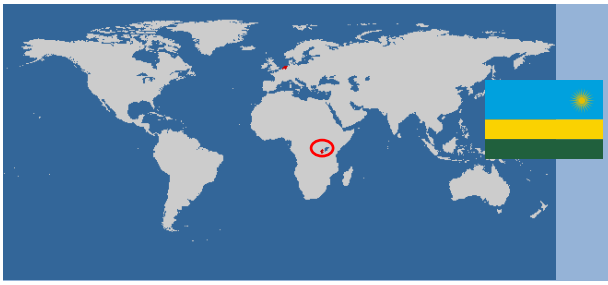

September 2017

NEWSLETTER

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

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Preface

By Carel Jaspers, Director Q-Point

The project "Capacity building for food security through sustainable potato value chain development in Rwanda" is doing well. Four staff of UR-CAVM are in Kenya for the their PhD training in the field of Irish potato. Investments in training and teaching materials are ongoing. In July, the project management team visited the Netherlands to discuss the developments in the international potato sector with Dutch companies and organizations in the Netherlands. One of the main lessons learned is that linkage and collaboration between the private sector and Universities is essential for a successful and sustainable potato value chain. One of the main achievement is that the gender policy developed in the project is now implemented in the entire University of Rwanda. I hope you enjoy reading this newsletter.

Carel Jaspers, director Q-Point

Content

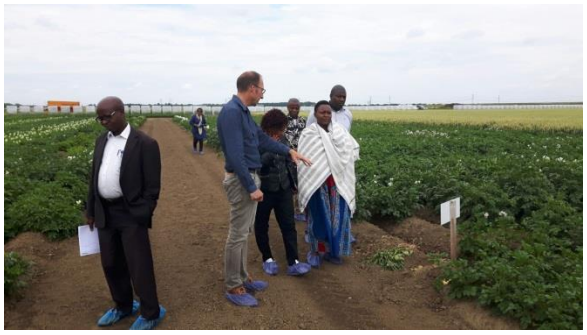
Rwandans visited the Dutch potato chain

By Mark Bos, trainer Q-Point

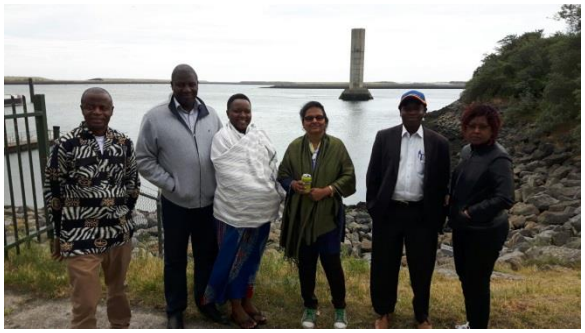
From 3 to 7 July six members of the College of Agriculture, Animal Sciences and Veterinary Medicine (CAVM) Rwanda visited the Netherlands.

On the first day the group visited C. Meijer B.V. Meijer is a variety potato breeding company. They have innovative varieties for the French fries and crisp industry and for the fresh table market. Their seed potatoes are sold worldwide and cultivated under licence.

Company presentation at C. Meijer B.V.



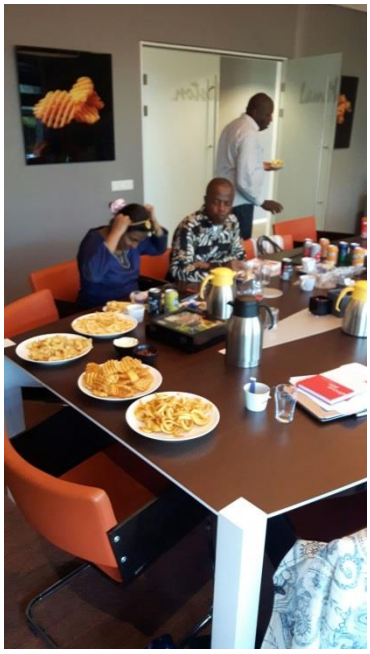
Field visit.



Patrice Mugenzi, Jean-Baptist Muhinyuza Alice Nayabo, Hilda Vasanthakaalam, Obedi Nyamangyoku Laetitia Nyinawamwiza (Neeltje Jans, Delta Works).

In 2016 the Rwandan delegation also visited Meijer's pilot farm for growing seed potatoes in Kenya (Suera Ltd.)

After the lunch they went to Lamb Weston. This firm is world leading in high quality potato products, sold in over a 100 countries around the world (e.g. McDonalds, Burger King, Tesco etcetera). In addition to a factory tour showing the processing of potato's, experts of Lamb Weston presented the way Lamb Weston is organizing and planning its activities with all relevant stakeholders in the potato value chain to serve the consumers' needs for high quality potato products.

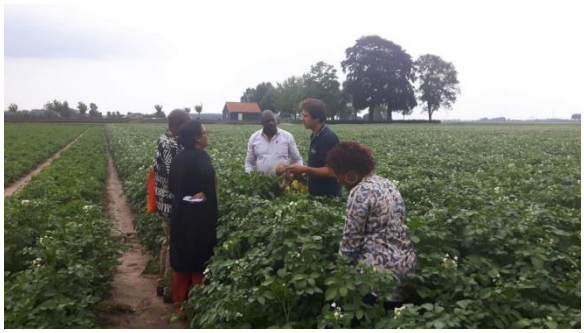


Product presentation Lamb Weston.

At the end all visitors received a goodie bag.

On the second day the Rwandan guests visited the HAS Den Bosch. HAS explained how they successfully work together with relevant private sector stakeholders in both developing curricula and applied research. This approach results in high appreciation of the skills and knowledge by the relevant sector stakeholders of graduated students. A tour around the facilities showed the research and practical training environment HAS is offering to its students . In the afternoon a visit was made to the arable farm of the Straver family in Almkerk (150 hectares of ware potatoes and >500 hectares total farm size).

The HAS and this arable farm work together very closely; students fulfil their internships and excursions to this farm with groups of students are implemented to teach practical lessons.

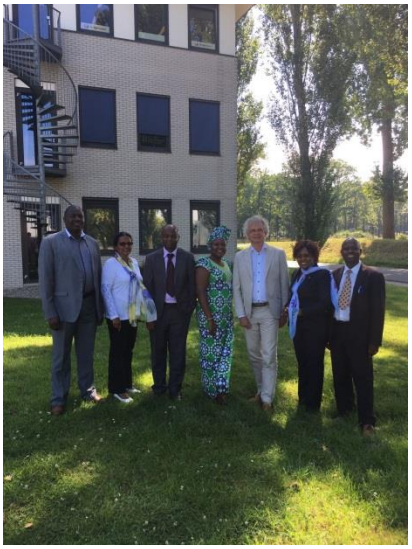


Visit to the arable farm of the Straver family in Almkerk.

During the visit the Rwandan guests made a trip around the facilities of the Straver family: the potato storage, the harvest machines, the storage equipment and had a look at the potatoes in the field.

Visiting the potato storage.

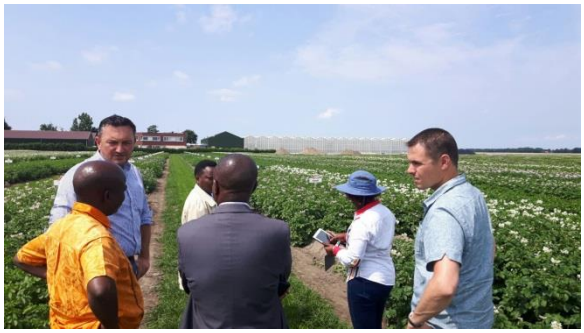
The Rwandan guests were impressed about the size of the potato production: the average size of a potato field in Rwanda is 0.5 ha; the size of the potato area of the Straver family is 150 ha.



Visit to Q-Point office.

On Friday the group went to Agrico and NAK-Agro Services in Emmeloord. Agrico is a potato co-operation, owned by farmers. Agrico is active in seed potato growing and ware potato production. Agrico is world market leader in exporting seed potatoes. Agrico member farmers grow almost 35% of all seed potatoes in the Netherlands. Agrico has its own research facilities to develop new seed potato varieties. Agrico is focussing on breeding potatoes that are tolerant and resistant to major potato diseases. Agrico is currently active in Kenya (with a Kenyan partner) in commercially growing seed potatoes (last two stages of seed potato growing). The Rwandan delegation visited Agrico Kenya in 2016 as an activity within this project.

Visit to potato co-operation Agrico.



Field visit Agrico.

NAK Services, the Dutch General Inspection Service , tests seed potatoes and seeds from cereals and grasses from all over the world. This visit was experienced as a very useful example of how to organise an independent quality assurance system for the seed potato sector. NAK shared their experiences in how they assisted their Kenyan counterpart (KEPHIS, visited by the Rwandan delegation in 2016) in improving testing and inspecting imported seed potatoes.

Visiting Dutch General Inspection Service (NAK).

Mission report for a study tour by CAVM team to the Netherlands

By Obedi Nyamangyoku, Coordinator of NICHE 185 Project

From 1 to 9 July 2017 a delegation of CAVM visited the Netherlands. The delegation consisted of:

1. Dr. Laetitia Nyinawamwiza, Principal, UR-CAVM
2. Dr. Obedi Ishibwela Nyamangyoku, Coordinator of NICHE 185 Project
3. Mr. Patrice Mugenzi, Deputy Coordinator
4. Dr. Hilda Vasanthakaalam, Research Cluster Team Leader
5. Dr. Jean Baptiste Muhinyuza, Deputy Research cluster Team Leader
6. Mrs. Alice Nayabo, Trainer of trainers

The purpose of the visit was to learn more and share experiences on the potato value chain. Considering the constraints we were facing on potato production along the potato value chain in Rwanda, the study tour allowed members to learn more on potato seed production, fertilisation, farming systems, post-harvest, handling, processing, marketing and partnership.

Conclusions

After our visit we came to the following conclusions:

- We need to establish a list of Rwandan potato varieties
- We need to determine which varieties fit for processing
- HAS University is a good model for CAVM in regard to internship and industrial attachment organisation
- To express CAVM interest for collaboration especially in staff and students exchange so that UR- HQ can negotiate an MoU
- We need young enthusiastic entrepreneurs graduated from HAS University, who can inspire more young Rwandans including UR-CAVM students and alumni. We requested Q-Point to invite such young people to come and inspire Rwandans.

Relevance of the mission to the individual, the institution and the country

The 5 day knowledge exchange was fruitful and incredible opportunity to the CAVM team.

The trip was of paramount importance. It allowed the CAVM team to have an insight on the potato value chain in the Netherlands and possible partnerships with some of the institutions involved in the potato value chain. There were also discussions on the challenges in the potato value chain and suggestions/plans on how to improve the Rwandan potato value chain and enhance potato activities in the community.

How the achievements from the mission will be put to use and monitored:

1. We learnt how potato breeding programmes and certification processes are organised and done.
   ➡ To be put into use for our current and future research projects on potato seeds production and for running the potato academy project.
2. We learnt how potato farming system is organised and managed by young entrepreneurs and how potato producers are organised in a strong international cooperative.
   ➡ To be put into use for our current and future research projects on potato farming system and the involvement of UR-CAVM in the Rwandan Potato Platform under implementation.
3. We learnt how potato post-harvest, handling and processing are organised and managed, and how an entrepreneur can convert its business from a product to another one in case of unsuccessful.
   ➡ To be put into use for Rwandan post-harvest, handling and processing practices.
4. We learnt how private business, government and research institutions cooperate (Dutch Golden Triangle: research funds moving from business - government - science and Dutch Diamond approach: government - knowledge institutions – business - civil society organisations joining forces to achieve the same goals).
   ➡ To be put into use for our current and future research projects with the government and other public institutions.
5. We learnt hands skills should be improved and how to induce agriculture pension to students.
   ➡ To be put into use in teaching and research activities; mainly when running the potato academy.
6. We had discussions with the Q-Point coordinator for the project NICHE/RW/185. We agreed to plan for all remaining activities to be carried out before 30 June 2018, the end of the project period. For the investment component, it was agreed that the lab equipment will be purchased by Q-Point and sent to Rwanda. The UR-CAVM team should be involved more in following the procedures of Greenhouse and seed store building.
7. We learnt how research and innovation should come: demands from the private sector like farmers, institutions, government, enterprises, entrepreneurs, environment, education system and researchers.

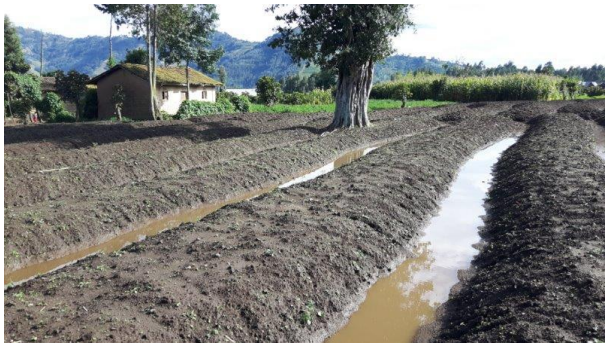
Observations of the sending institution

The offices of the Principal and of the Directorate of Research and Post graduate studies plans to ensure that the above-learned activities along the Potato value chain are not only put to use in our different research/outreach projects but also monitored during the evaluation of projects' progress. Activities related to monitoring of the learnt activities shall be incorporated in the activity plans of both the Principal's Office and the Directorate of Research and Postgraduate Studies.

Training practical aspects of growing potatoes Rwanda, March 2017

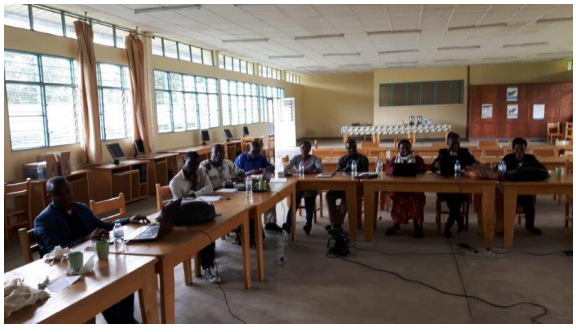
By Harm Brinks, Coordinator Organic Agriculture Delphy

The training was directed towards all practical aspects of growing potatoes in Rwanda. March is in the rainy season, most of the days we got heavy rain showers, resulting in water in between the new formed potato beds.



Rainy season: water between the new formed potato beds.

The training was a combination of a theoretical part in the classroom and a practical part on the field where we looked at the topics we discussed earlier. We had 20 people in the training, people working for CAVM and RAB (Rwanda Agricultural Bureau).



A part of the training was in the classroom.

Quality of seeds is still a problem in Rwanda. We saw a few trial fields on the premises of CAVM, a good site to exercise the knowledge about seed quality and potato diseases in small groups.

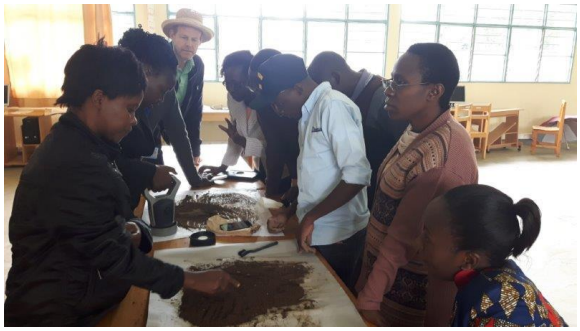
Exercise of knowledge in the field.

Besides viruses, late blight (Phytophthora infestans) is a big concern for potato growers. Sometimes the symptoms of this fungus are not always recognised in the field as late blight. Especially stem late blight doesn't show the typical symptoms one finds on the leaves.

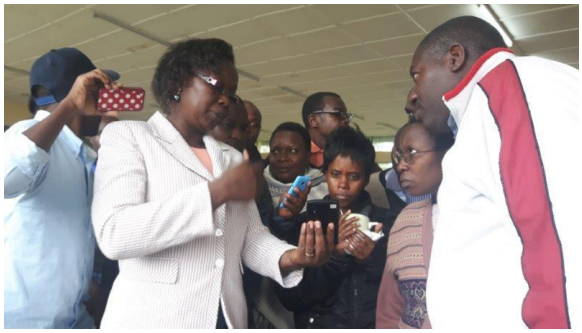
Recognising diseases.

Another topic is the availability of soil analysis. Many farmers, for financial reasons, don't have information about soil fertility and they use standard application rates of fertilisers, not adapted to the chemical soil status. In the training we demonstrated a simple hand held instrument that gives global information on the soil status for N, P, K and organic matter.

Taking soil samples with help of the young generation.



Preparing the soil samples and analyse with the hand scanner.



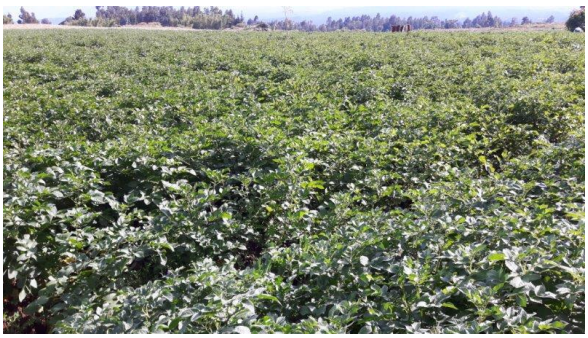
Access to the information through the smart phone.

At the end of the season potatoes are stored, as seeds or for the table potato market. We reflected on the theory in a practical store for seed potatoes. Conditions for drying were perfect, but for storing potatoes after this period the store was not perfect, leading to weight and quality loss.

Potato storage.

The group discussed the priorities to work on in Rwanda in order to improve yield and quality, results are shown in the table. This outcome could serve as a draft agenda for the Potato Academy.

	Factor analysis Irish potato for raising yields from 15 to 25 T/ha (as first step up to 40 T/ha					
	Total score is average x times factor is mentioned by groups					
		average	n =	tot.score	average	tot.score
	Factor	av			av	
Producton	Seed quality	10	5	50	7,4	37
Soil fertility	Soil fertility/analysis	10	5	49	8	40
Soil fertility	Fertilizers/plant nutrition	9	4	36	7	27
Climate	Climate/environment	9	4	35	4	16
Producton	Crop rotation	9	4	34	3	12
Training	Farmers's training/ext service	8	4	32	8	31
Pest management	Pest management	9	3	26	6	17
Finance	Credit accssibility	9	2	17	3	5
Pest management	Pesticides on the market	8	2	16	9	18
Market	Accessibility to market	7	2	14	8	15
Training	Change farmers behavior	7	2	14	6	12
Policy	Agricultural policies	6	2	12	5	9
Producton	Production systems	10	1	10	7	7
Producton	High yielding and res.varieties	10	1	10	10	10
Post harvest	Seed storage facilities	10	1	10	10	10
Training	Research findings publ and practicality	10	1	10	10	10
Producton	Consolidation of land	8	1	8	4	4
Producton	Potato ridge	8	1	8	7	7
Post harvest	Post harvest treatment	7	1	7	6	6
Producton	Meteorological information	6	1	6	5	5
Producton	Irrigation	5	1	5	1	1
Media	Media	4	1	4	10	10



Result on the longer term should be more potato fields with higher yields of good quality.

Genetic study of high dry matter, Fe and Zn contents in potato (Solanum tuberosum L.) varieties in Rwanda

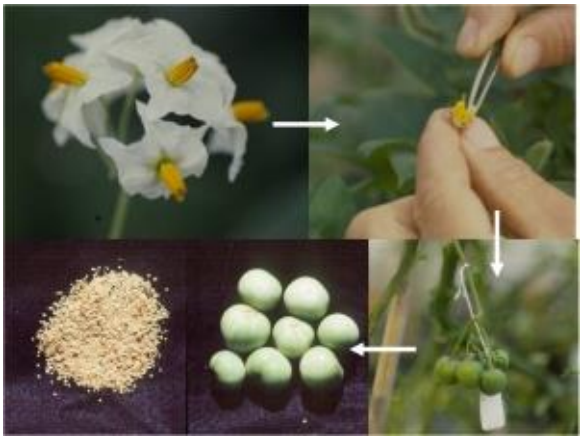
By Mr Jean Pierre Niyonzima, PhD student at Egerton University, Plant breeding programme

In Rwanda, potato is the fourth important crop, consumed in rural and urban areas and in the production areas 60% of the production is consumed locally. The potato is among the priority crops of the government of Rwanda through the Crop Intensification Programme (CIP) to meet food security, to develop the agro processing industry and increase the Rwandan economy mainly based on agriculture.

Potato productivity in Rwanda is still very low compared to achievable yields. Industrial and nutritive quality traits such as dry matter and micro nutrients are low and variable and their inheritance is not known for the potato germplasm in Rwanda. Low dry matter content is a problem for the productivity of the potato, industrial use and postharvest handling activities. Minerals play a crucial role in health maintenance by functioning as electrolytes, enzyme constituents, and structural components for bones and teeth. The trace minerals copper (Cu), iron (Fe), manganese (Mn), Selenium (Se) and zinc (Zn) are integral constituents in the antioxidant defence system in the form of metalloproteins.

Exploiting the genetic variability of potato to improve dry matter, Fe and Zn content.

In Rwanda the anemia associated with the deficiency or low content in Fe is manifested in 37% of children aged 6-59 months and 19% of women aged 15-49. The effective and sustainable approach to alleviate this issue would be the enrichment of staple food crops such as potato via genetic fortification through plant breeding to increase mineral concentrations and their bioavailability.



Crossing activities for evaluating the genetic behaviour of cultivars for dry matter, Fe and Zn content characters in potato.

This research will evaluate the genetic diversity of the potato germplasm in terms of dry matter content and mineral micronutrient to understand their variability, their heritability, and their stability across different environments, the genes controlling those traits, so as to contribute to the biofortification of preferred varieties in dry matter and mineral micronutrients.

During this investigation, screening, crossing and Marker Assisted Selection methods will be used to evaluate the genetic behaviour of different varieties. The planting materials to be used are local varieties and cultivars to be acquired in

International Centre of Potato (CIP). The study will be conducted from 2017 to 2019 at 3 locations (Busogo, Rwerere and Nyamagabe) representing the high potential potato production agro ecological zones.

This study will provide the information on genetic behaviour of potato germplasm in Rwanda in terms of dry matter and Fe, Zn micronutrients to use for further breeding works. It will also provide potato hybrid cultivars for further evaluation and release with high quality and quantity traits thus improving the economic returns for society.

In the future the in vivo and in vitro genebanks of potato materials should be given due attention for future use. There is need of a centre of excellence for biofortified and other high quality varieties of potatoes and a seed company operating at national and international level with research, extension and commercial services.

Report of a four day short term training for Curriculum Development for a Post Bachelor Course and a Farmers Course at the Potato Academy in Busogo

By Erno Bouma, Lecturer Horticulture & Business Management, HAS University of Applied Sciences

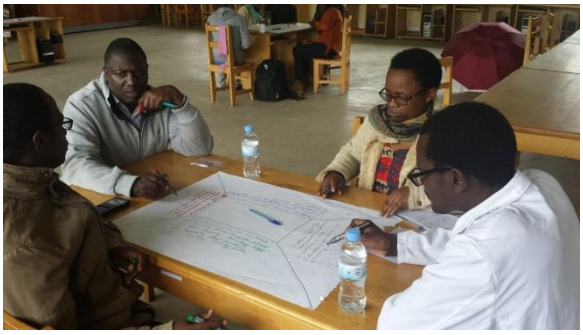
Experiences and review

I am looking back on an interesting training period with well-motivated participants. During the four day training period, the participants were trained in the way a curriculum for a post Bachelor class and a farmers programme should be developed and built up. Furthermore, together with the participants, we have created the framework for developing an Irish potato handbook.

Curriculum development

After the presentations and discussions, each particular group of participants, selected on their work experiences, started to draw up the development of the eight different parts of the curriculum for the Post BSc Irish potato course:

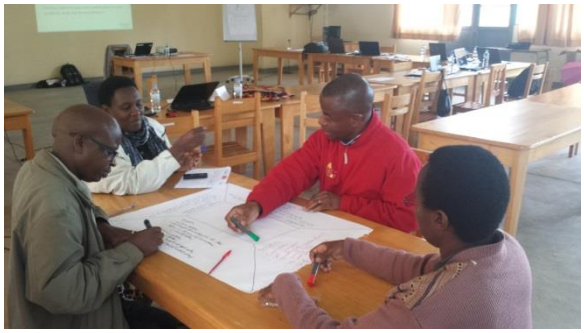
1. Introduction Irish potato production
2. Breeding and seed production
3. Agronomy and farming systems
4. Soil and plant nutrition
5. Pest and disease control
6. Postharvest and processing
7. Marketing, socio economics and value chains
8. Info communication systems. The participants discussed it for their particular experience. At the same way, the curriculum for the farmers course was developed



Group of participants work out the eight different parts of the curriculum.

Based on the outcome of the labour market assessments and the recommendations of workshop reports of the recent past, we discussed the distribution of the available study hours (480 hours per semester) between the

eight different modules. We decided to select four major important modules (the modules 2, 3, 4 and 5) and four minor (the modules 1, 6, 7 en 8). The major important modules receive 80 hours per module, the minor ones 40 hours per module.



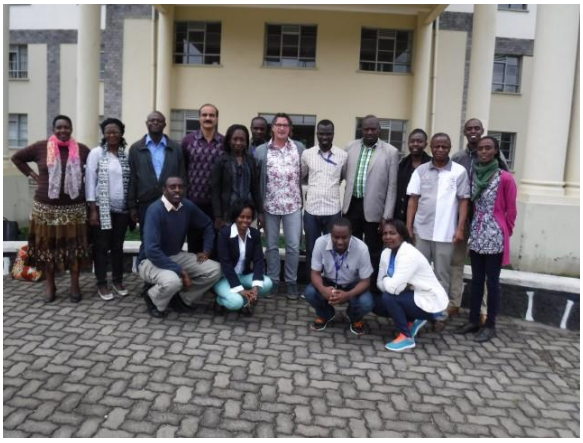
During the development of the various module descriptions, the developing groups have also included the alternative learning methods.

Development of a potato handbook
Together with the participants the outline of the content of the Irish Potato Handbook was discussed, both for the post BSc-course and for the farmers course.

Technical assistance on development of guide for Good Agricultural Practices (GAP) for potato Training of Trainers

By Cok Duijvestijn, trainer Q-Point

In the framework of the Niche Programme "Capacity building for food security through sustainable potato value chain development in Rwanda" (RWA/185), NICHE pays special attention to capacity building of UR-CAVM staff in practical potato knowledge and skills. In the (inter)national market quality and food safety issues are very important. This also helps them with the development of their own "potato academy".
For that it is important that UR-CAVM staff has the knowledge and skills to support the implementation of GAP at farmers' level. This training was focused on the basic principles of GLOBALG.A.P, so extension officers / teachers will be able to transfer this knowledge to (Irish potato) growers in Rwanda.



Part of the group who followed the training.

A group of 21 enthusiastic participants signed in for this training.

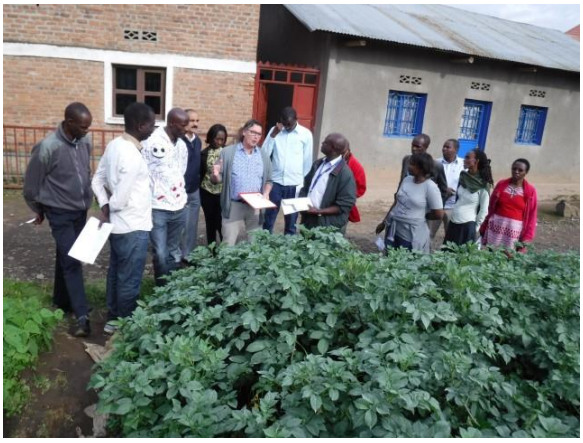
We started the training with the following subjects:

- Food safety developments
- Market and consumer demands (BRC / IFS / HACCP) to gain more knowledge about what is requested by super-markets in Europe.

A lot of practical questions were answered by the trainer.

After this part we started with the introduction of GLOBALG.A.P., developments of GLOBALG.A.P. and the General Regulations of GLOBALG.A.P. The trainer chose a practical way of going through the GLOBALG.A.P. checklist. The group was divided into small groups to discuss how to implement a rule in the Potato Academy. Main part of GLOBALG.A.P. is registration, the trainer showed practical documents the Potato Academy can use.

Together we developed a checklist for executing a zero assessment on the farm. All the participants used this zero assessment checklist when we visited the potato farm on and around the university. The farmers were asked a lot of questions related to GLOBALG.A.P.

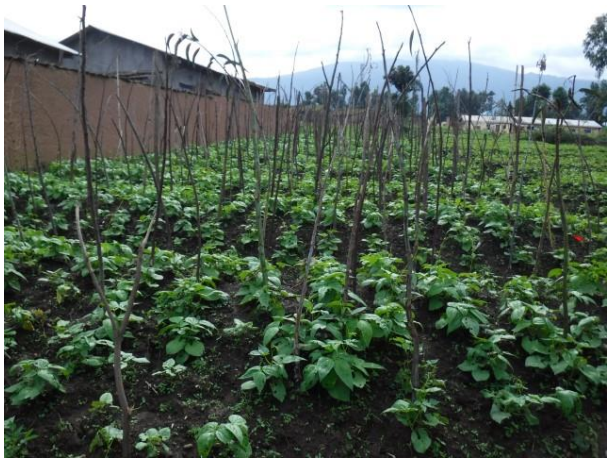


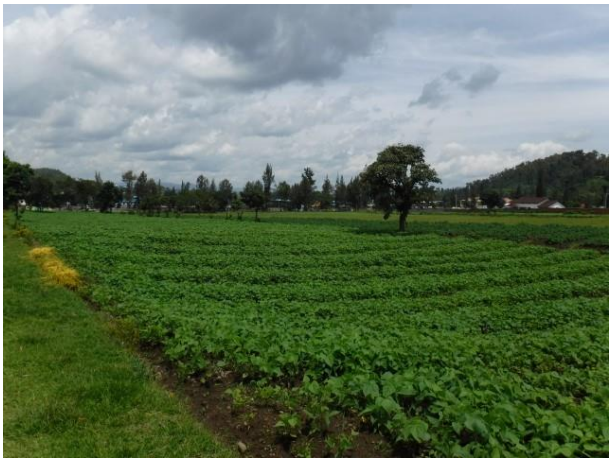
Talking with a potato grower in the neighbourhood.

Result of this training is that all participants have more knowledge about GLOBALG.A.P. however there is still a long way to go before the farmers in Rwanda will reach this level of growing. Important result of the training is that the need of a "Potato Academy" on the UR-CAVM university is high so they can be a good practice example for the potato growers in Rwanda.

Next step will be a follow-up training on GLOBALG.A.P. to see how the rules of GLOBALG.A.P. are implemented in the Potato Academy and how the GLOBALG.A.P. manual for potato growers in Rwanda is developed.

Tour on the farm of the university for a zero assessment on the GLOBALG.A.P. guidelines.



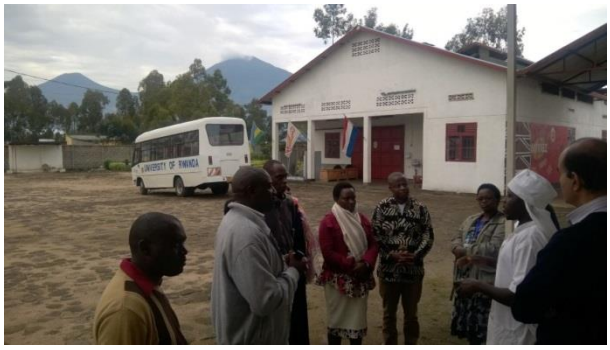


Training at CAVM

By Victor Volkers, trainer Q-point

From 27 February to 2 March Victor Volkers stayed at the Busoko Campus for a training on value chain analysis.
One of the field visits was to the crisps factory at Musanze, a start up by a Dutch entrepreneur. See both Dutch and Rwandan flag symbolising the good cooperation between the partners in this NICHE project.

Participants of training Value Chain Analysis.

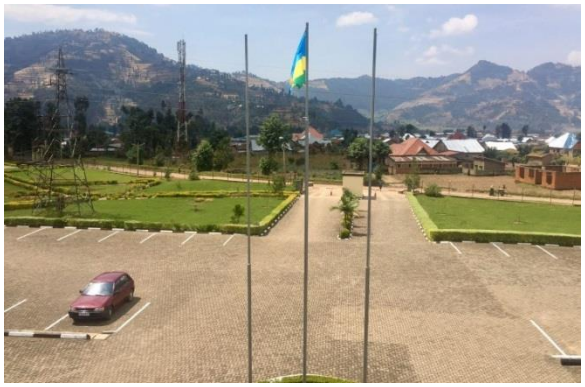


Field visits to the crisps factory at Musanze.

Strategic plan for income generation at UR-CAVM

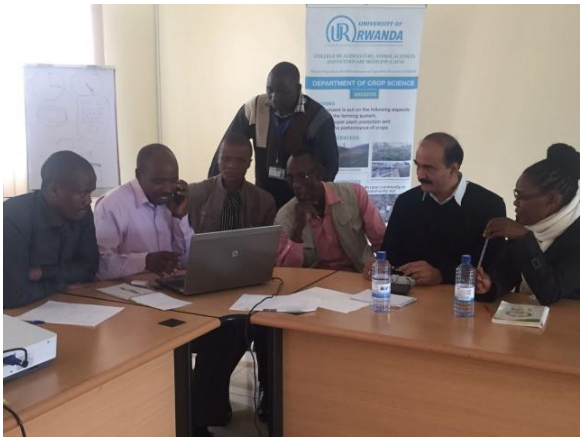
By Simone Langhorst, trainer Q-Point

Q-Point consultant Simone Langhorst was invited by CAVM (College for Agriculture, Animal Science and Veterinary Medicine) to facilitate the workshop "Strategic plan for income generation at UR-CAVM" . CAVM is a public educational institution and part of University of Rwanda, based at the very green and clean Busogo campus near Musanze.



CAVM view.

In order to strengthen the financial position of CAVM the need for a strategic plan on generating alternative means of income has arisen. This mission is part of the project "Capacity building for food security through sustainable potato value chain development in Rwanda" where technical assistance is given on strategic plan development and implementation to generate income to structurally integrate outreach with education.

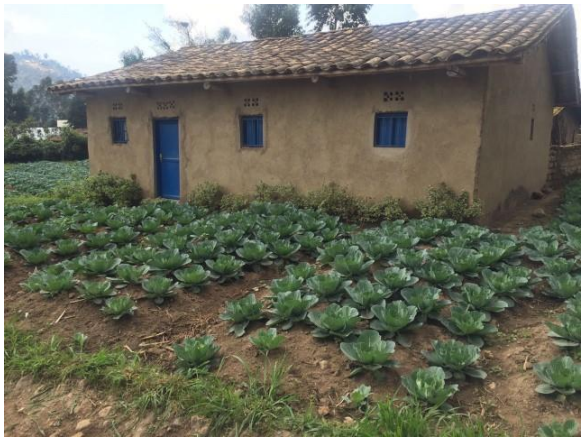


Group work.

The goal of the workshop is to develop a strategic plan for income generation at UR-CAVM and to identify bottlenecks and issues for implementation of income generation policy. During the workshop input and information was obtained from all participants: teachers and other involved staff. The principal of the college opened the workshop with an inspiring statement of her clear vision on agricultural education; all students must be aware that they can create their own farm business or at least their own income once they have graduated. This means business orientation should be further elaborated in the curriculum of the college. The workshop also contributes to the business focus of the teachers which they can use at their turn in their educational and practical programmes.

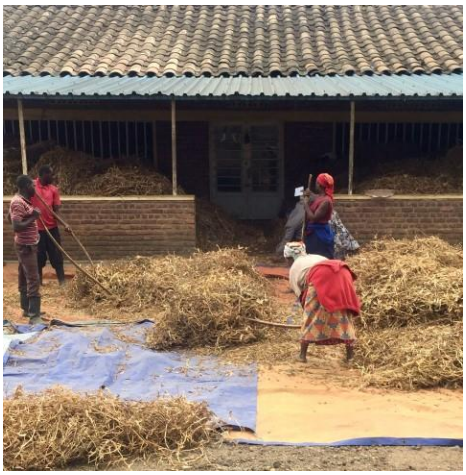
The participants worked with a Q-Point business plan tool where different questions needed to be answered in group work assignments. During presentations of the assignments all ideas were discussed, pitched and defended by each group which finally lead to new insights and opportunities for CAVM.

The conclusion of the workshop is that there will be a mix of three sources of alternative income to further develop: practices for education in agriculture (short courses), consultancy activities/ technical assistance and farm production and processing. Recommendations on implementation will be part of the final document.



Vegetables.

"I had a very pleasant stay in Rwanda at the Busogo campus where the people are nice, where there is an open attitude towards discussions and where participation is high. I was impressed by the green environment, the many crops/vegetables they are growing, the cleanliness and the level of organisation of the environment", states Simone "I hope to come back at some time and see that all income generating activities are implemented well and are actually a substantial part of CAVM".



Getting out the beans.

Partners

Q-Point
The Netherlands

Delphy (Formerly named DLV Plant)
The Netherlands

HAS Den Bosch
The Netherlands

Requesting organisation

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

Donor

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Colophon

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