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6th November 2018

Dear Sir/Madam,

RE: INVITATION TO AN INTERNATIONAL CONFERENCE ON SCIENCE, TECHNOLOGY AND INNOVATION FOR SUSTAINABLE DEVELOPMENT IN DRYLAND ENVIRONMENTS

Umma University in Kajiado County, South Eastern Kenya University (SEKU) in Kitui County, Lukenya University in Makueni County and Machakos University in Machakos County, together with other partners, are jointly organizing an international Conference entitled “*Science, Technology and Innovation for Sustainable Development in Dryland Environments*” to be held on 19th-23rd November 2018. The theme of the conference is “*Harnessing Dryland Natural Resources for Sustainable Livelihoods in the Era of Climate Change*”. The conference will be two-phased with a two-day pre-conference training workshop on 19th-20th November 2018 at SEKU and the main conference on 21st-23rd November 2018 at Umma University. The conference will provide an excellent platform for the academia from around the world to engage with the industry, innovators, policy makers, value chain developers, farmers, and service providers among others so that higher education in Africa contributes to solving the problems of natural resources governance in the era of climate change.

We are therefore pleased to invite you to attend the pre-conference training workshop at SEKU Main Campus in Kitui on 19th-20th November 2018 and the Main conference at Umma University on 21st to 23rd November 2018. Please note that you will be responsible for your travel and accommodation arrangements and conference registration fee.

Yours Sincerely,

**DR. ALI ADAN ALI
FOR THE: VICE-CHANCELLOR**



DAAD

Parallel Presentations

Friday 23rd November 2018

ENVIRONMENTAL SCIENCES (Friday)

Venue: L1 Chairperson: *Dr. Elijah Muange* Rapporteur: *Mr. Royford Mwobobia*

- 9:00-9:20 *Spatiotemporal variability of climate over South Eastern Kenya - Ngeno W. K., SEKU*
- 9:20-9:40 *Factors influencing the adoption of enclosure technology in rehabilitating degraded drylands in Kaiboni catchment in West Pokot county, Kenya - John Kipchumba Ngalla, Africa Nazarene University*
- 9:40-10:00 *Utilization of Banana Peduncle For Sustainable Art-Practice: A Management and Control Measure for Organic Waste in Uganda - Maureen Muwanga Senoga, Kyambogo University*
- 10:00-10:20 *Characteristics of wet and dry spells in Taita Taveta County - Nyangira, P., SEKU*
- 10:20-10:40 *Analysis of the Existing Solid Waste Management Systems in Wote Town, Makueni County, Kenya - Moses Faith Mutungwa, SEKU*
- 10:40-11:00 *Influence of Drought and Household Characteristics on Food Security Amongst the Pastoral and Agro Pastoral Households in Mbirikani and Kimana Wards, Kajiado County - Maxine Khakasa Nabukwesi, Africa Nazarene University*

HEALTH SCIENCES & NUTRITION (Friday)

Venue: L5 Chairperson: *Dr. George Waswa* Rapporteur: *Dr. Umulkher Ali Abdilahi*

- 9:00-9:20 *Nutrition and dietary practices on cancer reduction as a means to enhance livelihood: a study of Kajiado county, Kenya - Dr. Sedina Misango, SEKU*
- 9:20-9:40 *Building Household and Community resilience to Food insecurity through Kitchen Gardens in Las Anod District of Somaliland - Esther Muia-Matuku, Machakos University*
- 9:40-10:00 *Impact of Climate Change on Human Health and Possible Intervention: A Global Outlook - Mohamed Karama, Umma University*
- 10:00-10:20 *Challenges of Self-Management of Diabetes Mellitus Type II amongst Pastoralist Communities in Kenya, a Systematic Literature Review - Wilson Lugaya Akhonya, Umma University*
- 10:20-10:40 *The challenges for implementing healthcare in Ugunja Sub County, Siaya County - George Oyeho, Tangaza University College*
- 10:40-11:00 *Factors Affecting Food Intake and Nutritional Status of the Elderly in Mathare Slums, Nairobi - Kwamboka, E. M.*



DAAD

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The number of acutely food insecure households in the Las Anod region is estimated at 134,000 with a further 80,000 households classified as stressed (FSNAU 2018). Las Anod's economy is mainly centered on livestock. ADRA is currently implementing the Somali Resilience Program (SOMREP) to build household and community resilience to drought and other risks. In times of severe drought and times of conflict and displacement, communities become food insecure as their livelihood systems are disrupted. Lack of modern farming technologies limits the potential output of the farming activities and therefore the need to improve. Kitchen gardening is an innovative project that can be initiated to provide instant aid to communities by self-production of fresh vegetables. The purpose of this project was to train and capacitate women members of the Village Savings and Loan Association (VSLA) groups to start up container and bag gardens at the household levels in order to increase the variety of foods eaten and mitigate against food insecurity. A total of 191 women from twelve villages were trained in July 2018. A follow up assessment in August-September indicated that 42.4% of the households had fully embraced the container farming technology and the vegetables were thriving. A further 36.6% had attempted planting however the crops did not thrive for various reasons. The remaining 20.9% did not attempt planting. Benefits reported by the participants were; increased vegetable consumption at household level 86.4%, access to fresher vegetables 76.1%, less water usage compared to land gardening 91.3%, less space 88.9% and easier pest control 77.9%. Various benefits can emerge from Kitchen gardening in practices such as health and nutrition, improved food security, enhanced income and self-employment in dry land environments such as Somaliland.

Keywords: Household resilience, Capacity building, VSLA

Building Household and Community resilience to Food Insecurity through Kitchen Gardens in Las Anod District of Somaliland

Esther Muia- Matuku¹

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Abstract: The number of acutely food insecure households in the Las Anod region is estimated at 134,000 with a further 80,000 households classified as stressed (FSNAU 2018). Las Anod's economy is mainly centered on livestock. ADRA is currently implementing the Somali Resilience Program (SOMREP) to build household and community resilience to drought and other risks. In times of severe drought and times of conflict and displacement, communities become food insecure as their livelihood systems are disrupted. Lack of modern farming technologies limits the potential output of the farming activities and therefore the need to improve. Kitchen gardening is an innovative project that can be initiated to provide instant aid to communities by self-production of fresh vegetables. The purpose of this project was to train and capacitate women members of the Village Savings and Loan Association (VSLA) groups to start up container and bag gardens at the household levels in order to increase the variety of foods eaten and mitigate against food insecurity. A total of 191 women from twelve villages were trained in July 2018. A follow up assessment in August-September indicated that 42.4% of the households had fully embraced the container farming technology and the vegetables were thriving. A further 36.6% had attempted planting however the crops did not thrive for various reasons. The remaining 20.9% did not attempt planting. Benefits reported by the participants were; increased vegetable consumption at household level 86.4%, access to fresher vegetables 76.1%, less water usage compared to land gardening 91.3%, less space 88.9% and easier pest control 77.9%. Various benefits can emerge from Kitchen gardening in practices such as health and nutrition, improved food security, enhanced income and self-employment in dry land environments such as Somaliland.

Keywords: Household Resilience, Capacity Building, VSLA

Introduction

The food and Agriculture Organization of the United Nations (UNFAO) estimates that about 795 million people in the world, or one in nine, were suffering from chronic under nourishment between 2014 and 2016. Almost all the hungry people, 780 million live in developing countries, representing 12.9 percent, or one in eight, of the population of developing countries. Somaliland is chronically food insecure due to frequent natural and man-made disasters that erodes the livelihood base of the community. The majority of the rural population, whose economic mainstay is livestock, remains food insecure and are extremely vulnerable to external shocks. The poor also damage the vegetation cover for charcoal as a source of income. This environmental degradation

has resulted in grave soil erosion and reduction in rainfall effectiveness. Cyclic drought and scarce water discourage people to produce food.

Lack of modern farming and livestock keeping technologies also limits the potential output of the farming and livestock keeping activities and therefore the need to improve on these. Kitchen gardening is an innovative project that can be initiated to provide instant aid to communities by self-production of fresh vegetables and serve an answer to the question of diversity required for a healthy community. Literally, 'Kitchen gardens' refer to food growing around the house for household use (Evans & Jespersen 2001) and are one of the earliest and most extensive food

A substantial number also came from large size families.



Figure 1: Planting demonstration

Before trainings and demonstrations only 8.4% (16) of the respondents had small vegetable gardens within their households. It is evident from Table 2 that kitchen gardening demonstration and trainings resulted in increased gardening and homestead vegetable production.

Table 2. Kitchen Gardening Uptake

Practice	n (N)	%
Fully embraced	81	42.4%
Attempted	70	36.6
Did not attempt	40	20.9

Majority of the women (42.4%) that attended training and the demonstrations fully embraced the kitchen gardening technology and had thriving container gardens within the households. A sizeable number of the women (36.6%) had attempted planting. Among these some of them the plants did not grow at all, follow up indicated watering was poorly done. For others the plants grew up but were either eaten up by goats or rodents. 20.9% did not take up the technology besides having attended all the trainings and demonstrations and provided with starter seeds. Majority of this group felt that gardening was involving and time consuming. Worth noting is the

Non- Governmental (NGO) and donor dependency syndrome that has taken root in the populations in Somaliland.

Table 3 highlights the benefits the participant's that had fully embraces kitchen gardening mentioned as having from the kitchen gardening experiences.

Table 3: Benefits from Kitchen Gardens

Perceived benefit	N (%)
Increased vegetable consumption	70 (86.4%)
Access to fresh Vegetables	62 (76.1)
Less water usage	74 (91.3%)
Less space	71 (88.9%)
Easier pest control	63 (77.9%)

The participants had several perceived benefits from the project including: increased vegetable consumption at the household level as the vegetables were now readily available in the gardens. Others indicated that they now would access fresh vegetables from the farms. The vegetables sold in Las Anod markets are procured from Ethiopia and by the time they get to the market majority are withered. The participant's also felt that the gardens used less water and space thus very convenient. Pest control in the container gardens was also easier than in the farmlands for those that had attempted land farming

Success stories

From the participants that fully embraced the technology there were success stories as indicated by the photographs

otherwise poor diets with vitamins and minerals. Woven plastic feed bags, food aid sacks and other large bags and containers can be converted to upright bags. It is also evident from a study that kitchen gardening has proved a reasonable livelihood approach for resource poor people in terms of nutrient supply, calorie intake and economic benefits (Chayal et al. 2013). A study conducted in Kenya also reported that about 48% of the respondents do not purchase vegetables after establishing kitchen gardens and about 99% of the respondents think that the kitchen gardens have improved their nutritional variety (Njuguna 2013). The efforts made through awareness seminars and training sessions about kitchen gardening brought notable positive changes in people's behavior about the project and the uptake was encouraging

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