A new system helps smallholders keep pace with world markets

RIU

Validated RNRRS Output.

Rapid urbanisation and globalisation have opened up a world of opportunities for smallholder farmers who supply fresh produce. Yet big supermarket chains have high food-safety, quality and agricultural-practice standards, which present both technical and financial challenges. Partners in Uganda, Zambia, Zimbabwe and the UK have come up with a cost-effective and sustainable management and control system that allows fruit and vegetable smallholders to meet the stringent requirements of high-value EU retail markets. Either a farmers' organisation or an exporter acts as the primary marketing organisation, ensuring that all growers involved are complying with the requirements. In the process, farmers and cooperative organisations strengthen their ability to negotiate with buyers, suppliers, banks and service providers. Although developed for fresh fruits and vegetables, the system could readily be adapted for other crops, livestock or aquaculture.

Project Ref: **CPH20:**
Topic: **5. Rural Development Boosters: Improved Marketing, Processing & Storage**
Lead Organisation: **Natural Resources Institute (NRI), UK**
Source: **Crop Post Harvest Programme**

Document Contents:

Description

Research into Use
NR International
Park House
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UK

Geographical regions included:

Tanzania, UK, Uganda, Zambia,

Target Audiences for this content:

Crop farmers, Processors, Traders,

CPH20

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.

Agriculture to Agri-business: Management systems for high-value horticulture

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

Crop Post Harvest Programme

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.

Please note the Managing Partners should be the first points of contact.

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*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.*

Rapid **urbanisation** and **globalisation** of food supply chains coupled with the rise of national and trans-national **supermarket** chains have created **income opportunities** for **smallholder** farmers to supply **fresh produce** and other products into the retail supply chain. **Supermarket supply chains** are associated with more stable demand and higher prices than other markets. Supermarket supply chains may involve **local or export markets**. However, supermarkets demand compliance with **private standards** for **food safety**, **quality** and **good agricultural practice (GAP)** with **independent third part verification** of **standard compliance** as a condition for market entry. Smallholders making the transition from agriculture to **agribusiness** find it difficult to meet these standards on technical and financial grounds and in many cases the **supporting institutional framework** is unable to provide the necessary level of technical support.

Between 2002 and 2006, a coalition of partners in Zambia, Zimbabwe, Uganda and UK developed and implemented a cost-effective and sustainable **management and control system** to enable **fruit and vegetable** smallholders to meet the requirements of the **EurepGAP** standard and access **high-value EU retail markets**. The management and control system was developed to enable either a **farmers' organisation** or an **exporter** to become the **primary marketing organisation** (**PMO**) with legal and contractual responsibility for ensuring that all growers involved in the scheme were using the same system and complying with all of the requirements for EurepGAP.

Key features of the system included strengthening farmer / **cooperative** organisation to achieve cost savings and improve efficiency and management capacity to negotiate with buyers, input suppliers, financial institutions and technical service providers. A complete management and control system for all aspects of good agricultural practice, food safety and quality assurance with integrated **quality management** (**QM & QMS**) and **traceability** (**vertical & horizontal traceability** to plot level) systems was developed. A novel **peer group training** system was developed relying on farmer prepared visual training materials and daily reinforcement. Farmer and service provider exchange visits and interactions were introduced with training for the service providers to improve capacity to provide effective **extension advice**, **training**, **farm inspection/auditing** and support for system development.

This system was developed for smallholders needing to meet the requirements of the EurepGAP protocol for fresh fruits and vegetables, but it could readily be adapted for **combinable crops**, **non-food crops**, **livestock** or **aquaculture**. Features could be expanded or reduced to meet the needs of any private or public sector **farm-gate production** standard.

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***		***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

These outputs were developed for small-scale producers of fruits and vegetables.

However, the basic concepts of management and control systems for standard or regulatory compliance have very wide applicability. With minor adaptations these outputs could be directly applied to flowers and ornamentals, beverage crops, cereals and root/tuber crops and non food crops such as cotton. With further modification these outputs can be applied to livestock or aquaculture. This is known as integrated farm and integrated aquaculture assurance.

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	*X*	*X*	*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***			

*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.

The management and control system developed under R8271 & R8431 is a complete entity in its own right that requires no additional material in order to operate. However, crop production sections were designed specifically for growers of baby-corn and various types of peas. Depending on the crop type required it would be advantageous to integrate material from various IPM and ICM projects funded under the Crop Protection Programme. These include IPM promotion through improved training manuals (R8417, R8341), IPM for smallholder cotton in Uganda (R8403, R8197), ICPM for smallholder coffee in Malawi (R8423, R8203), IPM for potato pests in Bolivia (R8443, R8044), Banana IPM (R8342, R7567, R7529, R7972). With the exception of the IPM training manuals (R8417 & R8341) that dealt with vegetable crops in general, the other outputs are all crop specific and thus would only be relevant if the management and control system was being applied to these crops.

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)**.*

EurepGAP is a private standard for good agricultural practice that incorporates a high level of documented validation and independent verification as part of the EurepGAP protocol. Validation takes the form of monthly visits to all farm sites and farm inspections for all farms every 3 months. A full internal audit is required once per year and the system is subject to independent verification by an external auditor on an annual basis. In addition it is recommended that new groups undergo pre-audits by an external auditor prior to the certification audit.

The monthly and quarterly farm inspections were carried out by trained farm inspectors (qualified to ISO-19,011) from NZTT in Zambia (AMA in the case of Uganda). Inspection was carried out using a farm inspection checklist requiring the inspector to review documentary evidence of compliance, interview the farmer and farm workers for understanding of key issues and to make a physical inspection of the farm site and centralised depot facilities. Copies of the checklist with required corrective actions and deadlines for implementation were given to the farmer and follow-up visits were made as part of routine extension advice to assess implementation of corrective actions and discuss issues in more depth with the farmer.

The full internal audit was conducted by a qualified auditor from NZTT who had not been involved in provision of either extension advice or training to the farmer groups. A full EurepGAP checklist was used, but the form was modified to allow for ¼ to ½ a page of comments per control point. Feedback was provided to farmers in the manner detailed above.

Pre-audits were carried out in Zambia in September 2005 by Africert (a Kenyan EurepGAP certifying body) and December 2005 by Dr Alan Legge an independent consultant auditor from the UK. Written and verbal feedback was provided to the farmers as above. In addition an internal assessment (reduced pre-audit) was conducted in Uganda in September 2005 by a team of auditors from NRI and AMA.
External verification and certification were conducted for the Zambian farmer groups by an auditor from the Tanzanian regional office of a Swiss based EurepGAP certifying body known as IMO (Institut fur marktokologie). IMO followed standard EurepGAP procedure of using standard checklists to assess the competence of the farm inspectors, centralised management system of the farmers' organisation to assess a selection of individual farm sites and farm owners.

In addition a detailed cost-benefit analysis of the Zambian adoption of EurepGAP and involvement in export horticulture was made by a techno-economic team from NRI and IIED funded by DFID Policy Division (AG3815) in March-September 2006. A similar exercise is planned for Uganda in January-February 2007. The analysis in Zambia involved data collection and analysis of production costs, costs associated with EurepGAP, stakeholder views on EurepGAP and detailed interviews with members of the wider stakeholder group including financial institutions, service providers and the exporter buying produce from the farmers.

*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)**.*

The small-scale farmers in Zambia are peri-urban with irrigated land located with 25km of the centre of Lusaka. Approximately 70% of the farmers are female and most are retired professionals with secondary level education. Farming is viewed as a business and export horticulture is typically the second most important income earner with most farmers relying primarily on local crops and livestock. In a survey of 64 of the farmers only one had a professional agricultural qualification the rest are self taught. The typical farm size ranges from 1.0-4.0 hectares. Validation was carried out as per the time schedule specified above.

The farmers in Uganda are located in forest areas 80-100km from Kampala and rely on rainfed cropping of forest clearings using the principles of slash and burn agriculture. Farm sizes range from 0.1-1.0 hectare in most cases. Farming is viewed as a business with export horticulture as a primary source of income, but farming methods are primitive when compared to Zambia. Approximately 70% of the farmers are female and most are either illiterate or have only primary level education. None of the farmers involved has any professional agricultural background. Preliminary assessments of the Ugandan farming groups were made in March-April 2005 by a team from NZTT & NRI and assessments of progress were made in July and September 2005 by a team from NRI and AMA.

Current Situation

C. Current situation

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

The outputs are being used by 89 farmers (10 EurepGAP certified June 2006) belonging to Lubulima Agricultural Commercial Cooperatives Union (LACCU) to enable them to comply with EurepGAP so that they can retain access to high-value EU retail markets. NZTT in Zambia are using the service provider components of the management and control system, to provide training, extension advice, farm inspection and internal auditing for LACCU. York Farms have linked their EurepGAP certified system to that of LACCU to ensure continuous maintenance of EurepGAP throughout the supply chain.

In Uganda, 85 farmers in the Awaggwa Ekku Cooperative exporting via Jaksons Farms and 23 farmers in the Kamazi Farmers Cooperative exporting via Amfri Farms are in the process of adopting the full management and control system to attain EU regulatory compliance for continued access to wholesale markets and in the case of Amfri Farms the growers are aiming for EurepGAP to regain access to high value EU retail markets. AMA are using the service provider components of the management and control system to provide training, extension advice, farm inspection and internal auditing for the farmer groups.

Much of the management and control system developed in Zambia has been transferred to Tanzania where it has been incorporated into the MIM management system for 1,800 small-scale growers of export vegetables exporting via Gomba Estates. These growers are exporting to wholesale markets and need EurepGAP certification to access EU retail markets paying 20% more than other export markets.

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).***

The outputs are being used by farmer groups in Zambia, Uganda and Tanzania (as described under question 12). In addition information on the peer group training system and some elements of the management and control system (including the farming manual) have been passed on to two export orientated groups in Kenya with 900 and 300 small-scale farmers respectively. These farmers are already EurepGAP certified but the Zambian systems were still seen as beneficial additions to existing material by the Kenyans.

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

The scale of current use in Zambia is only moderate with some 89 of 500 growers using the system and only 10 having obtained EurepGAP certification so far. The reasons for this are problems with the viability of the export horticulture industry caused by revaluation of the Zambian Kwacha and the imposition of unrealistically high taxes on both agricultural inputs and produce sales. Most growers are unwilling to invest in EurepGAP under these conditions. Uganda is at an early stage of adoption of private standards and the industry is small in size but highly (>90% of supply) dependent on small-scale growers. For adoption to proceed external technical support is required in order to upgrade the level of service provision in the country to the necessary standard.

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).***

In commercial systems such as high value horticulture, the private sector is clearly the driver for change and key players and owners of the research outcomes. Public and non-governmental institutions have a valuable role in providing support to the market chain in the form of training, extension support, system development, independent auditing and laboratory services. Experience has shown that farmers require strong commitment from a commercial partner such as a market intermediary (commercial packer or exporter depending on market) or supermarket buyer. Donor, NGO or public sector driven initiatives almost always fail due to the lack of commercial drive and sustained input.

There is a need for a wide ranging skill-base, to cover all the issues related to good agricultural practice, and thus players may include national & international research institutions, extension services (public or private), training institutes, commercial partners, farmers, and farmer organisations. The national supporting institutional framework must have the capacity to understand the requirements of the buyers standards and have the ability to provide the necessary level of input supply, extension, training, auditing and laboratory services.

The farmer group must have access to an existing market to provide the income stream and incentive for investment in standard compliance. The buyer must be flexible to allow sufficient time for implementation of the management and control system whilst still purchasing from the farmers as interrupting the market demoralises the farmers and makes investment difficult.

Farm or group income must be sufficient to meet initial and ongoing costs of implementing buyer requirements. If the group is not financially viable it is extremely unlikely that donor intervention will lead to a financially viable system.

Farmers and supporting personnel must have basic literacy and numeracy.

Individual farmers must be willing and able to make the technical and financial commitment to adoption and maintenance of standard compliance.

Farmers need to be organised into a legally recognised grouping such as a primary cooperative with definite management structure and operating rules.

The farmer organisation (PMO) must be willing and able to make the technical and financial commitment to adoption and maintenance of compliant systems.

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.

Implementation of standards for good agricultural practice will help preserve the environment by ensuring correct storage, application and disposal of pesticides, agronomic practices that help to prevent erosion and maintain soil fertility, good field hygiene, correct disposal of waste products, efficient use of water for irrigation, crop rotation and adoption of practices that encourage natural predators of plant pests and thus reduce reliance on chemical pesticides. Independent audits in Zambia in June 2006 showed that LACCU farmers involved in project R8431 were meeting all the environmental criteria specified under EurepGAP. This is a big change from the situation pertaining when the original baseline surveys of farm sites were conducted under project R8271 in October 2003 thus making the Zambian farming operations more environmentally sustainable. An assessment of Ugandan SSGs supplying produce to Jaksons Farms and AMFRI Farms showed that the Ugandan SSGs were not informed of virtually any aspect of good agricultural practice. Examples of poor practice with implications for the environment included random planting on steep slopes thus encouraging erosion, improper selection, storage, application and disposal of pesticides, absence of crop husbandry resulting in encouragement of the spread of plant diseases and no attempt to use organic fertilisers and mulches to maintain soil fertility and reduce water loss. Assessments in August and September 2005 showed that many farmers were beginning to adopt improved practices in line with EurepGAP criteria. Practices included planting in rows and the use of parallel ridges on steep slopes to reduce erosion, creation of central stores, chemical soakaways and disposal pits at the farm sites and planting of spray barriers in a few cases. Following the practical course on pesticides in October 2005 there was evidence of improved understanding of pesticides by farmers and willingness to adopt improved techniques.

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

Correct adoption of private standards for good agricultural practice such as EurepGAP reduces adverse environmental impacts by virtue of the practices required of the farmer. There is little scope adverse situations as this would imply a return to non-compliant procedures existing prior to adoption of the standard.

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)***

Adoption of management and control systems for compliance with private standards opens access to high value local and export markets that offer more stable demand and higher prices. Funds from these activities can be channelled into installation of irrigation systems on the farm that reduce the risks and uncertainties associated with reliance on rain fed agriculture. This benefit can clearly be seen in Zambia where irrigation was a mandatory requirement for access to export markets, but farmers have used irrigation to provide consistent supplies of vegetables for the local market during the long winter dry season. Farmers with irrigation were not affected by the drought situation during 2003-2005 as compared to conventional non-irrigated farms that were severely hit by water shortages.