



JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

Setting Trends in Higher Education, Research and Innovation

Experiences in Open Research & Education for Sustainable Development in Africa

Prof Abukutsa-ONYANGO, M.O. (Ph.D, MKNAS, EBS)

Professor of Horticulture, Department of Horticulture, JKUAT Kenya

Open Research and open Educational Resources advocate & DVC (Research, Production & Extension)

Abukutsa.mary@gmail.com



JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

Setting Trends in Higher Education, Research and Innovation

A University of Global Excellence in Training, Research, Innovation & Entrepreneurship for Development





JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

Setting Trends in Higher Education, Research and Innovation



***“Effective Communication
& Open Science is Key to
Solving Current Global
Challenges”***

Open Research & Resources

- **Participatory & Multi-Disciplinary Research**
- **Open Data**
- **Open Science**
- **Open access publishing**
- **Institutional Repositories**
- **Open Educational Resources**



Advocacy for IR and Open Research

Organizers/Presentation/Activity	Venue	Date
1. Eifl & CKUL (Workshop) –Kenyan University	UoN-CCU	9/2/ 2010
2. Importance of Open access video recorded	UoN-CCU	9/2 /2010
3. Eifl/JKUAT Open access workshop & IR	AICAD/JKUAT	8/2010
4. BioMed Central - Open access in Africa	KUCC	10 /11/ 2010
5.Eifl/UoN Open access & IR workshop	UoN- CCU	30 /8/ 2012
6. Eifl/UoN Open access workshop & IR	AICAD/JKUAT	18 /10/ 2012
7. Eifl &CUUL (workshop)- Agric Researchers	Kampala, Ug	14 /5/ 2014
8. KALRO/FAO – Open data & Open Science	Nairobi	15 /6/ 2015
9.IBM-JKUAT- Open data &Science, Cloud dev	NSC-JKUAT	29/6/2015
10. KLISC-Open Access Policy Formulation	Panafric Hotel	26/10/2016
11. KLISC-Open access policy implementation	Karatina Uni	18 /05/2017
12. KLISC- Open access policy implementation	CUEA. Ke	26/07/2017

Advocacy for IR and Open Access Research

Organizers/Presentation/Activity	Venue	Date
13. KLISC-Open access publishing workshop	Nairobi-Safari Club	04/10/2017
14. KLISC/EIFL OP Policy Formulation workshop for Gv institution managers	Nairobi Safari Club	28/02/2018
15. Santa Clara university, California, USA	Zoom	25/10/2018
16. University of Cape Town & SPARC	Cape town (S/A)	5th /12/2019



Research on AIVs

- **Multidisciplinary Research Program**
- **Participatory Research**
- **Unknowingly used the Value chain approach**

JKUAT- 1991

Maseno University 1996





Research on AIVs

To Promote Sustainable Production and Utilization of AIVs for Nutrition Security and Poverty Reduction in Kenya (Africa)





Research Activities

- Germplasm collection and evaluation
- Seed bulking, Processing and Packaging
- Characterization of AIVs
- Agronomic studies



Research Activities

- **Advocacy and Outreach**
- **Capacity building**
 - Undergraduate and post graduate students
 - Farmers and CBOs
 - Policy makers
- **Dissemination**



Impact & Effects of AIVs Research

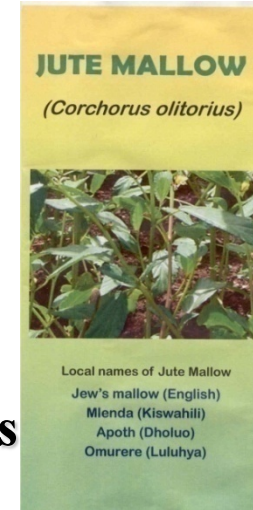


6. A healthy Nation



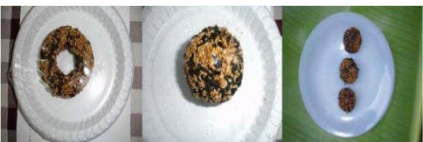
3. Good crop for farmers

4. Availability & Consumption



2. Leaflets 1. Quality seed

5. Products

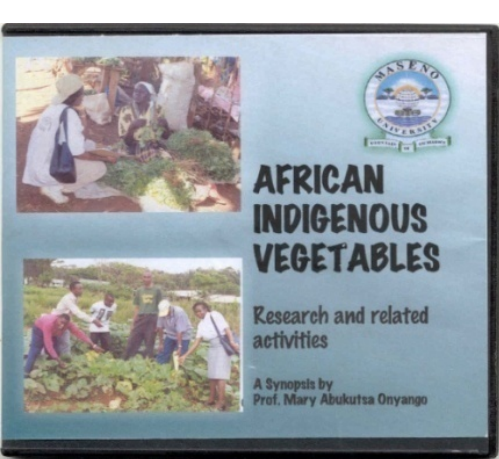
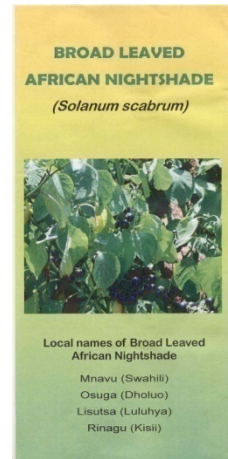


Publications and Communications

Publications & Channels of Communication	Approximate No.
1. Public Lectures and keynote speeches	40 (50% open access)
2. Theses	02 (50%)
3. Books and Book chapters	15 (50% e-books)
4. Dissemination Leaflets	15 (50% open access)
5. Technical Reports	10 (50% open access)
6. Technical Books and Booklets	11 (20%)
7. Magazine and Newspaper articles	20 (50% open access)
8. Audio and Videos (Documentary, Radio, TV)	20 (20% open access)
9. Scientific refereed conference papers	40 (80% open access)
10. Scientific refereed Journal Papers	40 (85% open access)
Total	213

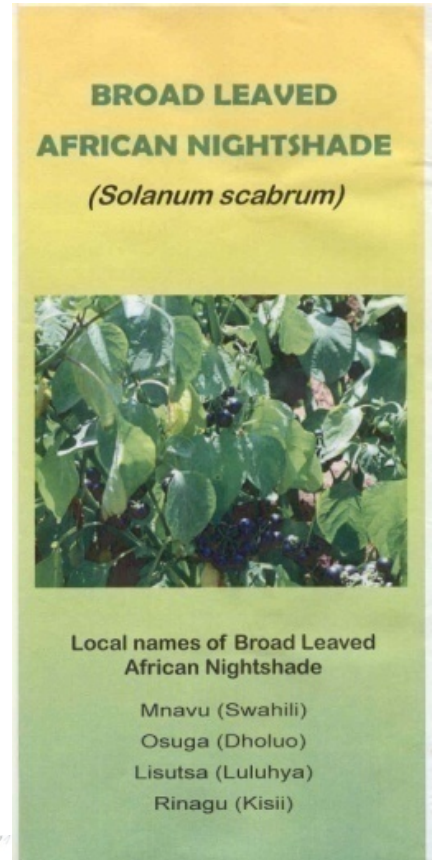
Publications and Communications

- **Scientific papers publications**
 - ❖ **Traditional Print Journals (Long time)**
 - ❖ **International Journals (Biased Rejection)**
 - ❖ **Open Access Journals**
- **Open Access Journals (DOAJ)**
- **African Journal of Food, Agriculture, Nutrition & Development-2007**



Open Access Platforms

- **Google Scholar**
– demonstrate
- **Research gate**
- **Academia.edu**





JKUAT TOP MANAGEMENT STRUCTURE

Vice Chancellor's
Office

Academic
Affairs Division

Administration
Division

Finance
Division

Research,
Production &
Extension Division



Research, Production & Extension Division Responsibilities (June 2017)



- **Co-ordination of Research, Production, Innovations, Extension & Collaborations**
- **Co-ordination of workshops and Seminars**
- **Soliciting for funds for research, innovations and production**
- **Co-ordination of income generating units**
- **Co-ordinate the activities of competence centres**



Research Production & Extension Division

Production/Innovations

Research

Co-ordinates

Extension & Technology Transfer

Linkages

Directorate /
Departments of RPE

1. Research
2. Production
3. Extension
4. Linkages
5. University Community
Collaboration Department (UCCD)
6. University Farm

Thematic
Research Centers

Institute of Energy &
Environmental
Technology (IEET)

Institute for
Biotechnology Research
(IBR)

Sino-Africa Joint
Research Center
(SAJOREC)

Water Research &
Resource Center (WARREC)

Sustainable Materials Research and
Technology Centre (SMARTEC)

Income
Generating Units

Chemistry
Products
Centre (CPC)

Food
Technology
Centre
(FOTEC)

JKUAT
Nursery
school

University
Bookshop



Research/Innovation Support

- **Sources of Funding**
 - **Internal Funding (JKUAT Upto2018)**
 - Required to be multi-disciplinary
 - **NRF Funding (Post-Graduate & Multi, support infrastructure development)**
 - **KENIA: Kenya National Innovation Agency**
 - **External Funding (EU, JICA, IFS, BGF, BMZ)**
- **Funding with different requirements with regards to IP & ABS, Publications & Dissemination**



JKUAT - 54 Patents (DIPUIL)

Category	Number
1. Patents	8
2. Utility Models	15
3. Industrial Designs	1
4. Trade Marks	27
5. Copy Rights	3

How open can we be with innovations?-IP Policy Restrictions



Dissemination and Technology Transfer

Major events include

- **JKUAT annual Open day**
- **Central Kenya ASK Show at Nyeri,**
- **Nairobi International Trade Fair**
- **Commission For University Education(cue)
Exhibition**
- **JKUAT Annual Tech-Expo**
- **Other exhibitions and farmer events as often
requested/approved**
- **Planning Open Mkulima Expo**

Extension and Technology Transfer





**MASS MEDIA
Dissemination
Smart Harvest
& Technology**

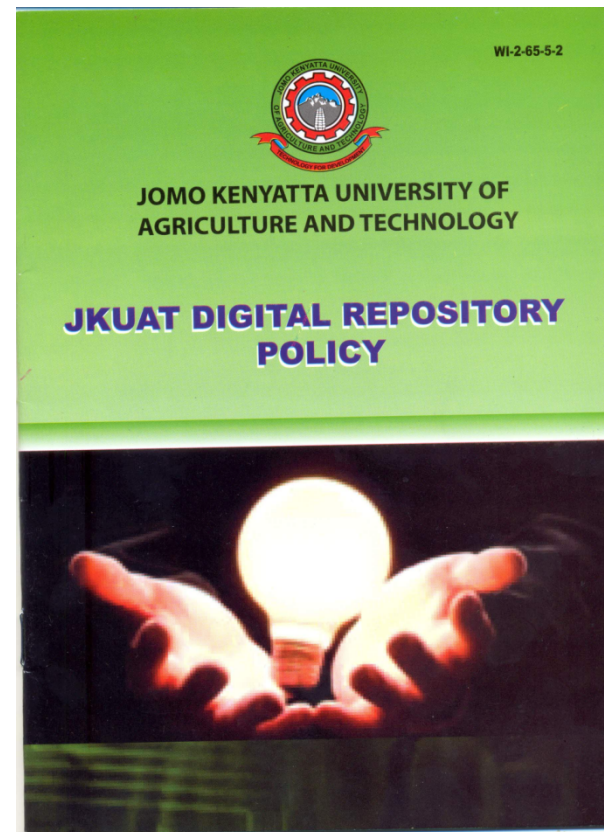


JKUAT Institutional Repository

Background

- **Open access sensitization workshop for Kenyan Universities and publishers**
 - February 2010 –UoN- CCU
 - CKUL & EIFL
 - Video on the importance of open access publishing
- **Open access introduced to JKUAT**
 - Workshop on benefits of OP
 - JKUAT Library & EIFEL
 - Creation of a committee to develop OA Institutional policy

JKUAT DR Policy



JKUAT-Institutional Repository

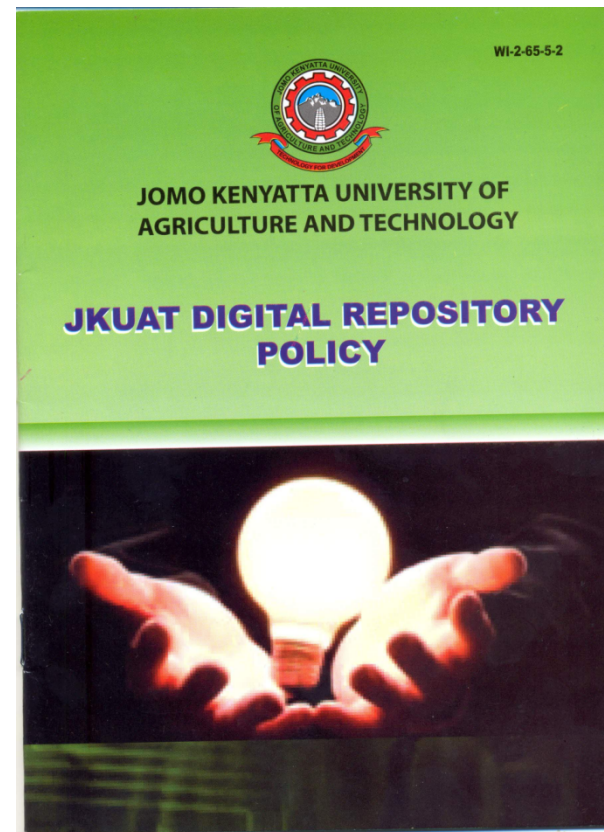
Development

- OA policy was developed between 2010 and 2012
 - through a consultative process
 - All inclusive committee
- Approved and adopted on 22nd of June 2012
- <https://goo.gl/PZex4O>
- October , 18 2012-IR

Workshop held at AICAD-JKUAT

- IR publicly launched by the VC

JKUAT DR Policy

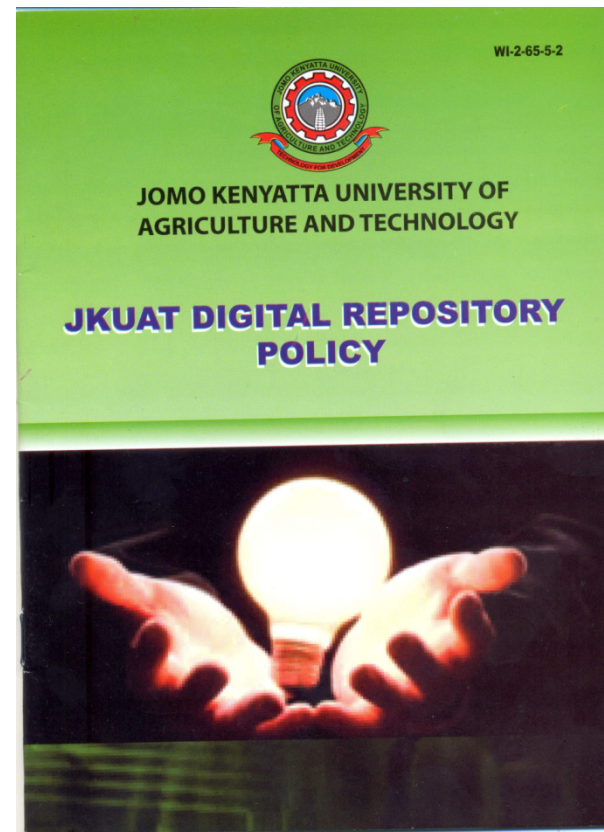


JKUAT Institutional Repository

ir.jkuat.ac.ke

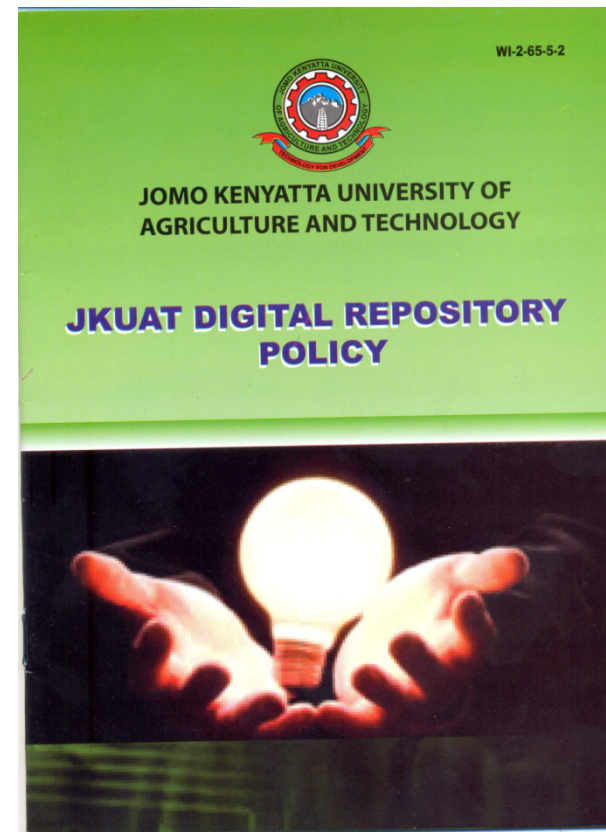
- **Collects, Preserves, and Distributes digital materials available at Jomo Kenyatta University of Agriculture and Technology.**
- **Communities in the Repository**
- **JKUAT Graduation Cere (4)**
- **JKUAT in the news (0)**
- **JKUAT Journals (170)**
- **JKUAT Key Speeches (71)**
- **JKUAT Library (16)**

JKUAT DR Policy



JKUAT Institutional Repository

- **Policies/Reports/News (2)**
- **Research papers/conference proceedings (1447)**
- **Theses and dissertations (1601)**
- **University projects and collaborations (0)**
- **View on line -Internet**
- **Search Abukutsa on JKUAT IR**

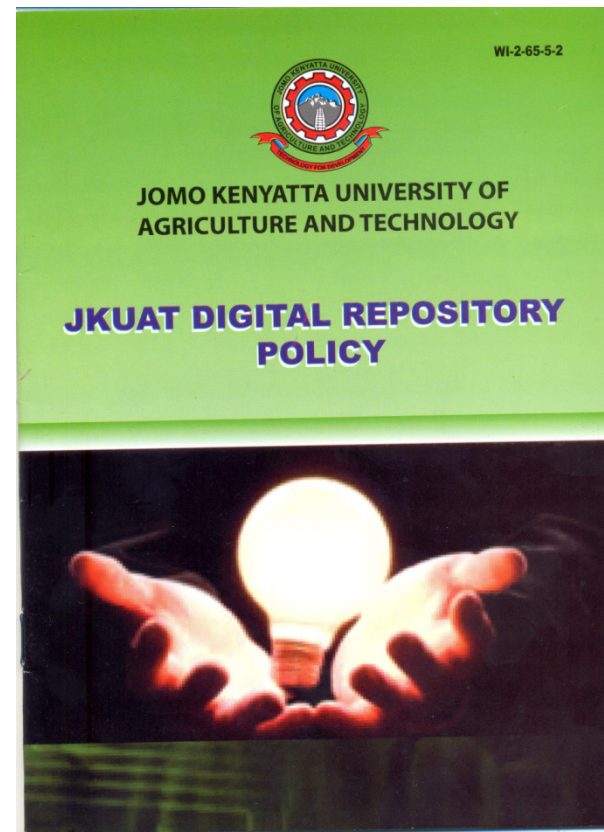


Benefits and Achievements

Achievements

- The issue of the IR has been taken up by the Vice Chancellor who constantly follows up on progress
- The VC has made it mandatory for JKUAT staff to have Google Scholar accounts. This makes it easier for the library to harvest research by JKUAT researchers
- Ranking of Universities

JKUAT DR Policy





Open Data

- **CODATA: Committee on Data-ICS**
- **Regional data sharing centre**
- **JKUAT-CODATA member org**
- **JKUAT Established CODATA -2016**
- **ICT Centre of Excellence & Open data (iCEOD)**
- **Improve the quality, reliability, management and accessibility of data**



Open Data

- **Process (2014-2016)-Open Research Data Policy (online)**
 - **Sensitization workshops-2015**
 - **Open data, open Science & cloud development at JKUAT**
 - **Competitions – among researchers**
 - **African Indigenous vegetables**
 - **Trainings and Workshops**



Benefits of IR and Open Research

- Dissemination of Information to end users**
- Knowledge and Information Sharing**
- Availability of Reference Materials for Scholars**
- Information and knowledge for Development**
- Visibility of Scholars- citations on Google scholar**
- Professional Advancement**
- Invitations to conferences as key note speaker**
- Increased collaborations**
- Job opportunities and Consultancies**
- Repositioned AIVs to Super Vegetables**
- Recognition and Awards: Edinburgh Medal 2014**



Recognitions and Awards



1. KARI-1998



2. CGIAR-2007



3. Gender and Diversity-2009



4. CTA/FARA/RUFORUM-2009-African Woman Scientist Competition-1st Prize

5. RUFORUM IMPRESSA Prize- July 2010-3rd Position

6. AU Woman Scientist-Earth and Life Sciences EA region- 1st Position-2010

7. Elder of the Order of the Burning Spear (EBS)

8. Edinburgh Medal in 2014, city of Edinburgh

African Indigenous Vegetables

Moved from being Poor man's food/weeds in 1991 to Super Vegetables in June 2015 as result of Open Access Publishing

See the link below to Nature Magazine

<http://www.nature.com/news/the-rise-of-africa-s-super-vegetables-1.17712>



Main Streaming OP Research at JKUAT

- **Policies:**
 - **Research,**
 - **IP, Open**
 - **Research data policy**
 - **Digital Repository Policy**
- **Identifying Champions**
- **Advocacy workshops for researchers & students**
- **Training of staff and Students**
- **Bench Marking with other Institutions**
- **Include in the Research reward system**



Open Educational Materials

- **Initiated in 2012-2014 by ICT Department**
 - **Course Outlines**
 - **Lecture notes**
 - **Reading Materials**
 - **Modules**
 - **Assignments**
- **Sensitization workshops and trainings (Colleges)**
 - **Very few lecturers turned up for training**
 - **Fear of their work need to revisit**



Challenges

- **Poor internet connectivity (ICT)**
- **Inadequate ICT infrastructure**
- **Inadequate advocacy and misconceptions**
- **Managing IP Rights issues**
- **Lack of awareness of publisher copyright and obligations. Researchers end up publishing in journals that restrict open access making it impossible to upload their work in our IR**
- **Harvesting research is a tedious process because the library has to confirm with different publishers on archiving rights**



Conclusions

- **Deliberate efforts should be made and policies and strategies put in place to support open Research and Educational materials**
- **Scientific Research findings must be effectively communicated to the public for impact on society and policy by repackaging them (Real Impact?)**
- **Researchers and scholars should make efforts to publish in open access journals**
- **Develop enabling environment for open Science and OP publishing for researchers**
- **Identify African Open Science Champions (AAS)**
- **Clear reward systems be established**

