BOOK OF ABSTRACT

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I. SESSION DESCRIPTION

ID: S9c

Local knowledge and the definition the ecosystem services and disservices

Hosts:

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<th>Host:</th>
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<th>Name</th>
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<th>E-mail</th>
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<tbody>
<tr>
<td>Host:</td>
<td>Fatima Ali</td>
<td>National Center for Research Sudan</td>
<td><a href="mailto:fatti-avectoi@hotmail.com">fatti-avectoi@hotmail.com</a></td>
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Abstract:

Local knowledge (indigenous knowledge) is composed of peoples' "do–how", know–how, and of the experience accumulated in a given community, society, or country over time. Indigenous knowledge is defined by the economic, social, cultural, ideological, and belief systems in which it is found and is created for and adapted to very specific biological, ecological, climatic, and socio–economic conditions. Indigenous knowledge systems in Africa are rich and have been extensively studied. Many research projects have for instance discussed the integration of local knowledge into the development process and the framework of "endogenous development" serves as one example of such an integration effort. Other projects used local knowledge to identify ecosystem services and disservices associated with invasive alien plants and management practices. This extensive body of research can be used to address questions such as: (1) What do we mean by local knowledge in the African context? (2) Is local knowledge useful and can it be integrated in the ecosystem service framework? (3) What are examples of African local knowledge that pertain to ecosystems and the environment? (4) Which forms of local knowledge can be used to identify ecosystem services and disservices? (5) Can both oral and material cultural knowledge be applied in the ecosystem service framework and if so how? (6) Can local knowledge be valued among Africans ecologists and, how?

Goals and objectives of the session:

The overall goal of this session is to discuss if the integration of local knowledge in the ecosystem service framework can help define ecosystem services and disservices in Africa and thereby contribute to developing good ecosystem management practices. Specifically, this session aims at (1) identifying different local knowledge forms that contribute to the definition of ecosystem services and disservices in Africa; (2) achieving a common
understanding of how to integrate these local knowledge forms in ecosystem services research; and (3) achieving a common understanding of how to apply the ecosystem service framework in development and conservation processes within the context of local knowledge.

**Planned output / Deliverables:**
The proposed output is a conceptual framework for the integration of different local knowledge forms in ecosystem service research in Africa and beyond.

**Related to ESP Working Group:**
*Sectoral Working Group – SWG 9 – Indigenous People & Local Communities*

## II. SESSION PROGRAM

**Date of session:** Tuesday, 18 June 2019  
**Time of session:** 14:00 – 15:30

**Timetable speakers**

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<thead>
<tr>
<th>Time</th>
<th>First name</th>
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<th>Title of presentation</th>
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<tr>
<td>14:00-14:15</td>
<td>Fatima</td>
<td>Ali</td>
<td>National Centre for research</td>
<td>Local knowledge and the definition the ecosystem services and disservices</td>
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<tr>
<td>14:15-14:30</td>
<td>Felix</td>
<td>Donkor</td>
<td>University of South Africa</td>
<td>Traditional knowledge systems and religious organisations as instruments of stewardship of ecosystem services</td>
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<tr>
<td>14:30-14:45</td>
<td>Ana</td>
<td>Turetta</td>
<td>Brazilian Agricultural Research Corporation – EMBRAPA</td>
<td>Agricultural Management Practices and Soil Ecosystem Services: Social learning by participative multistakeholder processes for strategy development to stabilize Food Security in Africa</td>
</tr>
<tr>
<td>14:45-15:00</td>
<td>Firmin N.</td>
<td>ANAGO</td>
<td>Faculty of agronomic sciences</td>
<td>Endogenous soil fertility management under cowpea [Vigna unguiculata (L.) Walp.] crop in Benin</td>
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**15:00-15:30** Discussion

## III. ABSTRACTS
Endogenous soil fertility management under cowpea [Vigna unguiculata (L.) Walp.] crop in Benin

First author: Firmin N. Anago
Affiliation: Laboratory of Soil Sciences, School of Crop Production, Faculty of Agricultural Sciences, University of Abomey-Calavi, 01 BP 526 RP Cotonou, Benin
Contact: firmin.anago@gmail.com

Cowpea is an important legume crop in the dry savannas of Africa, especially West Africa. However, in Benin, the cowpea grain yield is very low due to the soil depletion which induces food insecurity in Benin. Then to better analyze the endogenous knowledge of soil fertility management under cowpea production, a survey was carried out among 562 farmers in three agro-ecological zones (southern, central and northern) of Benin. Results showed that cowpea is grown by both young and old people irrespective of sex. The main areas under cowpea production are in central and southern Benin. Three cowpea cropping systems were identified according to the soil fertility management. There are farmers who grow cowpea in association with a cereal, use mineral fertilizers, practice manual tillage and bury crop residues in the soil. This practice is more observed in southern Benin in the ethnic groups Adja, Fon and Yorouba where there was a low availability of arable land. The second cropping system involves farmers who grow cowpea in a rotation system without intercropping and mineral fertilizer but practice manual tillage and bury crop residues on the soil. This system was more adopted in central Benin among the ethnic groups Mahi, Idatcha, Nago, Holli and goun. The third cropping system was observed in the northern part of the country where farmers grow pure cowpea in a rotation system with a harnessed tillage and crop residues were used as animal feed. These farmers were in majority of the ethnic groups Bariba, Djerman and Batonou who were mostly livestock breeders. Farmers in all areas recognized that soil fertility was declining, based primarily on changes in yields. Furthermore, the farmers of central Benin thought that the soils had good fertility unlike southern and northern Benin. The practices of fertility management of central Benin farmers preserve soil fertility better than the other practices. However, they can’t continuous to grown cowpea and expect high yield without return to soil nutrients removed.

Keywords: endogenous knowledge, declining of soil fertility, rotation system
Food security is a function of food availability, food accessibility, food stability and food utilization. Different types of processes can impact food security at different spatial levels, for instance: loss of soil fertility (local), urbanization (regional, national), and global climate change (international). Regarding local scales, initiatives that enhancing the soil ecosystem services thought agricultural soil managements are strategic to improve the resilience of agricultural production systems and stabilize food security in Africa countries. This study will present two different participatory methodologies applied in two African countries: The Participatory Knowledge Integration on Indicators of Soil Quality (INPAC-S) methodology applied in Uganda and the ZALF-GIZ Tool ScalA applied in Tanzania. Both methodologies were able to evidence the local knowledge on site conditions, for instance on resource conservation, food production, processing and markets/society; the level of the communities’ participation and engagement were high in the study areas. We can also highlight that the main result was the demonstration that methodologies that consider the social learning perspective can effectively capture and disseminate the communities' visions and beliefs about agricultural production and sustainable options to produce food, fiber and energy while at the same time providing and enhancing ecosystem services to society in Africa. Since those initiatives were led by Brazilian and Germany institutions, in cooperation with research institutions and universities from Uganda and Tanzania, the network established represents an outcome to promote joint solutions to stabilize food security thought the strength of sustainable agriculture productions system.

**Keywords:** food security; soil ecosystem services; learning processes; participatory methodologies