



International Conference of Sabaragamuwa University of Sri Lanka 2015 (ICSUSL 2015)

Role of underutilized crop value chains in rural food and income security in Sri Lanka

Arosh Bandula¹, Champika Jayaweera¹, Achini De Silva^{2*}, Patrick Oreiley¹,

Asha Karunarathne², S.H.P. Malkanthi

¹*Crops for the Future Research Centre, University of Nottingham Malaysia Campus, Malaysia;*

²*Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka, P.O.Box 02, Belihuloya, Sri Lanka.*

Abstract

Agricultural value chain is fundamental to the survival of human society, the growth or maintenance of regional and national economies, and the wealth and welfare of individual producers. Few staple food crops holding the lion's loin of food and income security of the rural farming communities where the role of unrecognized and underutilized crops was invisible. Previous researches and many past applications were focused on individual elements of the value chain rather than the holistic view. Complex interacting drivers in production, processing, marketing, consumption, environment and the people were neglected and this limitation hinders the recognition of underutilized crops. Our paper takes a critical stock take of underutilized crop value chains in Sri Lanka and focused to identify its role in rural food and income security with special concern to the availability of those crops at respective village markets and at their own household premises. Study aimed to map the underutilized crop value chain and describe its upstream and downstream nodes, agents, functions, and products. For the purpose of this study, mixed methods approach was employed which focuses on research questions that call for real-life contextual understandings on value chain agents, multi-level perspectives, both vertical and horizontal linkages and cultural interpretations. We employed qualitative research exploring the meaning and understanding of constructs; utilizing multiple methods (rapid market chain analysis). Value chain architecture explains the structure, agents, and strength of the relationships. Downstream composed of two main nodes, farmers, wild collectors and traders or village level collectors link with the upstream. Primary processors, secondary processors, wholesalers, retailers, and consumers were the key upstream agents. Chain structure heavily depends on the type of crop. Downstream activities depends on location, water availability, season and market demand which decides the crop mix. Informal collecting centres were common and village level collectors link farmers and wild collectors with upstream. Upstream activities were more concern on value addition and creation and the agents were multifunctional. Food basket analysis highlighted that underutilized crops were more attracted to urban consumers than the rural. Meal analysis revealed that considerable amount of

* Corresponding author. Tel.: +94-45-2280073; fax: +94-45-2280041
E-mail address: desilva.achini@yahoo.co.uk

underutilized crops consumed at household level were own production or wild collection. Complex and indirect income generation process was unrecognized yet.

© 2016 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of International Conference of Sabaragamuwa University of Sri Lanka 2015 (ICSUSL 2015).

Keywords: underutilized crops, rural households, food security, food safety

1. Introduction:

Country's food supplies heavily depend on few cereal crops, centered with rice, pulses, veggies and fruits. Less diversified meals and few dominant crops were linked to risks of health, uncertainty, climate vulnerability, and socio economic issues. Sri Lanka being a global hot spot of biodiversity claimed for huge variety of flora and fauna which enrich the lives of its inhabitants. Economically unrecognized large variety of crops contributed lot for daily meals as well as wallets of throughout the generations. Some of the crops which were unrecognized in scientific literature or unidentified in economics terms were the key consideration of our study. But these species were recognized by the local people throughout the centuries by means of food, nutrition, health, medicinal, cosmetic and economic values. The term, underutilized crop is commonly used to refer to crop species whose potential has not been fully utilized¹. Rural small holder farmers have been cultivating and using those crops for a long time. However rural small holder farming sector is represented by scattered farming units and distinguished by having smaller size of arable lands by their own to engage in agriculture. Effects of globalization and emerging market economic context have motivated farmers to cultivate few selected commercial crops by targeting urban, regional and international markets². State patronage on those commercial crops has further aggravated this commercial oriented crop cultivation. This nature of development has kept farmers away by cultivating underutilized crops which are having high potential to address food and nutritional security in rural households while generation household income. Individual components of underutilized crop value chains grab the research attention and increasing trend of research showing the attractiveness of the sector. This study focuses more on holistic chain wide approach to recognize the underutilized crops in Sri Lanka. Key concerns of the study were identifying the value chain architecture and its contribution on rural food and income security.

2. Methodology

Uva and eastern provinces being the historically important farming regions and the farmers with generation's old knowledge supports to maintain considerable amount of backyard production of underutilized crops. Two districts of Uva and three districts of eastern province were considered for the study and mixed methods approach was employed to collect the data. Mixed methods facilitate to focus on research questions that call for real value chain contextual understandings, multi-level perspectives and market interpretations. Field observations, in-depth interviews with key informants³, food basket analysis supports to conduct rapid value chain analysis which allow us to map the underutilized crop value chain. Our concerns eyed to identify the availability of crops at respective village markets and at their own household premises and how it contributes to daily meals as well as household income generation. The tools allow a rapid assessment of a specific markets, indoor to determine the nature and behavior of the upstream and downstream agents, qualitatively assess the market opportunities, gain an overview of supply and demand, competitiveness in the market place, product attributes, determine uses, preferences, and expectations for specific products, and define market strategies employed. Initial brainstorming session supported to define potential sources of information and recognize key agents for the interviews. Operationalization process involved with visiting the team of researchers to the selected locations where the product is growing, collecting, trading, and selling which has supported to investigate the products, prices, places, and promotions. Individual in-depth interviews were conducted with selected value chain representatives, farmers, wild collectors of fruits and vegetables, traders, whole sellers as well as the consumers in village markets, urban markets, and super markets.

Selection of customers for the food basket analysis was done randomly. However emphasize was given to maintain a good gender balance among selected customers. Customers were selected from weekly village fair to assure the customers from own communities. The collected information was organized as inventories of underutilized crops in both their purchasing list and consumption menu. The inventory was separately analyzed to recognized main crop categories having highest purchasing demand and consumption demand.

3. Results and Discussions

Structure of the underutilized crop value chains were composed of few nodes but several vertical and horizontal links representing many agents. Valuechains were varied on type of the crop. Downstream agents, farmers and wild collectors showed distinguished marketing characteristics. Crops cultivated and collected wild for marketing purposes directed to village collecting centers, road side retail stores of own or private. Naturally or wild grown crops with limited supplies were mainly used for home consumption. Commercial cultivation were used for own consumption and part of harvest shared with social networks; neighbors, relatives and friends. Further, farmers used four main marketing strategies road side stalls (seasonal), informal village collection centres, weakly fair at suburb town and traditional village fair to sell their products which include considerable quantity of underutilized crops. The four strategies were differing to each other in terms of size of the entity, available time, quantity and types of products available and target customer groups. The roadside stalls target urban travelers with the ego of consuming village food. Wild collectors only functioning seasonally and eyeing to collect demanded wild grown fruits and vegetables. Ownership of resources were unclear and first come first serve basis was practicing and informal negotiations were facilitating the sharing the wild harvest. Composition of the crops in downstream end was 60% vegetables, 30% cereals and pulses and 10% fruits. About 70% comes to the market as raw materials and rest is value added types of primary processing. Two types of collecting centers were found. Formal collecting centers with the involvement of local government authorities where auctions, pricing mechanism and taxes were applied. Informal collecting centers were governed by the established, resource rich traders and auctions were managed by themselves with own pricing mechanism. Own transport facilities and credit to farmers and collectors attracted many buyers and sellers to those informal centers.

Weekly fair at village level and urban setting provides diverse range of products to the customers. Rural farmers visit village fair to purchase daily necessities but unavailable in their locale or backyard. Key targets were onions, potatoes, tomatoes, green chilies and up country vegetables that unavailable in their locale. On the other hand, urban consumers were paid more attention on underutilized crops and their food shopping has more concerns on underutilized species. Village fair was the key marketing place which facilitates to exchange back yard production and generate income to the rural households and wild collectors. The product categories were mainly vegetables, fruits, cereals and pulses. The weekly shopping basket of the urban consumers composed of 12-15 items of underutilized crops. Urban customers were more concern on underutilized crops for its medicinal properties, health benefits, nutritional advantages and authenticity. Seasonality of many wild collected fruits and vegetables attract many urban consumers to the market places. Daily meals of rural households were rich in many crops available in back yard without spending money to purchase and unidentified support of savings. The meal composition supports them to assure food as well as the income security of the household. This practice helps farmers to address their day today financial shortfalls.

4. Conclusions

It can be concluded that underutilized crops are in a reasonable position to capitalize as a source of addressing rural food and income security. However number of aspects need to be developed in terms of further strengthening the sustainability of effective utilization of underutilized crops among rural communities in Sri Lanka. UC value chains were short and composed of downstream agents; farmers and collectors and the upstream agents, traders, primary processors, wholesalers and retailers and consumers. Opening and ending nodes were less complex compared to the middle. Middle of the value nodes were complex and composed of several vertical and horizontal linkages.

5. References

1. Engels J, Rao R, Brown AHD. *Managing Plant Genetic Diversity* 2001; CABI Publishing.
2. Ebert A. Potential of Underutilized Traditional Vegetables and Legume Crops to Contribute to Food and Nutritional Security, Income and More Sustainable Production Systems. *Sustainability* 2014; 6(1), 319–335. doi:10.3390/su6010319