also contributed to a documentary through Hivos in collaboration with Open Society Foundation where we highlighted the plight of farmers managed seed systems. This will be useful in reaching and enlightening more farmers across the globe who share the same challenges. Also we contributed to a podcast available online on the ‘Role of Agrochemicals in Kenya’. This was developed by Jason Farr a graduate student at an American University after his internship at our organization. It unveils the untold story and serves as a guide for farmers to enhance their conservation efforts.

Through agricultural shows and exhibitions we have been able to showcase farm saved seeds to farmers. Our extension officers have trained them on the procedures of mass seed selection, harvesting, extraction, sorting, treatment and storage of seeds. This has also been an avenue to reach senior government officials for instance during Chandera agricultural field day early December, we hosted Agriculture Cabinet secretary Willy Bett and CEC agriculture Dr. Immaculate at our stand. In July this year during Nakuru Agricultural show, we hosted by then Nakuru governor Kinuthia Mbugua, CEC agriculture Dr. Stanley and Director of Agriculture.

We recently held annual seed fairs with farmers from Kakamega, Nakuru, Nyandarua and Kiambu County. Various organization which includes; Hivos, Slow Food Kenya, Community Sustainable Development Empowerment Programme (COSDEP) and Resources Oriented Development Initiative (RODI) attended. The event came two months after an international seed fair at Nyando in partnership with Biodiversity international and two weeks after World Organic Congress in India where a farmer from our network and extension officer were sponsored by Hivos and Kenya Biodiversity Coalition (KBIOC) to participate. All these gave participants opportunity to learn more on our seed saving concept as well as giving opportunity for farmer-farmer training and mentorship.

Farmer to farmer trade fair

Another approach is partnership with like-minded organizations locally and internationally. Through KeFAAS we have been able interact with other agricultural extension Officers across the country. This has been an opportunity for experiential sharing on best practices in various organizations. Collaboration with international organizations; European Centre for Development Policy Management and 4 Italian Universities consortium, Bioversity International and Irish Seed Savers provides more information to farmers through inclusive research at farm level, sharing their work in documentaries and other resources. Through these Seed Savers Network links extension services to farmers from outside world to boost our agro-biodiversity work.

For more information visit their website and blog page www.seedsaverskenya.org
Strawberries are one of the easiest fruits to grow as it’s one fruit that’s happy to grow anywhere be it the ground in the vegetable garden, a pot on the patio or a hanging basket in a sunny location.

A nutritional powerhouse fruit, rich in Vitamin C, it’s ideal to add in your breakfast cereal or for dessert with yogurt. Strawberries prefer well draining soil such as a sandy loam.

The ideal soil is slightly acidic with a pH of 6.0 to 6.5. Strawberries are hungry feeders, so plenty of organic matter (compost or manure) needs to be included in the potting mix or garden soil. Also add a generous sprinkle of bone meal.

Strawberries love the sun so select a site that sees plenty of sun. They also need to be kept well watered at all times of the year, even through the seasonally dry periods to prevent the crop from drying out. To assist with retaining moisture in the soil mulch the surface well using straw, hay, or other organic matter.

During the cold months of July and August, especially if you live in the Nairobi area and suffer the grey skies, the plants will stop producing fruit. During this period the leaves will likely look tired, it’s time to prune them in preparation for the sunny weather. As soon as the weather WARMS up fresh leaves will appear and flowering will restart. At this time runners should also appear from each plant from which new plants will appear at the tip of the runner. When these have produced roots they can be detached from the parent plant to either increase the stock or replace any that have been lost during the year.

The area around the strawberry plants should be kept weed free at all times as they compete for light and nutrients.

During the fruiting period, and to encourage continuous fruiting, apply a potassium rich fertilizer once a month. This can be done organically by making a comfrey “tea”. This “tea” is easy to make by placing several comfrey leaves in a covered container that has a small hole in the bottom though which drips the “tea” from the decomposing comfrey leaves, into a collecting container. The comfrey “tea” is diluted using one part comfrey “tea” to 15 parts of water.

The fruits of strawberries should be harvested when the whole fruit is completely red. Fruits that are still white near the stalk are immature and should be left until fully ripened when they will contain maximum sugar content, flavour and size. The fruit should be picked with a small section of the stem and the cap attached as this assists with maintaining freshness. The caps and stem are removed at the time of eating.

Unfortunately strawberries like many fruits and vegetables attract an array of pests and diseases. Slugs and snails enjoy the ripe fruit, as well as fruit eating birds.

The slugs and snails can be collected by hand and destroyed. As for the birds, netting and not shading which will cut out a certain about of sunlight, is the best option. The netting should be supported at least a metre or so above the plants.

Spider mites can also be a problem in the dry weather but frequent watering should keep them away. When applying mulch, be sure to keep it slightly clear of the crown of the plant as covering the crown may lead to rot and loss of the plant.

Enjoy eating your freshly picked strawberries. (Acknowledgement source: Mkulima Young)
By Daphne Muchai - KeNAFF

Continued from previous issue, feeding different livestock using hydroponics fodder!

Dairy Cows

45kg fodder + 3 kg dry matter (hay, maize stovers, dried grass, dry Napier e.t.c)+150g calcium salt.

ADVANTAGES

1) Increase in milk output from 10 percent.
2) Increase in fertility—one calf per year is assured.
3) Milk natural taste, color and smell are enhanced.
4) General immunity of the animal is boosted.
5) A saving of between 100 Ksh and 200 Ksh daily per cow is guaranteed.

To grow fodder for two dairy cows per month will require 3.5 litres of hydroponic nutrient solution.

Giving hydroponic fodder as;

(So, to feed two dairy cows on hydroponic fodder as;

a) Supplement daily will require 4 Kg of barley/Gadam Sorghum seed.
b) Main fodder daily will require 12 Kg of barley/Gadam Sorghum seed.

To grow enough fodder for 2 cows as the main meal you require 360 Kgs of barley/sorghum seed.

1 bag of barley seed is 80 Kg.

To grow enough fodder for 2 cows you need 42 aluminum trays. To control temperature, the shade net is used which is recommended for hydroponics. The table below summarizes the requirements to grow monthly enough fodder for 2 Dairy Cattle in 3m by 4m room:

<table>
<thead>
<tr>
<th>REQUIREMENTS</th>
<th>Hydroponics as main feed</th>
<th>Approximate Cost per unit</th>
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<tbody>
<tr>
<td>Barley/Sorghum</td>
<td>360 kg/month</td>
<td>45.00/Kg</td>
</tr>
<tr>
<td>Hydroponics nutrient solution</td>
<td>3.5 litres</td>
<td>1,500.00/litre</td>
</tr>
<tr>
<td>Aluminum Trays</td>
<td>42 trays</td>
<td>1000.00/tray</td>
</tr>
<tr>
<td>Hydroponics shade net</td>
<td>12 square meters</td>
<td>135.00/meter</td>
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</tbody>
</table>

15kg fodder +1.5kg maize meal +dry pasture

Young bulls (6 months old) are known to increase the weight by 108 kg for three months under this feeding programme. This is because between six and nine months is bone spat period in cows. Emaciated cows recover in just one month.

POULTRY

LOCAL BREED

Aim to give 150g of fodder to any mature hen, ducks, goose and pigeon. Quail eat according to their body weight.

EXOTIC

They take 50 percent fodder and 50 percent coconut cake or conventional feed.

ADVANTAGES

i) Early maturity; broilers are ready by 28th day and layers start laying at 16th week.
ii) The egg yolk is bright yellow in color,
iii) Cannibalism is eliminated.
iv) Save between 40 to 60 percent on feed.

Source: http://kaaa.co.ke/hydroponic-fodder-solution-farmers/
By: Pauline Mundia Biovision Trust Africa

Busia County is well endowed with good weather and fertile soils. Despite this, food and nutrition security remains a key challenge to the farming community in the area. According to the latest Kenya Health and Demographic Survey (KHDS) 2014, 1 in 4 children in the area is stunted and 10% are malnourished. In addition, it was noted that in the region, the average age of a smallholder farmer is 50–65 years, with the youth involvement being minimal.

The value of School Gardens

In a bid to address the above-mentioned challenges, Biovision Africa Trust, through the Ecological Organic Agriculture Initiative developed a project to raise awareness of the value of biodiversity for food and nutrition through the establishment of school gardens. The project was funded by the Swiss Agency for Development and Cooperation (SDC) while field implementation was done by staff at SINGI farmer resource centre in collaboration with Bioversity International and the school communities.

School gardens are important practices to provide nutritious meals to growing children and adolescents. They have also been identified as best practices for mobilizing biodiversity for improved dietary diversity as well as introducing the youth to agriculture. School gardens are established by children. School gardens can help promoting good diet, develop livelihood skills, provide income and help improve environment through improved biodiversity and use of sustainable agriculture production systems. School gardens can become a seed ground for a nation’s health and security. In addition, they ultimately contribute to the achievement of sustainable development goal number two (SDG2) – “End hunger”

Establishing the school gardens

Two schools, namely Mundika Girls Primary School, and Resonate Academy were selected to implement the project. The main crops chosen to be planted were indigenous vegetables, spinach, sweet potatoes and sorghum. The initial step was capacity building of the teachers, parents and pupils. They were trained on soil fertility management, good agronomic practices, post-harvest management and cooking.

The next step was the actual setting up of the demonstration. After land preparation, the children were involved in the planting and other agronomic practices during the growing season. At the end of the season, the pupils harvested the vegetables and sold to teachers and took some home to their parents.

Key Outcome

The pupils were very enthusiastic about the project and proudly shared their success with their teachers and parents.

Scaling up

The aim of the school gardens is to teach children and adolescents sustainable agricultural practices, climate-sensitive technologies and the nutritional value of locally available foods. It is hoped that the initiative can be upscaled to more schools. In addition, we hope that the production in each school can be increased to contribute to the school feeding programme.
Join the Forum and Get your Membership Certificate Today!

VISION: Robust agricultural extension and advisory services

MISSION: To improve delivery of agricultural extension and advisory services by harnessing and developing capacities
KeFAAS held its first annual general meeting (AGM) on 14th December, 2017. In attendance were over 30 of the 54 registered members. The AGM was meant to present a score card of Forum operations and achievements since its inception in May 2015 and chart the future direction that it will take in its endeavour to fulfill its mandate. This being a first for KeFAAS, the Chairman stressed the need for members to participate fully in the affairs of the Forum to make it more effective and able to yield the desired results.

Among the business for the day were elections of a Management Board and appointment of a new country focal person, both of which were successfully accomplished. Members were issued with membership certificates and were reminded that, membership is open to all public and private agricultural service providers as corporate or individual members. The meeting also noted that youth in-and-out of school are welcome to join as individual members. In addition, the meeting recommended the current membership and annual subscription fees be maintained.

Among the key resolutions passed by members were:

- To engage the Chair of the County agriculture CECs caucus requesting him/her to join KeFAAS Board as a member.
- Establishment of more networks including at county chapters.
- The need for all agricultural service providers to periodically share their outputs for sharing best practices.
- The need to have strong representation in the counties, which can be achieved by inviting the county agricultural stakeholders’ forums to register as members.
- Enhancement of professionalism in service delivery by engaging with relevant stakeholders and formation of a regulatory body to register and regulate all agricultural extension and advisory service providers.

Finally, the meeting noted that resource mobilization is key to the sustainability of KeFAAS and the fundraising committee should move with speed and develop funding proposals and share them with relevant local and international donor agencies. The incoming Chairperson, Professor George Chemining’wa closed the AGM by thanking all the members who turned up to shape the future of the network and encouraged them to fully participate in future KeFAAS activities. He wished all the members a merry Christmas and a happy new year 2018.

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<tr>
<th>S/No.</th>
<th>Name</th>
<th>Position</th>
<th>Organisation</th>
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<tbody>
<tr>
<td>1</td>
<td>Prof. George N. Chemining’wa</td>
<td>Chairman</td>
<td>University of Nairobi</td>
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<tr>
<td>2</td>
<td>Pamela Mburia</td>
<td>Vice Chairman</td>
<td>Kilimo Media International</td>
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<tr>
<td>3</td>
<td>Dr. Lawrence Mose</td>
<td>Secretary</td>
<td>KARLO</td>
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<td>4</td>
<td>Daphne Muchai</td>
<td>Treasurer</td>
<td>WoFAK</td>
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<td>5</td>
<td>Bob Muchina</td>
<td>Member</td>
<td>Access Agriculture</td>
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<td>6</td>
<td>Mary Kamau</td>
<td>Member</td>
<td>AFAAS</td>
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<td>7</td>
<td>Noah Lusaka</td>
<td>Member</td>
<td>ALIN</td>
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<td>8</td>
<td>Pauline Mundia</td>
<td>Member</td>
<td>Biovision Trust Africa</td>
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<td>9</td>
<td>Albin Sang</td>
<td>Member</td>
<td>MoAFL</td>
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<tr>
<td>10</td>
<td>Philomena Chege</td>
<td>Member</td>
<td>MoALF</td>
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<tr>
<td>11</td>
<td>Daniel Wanjama</td>
<td>Member</td>
<td>Seed Savers Network</td>
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Are you in Rural Advisory Services or Extension Services?
If yes, register as a stakeholder/member today!
Visit www.kefaas.org or contact Silvia through 0720991074
Email kefaas2015 or info@kefaas.org
AgLINK is the official newsletter of the Kenya Forum for Agricultural Advisory Services. In pursuant of the organization’s Strategic Plan and in cognizance of the objective of mass communication within and outside the KeFAAS mandate, the editorial board of AgLINK establishes the following editorial policy:

**GENERAL**

AgLINK shall ONLY carry content that satisfies the following tenets:

Be exclusively devoted to agriculture and related sciences and practices thereon.

1. Observe, adhere and preserve the editorial principles of objectivity, fairness and correctness.
2. Be apolitical.
3. Publish regularly at intervals of 3 months; 4 issues a year
4. Maintain openness and freedom from the influences of particular member or section of membership.
5. Pursue unbridled integrity in the choice of articles and in the cost of publishing the newsletter.

**Overall Content Consideration**

**Themes:** It should be based on KeFAAS overall thematic areas of focus that include Agriculture, Climate change and Environment, Market information and much more.

**Diversity:** The editors will be alert to the need for articles from diverse agricultural practices and themes from the largest possible environment in the arid/semiarid, arable and fishing communities.

**PARTICULAR**

1. AgLINK shall comprise 8 general editorial segments as follows:
2. An editorial
3. Articles and photography/illustrations on agricultural trends and emerging innovations
4. Agricultural and ICT technologies
5. Success Stories in Agriculture and related sciences
6. Member News & Reviews
7. Reader Feedback Forum
8. Addresses

**Editorial Team**

Silvia Mburugu - KeFAAS
Timothy Gacheha - MOALF/KEFAAS
Pamela Mburia - Kilimo Media International
Noah Lusaka - ALIN
Pauline Mundia - Biovision Africa Trust