Know-how boosts cottage industries in tropical fruit

RIU

Validated RNRRS Output.

Some successful small entrepreneurs in Sri Lanka have doubled their incomes by processing and marketing tropical fruits. Previously, they just didn't have the know-how. Now, villagers in Bangladesh, India, Nepal, Vietnam and Sri Lanka use posters and fact sheets in local languages to learn how to preserve, pack and market fruits. Asia, Africa and Latin America are home to many edible tree fruits. But, they're mostly eaten straight off the tree or sold in the markets nearby, especially the less common varieties. This is changing as people learn to juice, dry, preserve and pickle fruit to add value and prolong shelf life. Learning how the market economy works and how and where to sell their products also helps.

Project Ref: **FRP44:**
Topic: **1. Improving Farmers Livelihoods: Better Crops, Systems & Pest Management**
Lead Organisation: **ICUC, Sri Lanka**
Source: **Forestry Research Programme**

Document Contents:

Description

FRP 44

Research into Use
NR International
Park House
Bradbourne Lane
Aylesford
Kent
ME20 6SN
UK

Geographical regions included:

Bangladesh, India, Nepal, Sri Lanka, Vietnam,

Target Audiences for this content:

Livestock farmers, Forest-dependent poor, Processors,

A. Description of the research output(s)

1. Working title of output or cluster of outputs.
In addition, you are free to suggest a shorter more imaginative working title/acronym of 20 words or less.

"Promoting selected tropical fruit trees through dissemination of information" and
"Improved livelihoods through the development of small-scale fruit processing enterprises in Asia"

Suggested short title for cluster: Underutilised crops processing and marketing for the benefit of the poor

2. Name of relevant RNRRS Programme(s) commissioning supporting research and also indicate other funding sources, if applicable.

FRP (described here; CPHP activities are relevant too)

3. Provide relevant R numbers (and/or programme development/dissemination reference numbers covering supporting research) along with the institutional partners (with individual contact persons (if appropriate)) involved in the project activities. As with the question above, this is primarily to allow for the legacy of the RNRRS to be acknowledged during the RIUP activities.

R7187, R8399
formerly: International Centre for Underutilised Crops (ICUC), University of Southampton, UK (Nazmul Haq)
now: International Centre for Underutilised Crops (ICUC), Sri Lanka (Hannah Jaenicke – h.jaenicke@cgiar.org)

*4. Describe the RNRRS output or cluster of outputs being proposed and when was it produced? **(max. 400 words)**. This requires a clear and concise description of the output(s) and the problem the output(s) aimed to address. Please incorporate and highlight (in bold) key words that would/could be used to select your output when held in a database.*

Underutilised tropical tree species are an important part of livelihoods for small-holders. They can provide food which supplements and improves the quality of diets, fodder and medicines, and income for school fees and other household expenditure by selling the produce of fruit trees. Lack of information and technology transfer were identified by partners as major constraints for development and promotion of tropical fruit trees. **Monographs and extension manuals**, covering a range of ten important Asian, African and Latin American species, assist NARS, policy makers, extension officers and interested NGOs in undertaking strategic and adaptive research which is needed to promote the use of tropical fruit trees. The publications are also extremely useful for **teaching and capacity building**. (R7187, 1998 - 2006)

In addition to lacking the kind of information provided in the project above, the utilization of fruit trees in Asia is inefficient partly due to a lack of information on appropriate technology for the **processing** of fruits and on the local and regional markets and marketing. The project has identified market opportunities and market linkages, transferred improved technology for product development and assisted stakeholders in **marketing** and in the **development of market strategies**. Beneficiaries can improve their livelihoods by entering a market economy

through new **value chains**. (R8399, 2004-2006)

5. What is the type of output(s) being described here?
Please tick one or more of the following options.

Product	***Technology***	***Service***	***Process or Methodology***	***Policy***	***Other Please specify***
	x		*x*		

6. What is the main commodity (ies) upon which the output(s) focussed? Could this output be applied to other commodities, if so, please comment

Tropical underutilised fruits were the focus of the research, but it can be easily transferred to other products, such as underutilised vegetables, medicinal plants etc.

7. What production system(s) does/could the output(s) focus upon?
Please tick one or more of the following options. Leave blank if not applicable

Semi-Arid	***High potential***	***Hillsides***	***Forest-Agriculture***	***Peri-urban***	***Land water***	***Tropical moist forest***	***Cross-cutting***
							X

8. What farming system(s) does the output(s) focus upon?
Please tick one or more of the following options (see Annex B for definitions).
Leave blank if not applicable

Smallholder rainfed humid	***Irrigated***	***Wetland rice based***	***Smallholder rainfed highland***	***Smallholder rainfed dry/cold***	***Dualistic***	***Coastal artisanal fishing***
x	*x*	*x*	*x*	*x*	*x*	

*9. How could value be added to the output or additional constraints faced by poor people addressed by clustering this output with research outputs from other sources (RNRRS and non RNRRS)? (**max. 300 words**).*

Please specify what other outputs your output(s) could be clustered. At this point you should make reference to the circulated list of RNRRS outputs for which proformas are currently being prepared.

ICUC and its partners provided training and information materials to ca 2,500 small entrepreneurs during 2004/5 to facilitate the setting up of new enterprises that process underutilized fruits. At the same time, ICUC built up the capacity of its local partner organizations to conduct underutilized fruit processing training and to transfer the necessary production and marketing information to the potential entrepreneurs. Yet, experience from Sri Lanka – and to a certain extent also from India (so far no assessment has taken place in the other countries) – shows that the business start-up rate and the sustainability of the trainees at less than 5% is not satisfactory. The low

success rate may be due to a combination of social, economical and technological factors. A feedback workshop held in February 2006 for Sri Lankan trainees revealed that although technical processing training was sufficient, most business initiatives did not survive due to lack of access to credit facilities, lack of access to market information and markets, lack of previous experiences in running businesses, lack of business management skills and unavailability of tailor-made solutions to the issues of the limited resource business initiatives. Thus, to increase the business start-up rate of the trainees and sustainability of the small-scale processing initiatives, further support needs to be provided by conducting business start-up training, providing loans through an appropriate mechanism (for example revolving fund), facilitating market and other credit linkages and allowing the successful business operators to share the experiences with less successful entrepreneurs.

To make the outputs more useful, stronger links to marketing and commercialisation projects would be useful, in particular FRP R7925 "Successful NTFP commercialisation" (and other projects in FRP clusters 5.1 and 5.2) and the CPHP clusters on market access, credit systems and processing.

Validation

B. Validation of the research output(s)

*10. **How** were the output(s) validated and **who** validated them?*

*Please provide brief description of method(s) used and consider application, replication, adaptation and/or adoption in the context of any partner organisation and user groups involved. In addressing the "who" component detail which group(s) did the validation e.g. end users, intermediary organisation, government department, aid organisation, private company etc... This section should also be used to detail, if applicable, to which social group, gender, income category the validation was applied and any increases in productivity observed during validation **(max. 500 words)**.*

This research has only recently been completed. For the promotion of underutilised species through the provision of manuals and monographs, lists of recipients and feedback letters from some partner organisations exist. The products are used in day-to-day research, university training and capacity building.

The processing and marketing research that was carried out in 5 Asian countries is currently being assessed, with initial information being available from Sri Lanka, and a study ongoing in India. Further reports will follow. Feedback in Sri Lanka has been obtained from the beneficiaries themselves through beneficiary workshops, and ongoing market studies are assessing the appearance of new products in shop windows.

We found that successful cottage entrepreneurs were able to increase their household income significantly, up to doubling it, and to now employing up to 10 family and paid staff, thus providing significant trickle-down effects.

*11. **Where and when** have the output(s) been validated?*

*Please indicate the places(s) and country(ies), any particular social group targeted and also indicate in which production system and farming system, using the options provided in questions 7 and 8 respectively, above **(max***

300 words).

Sri Lanka (February 2006): small-scale processors, peri-urban systems.
Ongoing activities in other countries.

Current Situation

C. Current situation

12. ***How and by whom*** *are the outputs currently being used? Please give a brief description* ***(max. 250 words****).*

Manuals and monographs are used by university teachers, NARS researchers, ARI researchers and NGOs and extension professionals. We have received feedback of the usefulness of the products in teaching, training and research activities and can measure their success in repeated requests for translation of some volumes into local languages.

Processing manuals and training materials are being used mainly by NGOs and small-scale processors. Manuals were produced in eight local languages and are accompanied with posters in local languages that are put up in the resource centres and small-enterprise kitchens as a ready reminder of the technology.

13. ***Where*** *are the outputs currently being used? As with Question 11 please indicate place(s) and countries where the outputs are being used* ***(max. 250 words).***

Monographs and manuals have been distributed to recipients world-wide, with a focus in each case on the regions of relevance for the particular species. Books cover species from Latin America, Southern Africa, West Africa, Africa in general, South Asia, and Asia in general, as well as several pan-tropical species.

Processing materials and accompanying information products in local languages are used in the five target countries of that research: Bangladesh, India, Nepal, Vietnam and Sri Lanka. However, requests for these materials in English have come from a variety of other countries in Asia, Africa and Latin America.

14. What is the scale of current use? Indicating how quickly use was established and whether usage is still spreading ***(max 250 words).***

Each publication (monograph, manuals, posters etc.) was printed in a print run of 500 – 1,500 copies. The bulk was dispatched immediately after publications, with requests still coming in several years after initial publication. Follow-up activities to support research and development of processing technologies has been requested by partner organisations in Asia, who in turn have been approached by primary stakeholders. Technical processing manuals in English and several of the posters are now out of print.

15. In your experience what programmes, platforms, policy, institutional structures exist that have assisted with the

promotion and/or adoption of the output(s) proposed here and in terms of capacity strengthening what do you see as the key facts of success? ***(max 350 words).***

Good links with partner organisations region-wide is essential to the promotion of information about underutilised species. ICUC has been instrumental (outside of RNRRS-funded activities) in the initiation of several regional networks in Asia and Africa for the promotion of underutilised fruits and vegetables. These networks have been essential in promotion and adoption of the information. All of ICUC's activities are carried out in close relationship with national partner organisations both within the public sector and private sector. Especially for the processing and marketing activities, several NGO and private sector partners have proved essential in the further uptake of activities beyond the RNRRS-funded project period.

Current Promotion

D. Current promotion/uptake pathways

16. ***Where*** *is promotion currently taking place? Please indicate for each country specified detail what promotion is taking place, by whom and indicate the scale of current promotion* ***(max 200 words).***

ICUC is a global institution, thus promotion of underutilised species using the outputs of RNRRS-funded research are promoted globally using websites, personal interactions, etc. Although country- and species-specific activities have been carried out in particular with respect to the processing and marketing of underutilised species, the information gained from these activities are now taken up in other countries.

For the processing and marketing information, partners in each country are continuing the promotion, to varying degrees of intensity. In some countries (esp. Sri Lanka and India), resource centre activities are ongoing beyond RNRRS funding with own support, in others, this is rather more passive. Responsible partner organisations are:
Sri Lanka: SEEDS and Practical Action (REN)
India: BAIF Research Development Foundation
Vietnam: RIFAV
Nepal: AEC and NARC
Bangladesh: BARI

17. What are the current barriers preventing or slowing the adoption of the output(s)? Cover here institutional issues, those relating to policy, marketing, infrastructure, social exclusion etc. ***(max 200 words)****.*

The promotion of underutilised species is a large task that cannot be completed with the development and publication of species-specific information, however important this may be on the path to greater recognition and use of such species. Recently, a Strategic Framework for underutilised species[1] has been published, which spells out some of the barriers to greater uptake of existing information, the gaps in our current knowledge. These are depicted in the Figure below, and can be summarized as: inappropriate policies, lack of public awareness, lack of knowledge (both records of traditional knowledge and new (research) knowledge), lack of capacity and

lack of appropriate markets.

Whilst some small-scale activities may be of great support on a local scale, in order to scale up the promotion efforts that ICUC started through RNRRS (and other) projects, further much larger efforts at policy and institutional scale are necessary.

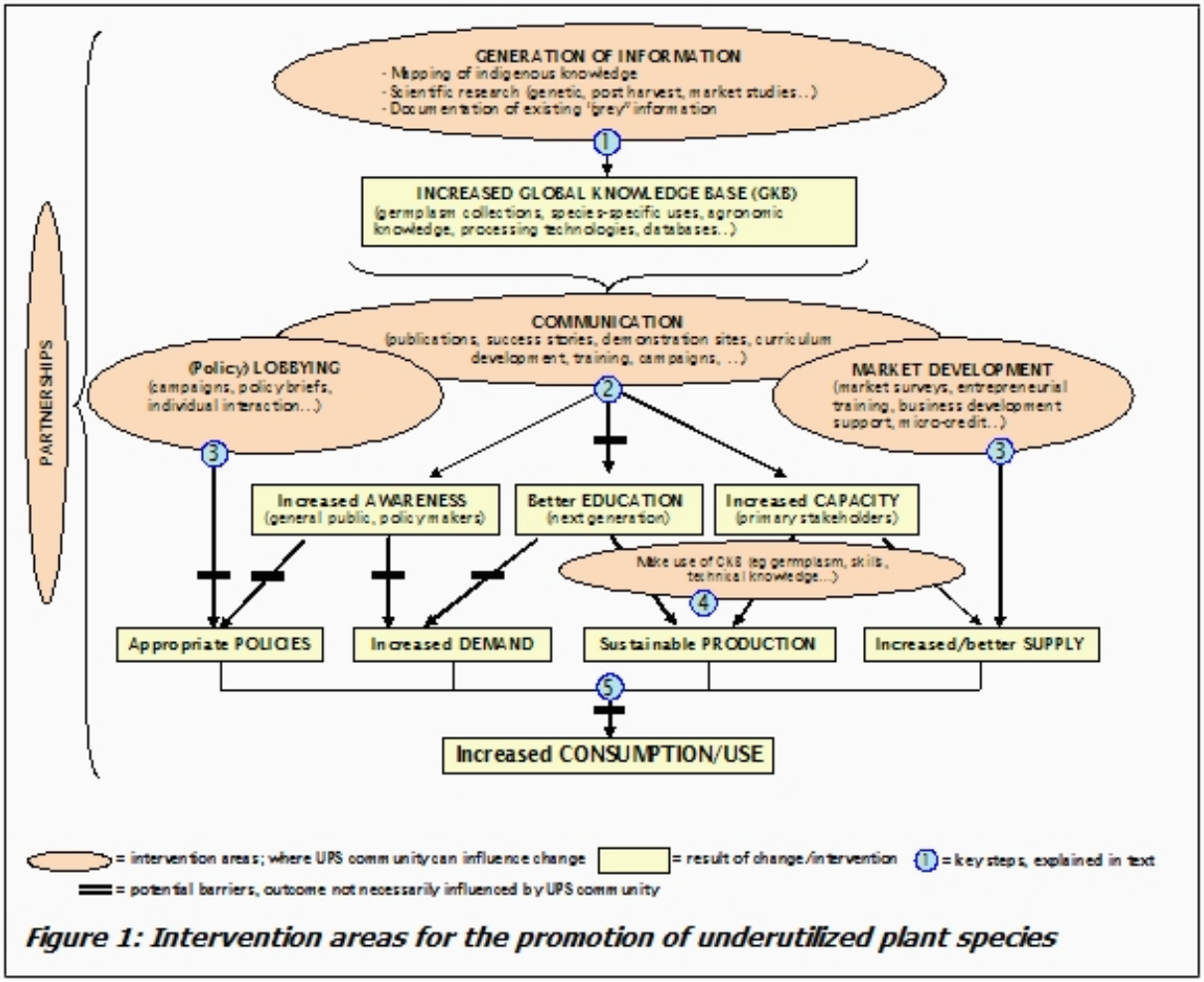

Figure 1: Intervention areas for the promotion of underutilized plant species

18. What changes are needed to remove/reduce these barriers to adoption? This section could be used to identify perceived capacity related issues ***(max 200 words).***

Following from our activities in the past years, we think that there are several ways of removing or reducing barriers to greater benefit from underutilised crops: firstly, increased awareness is a paramount necessity. Whilst ICUC has been good at preparing written materials, much larger campaigns, demonstrations, education as a joint effort with a large community of complementary partners is necessary. At the same time, technical barriers exist for small-scale producers, some of which have been described above. In order to ensure sustainable establishment of new, or strengthening of existing cottage industry, tailor-made micro-credits and business

development services (BDS) need to be provided.

19. What lessons have you learnt about the best ways to get the outputs used by the largest number of poor people? ***(max 300 words).***

Especially when working for a niche market/commodities, collaboration with complementary partners is necessary. So also for the activities around processing and marketing of underutilised crops, for which partnerships with international, national, public and private sector partners are necessary. Some of these partnerships are already strongly developed within ICUC's networks. Others, especially public-private partnerships, need to be strengthened. For the work on better processing and marketing of underutilised plant products, links to industry needs to be formed, as well as to business incubators in the target countries. South-South exchange would benefit greatly the national research systems and members of sub-regional organisations, the business development service providers, and also directly small-scale entrepreneurs.

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[1] Jaenicke H., and Höschle-Zeledon I. (Eds.). 2006. Strategic framework for research and development of underutilised plant species with special reference to Asia, the Pacific and Sub-Saharan Africa. International Centre for Underutilised Crops, Colombo, Sri Lanka and Global Facilitation Unit for Underutilized Species, Rome, Italy. 33 pp.

Impacts On Poverty

E. Impacts on poverty to date

20. Where have impact studies on poverty in relation to this output or cluster of outputs taken place? This should include any formal poverty impact studies (and it is appreciated that these will not be commonplace) and any less formal studies including any poverty mapping-type or monitoring work which allow for some analysis on impact on poverty to be made. Details of any cost-benefit analyses may also be detailed at this point. Please list studies here.

Impact studies on the benefit of cottage industry to reduce poverty are available, however, no specific impact assessment has been carried out for the projects described here (R7187 and R8399). Preliminary data from Sri Lanka suggests that no more than 5% of trainees (over 2,500 persons were trained in fruit processing) are now successful to the point of complementing household income by an additional USD500 a month through fruit processing activities (Abeyrathne & Jaenicke, pers. comm.[1]).

21. Based on the evidence in the studies listed above, for each country detail how the poor have benefited from the application and/or adoption of the output(s) ***(max. 500 words):***

- *What positive impacts on livelihoods have been recorded and over what time period have these impacts been observed? These impacts should be recorded against the capital assets (human, social, natural, physical and, financial) of the livelihoods framework;*
- *For whom i.e. which type of person (gender, poverty group (see glossary for definitions) has there been a*

positive impact;

- *Indicate the number of people who have realised a positive impact on their livelihood;*
- *Using whatever appropriate indicator was used detail what was the average percentage increase recorded*

Data to date is incomplete.

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[1]

Abeyrathne, A.H.M.S.W.B. & Jaenicke, Hannah. The profitability of small-scale processing enterprises for underutilised tropical fruits – a case study in Kandy and Kurunegala districts in Sri Lanka. Submitted to Urban Agriculture.

Environmental Impact

H. Environmental impact

24. What are the direct and indirect environmental benefits related to the output(s) and their outcome(s)? ***(max 300 words)***

This could include direct benefits from the application of the technology or policy action with local governments or multinational agencies to create environmentally sound policies or programmes. Any supporting and appropriate evidence can be provided in the form of an annex.

Following the “use it or loose it” axiom, the processing and marketing of underutilised crops will benefit the protection of endangered genetic diversity. It can also lead to increased production of species for which so far only a limited market was available.

25. Are there any adverse environmental impacts related to the output(s) and their outcome(s)? ***(max 100 words)***

Of course, over-harvesting and destruction of species is a real worry if new processing and marketing methods are propagated and new markets open up. We counteract these by encouraging sustainable harvesting methodologies. We are aware that more needs to be done in this direction.

26. Do the outputs increase the capacity of poor people to cope with the effects of climate change, reduce the risks of natural disasters and increase their resilience? ***(max 200 words)***

Underutilised crops are often traditional species, that are adapted to harsh conditions. They have often become neglected when higher-yielding species and varieties have been improved. However, underutilised crops are often the remaining crops left during hungry periods. ICUC propagates several underutilised species for increased resilience to natural or man-made disasters (drought, flood, civil strife etc.). Many underutilised crops can withstand prolonged drought periods, tolerate saline soils and flooding, and thus have great potential in times of climate change, changed cropping cycles, degraded soils and changed plant species suitability for certain

areas.