Nutrient rich local food diversity in Niger, West Africa

2015 Annual report

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December 2015

Introduction

In West Africa, many households relied on traditional locally produced foods to reach household food and nutrition security. With the increased access to market, a number of imported foods become available to the community households in some areas. Although the imported foods play key roles in bridging the gap during the lean seasons, they are not available and accessible to all the rural poor households. In many locations women had to rely on wild-harvested food products. For instance, due to less stable land tenure and small farm size, many wild species are the primary source of income and food for women and their families in the dry areas. The iconic shea tree (*Vitellaria paradoxa*) of the West African savannah for example, forms part of a complex women-led value chain that reaches both local and foreign markets as chocolate, cosmetics and other uses. The surveys we carried in the Kano-Katsina-Maradi transect in the framework of the Drylands CRP in 2015, aimed to assess the diversity of locally produced nutritious foods and imported foods, their abundance, the levels of use, the temporal availability across the year specially in dry areas, and the perceived nutritional values to rural communities. The current report presents a summary of the results.

Material and methods

Data was collected through rapid rural appraisal technics followed by participatory species selection and capacity building for the production of the most nutritive and lucrative species. In this process, the technical skill of the participating farmers was enhanced. For a baseline assessment, three sites were selected in Aguié and Gazaoua districts, in Maradi, viz. Milli, Gourjia (in Gazaoua) and Dan-Saga (in Aguié). The villages were selected based on population size, differential access to natural resources and levels of infrastructural development.

All the edible species (plants and animals) were extracted from a wide agrobiodiversity assessment that preceded the nutrition valuation survey in the same communities. In men and women FGDs we evaluated the provenance (local produced or imported) of products, the parts/organs consumed, the forms in which consumed, the products obtained, the abundance periods (months), the proportion of village households that consumed in the periods of abundance, the consumption frequency when abundant (1=almost every day of the week; 2= at least 3 times a week; 3= barely once a week; 4= barely once a month), and a scoring of the perceived nutritive value (from 1 to 3, with 1 the smallest value and 3 the highest).

Results

The perceived nutritious value and consumption frequencies

Data indicated a diversity of highly nutritious species utilized in the surveyed communities in Maradi (Fig.1). A number of local crops and wild-harvested species are perceived as nutritious or highly nutritious by the local communities. Overall, the perceived nutritional value seemed to vary with gender. Women reported higher

proportion of nutritious species than men in Dan-Saga, Gourjia, and Milli (Fig.1). However, there seemed to be a balanced perception between men and women in Milli, on species viewed as less nutritive. Women reported higher proportion of highly nutritious and frequently consumed species in Milli and Gourjia (Fig.2). In Milli, men and women have similar perceptions about highly nutritious and frequently consumed species. Among the reported highly nutritious and frequently consumed species are groundnut, millet, cowpea, grasshoppers, and pumpkin.

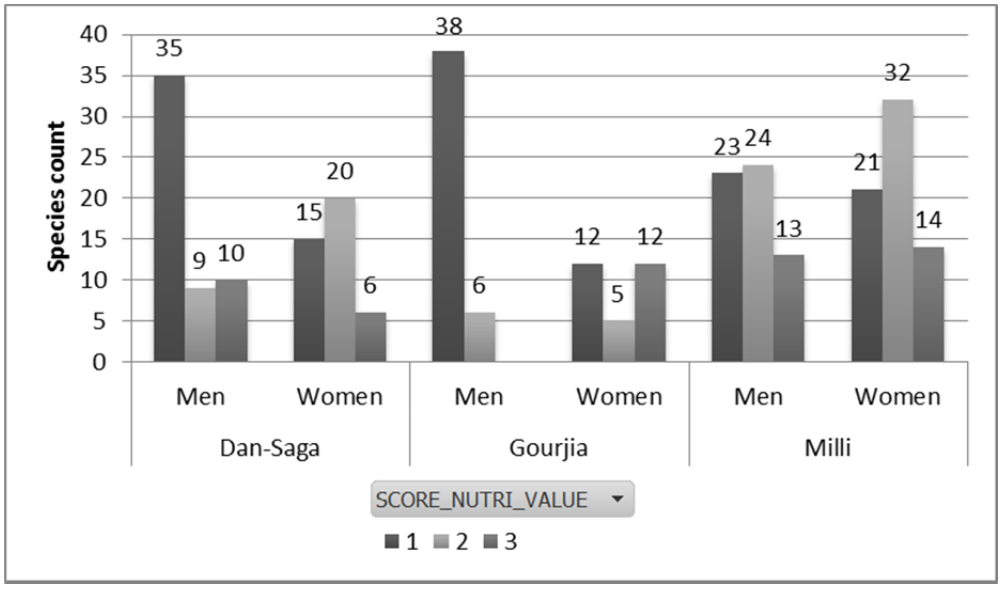

Fig.1. Richness of food species used in rural communities in Maradi, Niger.
*Score for nutritional value: 1=Less nutritious, 2=Nutritious, 3=Highly nutritious

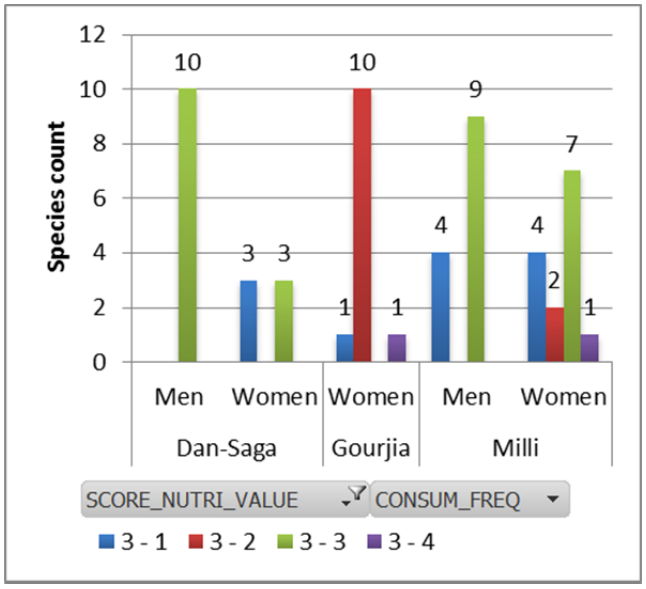

Fig. 2. Consumption frequency of the perceived nutritious food species in the period of abundance

Scores: 3-1: highly nutritious and consumed almost every day; 3-2: highly nutritious and consumed at least three times a week; 3-3= highly nutritious and consumed just only once a week; 3-4= highly nutritious and consumed only once a month.

Diversity of locally produced versus imported food products

Findings indicated that both local production and market play important roles in food supply for the communities that were studied (Fig.3). Most of the exclusively locally produced species were wild-harvested plant and hunted animal and insect species. Among these were *Senna tora, Piliostigma reticulatum, Balanites aegyptiaca, Cleome gynandra, Maerua crassifolia, Ziziphus mauritiana*, *Varanus exanthematicus, Cricetomys gambianus*, and some bird species. None of the staple crops were exclusively locally produced. The species or food products exclusively bought from the markets were, among others, *Triticum aestivum, Oryza spp, Zea mays*, Fish, Maggi cube, and salt. Other staples such as sorghum, millet, cowpea, melon, and most of the domesticated animals are of both local production and market origins.

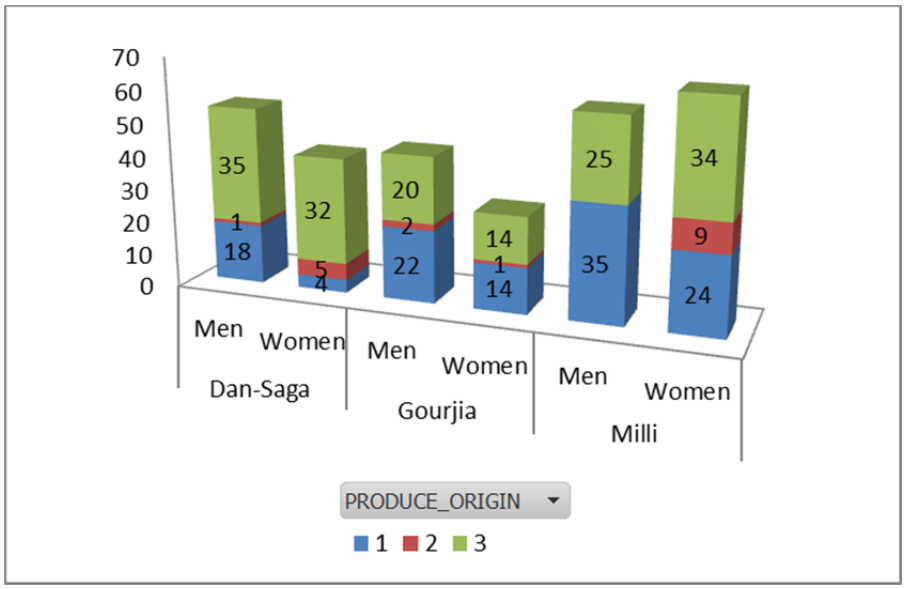

Fig. 3. Diversity of locally produced and imported food products

*Product origin: 1= exclusively locally produced, 2= exclusively imported, 3= both local and imported origin

Implications for crop improvement and livelihood security

An earlier assessment carried in Aguié, Niger indicated a relatively high diversity of locally produced food crops. Besides, the rapid inventory showed there was a limited number of nutritious wild vegetable species that were collected during the lean season to bridge the gap in household food supply. These species were particularly helpful at crop onset when little food is available in household granaries. They also constituted a good source of income in that period for the women involved in their collection and sale. In order to sustain the provision of these food resources, 10 women have been organized and trained on how to produce two of the most advanced species that they are domesticating in the area. These were *Senna tora*

and *Ceratotheca sesamoides*. The two species are highly nutritious and mostly used as leafy vegetables for daily consumption. Although more research needs to be done, *Senna tora* for example, is known for its richness in zinc, β-carotene and antioxidants - nutrients that are lacking in the staple crops consumed in the area (millet and sorghum).

The opportunities for domestication of wild plant species are huge. Our research in Niger has indicated that between 100 and 150 wild species are commonly consumed as vegetables by rural and urban communities[1]. Many of these become even more important in times of drought or crop failure. Considering that these countries are also suffering from deforestation, increased land competition and weak institutional structures to support access to wild foods, domestication is a key part of keeping these resources within reach. Recognizing and documenting the role that farmers involved in plant domestication play is key.

Conclusion

The study indicated an important diversity of local foods. Milli community seemed to use more imported food products compared with the other two communities. The results also revealed an important contribution of wild-harvesting and hunting to local food diversity. This calls for more work on the domestication of the most nutritious species to enhance the local food and nutrition security.

[1] *Referring to reports on the Bioversity International-led project: Empowering Sahelian farmers to leverage their crop diversity assets for enhanced livelihood strategies, supported by the International Fund for Agricultural Development (IFAD) (https://www.bioversityinternational.org/news/detail/women-farming-wild-species-in-west-africa/)*