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ANNUAL REPORT ON KARC 2019

BACKGROUND

Kikumu agriculture research centre is organization in kasese Western Uganda. The organization is promote sustainable small scale agriculture enterprise development by creating community education and support for advocacy strategies relevant to the marginalized rural population development needs in Rwenzori region through involvement local communities in identifying their needs and developing possible solutions that are appropriate for improving and transforming agricultural and environmental situations in Kasese district and Rwenzori region in general.

The organization comprises of women and men, who are qualified and experienced specialist in the field of social sciences, agriculture and analysists. It is a community based and charitable non-government organization. It was initiated in 5 may 1999 after ADF wars in Kasese Uganda.

Kasese District since 1950s has been in Political wars and wars plundered the agricultural enterprises. Most of agricultural Activities were left not functioning. KARC was established to help rural communities in promotion of information in agricultural enterprises development.

(a) GOAL

To pave ways to fighting poverty through participatory, collaborative for economic empowerment of the rural people through improved sustainable small scale agriculture innovations.

(b)MISSION

Improving local grass root communities in achieving a society of transformation in small scale rural agriculture enterprise technologies for economic and socio-cultural Development.

VISSION

Working for well developed strengthen and active rural agricultural technological society which add value on rural enterprises to break ties of rural poverty.

OBJECTIVES OF KARC

1. To promote small-scale sustainable rural agriculture enterprises development in the communities.
2. To promote water technology in agriculture to increase agriculture output in rural areas.
3. Promote advocacy strategies for marginalized rural agriculturalist rights and peace building initiatives in the communities.
4. Promotion and support public Health programs geared towards fighting diseases in the doubly marginalized communities , fighting pollution and pollutants by encouraging healthy environment so as to ensure climate change.
5. To promote Training programs appropriate for community development.
6. To promote Research and information management on communities challenge enterprise development in rural areas.

KARC ACTIVITIES/PROGRAMS

SMALL SCALE RURAL AGRICULTURE AND CONSERVATION ENTERPRISES

Organic farming, small scale Sustainable agriculture modernization, Bee keeping, Fruits management, small scale Animal rearing, Tree planting, produce and marketing ,export, value addition, grading Kitchen garden, urban farming, environmental conservation and tourism mountain action and cultural heritages.

Under food security we have Fruit management, Kitchen garden, Bee keeping, Small scale animals rearing, Food conservation, storage, Agro food processing and Food baking.

FOOD AND NUTRITION HEALTH.

HIV/AIDS nutrition and diet, food processing and training food science, we Help survivors of floods, marginalized groups, organized violence, HIV/AIDS helpline and counseling

AGRICULTURAL COMMUNITIES RIGHTS

Ecologies of land and farming rights, conflict on land and dispute settlement, agricultural and conservation welfare.

HEALTH: sexual reproductive health, water borne diseases, and civic education on primary health care.

TRAINING

Work shop/ Demonstration plots, Vocational training, conservational training and community training programs relevant to rural agriculture and conservation enterprises

Cultural Heritage:
Rain modification, cultural heritage conservation, cultural and management mentaince and construction

KARC TARET GROUP

- Vulnerable women, children.

ORGAN GRAM

1. KARC foundation structure has the highest policy making organ as the general assembly of members
2. Board of directors are in charge of policy making and overall supervision of policy implementation

The executive committee with coming up policy proposals to the general assembly of members and implementation of decisions and policies made by the general assembly of members. The executive committee supervises the affairs of the organization and appoints the members of the secretariat

The executive committee comprises of, chairman, vice chairman, treasurer, general secretary, legal adviser, technical advisor, one member.

3. Secretariat is headed by executive director. It comprises of coordinator, program officers, accountant, cashier, head master, teachers and principal.

Each program is attached to volunteer for effectiveness.

KARC SCOPE

Areas covered include:
Kyarumba,kasese town, L. Katwe, Kisinga, Kyondo, Mahango, Muhokya, and Rukoki subcounties in western Uganda .

KARC CORE VALUES

Vertical and lateral accountability, Transparency, discovery of innovation in agriculture is wisdom of life of people of Uganda, Gender sensitivity and Respect for nature resource utilization and consider agriculture as source of food for growing population in world.

PARTNERS

Tools with Amision UK,Marie- schlei-verein Associations Germany,SES Germany, The Prem Rawat Foundation,Kasese district local Government, Kasese district development net work,FOWODI,UNASO Kampala, IRIN

USA,CTA Netherlands, Project hope UK, and Work Aid UK,VGIF USA and Uganda women network,sacred Fire foundation.

ANNUAL REPORT ON ACTIVITIES OF KARC UGANDA :

CLIMATE CHANGE

Indigenous Knowledge and Climate Change

For over 12 million indigenous peoples In Ugandae, climate change impacts are expected to be early and severe due to their location in high risk environments. This includes nomadic pastoralists living along arid margins, horticulturalists and fishers in small and low-lying islands, farmers and pastoralists in high-altitudinal zones and hunters and herders across the Uganda

To face these challenges, indigenous peoples are mobilized to use their in-depth knowledge of the territories that have been the source of their livelihoods for generations. Indigenous knowledge operates at a much finer spatial and temporal scale than science, and includes understandings of how to cope with and adapt to environmental variability and trends. Indigenous knowledge thus makes an important contribution to climate change policy, and promotes local and indigenous knowledge and its inclusion in global climate science and policy processes. Working at local, national and global levels, KARC strives to strengthen indigenous peoples and local communities, foster transdisciplinary engagements with scientists and policy-makers and pilot novel methodologies to further understandings of climate change impacts, adaptation and mitigation.

OTHER AREAS OF CONCERN ON CLIMATE CHANGE

ACTION PLANT

- Recycling of wastes into energy
- Trees planting and karc has planted 1000000 trees
- Management of water lands and rivers
- Research and vulnerability management
- Fish farming
- Natural resources conservation

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ACTIVITIES AND PHOTOS FOR KARC-UGANDA

Poor agricultural practices cause soil damages, erosion and pollution in Uganda . This is mostly causes climate change and desertification

Take look

Above shows bush burning.

GEEN GOLD MASSAGE IN KASESE

VANILA CROP GROWING IN KASESE

Vanilla farmers in Kasese district have applauded the Agriculture, Animal Husbandry and Fisheries Ministry for issuing guidelines for harvesting vanilla in the country.

Early this week, the Agriculture State Minister, Christopher Kibanzanga read out the guidelines for the growth, harvesting and export of vanilla while addressing journalists at Uganda Media Center.

Kibanzanga said government has set harvesting dates as a temporary measure to improve the quality of vanilla beans.

Vanilla has lately been referred to as green gold because of the handsome prices on the global market with a kilogram of the crop going for as much as Shillings 250,000.

The crop is one of the world's most popular spices and an important ingredient in chocolates and perfumes. With a lot of money accruing from the crop, a number of challenges including insecurity came up.

The ministry set the dates for harvest, selling and buying of the cash crop as June 15 to July for this season and December 15 to January for the next season.

Vanilla farmers in Uganda have never had it better, with farm-gate prices standing at about $70 per kilo for the price-sensitive produce.

With a kilo selling at $500 on the world market — a jump from $300 in 2017 — both farmers and dealers are seeking ways of boosting production to satisfy the market.

The Uganda Export Promotions Board said that the country is targeting to export 100 tonnes of vanilla this year, from about 75 tonnes exported last year.

Noah Kule, the director of African ark college of management sciences, a vanilla export firm, said the supply cannot match the demand in overseas markets, even as the prices continue to rise. We need to control early theift of vanilla and this kills market.

He said that a drop in the volume of exports registered in early 2014 -17 was due to a fall in global market prices, which forced some farmers to abandon the crop.

"In early 2016, the export price was around $80. By the end of that year, it was around $100 and at the beginning of 2017 it rose to $300; it now stands at $500 per kilogramme. Farmers should start planting more vanilla now," Bwambale ADSON OF Mughete Is rich due to earning of 100,000 Euros Per season

MACADEMIA

Cultivation of macadamias

Macadamias can be produced successfully in areas where avocados, papayas, mangoes and bananas do well.

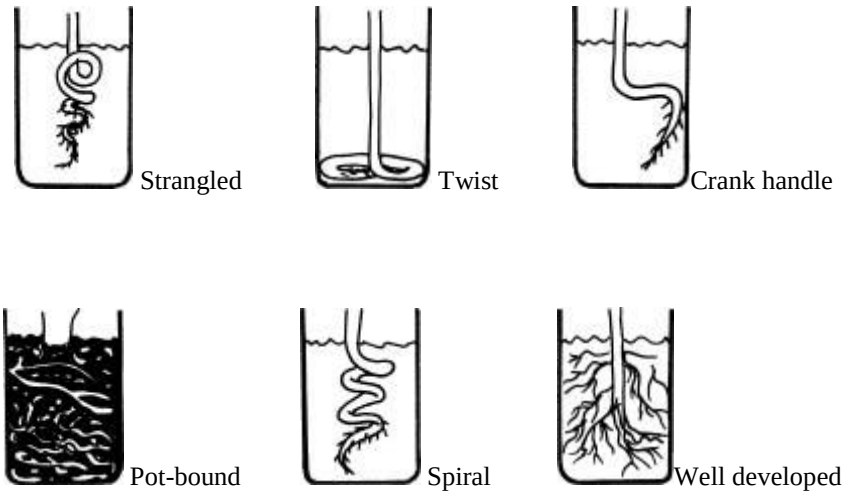
The trees flower during spring from August to September. The further development of the fruit lasts 31 weeks.

Select high-quality nursery trees by inspecting the:

- plant container and roots
- soil mixture
- leaves
- internodes
- graft union
- shape of the tree.

Plant container and roots

The size of the container is very important. If the container is too small, the tree becomes pot-bound and the taproot might be distorted. The tree may appear healthy in the nursery, but has little chance of reaching its full potential in the orchard. The weakened root system cannot provide the growing tree with sufficient water and nutrients.



Distorted root systems

Climatic and soil requirements

Soil

Most soil types are suitable for the production of macadamias, provided they are well drained and have no restrictive layers in the top 1 m of the soil. Poorly-drained clay soils are not suitable.

Temperature

The ideal temperature for macadamias is between 16 and 25 °C. Although the trees can survive when temperatures drop below 3 °C, they should not be regarded as frost resistant.

Height above sea level

Height above sea level influences nut quality and production. Production declines dramatically above 600 m. Above 640 m growth is slower and trees take longer to produce.

Cultivars suitable in areas between 600 and 640 m above sea level are Mauka, Kau and Keaau.

Cultivars recommended nearer to the coast, 90 to 300 m above sea level, are Purvis, Makai and Keaau.

Cultivars

The cultivars recommended are: Keaau, Kakea, Kau, Purvis, Pahala, Mauka and Makai. They are regarded as superior to Nelmak 1 and Nelmak 2 for commercial processing and marketing. Their oil content is usually higher than 73 % and the sugar content is low enough to ensure an even, cream colour after the nuts have been baked. Under ideal circumstances the crack-out percentage will be higher than 40 %.

Soil preparation

- If the physical properties of the soil, namely depth (0,81,0 m), drainage, etc are suitable for growing macadamias, the soil must be prepared carefully and well in advance.
- The soil must be loosened as deeply as possible. It should then not be necessary to make large planting holes.
- If the soil in the planting holes is compacted, the roots could become rootbound.
- An investigation should be done after the planting of macadamia trees to ensure that root growth is not restricted.
- Do not fertilise recently planted trees. They must first become well established and grow vigorously. It is wise to wait one year before applying fertiliser.

Planting distances

- Macadamia cultivars have different growth patterns. They are usually either spreading or upright growers.
- The size of each cultivar's drip area (surface area below leaf canopy) depends on the altitude, soil type, rootstock, rainfall, temperature and relative humidity.
- The planting distance for each cultivar will therefore differ from place to place. Various guidelines can be followed with respect to spreading and upright growers.

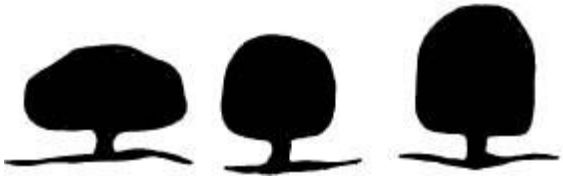
As soon as the competition for light becomes too great, production will decrease.

To allow for tractors to move between the trees, the hedgerow planting system is used. With this system:

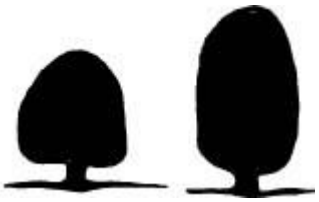
- Upright growers are planted 3,5 m apart within the row with 7 m between rows.
- Spreading cultivars are planted 10 m apart within the row with 6 m between the rows.

Tree shape of some macadamia trees

Cultivar	Tree shape
Keauhou	Spreading (umbrella)
Kakea	Spreading (broad)
Keaau	Upright (broad-upright)
Ikaika	Spreading (broad-upright)
Kau	Upright (upright)
Mauka	Upright (broad-upright)
Makai	Spreading (umbrella)



Umbrella **Broad** **Broad-upright**



Pyramidal **Columnar**

Various tree shapes

Intercropping

Other crops are sometimes cultivated between young macadamia trees. There are 3 main aspects to be considered before planting an intercrop.

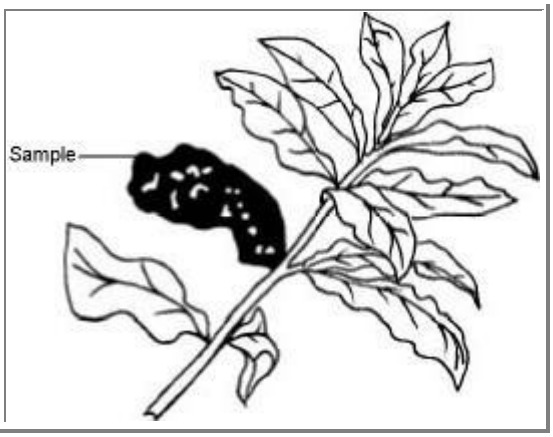
- Cultivation of the intercrop could damage or adversely affect the growth of the tree or injure roots and should be avoided.
- Tall-growing plants could crowd out or overshadow the young macadamia trees and should not be planted.
- No other crops should be planted between bearing macadamia trees. Once this stage has been reached, the macadamia trees should receive the attention and treatment necessary to ensure maximum growth and production.

Leaf analysis

- Macadamia leaf samples must be taken during October and November. The time of sampling is critical. The correct leaf must be sampled.
- When submitting a leaf sample from a particular orchard for the first time, it must be accompanied by a soil sample. Thereafter it is advisable to send in soil samples annually. It is essential to consider the results of both soil and leave samples when making fertilisation adjustments.
- Only leaves from healthy plants must be sampled. They must be free from sunburn, insect damage or any deficiency symptoms or signs of disease.

Method of sampling

- Select approximately 20 healthy trees, well distributed throughout the orchard, homogeneous in appearance, and representative of the orchard as a whole.
- The selected trees must be clearly marked with, for instance, paint. In this way it is possible to take soil samples at the same places and leaf samples from the same tree every year.
- Four leaves are taken from alternate sides of the trees giving a



sample of 80 leaves.	**The leaf that should be sampled**

Fertilisation

Do not fertilise young, transplanted trees too soon. They must first become well established and start growing vigorously before any applications are made, preferably after at least 1 year.

Never apply fertilisers against the stem of young trees.

Fertiliser must be broadcast evenly from about 0,2 m from the stem to about 0,5 m outside the drip area of the tree.

Macadamia trees are very sensitive to root damage, therefore each fertiliser application must be followed by a light, controlled irrigation.

Fertilisers must not be worked into the soil.

When the trees are established and start growing, fertiliser must be applied regularly according to the table.

Quantity of fertiliser according to age (kg/tree/year)

Tree age (years)	LAN 28 %	Superphosphate	Potassium chloride
1	0,2	0,2	0,1
2	0,4	0,2	0,3
3-5	0,6	0,3	0,5
6-8	1,0	0,5	0,5
9-11	1,5	0,75	0,75
12-14	2,0	1,0	1,0
15+	3,75	1,35	1,25

Zinc and boron sprays

Because most soils are naturally low in zinc, or the zinc is not available, this element must be applied every year. The following concentrations are recommended:

- Zinc oxide at 200 g/100 l water, or
- NZn at 150 ml/100 l water.

Many macadamia orchards are also low in boron and it is desirable to spray the trees every 2 years with 100 g borax or 75 g Solubor/100 l water right from the start.

Irrigation

Water stress often limits tree growth, as well as the set, growth and quality of macadamia nuts. It is important to know how much water to apply and when to apply it if it does not rain.

Water requirements

The approximate water requirements for macadamia trees (mm/month)

Tree age												
Years	Month											
	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	Apr.	May	Jun.	Jul
5	16	20	24	27	29	29	24	21	14	9	9	9
10	46	57	69	77	81	81	67	59	38	26	26	26

Diseases and pests

Phytophthora *root rot*

This disease usually occurs as a result of mechanical damage causing injury. These areas usually become infected. Trees suffering some kind of stress such as drought conditions may also get the disease.

Nut borer

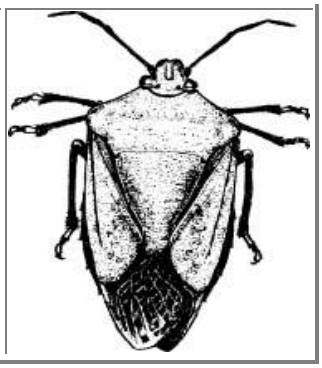
Nut borer is the common name for the larvae of 4 types of moths that can either burrow into the green husks of macadamia nuts or feed on the kernels. The damage can easily be recognised, but the moths are small and inconspicuous and seldom seen in an orchard.

- Adult larvae are about 10 mm long and pale red or grey.
- An infested nut can be recognised by a small hole in the husk which is surrounded by excreta.
- Affected nuts, especially young developing nuts, usually drop as a result of damage to the husks.
- Susceptibility to attack by moth larvae differs among cultivars because of hardness and thickness of the shell.
- No insecticide is at present registered against nut borer. It can, however, be limited by planting fairly resistant cultivars such as Nelmak 1, Nelmak 2 and the Hawaiian cultivars.
- A natural enemy that plays a role in the control of false codling moth is the parasite *Trichogrammatoidea lutea,* which parasitises the eggs of the moth.

Stinkbugs

Stinkbugs are the most important pest on macadamias in South Africa. Damage is caused by a stinkbug complex comprising at least 20 different types. The most important types are: two-spotted stinkbug, green vegetable stinkbug, coconut stinkbug, small green stinkbug, spotted stinkbug, yellow-edged stinkbug and yellow-spotted stinkbug.

Stinkbugs can cause crop losses of up to 80 %.



Damage

Most stinkbugs have 4 generations per year and each generation causes a different type of damage to the nuts.

- The first generation is the spring generation (August to September), and occurs during or after flowering. This generation can cause extensive flower and/or fruit drop of small macadamia fruit.
- The second generation is the summer generation (December). Damage occurs during fruit development or just before the fruit reaches mature size. Once the fruit has reached mature size, it remains on the tree even after stinkbugs have fed on it. When harvesting, these nuts will have large, sunken lesions on the kernels.
- The third generation, the autumn generation (February to March), is normally the largest. This generation feeds on the nuts before and during harvest. Although it causes lesions on the nut kernel, no fruit drop occurs. The size of the lesions depends on the type of stinkbug. The coconut, two-spotted, yellow-spotted, and spotted stinkbugs are capable of inflicting damage late in the season because of their longer mouthparts. Less trouble is experienced from other stinkbugs during autumn.
- The fourth generation stinkbugs (winter) do not normally cause problems because most nuts have been harvested and stinkbugs are not very active during this season. The damage evident at the end of the season (stung nut kernels) is inflicted from December to harvest. The hardness of the shell does not limit stinkbug feeding. Nuts must therefore be protected against stinkbugs throughout the year from flowering until harvest.

Control

Stinkbugs can be controlled chemically.

The shaking method is used to monitor the number of stinkbugs, especially the winter and spring generations when morning temperatures are low.

- Ten trees must be chosen weekly at random per control unit/block (a unit is not larger than 5 ha). All the lower branches which can be reached on each tree must be shaken and the stinkbugs counted.
- Trees must be shaken before the temperature exceeds 18 °C, otherwise the stinkbugs will fly away when the branches are shaken. The economic threshold value (in other words the level at which economic damage to harvest occurs) for this method is an average of 0,7 stinkbugs per tree
  Read more at Gardening Know How: Macadamia Plant Care: How To Grow Macadamia and take look.

We urges people of kasese to take up this job to fight poevert

Cotton Production in Kasese Declines by 50% in KASESE

Cotton production along Kasese in western Uganda has dropped by about 50 percent, according to an official from the KARC. Kule Noah , says that the decline in cotton production has been partly due to the prolonged drought. He says that farmers were able to harvest about 200 kilograms of seed cotton per acre this season compared to the 400 Kilograms, harvested under favorable conditions. Noah also attributes the decline to price fluctuations. The price of cotton dropped from 600 shillings per kilogram between 2003 and 2016 to 450 shillings this season. He says that most farmers refused to plant this season because of the low prices. Noah is however optimistic that cotton production will be boosted when government provides price subsidies to the farmers. Government also plans to introduce small-scale irrigation systems in Kabirizi cotton growing area along the Kasese- Bwara high way. Many farmers face climate change and there need of irrigation system to improve cotton innovation in Kasese Uganda. Alll Ugandans use cotton in clothing themselves and need to improve cotton industry in Uganda and so textiles employees many people.
Take look

Horticulture

The projecrt is funded by Kasese district local government

Horticulture overview

A review of vegetable production was discussed in groups by participants in their respective camps. The participants brought out any issues on small-holder farmers practices. The camp/block extension officers actively followed the discussions and I was able to make suggestions and give clarifications. Later KARC experts presented a brief outline on the current horticultural practices by smallholders summarising the following:- site selection, cultivar choice, nursery management, organic and inorganic fertiliser management, land preparation, irrigation, pest and disease management, post-harvest handling and marketing. The major constraints and gaps were outlined.

Weather and climate. Each horticultural crop has certain climatic requirements. Unfavourable weather and climatic conditions produce a stress. Components of weather and climate include:

Temperature

Temperature influences all physiological activities by controlling

- Phytosynthesis
- Respiration
- Enzymic activity
- Organic matter decomposition
-
- Frost damage at 0 °C
- Chilling injury 0 - 2 °C or lower but above freezing point.

Light

Photosynthesis uses light. Light intensity and duration are important for crop growth and development. Low light causes plants to be spindly, small leaves, bud blades, poor pollination and poor fruit quality.

Rain modification

KARC Uganda received 4000$ for rain modification for Uganda to revense and mitigate climate change.

The chief concern of these rites, with the exception of the annual **'au' ma xae,** readily apparent from their performances and accompanying ritual texts, is the successful growth of the rice crop. This is effected primarily through the propitiation of various spirits, the most important of which is the Lord of the Water, Lord of the Land. There are, however, other features embedded within these rites, and the overall structure of the ceremonial cycle, which are important. They are specifically: cultural definitions of a certain order which opposes settlement and forest, represented by relations with the Lord of the Water, Lord of the Land, within the domain; the complementary roles of male and female in reproduction symbolically applied to agricultural production; the importance of a "cool state" for the successful growth of rice; the identification of rice with humans; and a general aoristic and proleptic orientation which emphasises continuity through renewal.

As it will not be possible to examine here all the rites which make up the annual ceremonial cycle in God, I shall therefore consider only what is sufficient to illustrate these features. The rites which I focus on are those which make up the rites of planting, the rite of protection, "wrist tying at the reaping of rice" and "eating the 'head rice' " in the larger body of rites of harvesting, and the rites of the New Year.

Agricultural Rituals: The Ceremonial Cycle in Uganda

We have seen in the last chapter that the Kasese rain modifications are dependent on Uganding, crops like wet-rice cultivation, and a cash economy for their subsistence needs. Indeed, for several households in ritual, the cash sector is crucial in enabling them to meet their subsistence needs. Notwithstanding the extent to which the rituals are dependent on an external economy, Uganda agriculture is regarded as the dominant form of subsistence production within the community. This particular perception of Ugandaning is based on two factors: first, an understanding that Ugandan agriculture predates wet-rice agriculture and is seen as a "Yawasi" system of cultivation; second, the continuing cultivation of Ugandan which has ensured the persistence of a religious and ritual life that remains organised around the Ugandan cycle.

In this chapter, I present a description of several rites which form part of the cycle of ritual activities in ritual in order to show its crucial importance in the community and in relation to Uganda agriculture, despite the fact that the

Ritual possess a mixed subsistence system. As these Ugandan rites form the basis of rites performed in wet-rice fields,matoke,bean,maizi, I shall not therefore deal with wet-rice agricultural rituals in crops

Take look for rain modification system for Uganda.

Many of the rain makers in Uganda have no rights and brutally handled and account for climate change and have known their identity.

COCOA GROWING IN KASESE

Cocoa can save famers better than coffee because of cost benefit analysis

Cocoa employees 50000 small scale farmers in kasese District

Kikumu agriculture research centre funded 40000 US$ towards construction of African ark primary school, suppled uniforms, meals and furniture through from support of TPRF.. The support is given towards orphans.

The project has economic empowerment of people with disadvantaged group. We have supported orphans and women leaving HIV/AIDS on lake Edward 1200 ducks for nutrition.

Conservation, processing coffee to determine maket.processing coffee on mountain Rwenzori.

Training women in ICT and agriculture :women can use computer to know prices of coffee through internet using phone and computer.

Women vocational training graduation

Concerns and Recommendations in 2019

- Small scale farmers need to change from cultivation process to processing their products to meet value chain management and seaport to earn higher from their products.
- Need to establish min irrigation systems in kasese
- Inclusive measures and gender
- Improve vocational skills in agriculture
- Inclusive of gender issues and increase human rights of marginalized groups
- Inclusion of ICT in Agriculture
- Farmers need to support mitigation measures to climate change
- There need to reform policy on vanilla and increase security of vanilla farms in kasese
- Cereals and horticultural need processing and add value
- Increase in formation of cooperatives for marketing and loan schemes

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