

Collaboration between Local Farmers and Scientists towards Introduction of Flood- and Drought-adaptive Cropping Systems

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1. Introduction

For the effective tackling of environmental issues through sustainable development in rural areas, one of the important factor is how to share the information about natural resources and their ecosystems among stakeholders, especially local people and scientists, and create a 'new' framework for natural resource use. A technical cooperation and research project named "Flood and drought adaptive cropping system to conserve water environments in semi-arid regions" has been implemented in northern Namibia by Japanese and Namibian scientists since 2012 to 2017. This project aims to develop "Flood- and drought-adaptive cropping techniques (rice-millet mixed cropping)" which can preserve water resources and produce staple foods to cope with the yearly fluctuation of flood and draught through the use of seasonal wetlands. The aim of this presentation is to examine the possibility of harmonizing scientists' knowledge and farmers' perceptions to create the 'new' mixed cropping system related with the use of seasonal wetland environments.

2. Methods

A field survey was conducted in three villages in northern Namibia and data on physical conditions of seasonal wetlands such as precipitation, surface water fluctuations and vegetation were collected. To understand the farmers' perceptions on seasonal wetlands, interviews were conducted with the households' heads (or household members) who have the seasonal wetlands in their own farm land. Besides, information on local knowledge regarding mixed-cropping was collected through interviews, and the participants' remarks were also recorded. We also observed the farmers' perceptions on the 'new' mixed-cropping system suggested by the project at the workshops.

3. Result and Discussion

(1) The study area is located in the Cuvelai system seasonal wetlands (CSSWs). Numerous pan-shaped seasonal ponds (known as ondombes) are formed on the slight upland area. As the results of field surveys, ondombes are categorized into various types based on their differences in physical conditions such as vegetation types, patterns of water fluctuation and soil conditions.

(2) Local farmers recognized the differences of the various types of ondombes by some indexes of water fluctuating patters and vegetation types.

(3) In this area, local people didn't use the seasonal wetlands for crop cultivation. In the process of the introduction of the rice- millet mixed cropping system by the project, farmer's recognitions of wetland environment have changed and created the 'new' local knowledge of wetland environment.

(4) Various gaps among the farmers' perceptions and practices and the scientists' knowledge regarded as 'new' and indigenious mixed-cropping techniques were observed. There were some differences between the scientists' initial knowledge and the farmers' perceptions at the beginning of the project, so it was important for the scientists to understand the causes of such gaps and modify the project framework to co-create the 'new' mixed-cropping system harmonized with natural environments.

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