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NEWSLETTER

Capacity building for food security through sustainable potato value chain development in Rwanda (NICHE/RWA/185).

Q-Point, The Netherlands, I www.q-point-bv.nl, E info@q-point-bv.nl, T 0031 317 491581

Preface

By Carel Jaspers, Director Q-Point

The project "Capacity building for food security through sustainable potato value chain development in Rwanda" is a project of the University of Rwanda (UR) and the Q-Point consortium. We are happy to inform you that 4 PhD candidates started the course at Egerton University in Kenya and that our partner Pretoria University from South Africa was able to visit CAVM to discuss potato research and further collaboration. A delegation of five person from UR-CAVM visit Kenya to understand the potato sector and to establish new linkages with private sector and other institutions.

I hope you enjoy reading this newsletter.

Carel Jaspers, director Q-Point

Content

Progress of the project

By Obedi Nyamangyoku, project coordinator and Senior lecturer at former Higher Institute of Agriculture and Animal Husbandry

Introduction

In Rwanda, Irish potato constitutes an important crop in the achievement of household food security and incomes for rural poor households. To contribute to its development this project was initiated focusing on capacity building along the potato value chain (Inputs supplier - seeds production – Ware potation production – Postharvest & handling – Processing – Marketing).

Group photo of members who have participated in the meetings on assessment of teaching and research facilities at UR-CAVM.

The project was financed by the Netherland organization for international cooperation in higher education (NUFFIC), under the Netherlands Initiative for Capacity development in Higher Education (NICHE). For its implementation the contract was signed between the University of Rwanda (UR), College of Agriculture, Animal Sciences and Veterinary Medicine (CAVM) and Q-Point the Netherland partner.

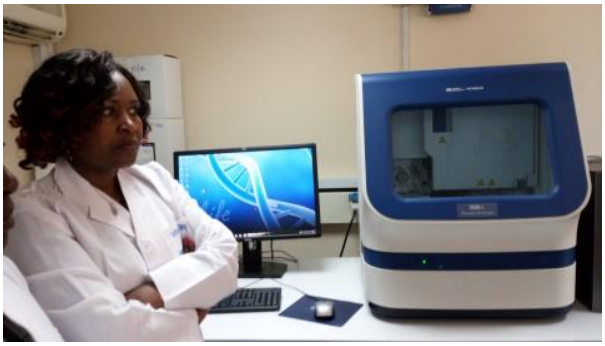
Progress made so far

Assessments on organisational level, capturing policies and strategies on University services in the field of potato, training and research facilities, capacity needs of staff, gender issues, HRM services, QM services and management practices.

Also a labour market needs assessment has been carried out in the Rwandan potato sector, questioning 80 stakeholders mainly representatives of the private sector.

From these assessments follow up support was provided through trainings (ToTs) on management and potato expertise, technical assistance in the development of gender measures, assistance on infrastructure development, long-term trainings (4 PhD staff members) and technical assistance on curriculum development for courses in potato together with stakeholders meetings to develop and verify the Potato Academy plans and to discuss trends, problems in the Irish potato sector as input for service delivery.

Regional study tour in Kenya. Picture taken at CIP station, in Molecular Biology laboratory.



Dr Laetitia Nyinawamwiza, the Principal of UR-CAVM, following some explanation on Molecular Biology at CIP/Kenya.

UR-CAVM team with two experts from University of Pretoria visiting a cooperative potato field in framework with Assessment of training and research facilities and Technical Assistant on training and infrastructure development and investment plan (September 2016).

UR-CAVM team and Experts from University of Pretoria visiting IABINYA cooperative at Nyabihu.

UR-CAVM team and Experts from University of Pretoria visiting Nyabihu Potato Processing Plant.

Visiting Kenya Plant Health Inspectorate service (KEPHIS) Laboratory complex. The team has negotiated collaboration between UR CAVM and KEPHIS on the training, development of curriculum for potato academy.

Development of NPK fertilizer recommendations for optimizing potato yield and quality

By Adrien Turamyenyirijuru, PhD student

Irish potato is among the most important crops in Rwanda, but so far its yield is still below the genetic potential. Low soil fertility coupled with low fertilizer use efficiency are major constraints to potato production. A field trials will therefore be conducted to characterize the selected physical and chemical soil properties of Irish potato fields and assess the effects of N, P and K fertilizer rates on tuber yield and quality of potato in Burera and Rubavu districts during the short rainy season 2016 and long rainy season 2017.

Kinigi potato variety/ Research test crop.

Prior to field trials establishment, a Participatory Rural Appraisal will be conducted to assess indigenous knowledge of potato growers about soil fertility assessment and management. Moreover, soil laboratory analysis will be done to characterize physical and chemical properties of both sites. The three factors under study will be rates of N, P2O5 and K2O applied on potato. The experiment will be laid out, concurrently in both sites, using RCBD with 3 × 3 × 2 factorial arrangement of treatments, replicated six times using a one-farm one-replicate design. Fertilizers will be applied in form of urea, triple phosphate and muriate of potash to supply N, P and K nutrients, respectively at rates of 0, 50 and 100 kg ha-1 for N and P; and only 0 and 50 kg ha-1 for K. The number of replication treatments will be eighteen.

Nutrient imbalance leads to low fertilizer use efficiency, low potato yields, low potato quality, and low profits for farmers. It also results in further depletion of deficient nutrients in the soil.

Growth and yield parameters, tuber nutrients content and processing quality attributes will be measured. Data collected through PRA will be analyzed using SPSS. T-tests will be used to compare responses from two variables while Pearson Chi-square test will be used to determine relationships among them. Data collected on agronomic parameters and tuber quality will be subjected to ANOVA using SAS. Treatment effect will be tested for significance using F-test at 5%. DMRT (P=0.05) will be used for mean separation. Strength of relationship between variables will be determined by correlation coefficient and regression analysis. Based upon the research findings, accurate and reliable recommendations will be articulated

Exposure visit potato sector Kenya - 12 to 18 June 2016

By Mark Bos, trainer Q-Point

A delegation of five person from UR-CAVM, Dr. Obedi Nyamangyoku, Dr. Hilda Vasanthakaalam, Jean-Baptist Muhinyuza, Patrice Mugenzi, headed by Principal Mrs. Dr. Laetitia Nyinawamwiza undertook an exposure visit to Kenia to explore the Kenyan Potato Sector. The visit program was composed and organized by Q-Point and Prof. Rodha Birech of Egerton University.

During the visit various research institutes such as ILRI and CIP, Governmental institutes KEPHIS (Phytosanitary service) and ADC (research and production of certified seed potatoes), Donor organization(SNV), private sector operators involved in seed potato-, and potato production (Agrico, Meijer Potatoes/Suera Flowers Ltd.) and processing (Njoro Canning) have been visited. Experiences were shared and the delegation leaned more on potato seeds production, fertilizations, field maintenance, post-harvest handling, processing and marketing practices in Kenya.

On top of these visits time was provided to meet Egerton University, a visit that was very constructive for both parties. Especially the interaction between the UR-CAVM PhD. students at Egerton and their supervisors from Egerton and UR-CAVM proofed to be very stimulating for all involved in the further implementation of this NICHE Project. The success of the visit to Egerton University resulted in the signing of a mutual agreement and time bounded agenda to establish a Memorandum of Understanding on collaboration between Egerton University and UR-CAVM.

All visits resulted in establishing a valuable network of public and private expertise for further development of the Potato Academy of UR-CAVM.

PhD research on "Evaluation of efficacy of selected plant extracts on potato bacterial wilt disease"

By Marie Chantal Mutimawurugo, PhD student Egerton University Kenya

Irish potato (Solanum tuberosum L.) is the fourth major crop of the world after rice, wheat and maize and the second source of energy (after cassava) and income generation in the case of Rwanda. Although potato crop is a major food crop, the actual yield is below the potential yield due to diseases' infection and other agronomic parameters.

Among the serious potato pathogens, potato bacterial wilt (Ralstonia solanacearum race 3 biovar 2) is at the second rank at global level after Phytophtora infestans. Although, R. solanacearum comes at the second line, it is considered as the most problematic since it has no known chemical control which is effective against it and even when it is available, its application may result to environmental pollution.

Usually, potato growers use cultural control methods such as crop rotation, use of clean seeds, planting in non-infected soils and growing tolerant varieties. However, all these cultural practices have individual practical, technological or economic limitations. For instance, crop rotation is not feasible because the pathogen can survive in the soil for long periods in the absence of host plants; small farm size is in Rwanda, lack of tolerant cultivars or their unsuitability by consumers. In addition, it is not easy to get clean seeds of potato which is mainly propagated by vegetative means.

Therefore, a new alternative which could be locally feasible and economic or environmental friendly should be developed in order to manage this pathogen in potato crop. One of the current methods used to control plant pathogen is biological control by using plant extracts with antimicrobial properties.

This is the reason why in this research I will focus on evaluating the efficacy of natural extracts from local plant materials namely Onion (Allium cepa), Garlic (Allium sativum), Stinging nettle (Urtica massaica), Marigold (Tagetes erecta), Tobacco (Nicotiana tabacum), Lemongrass (Cymbopogon citratus), African basil (Ocimum gratissimum), Lion's ear (Leonotis nepetifolia), Limon (Citrus limon), and Rosemary (Rosmarinus officinalis) on growth and incidence of potato bacterial wilt.

In this study, local plant materials will be collected in Rwanda from which the extracts will be used in metabolite analysis, screening, in vitro and in vivo experiments to evaluate their efficacy on growth of R. solanacearum and the incidence of disease on protected potato crops. The result of this research will be applied to produce potato healthy seeds, increase potato yield and protect environment through organic farming system.

Evalutation of efficacy of selected plant extracts on patato bacterial wilt disease.

Egerton University: Its status and partners

By Rhoda Jerop Birech, Department of Crops, Horticulture and Soils, Egerton University Kenya

Egerton University started in 1939 as an agricultural school for white settlers. Seventy seven years later (in 2016), it has grown to become a reputable institution of higher learning.

Egerton University is a premier institution of higher learning in East, Central and Southern Africa and a renowned centre of excellence of Agricultural training, research and innovation. It has expanded steadily to offer 15 Diplomas, 60 Bachelors programmes, 51 Masters and 28 PhD programmes in 51 academic departments, 10 faculties and 3 Colleges. It has a total student enrolment of 25,000.

The University is guided by the following core values: Passion for excellence and devotion to duty, integrity, transparency and accountability, social fairness and professionalism.

Egerton University engages in mutual collaboration with various entities such as Universities, colleges and research organization in Kenya, in Eastern Africa, across the African continent and around the world. Within Kenya, it collaborates with government Ministries and state corporations, private companies, associations and communities, foreign missions and civil societies. It works together with international research centres and UN bodies such as ILRI (International Livestock Research Institute), ICRISAT (International Centre for Research in Semi-Arid Tropics) and UNEP (United Nations Environment Programme).

Through partnerships, Egerton University achieves its vision of being a world class university for the advancement of humanity and its mission of generating and disseminating significant knowledge and offering exemplary education that contributes to national and global development.

Egerton University partners have diverse mandates including training, research, innovations, outreach, production, manufacturing, service, trade, media, science & technology, public service, policy, governance, social services and development. Through partnerships, Egerton University achieves its vision of being a world class university for the advancement of humanity and its mission of generating and disseminating significant knowledge and offering exemplary education that contributes to national and global development.

On 15th June, 2016, Egerton University and the University of Rwanda initiated partnership negotiations and agreed to collaborate in the following areas:

1. Lecturing & Research Staff Exchange
2. Staff Capacity Building including training of technologists and administrators
3. Student Exchange
4. Joint Research Binding & Implementation
5. Curriculum Development & Evaluation
6. Sharing of External Examiners
7. Capacity building in Extension & Outreach Services
8. Joint Utilization of Research Infrastructure & Facilities
9. Joint Post-graduate Students Supervision

Effect of different potato varieties produced in Rwanda on quality of processed potato products

By Vedaste Ndungutse, PhD student, Department of Dairy, Food Science and Technology, Egerton University Kenya

Potato is among staple food in Rwanda. Around 80% of potato is water and 20% of it is dry matter where carbohydrate is the major component. Biological value of potato is comparable to that of food from animal origin.

Potato tubers are grown in many areas of Rwanda and more than 90% of production is from North West of the country. Potato production in Rwanda has increased significantly since the beginning of the last decade from 957,198 MT in 2000 to 1,789,404 MT. Potato tubers are bulky and highly perishable which limit market availability. In the case of surplus, they are likely to be relatively localized and scattered and this leads to lack of market integration and limits market size.

Moreover, production is highly seasonal leading to market variation in the quantity and quality of potato tubers in markets and associated price fluctuates. It was estimated that 30-50% of potatoes are lost after 3-4 moths of storage. Moreover, potato consumption in Rwanda is monotonous and it is either through boiling, deep fat frying with/without skin (as whole or half potatoes) or as French fries. In order to reduce postharvest losses of potatoes, it is better to process them in more stable products which are value-added products, more attractive, palatable, nutritious, and less bulky to permit continuous use.

Potato processing industries are coming up in Rwanda, but potato varieties grown in Rwanda have not been studied for their suitability for processing. Therefore, the purpose of this research is to increase potato utilization in Rwanda through characterization and identification of suitable varieties for different processing techniques.

The study will help big and small industries make good potato varieties choices. There will also be information on the effects of processing some of which will directly touch on the safety of the final products. It is also important to nutrition and food security as it will permit increase in domestic and foreign exchange earnings through sale of value added products.

In order to reduce postharvest losses of potatoes, it is better to process them in more stable products which are value-added products, more attractive, palatable, nutritious, and less bulky to permit continuous use.

Workshop Gender mainstreaming in agriculture

By Olivia Ansenk, trainer Q-Point

In the framework of the Niche Programs RWA/173 and RWA185 Gender is a crosscutting issue. Subsequently the project provides support in the establishment of gender measures and capacity within UR-CAVM. Following on the Gender assessment and Gender Policy Development efforts this workshop was instrumental in making the translation to implementation of the Gender Policy. The focus of the two-day workshop was on developing gender mainstreaming strategies for academic and administrative undertakings within UR-CAVM. The Gender Policy and implementation strategies of the CAVM will be exemplary within UR, as CAVM is a pioneer within UR to develop a Gender Policy and Implementation strategy.

Training Leadership and People Management and Change Management

By Victor Volkers, trainer Q-Point

The University of Rwanda unites seven previously independent institutes, which implies organisational changes in structure, procedures, style and culture, and therefore personal change for leaders and staff of the university. The senior and mid-level managers participating in the training, as well as their staff, had just heard in which position and location they serve henceforth, and may be happy and/or sad about their new location and role. While training in "Leadership and People Management" (LPM) and "Change Management" (CM) always aim to help leaders to achieve more with their staff and deepen their job satisfaction, in the context of the posting decisions and ongoing change process, the training was particularly timely to help the participants cope with the changes they face.

The two programmes, LPM and CM, were jointly offered by Diederik Prakke from MDF and Victor Volkers from Q-Point respectively. Both trainers focused on transformation and experiential learning, rather than simply exposing the participants to information and ideas.

Embracing change although the setting felt a bit odd in the beginning.

Experiential learning: work as a team and consider the advices of the others and work together.

The dialogue during the iceberg and cheese presentations.

Comments on the learning goals: To what extend did you learn better to?
Some reactions of the participants

- Excellent. Experiential learning has been wonderful; it helped understand better difficult issues like the emotional bank account for vision sharing and change management.
- Communication is at the root of all relationships between leaders/managers and the staff. A lot of problems would not arise or would be resolved early if communication was improved. I am going to focus on this skill and ability.
- I learnt that everyone was human and people do make mistakes, allow them to try so that they do error and learn from it. We learn by doing. The leader also did not know all the answers; we need to work as a team and consider the advices of the others and work together. Communication involves active listening and not passive.
- I learned the importance of change, the roles of leaders and managers and how to manage change. - seven habits of good manager including being proactive rather than reactive; begin with the end in mind; see do get; first things first; think win-win; see to understand before seeking to be understood.
- The change management module helped me to know how as a manager I have to consider the vision of the institution and make it shared by all staff so that we can do things together. With the lesson of building a bridge which was taken by all of us before as impossible, that brought us to celebrate a success through the shared vision.
- After the training, I have been able to make management decisions that proved to be effective in setting up priorities and helped in time management. This was helped by understanding what private victory means.

Experiential learning: does a leader always need to know the answers?

All participants and the trainers Victor Volkers (in the front) and Diederik Prakke (behind).

Midterm evaluation

By Carel Jaspers, Director Q-Point

Carel Jaspers, Dutch project coordinator, and Victor Volkers, trainer, visited UR-CAVM Headquarter for a midterm evaluation meeting. They made preparations for annual report number two. They also visited the research facility and a potato field.

Carel Jaspers (l) and Victor Volkers (r) in front of the UR-CAVM building.

Dr Obedi Nyamangyoku, the Project Coordinator (r) and the Mr Patrice Mugenzi, the Deputy Project Coordinator (l), visiting the potato field of cooperative member at Mudende, Rwanda.

Partners

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HAS Den Bosch
The Netherlands

Requesting organisation

College of Agriculture, Animal Sciences and Veterinary Medicine(CAVM)
Busogo Campus in Rwanda

Donor

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Colophon

This newsletter is created by

Q-Point
The Netherlands
T +31 317 49 15 81
E info@q-point-bv.nl
I www.q-point-bv.nl

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