

Theme - Biodiversity and genetic resources

Agro-biodiversity of cassava in three different agroecological zones of Suriname – A preliminary analysis

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ABSTRACT

Cassava (*Manihot esculenta* Crantz) is a staple food crop among the Ameri-Indian and Maroon ethnic groups of Suriname where it is cultivated under mainly subsistence agricultural systems while it is an important commercial crop in the Javanese group. Productivity of the cassava crop as well as the agricultural system in this context is low. Rural migration and introduction of processed foods in their diets may lead to the erosion of both the biodiversity as well as the knowledge base. Therefore a rapid rural appraisal survey was done in various agroecological zones representing each of these groups over a period of 15 months to better understand the agronomic and biological diversity of the cultivated genotypes. Preliminary data indicated sufficient variation in terms of cropping systems, land preparation and intensity of cultivation, as well as differences in planting methods and the use of planting materials as well as constraints to productivity improvements in such systems to warrant a detailed study. Indigenous knowledge base identification in terms of cultural habits and food needs and preferences was also noted as necessary.

Introduction

A serious concern of Suriname is conservation of its biodiversity, the sustainable use of the various components of its biodiversity and judicious use of benefits that could be realized from this biodiversity. Agricultural biodiversity conservation and use has received less attention particularly for some of the key root and tuber crops. It is however recognized by authorities that there is also a greater need of maintaining agriculturally important crop biodiversity within these efforts to effectively use bio diversity resources.

In this study our objective was to examine within this existing biodiversity the role of cassava (*Manihot esculenta* Crantz) in various communities of Suriname where it is an important staple food crop. In addition to examining the genetic variability a key purpose was to observe various agronomic practices traditional and improved that are used with identifying opportunities for improving productivity of the crop without greater damage on the environment.

Methodology

Study method used was rapid rural appraisal with and without interactions and discussions with the farmers. This method was used to in order to maximize available resources for this survey. Figure 1 indicates the study area that included the districts of Paramaribo, Wanica, Commewijne, and Brokopondo with 13 sites in the coast, 10 sites in intermediate zone, and 5 sites in the inland. Both farmer-researcher interactions (Figs. 2 and 3) as well as rapid appraisals using a check list method were used as appropriate. Cassava varieties were identified using a minimum set of morphological indicators (Ekanayake, 1992; Fig. 4).

LEGEND

| | |
|-------------------|---|
| ■ | Mudbank |
| ● | Settlement |
| Vegetation | |
| 1 | Mangrove Forest |
| 2 | Beach and littoral woodland |
| 3 | Grass-, fern- and peat swamp |
| 4 | Low swamp forest |
| 5 | High swamp forest |
| 6 | Open to closed palm marsh forest |
| 7 | Marsh forest |
| 8 | Creek forest |
| 9 | Mixed marsh forest and mesophytic high dryland forest |
| 10 | Predominantly mesophytic high dryland forest |
| 11 | Open savanna |
| 12 | Savanna forest |
| 13 | Shifting cultivation |
| 14 | Tree plantation |
| 15 | (Sub-) urban area, cultivated land and abandoned plantation |
| 16 | lagoon |



Fig 1b



Fig. 2



Fig 3



Fig 4

Results and Discussion

Significant variations in agronomic practices used in cassava culture as well as in genetic resources was noted. These included land preparation, and planting methods. Slash and burn on moderate to highly degraded land was predominant in the interior villages requiring sustainable environmental management (see Fig. 5 on natural biodiversity of the area). The germplasm used widely for cultivation that included both sweet and bitter type as identified by the farmers and their households was however more limited than expected. Displacement of communities and people were recognized as additional factors for the narrow cultivated germplasm availability among farming households. Relatively poor quality of planting materials used may contribute to rapid loss of some of the genotypes susceptible to pest and diseases. It was also observed that relatively limited and poor extension services gave rise to limited knowledge of a majority of farmers about improved technologies on cassava. Some farmers grew cassava for their village informal market system as well as for urban markets. A range of cassava based food preparations are done with bitter cassava bread used predominantly as a base (Fig. 6). Site-specific knowledge in the use of cassava genotypes and their culture methods by the indigenous people as well as the nurture of cassava germplasm is a serious task requiring the efforts of various entities involved in the agriculture sector. The variations noted in this study and points of concern as discussed above warrants a more detailed study of agro-biodiversity of cassava.



Fig 5.



fig. 6

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