Strategic Repositioning of NUS for

Food Security, Nutrition, Health and Economic Development

Prof Dr. Mary Abukutsa O.O. (Ph.D, MKNAS, EBS)

Professor of Horticulture

Jomo Kenyatta University of Agriculture and Technology (JKUAT), Kenya

abukutsa.mary@yahoo.com

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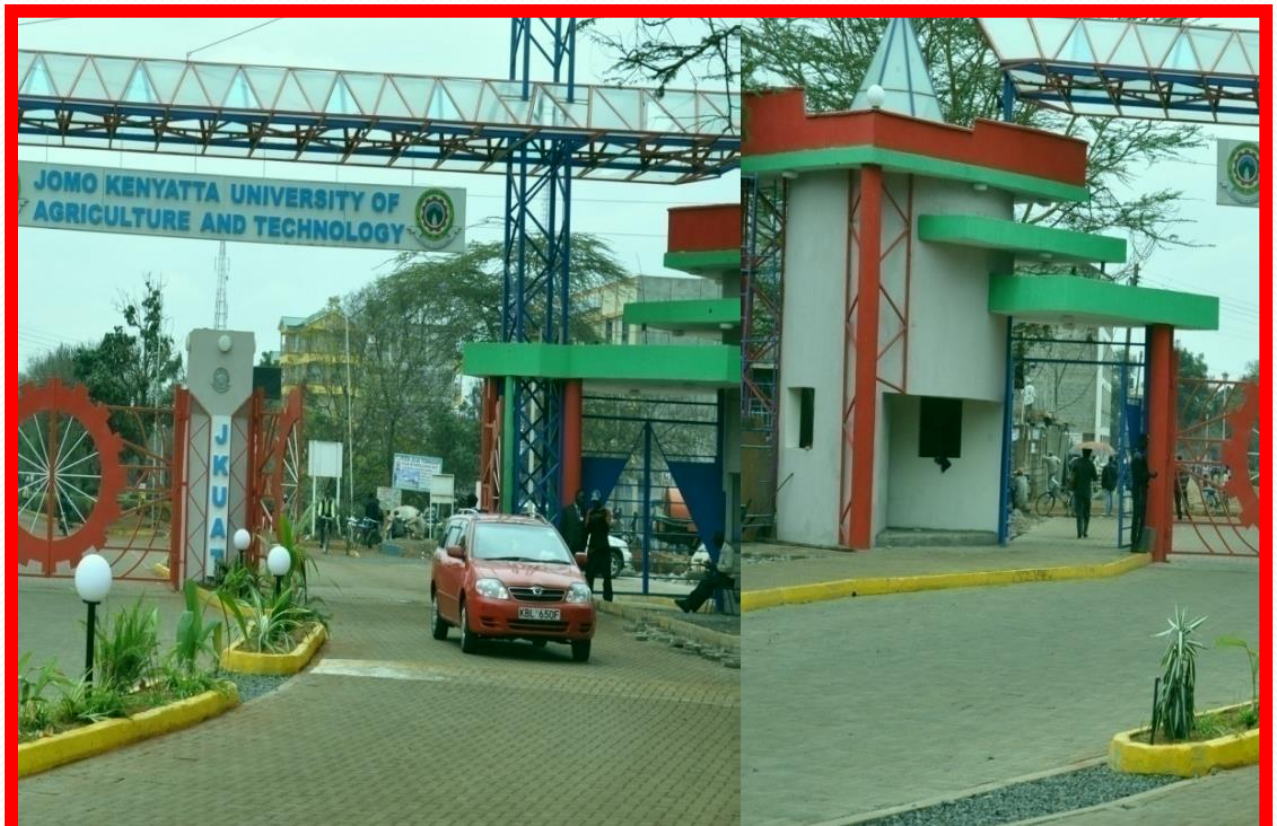
Introduction

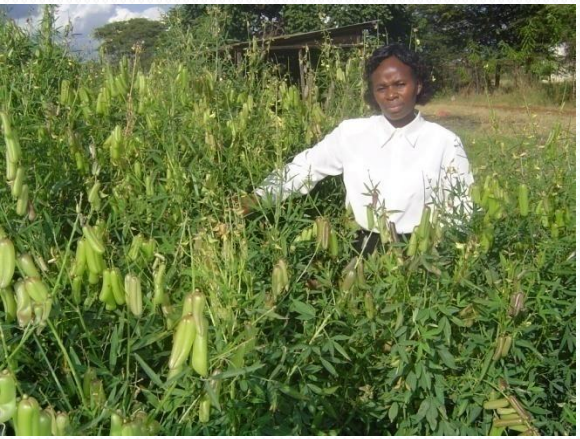
JKUAT, Kenya
A University of Global Excellence in Training, Research and Innovation for Development



Introduction

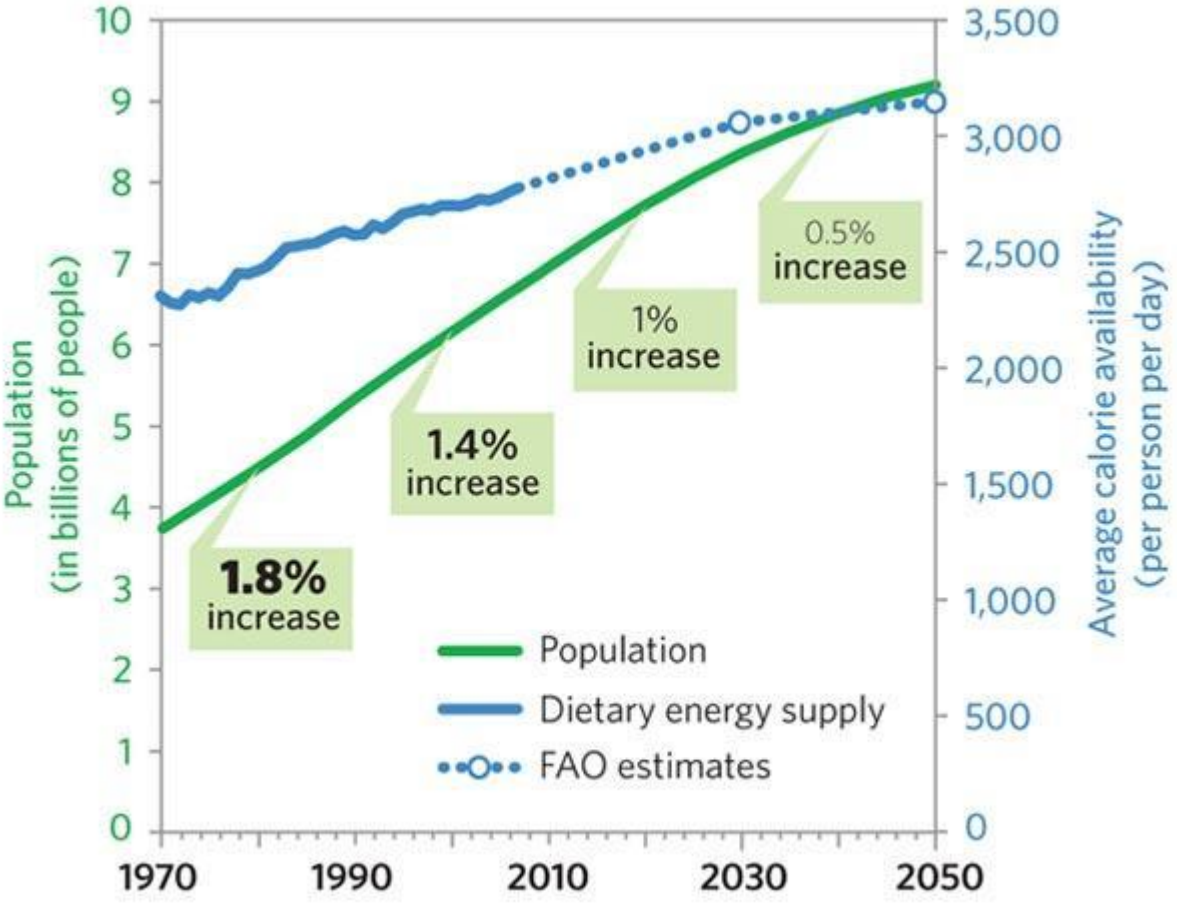
Research Activities in NUS at JKUAT

- Rice (African rice varieties)
- Mushroom Research
- Papaya (pawpaw)
- African Indigenous Vegetables and Fruits



Introduction

- Population increase = need for morefood
- Hunger, Malnutrition & non-communicable diseases
- Climate change
- Water
- Environmental degradation
- Loss of Diversity
- Agro-biodiversity is critical to human surviva but are significantly undervalued and under-utilized



Sources: Nature 466 (2010)

Introduction

- **Half the population in Africa live on < $1 a day**
- **90 % of the calories in the human diet come from 15 crops and 60 % from 3 crops (wheat, rice and maize)**
- **Agro-biodiversity remain unexploited**
- **Need to strategically reposition NUS for Food Security, Nutrition, Health and economic development**

Value and Potential of NUS

- Resilience to climate change
- Fit in Sustainable Cropping systems
- Minimize risks of crop loss
- Health benefits
  - NUS vegetables contain phyto-chemicals that are anti-cancer, anti-diabetes and anti-hear diseases
- Nutrition: NUS has competitive advantage

Amount (g) required to meet DRI of Provitamin A, Iron & Folate

	Provitamin A[1]	Iron[2]	Folate[3]
Common cabbage	16300	2395	952
Lettuce	740	758	606
Spinach	250	455	285
Ivy gourd	270	337	612
Tropical violet	320	160	1666
Jute mallow	130	137	594

[1]Daily DRI for adult males of 19-50 y: 900 µg RAE

[2]Daily DRI for adult males of 19-50 y: 9.1 mg of 15% iron bioavailability

[3]Daily DRI for pregnant females: 600 µg DFE

Major Constraints of NUS Production

- Neglect and Stigmatization: weeds, poor man's, orphan
- Inadequate awareness of NUS value and potential
- Inadequate research and capacity building
- Lack of Quality Seed and technical packages
- Poor keeping quality, bitter and tedious to process
- Poor Marketing Strategies
- Poor policy framework
- Leading to low yields, production and consumption

African Indigenous Vegetable Initiative

- **Multi disciplinary and Multi-institutional Research for Development initiative**
- **JKUAT in 1991 & Maseno University 1997**
  - **(Researchers, Farmers, JKUAT, Maseno University, AVRDC, IFS, IPGRI, EU, Students and Policy makers, traders and consumers, NCST, KARI)**
- **Contribute to alleviation of food insecurity, malnutrition and poverty in Kenya and other African countries by raising the status of AIVs**

Identified Priority AIVs

AIVs with Nutrition and Economic Potential in identified through a series of household, baseline and market surveys in various countries Characterization, Physiological, Agronomic, Nutritional and economic studies and recipe and product development of AIVs

Pumpkin
(Cucurbita moschata)

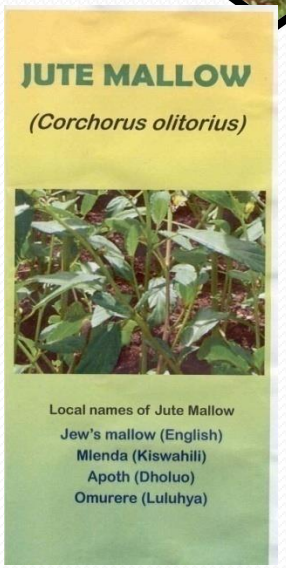
Jute mallow
(Corchorus olitorius)

Cowpea
(Vigna unguiculata)

African Indigenous Vegetables

Products

Good crop for farmers



Leaflets

Quality seed

Availability

Indigenous vegetables gain popularity

BY DUNCAN MBOYAH

INDIGENOUS vegetables are now regaining popularity across East Africa.

According to a recent study conducted in Kenya, Tanzania and Uganda, there is high demand for cowpeas *(kunde)*, African nightshade *(managu)*, spider plant *(saga/dek)* and amaranths *(mchicha)* in major supermarkets.

Jute mallow *(mrenda/apoth)*, slenderleaf *(mtoo)*, African Kale *(kandhira)* and pumpkin leaf *(malenge)* follow closely in that order as common delicacies in most homes and restaurants.

More than 90 per cent of the farmers interviewed during the study observed that there had been an increase in the cultivation of the vegetables as a result of an increased demand and promotion.

The vegetables are in high demand in the United Kingdom, where a large number of Asians are now putting orders from Kenya and other countries.

Calls are now being made for the construction of a cold storage in regions where the vegetables are grown in plenty.

The study also found that the traditional vegetables are a major source of income that could be used in achieving Millennium Development Goals.

The International Foundation in Science, the Swedish International Development Agency (Sida) sponsored the study through the inter-university council of East Africa, and the European Commission.

"Despite the neglect that threatened their extinction, studies now show that these indigenous vegetables are highly nutritious," says the study's lead researcher, Prof Mary Abukutsa-Onyango of Jomo Kenyatta University of Agriculture and Technology (JKUAT).

The vegetables provide more than 100 per cent of the daily allowance for minerals and vitamins and 40 per cent of the proteins.

This study shows that the indigenous vegetable have medicinal properties, such as the ability to heal stomach related ailments and prevent anaemia.

These vegetables have not been fully exploited even though horticultural studies indicates they have short growth period, tolerates stress and respond well to both organic and inorganic fertilisers.

Abukutsa-Onyango said sustainable production of the indigenous vegetables has declined due to neglect, lack of quality seed, and use of inappropriate production technologies.

About 92 per cent of the respondents in the rural areas regarded indigenous vegetables as subsistence crops and not as produce with commercial value. Only three per cent saw the vegetables as an income-generating venture.

Most of the farmers cultivate these vegetables for their own use.

"Intercropping indigenous vegetables with other crops is more advantageous than mono-cropping and should be encouraged by farmers," says Abukutsa-Onyango.

In Kenya, the study done in Kisii, Vihiga, Kisumu, Butere Mumias, Bondo and Kakamega districts found that farmers use farmyard manure as a source of macro and micronutrients to nourish the vegetables and wood ash in controlling pests.

Majority of the farmers depend on rainfall, with handful from Kisumu using irrigation.

Abukutsa-Onyango says neglect by stakeholders; lack of technical packages, poor marketing channels and lack of interest in exploiting the potential of indigenous vegetables are the major constraints facing the industry.

Through the Farm Concern Project plans are in place to avail traditional vegetables in hospitals. Already, the project is picking up at Kenyatta National Hospital.

— An AWC Feature

Increased Popularity & Consumption

Capacity Building Initiatives

- Curricula Development
- Undergraduate and Postgraduate Projects
- Training at (AVRDC-Arusha) between 2002 to 2008
- Farmers:2000 between 2001 and 2013 , AIVs
- Trained 14 policy makers in 2008 IndigenoVeg Project in South Africa (Rhodes University-South Africa)

What Needs to be done ?

- Change perceptions/advocacy
- Develop capacity (Graduate level)
- Enhance research along the value chain
  - Seed systems
  - Physiological and agronomic studies
  - Nutritional and recipe development
  - Health aspects
  - Cropping systems
  - Socio-Economic Issues
- Improve Conservation
- Add value and upgrade market chains
- Create a supportive policy environment

Ahsante

Thank you

Dankenshe

Muchas gracias

Muito obrigado

Merci beaucoup