Study on Present Status of Local Root and Tuber Crops Grown in Uva Region

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Introduction

Local root and tuber crops are important and popular food crops which can be used as the main meal as well as side dish in Sri Lanka. They are vegetatively propagated, produce underground food, and are bulky perishables. The major and the popular local root and tuber crops are yams (*Dioscorea species*), cassava (*Manihotesculenta*), sweet potato (*Ipomoea batatas*), and edible aroids (*Colocasiaesculenta* and *Xanthosomaspp*). Also they are high in carbohydrates, medicinal value and adaptability for the different climates. At least one or more varieties of local root and tuber crops are available in any given period of the year and farmers can easily cultivate these crops due to its easy management, minimum pest and disease attacks, less input, less attention as well as ability to cultivate in marginal lands (Department of Agriculture, 2006).Therefore local root and tuber crops are certainly an alternative for food security of country. Today, local root and tuber crops consumption and cultivation however have been ignored and these crops are facing a threat of extinction in Sri Lanka. Therefore present study was conducted to study the present status of local root and tuber crops grown in Uva region and to collect different types of local root and tuber crops available in Uva region.

Methodology

The study was carried out in the Uva region. Survey was conducted to study on present status of local root and tuber crops grown in Uva region. The data were collected from 250 farm familieswho engage in home gardening and organic agriculture at Dehigolla, Arawatta, Madaoya, Meegahakiwula, Sirimalgoda, Passara, Badalkumbura, Therela, Obbegoda, Weheraya, Handapanagala, Uvaparanagama and Morayaya areas representing the Uva region. The survey was based on interview method and field observations using a structured questionnaire from June to July, 2012. The questionnaire was focused on the information on local root and tuber crops, whether the farmers cultivate local root and tuber crops, types and amount, cultivated purpose, constraints for the cultivation ,reasons to not to cultivate, knowledge of the community about the bio diversity conservation and on- farm germplasm conservation. Geographic Information System was applied to identify the distribution of local root and tuber crops in Uva region by using Arc view software. Different samples of yams and local tuber crops were collected for the *ex-situ* Germplasm Conservation with in the university.

Results and Discussion

Farmers' response towards the cultivation of local root and tuber crops were analyzed and illustrated in table1. Cultivation of local root and tuber crops are highly significant at 0.05.All the farmers in Uvaparanagama,Weherayaya,Sirimalgoda,Morayaya,Madaoya and Meegahakiwula areas are cultivating local root and tuber crops. Ninety one percent of the farmers in Arawatta, 88 % in Badalkumbura, 80 % in both Obbegoda and Therela, 79 % in Dehigolla, 68% in Passara and 67% in Handapanagala are cultivating local root and tuber crops. When it considers that in Uva region 91% of the farmers who engage especiallyin organic agriculture are cultivating local root and tuber crops.

The present study was able to find thirty two species of local root and tuber crops in Uva region and they were Manioc, sweet potato,*Angili-ala, Raja-ala, Kahata-ala, Hingurala, Kiri-ala, Wal-ala, Katuala, Udala, Hirithala, Jawala, kukulala, Kodol, Maw ala, Gahala, Habarala, Dheseala, Kokisala, Kaluhabarala, Welalakola, Buthsarana, Artichoke, Arrowroot, Kidaran, Kiriala, Innala, Sewelala, Dandila, Dehiala and Hondala* which indicates the present species richness and the reduction of number of species recorded earlier which was more than 45different types of local root and tuber crops (Badulla Women Development Centre, 2004).

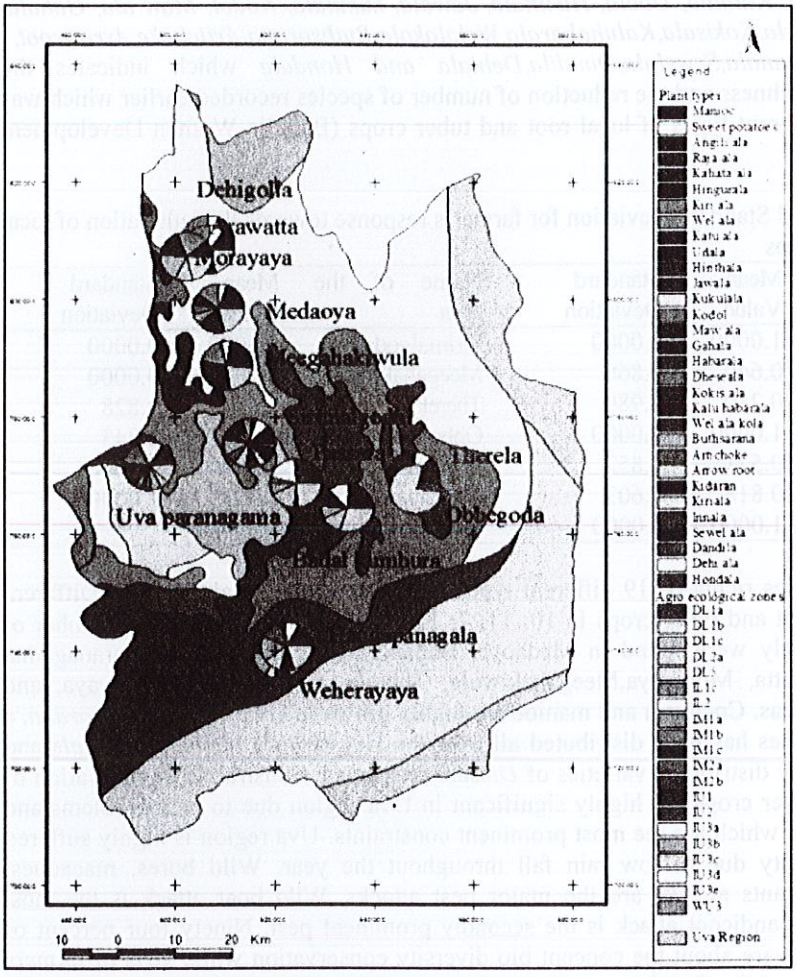
Table 1: Mean and Standard Deviation for farmer's response towards the cultivation of local root and tuber crops

Name of the area	Mean Value	Standard Deviation	Name of the area	Mean Value	Standard Deviation
Madaoya	1.0000	0.0000	Sirimalgoda	1.0000	0.0000
Badalkumbura	0.640	0.860	Meegahakiwula	1.0000	0.0000
Passara	0.280	0.980	Therela	0.600	0.828
Uvaparanagama	1.0000	0.0000	Obbegoda	0.600	0.843
Dehigolla	0.571	0.852	Weherayaya	1.0000	0.0000
Arawatta	0.818	0.603	Handapanagala	0.3333	1.0000
Morayaya	1.0000	0.0000			

The highest species richness, 19 different types were found in Sirmalgoda area.Different types of local root and tuber crops in 10, 11, 7, 12, 10, 9, 12, 11, 9, 7, 10, 8 number of species respectively were found in Madaoya, Badalkumbura, Passara, Uvaparanagama, Dehigolla, Arawatta, Morayaya,Meegahakiwula, Therela, Obbegoda, Weherayaya, and Handapanagalaareas. Cocoyam and manioc are highly grown in Uva region. *Buthsarana*, a *Cannanceae* species has been distributed all over the Uva region. *Welala,Kahataal*a and *Katuala* are highly distributed varieties of *Dioscorea* species. Constraints in cultivation of local root and tuber crops are highly significant in Uva region due to pest problems and climatic problems which are the most prominent constraints. Uva region is highly suffered from water scarcity due to low rain fall throughout the year. Wild bores, macaques, bandicoots, elephants attacks are the major pest attacks. Wild boar attack is the most prominent while bandicoot attack is the secondly prominent pest. Ninety four percent of farmers are not aware about the concept bio diversity conservation while 96% of farmers are not aware about the On- farm germplasm conservation. However there are thirty two species conserved on-farm among the farmers and contributed on-farm germplasm conservation without their knowledge on theory on the germplasm conservation.

According to the analysis of the map of distribution of local root and tuber crops with the agro ecological zones (Map1), Morayaya, Madaoya, Arawatta and Dehigolla areas belong to the Intermediate Low country 2 zone. Rainfall is high on January and December and not expected from May to July period. Farmers in Madaoya, Arawatta and Dehigolla cultivate Manioc, Cocoyam and *Kidaran* in at higher amounts .*Katuala* and *Welala* also can see in these areas. Species diversity of these areas is low comparing to Morayaya because Yoda ela canal system in which provides adequate water. The highest species diversity in *Dioscorea, Alocasia* and *Colacasia* species are found in Sirimalgoda (Intermediate Mid country 1a zone)and next Uvaparanagama (Intermediate Upcountry 3e zone).The highest elevation also recorded in Sirimalgoda (1004m) and Uvaparanagama (1044m).Species diversity of yam and other local root and tuber crops has been increased with elevation. The elevation is a favorable condition for the growth of the local root and tuber crops

(Department of Agriculture, 2006).Therefore, Sirimalgoda and Uvaparanagama areas are more favorable for cultivation.



Map 1: Relation of distribution of local root and tuber crops with agro ecological zones

Therela and Obbegoda flat areas with several types of soils and low rainfall expectancy belong to the Intermediate Low country 1c zone. Cultivation of Manioc and the Cocoyam is higher than the cultivation of other types. Most of the people have ignored to protect the species diversity in their farms and pay more attention on the crops which can be grown in low water conditions. Manioc and Cocoyam are grown well in almost all agro ecological zones in Uva region. Arrow root and Artichoke like species can be observed in the areas with higher elevations, higher rain fall, and well drainage. No special relationship was found with the soil types and the distribution of the local root and tuber crops. Twenty eight different types of yams and other root and tuber crops were conserved ex-*situ* in Uva Wellassa University.

Conclusion

Many types of local root and tuber crops are grown in Uva region. Majority of the farmers who are engaging organic agricultural home gardening are cultivating local root and tuber crops in Uva region. Cultivation of yam and other local root and tuber crops have been ignored mainly due to pest problem and the climatic problems. Lack of planting materials, lack of market place, long time duration for the harvesting, low land availability are the major constraints in cultivation of local root and tuber crops. Wild bores and the bandicoots are the most prominent pests for the cultivation of local root and tuber crops. Ignorance of cultivation and unfavorable climatic conditions cause the reduction of the species diversity of local root and tuber crops in Uva region. Thirty different types of local root and tuber crops were conserved in *Ex-situ* in Uva Wellassa University.

References

Department of Agriculture Sri Lanka, 2006.*Dioscoreaspp* [Online] (Updated 2006) Available at: http://www.agridept.gov.lk [Accessed on July 2012]

Badulla Women Development Foundation, 2005.*Uvedeshiyaala.*South Asian Network on Food, Ecology and Culture