

Information repackaging for the conservation of biodiversity on farmlands in the central districts of Uganda

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Abstract

Uganda's economy is primarily agrarian and supports almost 90% of the country's population, most of which is rural. The country is well endowed with a variety of fertile soils, rainfall and altitude which allow for the production of a variety of crops. Intensive agricultural activities are mainly supported by subsistence and commercial farming and this is often associated with reduction in the value of land in biodiversity. However, information plays a central role in helping to improve management and sustainable use of biodiversity for food production. This therefore ensures agricultural practices that both meets human needs and contribute to sustainable development. This paper discusses the role of biodiversity in agriculture, Information repackaging, the significance of information repackaging, functions and key steps in information repackaging, repackaging as a method of information dissemination to farmers, The paper highlights examples of institutions that have been instrumental in the promotion of agro biodiversity by repackaging information, their monitoring and evaluation procedures, and feedback mechanism from farmers in the central districts of Uganda. It also highlights how these mechanisms have lead to the improvement of the services provided.

Introduction

Uganda is an agrarian economy with a diversity of farming systems. Approximately 90% of the country's population thrives on agricultural activities most of which is rural.(NEMA 2008). Production of a variety of crops is enhanced by the country's endowment with rich soils, adequate rainfall and altitude. Intensive agricultural practices are mainly supported by subsistence farmers but this is often associated with reduction in the value of land for biodiversity.

However, information sharing plays a key role in ensuring adequate management and use of biodiversity for productive agriculture. This owes to agricultural practices that meet both human needs and contribute to environmental improvement and conservation hence sustainability. One of the major ways of reducing

threats to and loss of biodiversity is to make people aware of it and its values (NEMA 2008). This makes them appreciate their environmental, social and economic benefits of biodiversity. Without this, they would otherwise find it difficult to protect and sustainably use biological resources.

Agriculture and biological diversity are interdependent. They complement each other in a system of intricate links that involve productivity, adaptation, ecological functioning among others. Agri-food production relies on biodiversity. Yet farming can weaken it. Increasing food production means finding ways of expanding agriculture without upsetting our planet's biological interdependence. Earthworms, bees, orchids, mangrove swamps and tropical rainforest; seem a motley collection, but they are all symbols of both the diversity and the fragility of the linkages between agriculture and nature. (NEMA 2008).

How Biodiversity benefits natural and agricultural ecosystems

Productivity

Bees, earthworms, orchids, and bacteria provide many thousands of nutritious products through agriculture and the harvest of natural populations. High production levels can only be sustained through maximizing the beneficial impact of ecosystem services for agriculture

Adaptation

Biological organisms contribute to the resilience of agriculture because of their capacity to recover from the environmental stress and their ability to evolve. Adequate management of agricultural and natural biodiversity; above and below ground and underwater secures help to sustain agricultural production.

Maintenance of ecosystem functions

Essential function such as nutrient cycling, decomposing of organic matter, degraded soil rehabilitation, pest and disease regulation, water quality control and pollination are maintained by a wide range of biologically diverse populations in natural and agricultural ecosystems. Maintaining the diversity of species and building on and enhancing ecosystem functions reduces external input requirements by increased nutrient availability, improved water use and soil structure, natural control of pests.

How Farming benefits Biodiversity

Delivery of ecosystem services

Agricultural systems managed sustainably as ecosystems, contribute to wider ecosystem functions such as promoting water infiltration, maintenance of water quality, waste removal, reducing runoff, soil moisture retention, erosion control, carbon sequestration, and pollination that is essential for crop production.

Incentives

Farming provides incentives to preserve areas such as hedgerows and field borders for species needed such as pollinators that need habitat diversity to survive. Farming of aquatic species often occurs in natural

water bodies, providing incentives to protect the aquatic environment from adverse impacts, for example from pollution, siltation and water diversion. The need for adaptation and potential for improvement in productivity provides an incentive for the conservation of a diverse range of genetic resources.

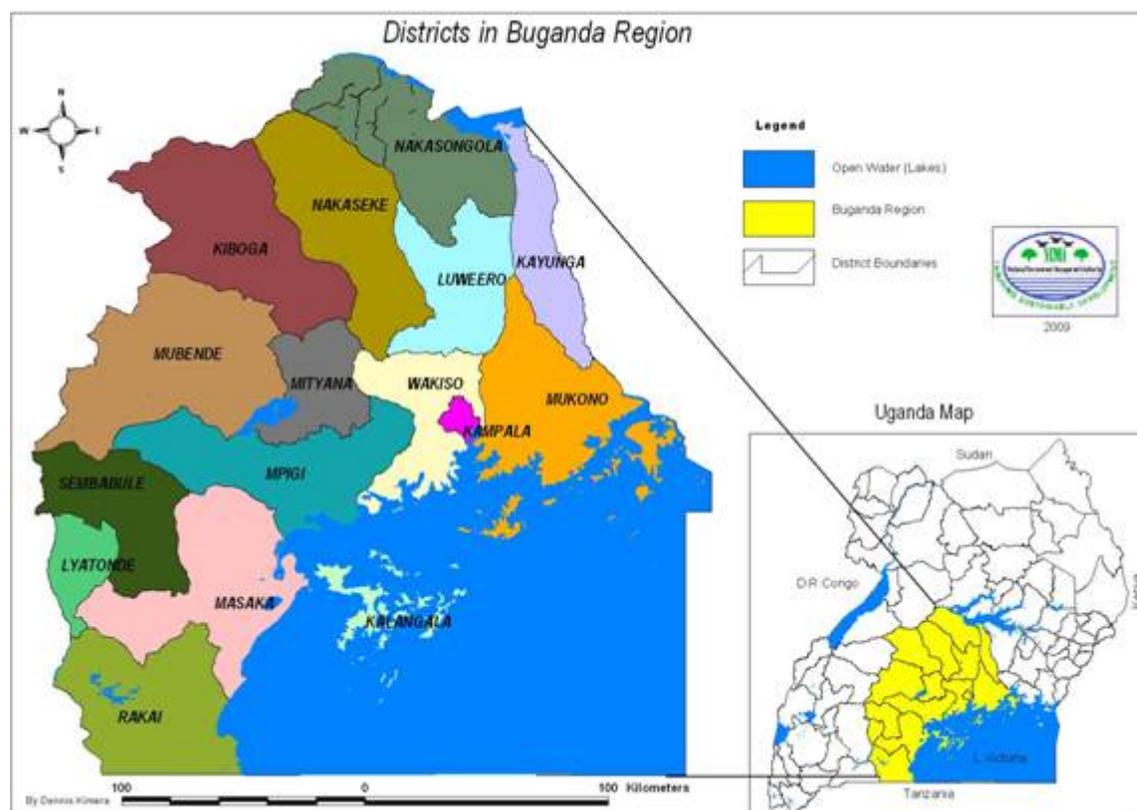
Ecological knowledge

A lot of ecological and biodiversity knowledge, its importance, and functions have been gained across cultures and will continue to be gained through agricultural practice. There's need to document such local knowledge of farmers in different agro-ecological zones of Uganda and utilize it in agricultural research to increase productivity, household incomes and livelihoods. This is the essence of implementing the plan for modernization of agriculture in Uganda as part of the overall plan to eradicate poverty.

Area of study

Information repackaging and dissemination has been vital for farmers in various regions of Uganda. This study centered on the districts along Lake Victoria. This is a region which normally experiences a lot of rainfall and has rich fertile soils. (NEMA 1996) They include Rakai, Masaka, Nakasongola, Ssembabule, Wakiso, Mubende Mpigi, Mukono, Luwero, Lyantonde, Kayunga, and Kampala districts as illustrated on the map.

Map showing area of study



Map Production: Dennis Kimera

Information repackaging

Information repackaging refers to putting together information gathered from different sources and condensing it. Information Repackaging (IR) is a library and information service which customizes information to meet the specific needs of users

Packaging is the bundling of products and services to address specific needs. (Iwhiwhu 2008).It can be done by:

- Reformatting and synthesizing raw information;
- Combining expertise or consulting on a subject with access to relevant information sources;
- Providing training or assistance to a user in accessing an information product.

Information repackaging can be done in many ways including reformatting and synthesizing raw information, combining expertise or consulting on subject with access to relevant information sources and providing training or assistance to users in increasing an information product. However, illiteracy usually hampers the delivery of information to farmers. Therefore, information providers should always adequately interpret, repackage and apply information to the user's situation and help communities to act on the information they receive.

Why information is repackaged.

Language barrier

Information contained in scientific and technical journals/research reports and books is in languages which make them inappropriate for use by most people (WHO 2008). Even when the language is appropriate there are other language barriers and format considerations.

Illiteracy

Almost ...% of farmers in the Lake Victoria region are illiterate. Information repackaging promotes literacy by providing information to farmers.....

Attitude

As the saying goes, "seeing is believing" Many people would rather see for themselves than hear how best to manage their farmers, this is where the use of posters can be effective because situations can be illustrated and appreciated well.

Ignorance

Some Information is repackaged because people might not be aware that some farming activities actually decrease food production as for example planting the same crop over and over again decreases the soil nutrients.....

Lack of funds

Funds dictate the medium of dissemination of information. As for example if the population is big then instead of printed material, one could use the radio to communicate agro biodiversity information

Information repackaging is one way of overcoming these obstacles .It is important in assisting the facilitation and appropriate dissemination of gathered information. Presentation of information is crucial for it being disseminated properly. It must be understandable, readable, acceptable and usable.

Functions of Information repackaging.

The repackaging of information serves the following functions;

As a saving tool

Local farmers have minute use information over and above their requirements. The repackaging of information helps reduce the time farmers may otherwise have to spend on lengthy perusal and interpretation of large volumes of agro-diversity information.

As a selective tool and a systematic sorter of useful information.

Farmers are ensured wider access to useful information originally contained only in limited copies of publications available in libraries and documentation centres.

As a translation tool

Good materials prepared in various languages and local dialects are increasing in number. These have to be translated into a more commonly used language to ensure wide use.

As an opportunity for practical application of research results

Farmers are provided a chance to correlate with the wealth of information emanating from research studies, experiments and action projects through overt policy and practical implications and recommendations.

As a means for prompt delivery of relevant information

Farmers are kept updated on the latest available agro-diversity information, a facility that is particularly made significant by the current rapid generation of new information which may sometimes invalidate information preceding it.

Key steps in information repackaging

The process of repackaging information depends on the availability of materials, from research institutes, government sources, online services and networks and indigenous knowledge. The present technology of integrated text, graphics and media facilitates repackaging. Information repackaging can also be seen as

part of a process of information consolidation. The following are proposed steps for information repackaging.

- Study of potential users, user needs and closing information gaps
- Selection of primary information sources and the evaluation of the information content
- Content analysis: this enables restructuring (condensing, rewriting, translating, etc.) and packaging or repackaging of information
- Dissemination of the packages in the various formats
 - accompanied by feedback from users
 - evaluation and adjustment of the material

Information repackaging as a method of information provision to farmers

Librarians should take the leading role in repackaging information for farmers. Librarians are expected to repackage information materials which have been tailored to meet the information needs of rural inhabitants in a language and format they would understand (Aboyade 1987) Information to be repackaged could be sourced from published materials, raw data collected by research institutions, government statistical service, online information and even from peoples own corpus of indigenous knowledge.(Onwubiko 1999)

Types of agricultural information for farmers

The types of agricultural information required by farmers can be categorized as technical/ scientific, commercial, social –cultural and legal (Aina 1995).

Technical/ scientific information

This information arises from research and development at research institutes, government departments, universities and international organizations. It includes reports, journal articles, theses and dissertations.

Commercial information

This is information on sales of agricultural commodities, cooperatives and export activities. Most of this information is found in newsletters, gazettes, feasibility reports and government publications

Social cultural Information

Information on traditional agricultural practices (indigenous knowledge), labor availability etc. the possible sources of this information are books, government publications, newspapers, and reports.

Legal information

This concerns any legal information on land tenure, land distribution, taxes, agricultural products and most of this information is contained in policies, compendium of laws, or government publications.

Information dissemination

Accuracy, completeness, and consistency of information is very crucial. Packages must have a clear presentation and should be tested by a wide range of users before more production can be done. There is need to be dynamic and explore new ways of providing the service.

Indigenous knowledge transfer

It used to be thought that development consisted of the dissemination of modern, scientific and sophisticated knowledge to inform and uplift the rural masses. Rural people's own knowledge tended to be despised and ignored. This is no longer the case and the existence of indigenous knowledge, side by side with external information, is acknowledged as important in the development process. It is now accepted that any attempt to communicate modern scientific and technical knowledge to rural people must take due cognizance of their beliefs and culture (Aboyade 1981). Rural people are strong in information about farming practices and the environment. Theirs is an adaptable system because it is based on observation and therefore continuously updated and corrected. The mobilization of rural people's knowledge is necessary. Ways have to be found of linking the indigenous and exotic knowledge systems, so that each complements the other. The full participation of rural people in the process of introducing new ideas and in the design and implementation of development projects is essential. This not only ensures the incorporation of indigenous knowledge but fosters the development of a third knowledge system, the knowledge created by rural people as they take part in the development process (Mchombu 1993; Karlsson 1995)

Primary (research) information has to be produced, organized and then repackaged in a form understandable by the end user. This extension material must then in its turn be organized and finally communicated to the farmer. Considering the type of information needed and its specificity to local and particular conditions, clearly any mechanism of information transfer must be conceived not only at the national level but especially at the local level

Traditional communication systems

There is already an indigenous information transfer system in existence in rural communities. Information is constantly circulating. Providers of information must take into account the traditional ways of communication and even utilize some of their methods. Exchange of information takes place where people meet, e.g. market places, health clinics, bus stops, village meetings, schools, churches, mosques.

Person-to-person communication is the most effective, via priests, local dignitaries, age-group leaders, friends, neighbours and parents. There are acknowledged 'information gatekeepers', elders of the community or those holding positions in the village authority structure. They are the recognized leaders of thought. These people often have to demonstrate by their own examples that it is in order to adopt new ways of doing things. They also provide avenues for discussing and explaining the implications, of suggested innovations (Aboyade 1981). Outsiders like extension workers or primary school teachers also rely on personal contact and demonstration and act as 'gatekeepers' (Mchombu 1993)

Media of communication

Experiments with communication media confirm that printed media only meets with limited success. Where high rates of illiteracy are present, print-based systems are unsuitable. Visual (e.g. posters), audio (radio, cassettes) and mixed media (e.g. film) have had varied success. Most effective are media which incorporates traditional systems, like theatre, song and group discussion. Indigenous knowledge has always been transmitted very effectively through teaching, apprenticeship and storytelling (Lundstrom 1985; Rosenberg 1987). In Uganda repackaged information is presented in an amalgamation of almost all media because most communities are a mixture of both literate and illiterate populations.

External information

External information to rural communities is at the moment fragmented between several government ministries, non-governmental agencies and parastatals. Most of the agencies supply information as part of a larger package of inputs and services and within a narrow subject field. The supply of information is dismally low. All this leads to a serious gap in the exchange process and also in the information transfer chain that links rural communities with other knowledge centers both within and without their own country (Mchombu 1993). Since most people in rural areas earn their livelihood through farming, a considerable amount of research has been carried out on the way information is transferred to farmers and other end-users.

Sake holder involvement in Information delivery and support systems

This is essential for the appropriate the appropriate formats into which the information would be repackaged and the channels through which it would be disseminated, Since information is not static, any repackaging program would need to assess changes and provide a service accordingly (WHO 2008)

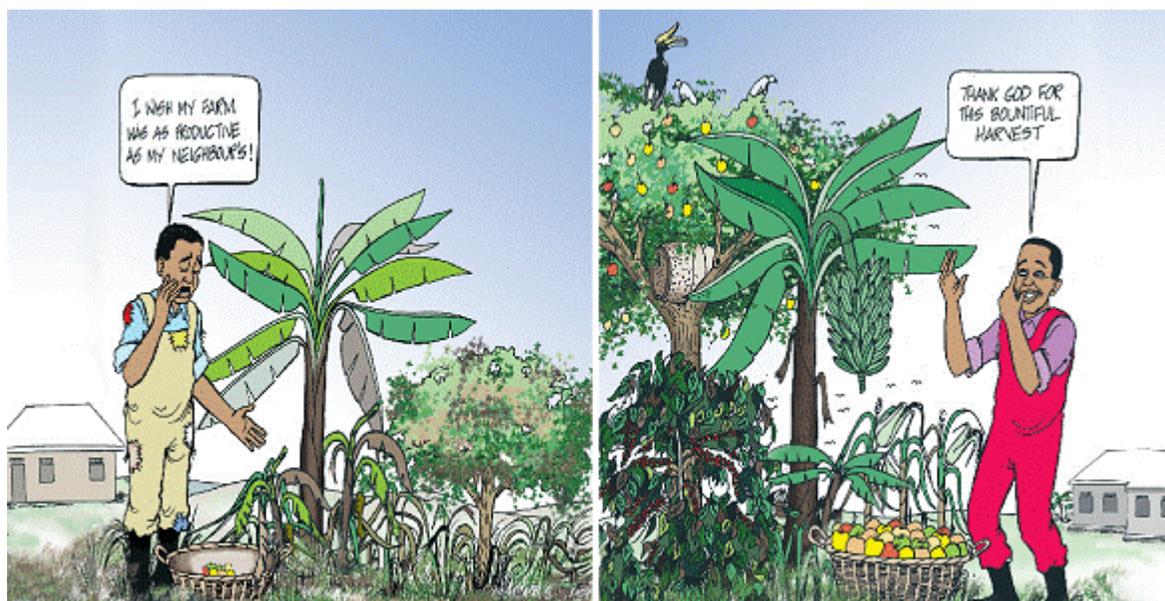
There are several organizations and projects in Uganda that have partnered to promote agro biodiversity. Most of the work is carried out through projects funded by the international communities and

The role of government institutions and non government organizations (NGOs)

Conserving Biodiversity on farmed landscapes of Uganda (COBA)

Conserving Biodiversity on Agricultural Landscapes of Uganda (COBA) was a research/sensitization drive that was implemented for 3years to show stakeholders that birds, bees, butterflies and trees are a vital component in agriculture yields. Other project partners were British Trust for Ornithologist, Uganda Wildlife Society, Nature Uganda and Makerere University Institute of Environment and Natural Resources. More results on this research are still being analyzed. Many outputs which include press releases, , workshops with farmers, newsletters, Demo farms selected, posters, reports and Agro – biodiversity groups were achieved. The researches also lead to the production of a handbook for extension advisors on Agro biodiversity .below is an example of the poster.

Conservation of Biodiversity in Agricultural Farmlands (COBA)



Integrating Farm forestry into NAADS Activities.

The Uganda Wildlife Society through the Uganda Forest Working Group secured funding from FAO to undertake a study, in partnership with National Agricultural Advisory Services (NAADS) to which NAADS has intergrated farm forestry into its programes. The ultimate goal of this study is to make informed recommendations for integration of farm forestry into NAADS activities and programes. Many activities have been carried out and this includes developing messages for broadcasting media, print media, extension services, educational tours and group discussions

The National Environment management Authority (NEMA)

With funds from the World Bank, NEMA produced a handbook for Biodiversity conservation in Uganda and accompanying booklets one of which is Biodiversity and Food security to create awareness on the importance of conserving biodiversity in Uganda

Mult – purpose community telecenters

There are three major MCTs in Uganda and these are Nakaseke, Buwama and Nabweru, all of which are in the central region. A telecentre is a common point of access for mobile users (usually an entire community). It provides a range of ICT services, which include telephone, faxing, photocopying, email, word processing, D-ROM and the Internet (Caspry, 2002). A number of services are provided at a telecentre (Rangi et al, 2002); The MCTs are instrumental in improving rural communities access to agricultural information through traditional and modern ICTs. Telecentres identify, acquire and repackage agricultural information, research results and indigenous knowledge for the rural communities, The Telecentres are strengthening agricultural information systems and services and providing services of agricultural information resource centres purposely to empower farming communities and facilitation of

the work of extension agents and other stakeholders, and disseminate agriculture – related information by electronic delivery options.(Mutongole 2004)

National Agricultural Research Organization (NARO)

The National Agricultural Research Organisation (NARO) was established by an act of parliament on 1st November 1997, by amalgamating several research institutions that existed within several Government Ministries. This umbrella organization comprises nine research institutes and eleven agricultural research and development centers. The Agricultural Research Information System was established within NARO to gather research data and disseminate research results for the benefit of the agricultural community in Uganda. Eight Libraries were set up at various NARO research centres and they are now fully dedicated to collecting and disseminating this data, some of which is included in the Food and Agricultural Organisation Database like the AGROVOC Thesaurus (Kigongo – Bukenya, 2000). Many researchers, students and farmers access information from these libraries.

Evaluation and feedback on information disseminated through repackaging

Agro biodiversity working group

This working group was established in 2006, with the main purpose of Identifying y best practices for the long-term conservation of bio diversity in selected farmed landscapes in Uganda and establish a framework for sustainable agricultural development and monitoring.

Participation monitoring and evaluation (PME)

PME refers to the active involvement of farmers and other stakeholders in the generation and analysis of information about program activities, outputs and impact.(NAADS 2007) it takes place at farmer group, parish, sub county, district and national levels. Information is collected regularly and used where planned activities fall short of expectation. NAADS carries out evaluation activities less frequently at review meetings to determine the progress and corrective measures where faults were detected.

Conclusion

The diversity and presence of life (biodiversity) on agricultural land is important for maintaining the health and productivity of farmlands. However, agriculture as practiced today threatens wild plant and animal species and ecosystem services upon which both humans and biodiversity depend. It is therefore important that farmers are aware of the role of biodiversity in crop yields and should therefore be informed on how to manage their gardens wisely for the conservation of biodiversity and hence increase of food production. Information repackaging can go a long way in disseminating this information and this can eventually lead to sustainable development.

References

Repackaging of Health Information (Module 6.3) Hinari Access to Research WHO 2008

<http://www.cec-ugc.org/IIIE%20Library%20Project/FAQ.htm>

Information repackaging definition

<http://unesdoc.unesco.org/images/0007/000705/070591EB.pdf>

Functions of information repackaging

user name – Mutongole

password – Nabiteeko5

<http://www.mrc.ac.za/ikmd/glossary.htm>

Definition of information repackaging by the South African Medical council