



**CARP+ Seed Potato Value Chain@Egerton University**

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**Annual Report for the Period 1<sup>st</sup> August 2018- 31<sup>st</sup> Dec 2019**

**Project Title: Enhancing Access to High Quality Seed Potato for Improved Productivity and Income of Smallholder Farmers in Nakuru County**

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**1. Establishment of the Hydroponics and aeroponics facility for rapid seed potato multiplication at Egerton**

The CARP+ established a hydroponics and aeroponics units and established the first seed crop here for production of high status breeder's material through tissue culture technology. The chemicals and reagents for use in the Tissue Culture (TC) lab have already been procured for the PhD student and additionally two research assistants working in the hydroponics/aeroponics unit and TC laboratory hired. These activities will contribute to production of high status seed potato material that Baraka College and farmer groups in the CARP+ and beyond can acquire for further multiplication and Bulking as seed merchants or out growers. This will significantly improve their livelihoods through guaranteed incomes as well as enhance access to quality seed to thousands of farmers across the region.



*Figure 1: Hydroponics and aeroponics units at Egerton University field 7*



*Figure 2: CARP+ and ADC Molo team go about preparing the hydroponics troughs for planting.*

## **2. Organising of potato demonstration plots for Training on GAPs**

The MoA together with other stakeholders in the potato value chain in Nakuru county such as NPCK, ADC Molo, Karlo Tigoni, Baraka fertilizers, Amiran, Twiga chemicals among others have set up potato demo plots at sub-county levels in Nakuru county with the aim of training on good agricultural practices. The demos have been set up in 8 sites across the county. Egerton University through the CARP+ SPVC have actively collaborated with the ministry in organising the demos through stakeholder meetings and



will continue to be at the core in trainings and planned field days. The CARP+ is hosting one of the demos where two farmers field days have been conducted so far.



*Figure 3: Farmers learn about the Apical rooted cuttings at Egerton demos planted in partnership with partners in the Nakuru County Potato platform*



*Figure 4: Farmers learn about potato GAPS during a field day at Egerton field 7*

### 3. Agri-Tech Talks and Exhibition at Nakuru

This was a two-day event organized by Nakuru county government in conjunction with other stakeholders in agriculture. This included Food and Agriculture Organization (FAO), Smart farmer Africa, Land O' Lakes, Vijabiz, Egerton University, Nakuru Farmers, seed savers network among others. The theme was Digital Agriculture and Mechanization, the new revolution in farming. CARP+ SPVC facilitated about 30 students (BSc Agri, Selum and Msc AGRD, COSE and AGRO) to attend the event in collaboration with Nakuru Irrigation Acceleration Platform (NIAP) and TAGDev. Many exhibitors displayed products and services promoting the theme of the day, majority being youth groups and individuals. CMS Agropriises, Tamu Nuts enterprises, Inuka Njoro youth group, Shabaab women group, ten sisters group among others were present. CMS Agropriises and Tamu Nuts are students' enterprises run by MSc. Agri-enterprise at Egerton University. CMS Agropriises displayed their potato crisps and sold to the attendees. It was a great opportunity to share with other stakeholders in potato as well as tubers value addition. Shabaab women group add value to different tubers such as arrowroot and sweet potatoes. The enterprise promised to work with CMS Agropriises in expansion of tuber value addition in Nakuru County.



Figure 5: Egerton Students exhibit various products during the Agri-tech talk workshop in Nakuru

#### **4. Agri-wallet workshop in Nakuru**

The CARP+ SPVC together with NIAP facilitated its students in Agrienterprise and Community studies to attend and AgriWallet workshop held in Nakuru on 11<sup>th</sup> December 2018. Agri-wallet is a mobile financial tool that helps the farmers to grow their Agri-enterprises by facilitating quick sales payment, savings, loan borrowing and investment. This is achieved through a network of linkages between the farmers, the buyers, and the agro-input dealers. It was formed by Dodore Kenya Limited in the year 2016 to help smallholder farmers since majority of the farmers have challenges of saving their money after sales of the farm produce. Agri-wallet works in close partnership with other organizations such as SNV, Rabobank foundation, Technoserve, MasterCard foundation, IFDC and World Vision Kenya. It has a network of 9710 farmers and 27 buyers distributed in Mt. Kenya region, Nakuru, Homabay, Migori, Makueni, Nairobi and Siaya. These farmers are involved in different value chains including potato, dairy, mangoes, soya beans, papaya and sorghum. Agri-wallet operations begin by searching for existing formal buyer-seller (farmers) relationships. This includes buyers of farm produce such as dairy cooperatives. Input suppliers such as agro vets also have relationships with farmers who should buy inputs from them. The buyer helps to provide a profile of his or her suppliers (farmers), they can be either contracted or in a trust relationship with the buyer. Agri-wallet then takes the initiative to register the farmers as well as facilitating the relationship through financial support.

#### **5. Ruforum Biennial conference 2018**

The CARP+ SPVC participated in 2018 Ruforum Biennial conference held in Nairobi in October. The theme of the conference was “**Aligning African Universities to Accelerate Attainment of Africa’s Agenda 2063**”. The CARP+ students presented posters and extended abstracts from the first year activity. At least 11 posters and 5 extended abstracts from the baseline survey, field days and potato fairs, seed potato activities with farmers and students research activities. In addition, students were trained on social media skills on 20<sup>th</sup> October 2018. The training theme whose theme was “**Telling the African story**” equipped students with skills in social media such as Twitter and Facebook. Students were trained on how to take high quality photos and short films that

they can use in telling their stories. The stories can be shared online through social media and in databases such as in the Ruforum website. On 21<sup>st</sup> October 2018, students were inspired by Johnston Mwakazi during the “**Personal mastery for student’s session**” held at the University of Nairobi Towers. The facilitator shared his story as well as case stories of other people around the world who have succeeded. He shared the case of the African story and how the people in Africa have suffered for too long and made comparison with other Nations around the world where people have made simple innovations to ease their lives and to uplift their living standards. This he said is possible in Africa if the current generation of leaders (students present at the conference) were to take it upon themselves to stir the change that Africa need.

The following is a summary of works presented at the conference relating to CARP+ activities

<b>S. No</b>	<b>Title</b>	<b>Name of authors</b>	<b>Type of article</b>
1	Analysis of Production and Use of Clean Seed Potato among Smallholder Farmers in Nakuru County, Kenya	Amwine, L; Mutuku, M.M, Nkurumwa, A; Kibe. A; Mwangi, M.	Extended abstract
2	Community action experiential learning on enhancing access to quality seed potato in Nakuru county	Amwine, L; Kibe. A; Mutuku, M.M; Nkurumwa, A.O.; Mwangi, M.	Poster
3	Assessment of Gender Roles in Potato Production: A Case study of Nakuru County, Kenya	Agbolosoo, J.A; Bett, H; Nkurumwa, A.O; Mutuku, M.M; Kibe, A.M; Mwangi, M	Extended abstract
4	Enhancing Access to Information on Potato Technologies Through Agricultural Fairs	Cheruiyot C. Judith; Kibe M. Anthony and Mariam Mwangi	Poster
5	Participation of Small-Scale Farmers in Collective Marketing of Potato in Nakuru County, Kenya	Nyasulu, L.; Mutuku M. M.; Nkrumwa A.O.; Kibe, A. M, Mwangi M.	Extended abstract



6	Learning experience in potato through community action research project (CARP+) in Nakuru county	Manjale, M.J.; Mariam Mwangi; Anthony Kibe A.; Mary Nganga and John Nganga	Poster
7	Effects of different propagules and growing media on the growth and yield of seed potato	Nganga, J.; Mariam, M.;Kibe A.M.; Ng'ang'a, M.M.; Manjale, M.	Poster
8	Establishment of on-farm seed potato demonstrations sites in Nakuru county, Kenya	Ng'ang'a M.M.; Kibe A.M.; Nganga, J.	Poster
9	Factors influencing storage of seed potato among Smallholder Agri-enterprises in Nakuru County, Kenya	Mutinda, R.M.; Wambua D.K.; Kibe A.M.; Gathungu, E.	Poster
10	Factors influencing storage of seed potato among Smallholder Agri-enterprises in Nakuru County, Kenya	Mutinda, R.M.; Gathungu, E.; Kibe A.M.	Extended abstract

## 6. Attachment of MSc COSE students at NPCK

The CARP+ attached its community studies students for 2 months to its partner NPCK. The three students Lamech Amwine, Lucky Nyasulu and Judith Cheruiyot had a lot to learn from the organisation whose to help plan, organize and co-ordinate potato value chain activities with the aim of developing the subsector into a robust, competitive and self-regulating industry. The Potato Council organizational structure enables it to draw synergies from a wide membership, representing all stakeholders and actors in the potato industry. The attachment experience was good as the students were engaged in many activities and gained hands in training farmers. Implementing the Zeba project together with farmers gave the students the community experience which is the core of the MSc. COSE programme. Furthermore, orientation on organisation structure and day to day operation activities helped the students to understand how organisation systems operate. This experience was necessary and will help the student in her future career.



*Figure 6: Lucky Nyasulu (in red jumper) and Lamech Amwine (in black coat) during a farmers training in Nyandarua county.*



*Figure 7: Lucky Nyasulu and Lamech Amwine during a field visit to a potato farmer*





*Figure 8: Lamech Amwine helps a group of farmers sort and grade their potato before marketing*

## **7. Internship program for BSc COSE**

The CARP+ SPVC attached 5 Bsc students in community studies at Egerton University for 2 months from in September to November 2018. The students were engaged in CARP+ activities that included case studies development in two farmer groups in Nakuru. Propagation of seed potato in hydroponics and aeroponics at Egerton university. Management and harvesting of CARP+ SPVC field seed potato at Egerton university among others.

## **8. Organization Capacity Assessment Tool (OCAT) and Case Studies Development and Documentation Training**

The CARP+ SPVC through facilitation of TAGDev Program at Egerton University conducted an **OCAT** training on 5<sup>th</sup> and 6<sup>th</sup> February 2019. Organizational capacity assessment is an important exercise that helps determine internal capacity of the farmer groups (FGs) and cooperatives by establishing their status quo which includes current gaps, their strengths and areas of improvement to make them effective and sustainable.

The two-day training was conducted by the National Potato Council of Kenya who are a main CARP+ partner. The training targeted staff and students from Egerton university and Baraka Agricultural College. Twenty students from Egerton (TAGDev Cohort 1 and 2), five (5) from Baraka Agricultural College and three (3) staff from Egerton University were trained on the tool. On the second day of the training, the CARP+ SPVC conducted a pre-testing of the tool with farmers at Gilgil (Kasambara Bidii Self Help Group). The CARP intends to administer the tool to all farmer groups we are working with to assess their capacity for purposes of needs specific trainings in the current financial year.

On 12<sup>th</sup> to 14<sup>th</sup> February 2019, the CARP+ SPVC conducted a case studies and development training for students and staff from the Seed Potato CARP+, Cassava CSV and TAGDev program administration staff. The training also drew participants from collaborators in the two projects. A total of five (5) staff and 20 post graduate students (TAGDev cohort one- 15 students and cohort two- 5 students) were trained by two case studies development experts. The trainers held a pre-training conference with the case studies writers on 23<sup>rd</sup> January 2019 where the case studies topics were agreed upon and participants (writers) allocated to specific case studies. The writers were given an assignment to draft a case study around their topic and send the draft before the actual day of training for review. All case study stories/topics to be documented were drawn from the seed potato CARP+, Cassava CSV and TAGDev experiences of their first year and two years' (for TAGDev) journey in implementation of the projects. From this training, six case studies were written and they are being edited and reviewed by the trainers for preparation to publication.



*Figure 9 and 10: CARP+ teams including staff, students and farmers during the case studies workshop where 6 cases were prepared.*

## **9. TAGDev National Forum Meeting for Universities, TVETs and Industry Players in the Agricultural Sector**

The TAGDev program facilitated seed potato CARP+ to attend the National Forum meeting for Universities, TVETs and industry players in the agricultural sector held in Naivasha on 12<sup>th</sup> and 13<sup>th</sup> March 2019. Four (4) CARP+ Egerton staff, Baraka Agricultural College Staff (3) and two (2) SPVC CARP+ students participated in the two-day event. Baraka Agricultural College also exhibited in the event.

## **10. Farmers Field Day and Exhibition**

The Seed Potato CARP+ in collaboration with the Nakuru Irrigation Acceleration Platform organised a farmers training and field day at a farmer's field in Njoro, Nakuru held on 8<sup>th</sup> March 2019. The field day was organised to demonstrate potential in irrigated agriculture. The farmer Mr Kangethe donated a portion of his farm measuring about 30m x 50 m for where various stakeholders (Lachlan, ADC Molo, Egerton Seed Unit among others) planted their demonstration plots for various technologies including crop nutrition, high yielding crop varieties and crop protection. The farmer who has invested in irrigated farming also allowed the stakeholder to use his drip lines and water for irrigation of their plots. This activity culminated in the 8<sup>th</sup> march field day and exhibition at the same farm where SPVC CARP+ and TAGDev sent their students to learn and participant in various roles exhibition and training farmers on seed potato demos established by the CARP+. More than 250 farmers attended this event.



*Figure 10: Farmers look at solar pumps at Elim farm field day*





Figure 11: Farmers visit field plots during the Elim farm field day

### **11. Nakuru Potato Strategy Stakeholders Meeting**

The Seed Potato CARP+ in collaboration with NPCK organised a potato stakeholder meeting held at Agricultural Training Centre (ATC) Soilo, Nakuru on 23-24<sup>th</sup> May 2019. The meeting was organised for the purpose of discussing the first draft of the Nakuru Potato Strategy document and incorporate the views of the stakeholders in the development of this important document. The meeting was attended by various stakeholders including; ADC Molo, KEPHIS, MoAI Nakuru and Nyandarua county, SNV, Farmer cooperatives and farmer representatives, NPCK, Egerton University, Agrico East Africa, UPL crop protection, Twiga Chemicals, National meteorological department representative among others. The CARP+ SPVC was represented by four students and two staff members who made their contribution during the break up sessions as well as by presentations. The CARP+ SPVC initiated the process and is sponsoring the development of a draft Nakuru Potato Strategy and its implementation through the MasterCard Foundation funding.

### **12. The development and implementation of The Crops (Irish Potato) Regulations, 2019**

The regulation on maximum 50kg packaging bag and pricing by weight was stipulated in AFFA Act 2013 but has since been amended rendering its implementation impossible. The implementation of the regulations was previously faced by a challenge of a court case by traders in 2014 who petitioned lack of involvement in development of the regulations. Currently, the amended Act empowers the Cabinet Secretary (CS), State



Department of Agriculture, to regulate the packaging standards and unit of pricing for each crop through a gazetted legal notice. The process for the development of a legal notice calls for stakeholders' inclusivity as indicated in the chapter 4 of Kenyan constitution. The Agriculture and Food Authority (AFA) and NPCK organized several stakeholders' engagements in making resolutions on regulations for packaging standards where farmers' and other stakeholders were taken through the process required in developing and implementing the regulations on maximum 50 kg packaging bag and pricing by weight. These processes included:

- i. Involvement of stakeholders in decision making of packaging standards and pricing mechanism via stakeholder meetings and forums
- ii. Development of a legal notice that support the maximum 50kg potato packaging bag and potato pricing by weight by the Cabinet Secretary, State department of agriculture
- iii. Gazettement of the legal notice to support the implementation of the regulations and stakeholders support for the implementation of the legal notice
- iv. Amendments of the County financial bills, to support cess charges by weights or using maximum 50 kg potato packaging bag.
- v. Awareness creation of the law enforcement arms and agencies

The public participation spearheaded by AFA and NPCK was successful completed in 14 potato producing counties: Uasin Gishu, Nandi, Kisumu, Narok, Bungoma, Trans Nzoia, Elgeiyo Marakwet, Kiambu, Bomet, Meru, Nakuru, Laikipia, Nyandarua and Nyeri and 3 consuming cities: Kisumu, Mombasa and Nairobi from 18<sup>th</sup>- 22<sup>nd</sup> June 2018. This was followed by a validation workshop held at Kenya Agriculture and Livestock Research Organization (KALRO) HQ on 4th July 2018. The draft regulation also underwent through: the regulation impact assessment (RIA), legal review and comments by the Attorney general's office, 14 days public review followed by National validation workshop on 21<sup>st</sup> Nov 2018 at KALRO HQ to validate the reviewed regulations. The regulations were published in the Kenya Gazette in a legal notice number 17 on 5<sup>th</sup> April, 2019 and were subsequently submitted to the National Assembly for approval on 11<sup>th</sup>

April 2019. The regulations later were acceded to by the National Assembly on 2<sup>nd</sup> May 2019.

The Crops (Irish Potato) Regulations 2019 was launched by Hon. Mwangi Kiunjuri, the Cabinet Secretary (CS) for Agriculture, Livestock, Fisheries and Irrigation on 25<sup>th</sup> May, 2019, at KALRO Headquarters during this 2019 National Potato Conference and Trade Fair organized by NPCK. The objectives of the regulations are; 1) Promotion of best practices in production, transportation, and storage of Irish potatoes 2) To provide for quality assurance and marketing standards for potatoes and 3) To provide for procedures and conditions for registration of Irish potato growers, grower associations, and dealers. Prior to the launch, NPCK, Agriculture and Food Authority (AFA) and specific Counties including Nakuru and with support from development partners such as **AGRA, Seed CARP+ seed potato value chain project, IFDC-PCB project**, carried out stakeholders' sensitizations and awareness creation of the regulations. Round table engagements were also held in order to identify an implementation committee in each county, identify key implementers of various provisions, and develop a road map and action plan for implementation. The launch of the regulations marks a milestone for the subsector and subsequent implementation of the regulations will help transform the potato sub-sector. NPCK will closely work with County potato coordinating units to support implementation of the regulation.



Figure 12: Launch of the Crops (Irish Potato) Regulations 2019 by Hon. Mwangi Kiunjuri, the CS for Agriculture, Livestock, Fisheries and Irrigation

### **13. National Potato Conference and Launch of the Potato Regulations 2019 (Kenya Gazette Supplement No. 39 of 5<sup>th</sup> April, 2019)**

This event was held in collaboration with NPCK a major partner in the project. The CARP+ facilitated 15 students and 10 farmers to participate in the two-day workshop that culminated in the launch of potato regulations 2019. The regulations require all potato sector actors to adhere to the following requirements;

- i. The unit of measure of all potatoes shall be the kilogram (Kg).
- ii. The maximum weight for each single unit of package of Irish potato shall be 50 kg.
- iii. Growers and dealers of Irish potato produce shall use a weighing scale that has been properly calibrated, serviced, inspected and approved by the Ministry for the time being responsible for trade.
- iv. All Irish potato growers and growers' association, dealers, transporters shall be registered with the County Government's Department of Agriculture.
- v. Crop inspectors shall have powers of entry upon any land, or premises, or and can stop and enter into any vehicle, vessel or conveyance used for storage or transportation of Irish potatoes for the purpose of ascertaining that the net weight and packaging conforms to these regulations. The inspector shall seize and detain the Irish potato packaged and transported in a manner that does not conform to the requirements of these regulations at the cost of the offender.

The CARP+ SPVC participated in the policy development of the regulations through its staff and by facilitating the NPCK to conduct the consultative and public participation meetings. These requirements are intended to regulate the potato sector and eliminate exploitation of potato farmers by middlemen who make high profits at the expense of poor farmers. The regulations have ever since been effected in Nakuru County among other potato producing counties.

### **14. Profiling of Potato Market Outlets in Nakuru County**

In the month of March, 2019 the NPCK and Egerton Students, through the support of the Seed Potato CARP+ project undertook a rapid appraisal and profiling of market outlets for ware potato in Nakuru County. The aim was to better understand requirements for each market outlets and use the information to support and link potato farmer groups/cooperatives in Nakuru with direct market linkage. The information was aggregated using a questionnaire and the details captured included varieties, quantities, and qualities of potato required by the specific outlets. Among the respondents interviewed included: traders, hotels, fast food, supermarkets and County Department of Agriculture.

Findings from the study shows that the predominant potato varieties traded in the region are Tigoni, Shangi, Sherekea, Unica, Kenya Karibu, Kenya Mpya, Dutch Robjin, Markies, Manitou, Jelly, Rudolph and Destiny. Among the varieties, Shangi is the most preferred variety in the market and is considered as multi-purpose variety good for chips, crisps and table while the others are preferred for stews, mashing, and other uses. During the exercise 27 market outlets, 4 Supermarkets and 2 traders from Wakulima market were profiled. Of the twenty-seven profiled market outlets majority uses Shangi for processing chips, however a small percentage have adopted other chips processing varieties such as Jelly, Markies, and Rudolph. Majority of the outlet rely on traders from Wakulima market (which handles about 35tons per day) to source and supply them with potatoes. Medium (51mm-80mm) and large potato sizes (81mm>) are preferred by off-takers.

#### **Overall challenges faced by the potato buyers**

1. Lack of knowledge on different potato varieties as most traders identify the variety with the skin colour which is either white or red
2. The outlets have limited access to right varieties for processing
3. Procuring and sourcing quality and fresh potatoes, seasonality and price variation
4. Potatoes are not well graded and sorted, same bag has mixed sizes and varieties
5. Quality of potato is not consistent, there instances when potato supplied has green tubers
6. High losses due to tubers rotting especially when packaged while wet and with a lot of mud



7. Lack of standard packaging for potatoes makes it difficult for traders when determining the market price

### **Proposed way forward**

1. NPCK to develop and provide guidance on a suitable mode of engagement between the farmer cooperatives/ groups and the market outlets including wholesale traders
2. The farmers to be trained on sorting, grading and postharvest management in order to meet the quality specifications for different market outlets and reduce on postharvest losses
3. Work closely with the market outlets to avail samples of other varieties that will be tested for processing and other suitability
4. NPCK, partners and County department of Agriculture, Fisheries and Livestock and department of Trade, Tourism and Investments undertake the following initiatives:
  - Support implementation of potato marketing regulations (AFA, NPCK, AgCK, CG)
  - Create awareness of different types of varieties through demonstrations, workshops and visual aids (CIP, KALRO, Egerton University, NPCK, CG)

### **15. Establishment of seed potato fields at Egerton University field 17**

In collaboration with Toyota Tsusho and Case International (Case IH), the CARP+ established a one-acre seed potato field at Egerton University on 20<sup>th</sup> June 2019. The seed crop of the variety Dutch Robjin has been registered with the Kenya Plant Health Inspectorate (KEPHIS) for certification. During establishment, Case IH provided a 22 hp tractor that was used to demonstrated mechanized planting of potato. Twenty farmer representatives were also invited from various groups and they also manually established ¼ acre following the conventional non-mechanized planting for comparison. The crop is due for harvest in October 2019.



Figure 13: Farmers and students load fertilizer during the mechanized seed potato demos at Egerton Field 17



Figure 14: Mechanized planting of seed potato field at Egeron University field 17. Tractor and implements provided by CASE IH-Toyota Tsusho based in Nakuru.

## 16. Collaboration with CaWSAC project to establish a smart agriculture centre at Egerton University field 7

The CARP+ SPVC have collaborated with the Climate and Water Smart Agriculture Centre (CaWSAC) a 7 months' (June to December 2019) project funded by SNV-The Netherlands at Egerton University. Through this program, the partners are establishing a climate and water smart centre where water smart technologies such as drip irrigation, sprinklers, mulching, solar powered pumps and water harvesting are being demonstrated. The centre is also growing potato together with suitable rotation crops from seed potato production thereby providing an enterprise opportunity for the CARP+ SPVC project by providing suitable rotation crops in their seed production systems in the university and at farmers' fields. The two projects jointly facilitated a farmers' field day at the centre held on 3<sup>rd</sup> August 2019 where 100 farmers attended. Water harvesting, solar powered pumps, seed potato production practices among other were exhibited. Six stakeholders exhibited in this event namely ADC Molo, SunCulture, International Potato Centre (CIP), Agro-Science Park Egerton, Agrico East Africa, Baraka Fertilizers and Hong Zhou Agrochemicals. Other companies that had grown their crops in the demos include TECHNISEM who provided seeds of squash, cabbage, carrots, celery and onions.



*Figure 15: Students planting Apical rooted cuttings at CaWSAC under irrigation*





*Figure 16: Established potato crop at the CaWSAC Egerton*

### **17. Facilitation of Baraka Agricultural College (BAC)**

The CARP+ project has facilitated in two years seed potato production at BAC. From the 5 acres of shangi produced last growing season at the college, this current year the institution has managed to expand to 10 acres of seed potato production translating to more than 100 tonnes seed potato of shangi, Kenya Karibu, Dutch Robjin and Sherekea varieties in expected harvest in August 2019. The institution is now in the next season considering mechanizing production from land preparation to reduce on losses from especially manual harvesting and grading.



*Figure 17: Ms Meghan Markle during the field visit at BAC seed potato fields*

**18. National Potato Council of Kenya (NPCK) Marketing Event, 14<sup>th</sup> August 2019 Agricultural Training Center, Nakuru County**

The National Potato Council of Kenya (NPCK) organized a marketing event involving potato farmers, processors, traders, Nakuru County Government and CARP+ at ATDC Soilo in Nakuru County. The goal was to create a platform for stakeholders to engage directly so as to create synergy and increase value chain efficiency. farmers, traders and processors were present at the event.

**Business to business meetings between farmers, traders and processors**

The farmers had an opportunity to interact with the traders and processors present so as to know the requirements of the market which they supply. These included Sereni Fries, Njoro Cannery, CMS agropriests, Midlands Ltd, Viazi Kings, traders from Wakulima market in Nakuru County and a representative of Twiga foods and Java restaurant chain. Farmers were informed of the various sizes, varieties and quantities demanded as well as the terms of engagement with each.



*Figure 18: Farmers, Traders and processors participate in B2B meetings at ATDC Soilo, Nakuru*

### **Outcomes**

Farmers reported that there were still inadequacies in the provision of seed potato for the demanded varieties. They also noted with concern that some of the demanded sizes were too big and some prices offered too low. There was also information dissemination inefficiency allowing farmer exploitation by brokers.

### **Way forward**

Farmers proposed that prices of potato be regulated with a price floor to protect farmers. Viazi soko platform was also to be a useful tool to address information dissemination asymmetry. The Nakuru County officer in charge of Potato value chain said that farmers would continue to be sensitized on the potato regulation, market needs and use of certified seed. She urged them to register their potato production groups with the CGN which would also be done for processors, traders, transporters, warehouses and collection centres. She further said that enforcement of the regulation was already underway. The CECM for Agriculture asked the farmer groups represented to become ambassadors to mobilise farmers for further sensitization meetings to take place every fortnight forward in every ward. She said that the CGN was working to ensure compliance with the 50 kg bag in markets outside Nakuru to streamline regulation implementation. The CARP+ P I also emphasized the central role of farmers in the success of regulation implementation and urged farmers to enforce compliance.



### 19. Rift Valley Institute of Science and Technology Expo 2019 Date: 9-10 August 2019

The CARP+ SPVC project facilitated two Agronomy and one horticulture students attached to the project to take part in the above event organized at the Rift Valley Institute of Science and Technology sports ground and farm demo field. The theme of the Expo was enhancing agribusiness through technological innovations focused on training local farmers on how to boost food production by linking them with experts in different fields of agriculture. Activities included Silage making and packaging, ploughing and tractor calibration, feed formulations/fodder, climate smart agriculture practices, market information access, research and biotechnology value addition, crop demonstration plots, livestock exhibition, farm machinery and implements exhibition, networking of the stakeholders in agribusiness sector(finance and service providers, farmers, trainees and technologists), demo plot exhibitions of various varieties of different crops (cooper, k-brands, Kenya seed company, Syngenta, Kenya seed co, Pannar and RVIST).



*Figure 19: Mohammed Manjale, Mary Nganga and Lily , Bsc Agriculture and Horticulture students under the CARP+ potato attend a farmers field day during their attachment to the CARP+.*

### 20. Potato Post Harvest Handling Training Series: Collaborative partnership between CARP+ SPVC and Louisiana State University (LSU)

Post-harvest loss is among the major challenges to food security in Africa. Up to 30% is lost post-harvest in potato production. To secure food and nutrition while fortifying farmer livelihoods, it is necessary to build capacity of farmers to address this challenge at



farm level. CARP+ SPVC therefore organized a series of trainings for various tiers of stakeholders along the potato value chain. The main areas of training included:

- The role of pre-harvest crop management on quality of produce at harvest
- Safety and hygiene standards to be observed during harvest
- Impact of bruising and blunt impact trauma on produce quality and shelf life
- Role of microbes in reducing shelf life and saleability of produce
- Prolonging shelf life of produce through curing and cold chain management

### **Structure of the Trainings**

Training was done based on nature of stakeholder to be trained and orientation to the value chain. Students, Egerton University and ADC staff were trained coupled with a brief on collaborative research and academic opportunities available at Louisiana State University. These included exchange as well as scholarship programs for students and staff. KALRO staff and interns were trained on the technical aspects of post-harvest management including long term storage through curing, cold chain management and use of sprouting inhibitors. Farmers, traders, transporters, County officials and processors were trained on market readiness of produce as influenced by post-harvest handling and packaging during storage and transport. Coupled with this was sensitization of farmers on the Crop Irish Potato Regulation 2019 and the NPCK Viazi-Soko marketing platform.

## **21. Seed potato production at Baraka Agricultural College**

BAC and Egerton University are carrying out a project on Multiplication (bulking) of clean/ certified seed potato. It was planned that there will be two seed potato harvest this year. With the delayed rains the planting was done in May 2019 as compared to April 2019 as planned.

The CARP+ project funded the management of 3 acres in seed production. In an effort to mitigate seed potato shortage, the management of Baraka decided to do 8acres on seed potato in this ratio;

<b>Variety</b>	<b>Land size</b>	<b>Productivity</b>	<b>Tonnes</b>
Shangi	2.5 acres,	283 bags of 50 kg	14.1

Dutch robin	2.5 acres,	271 bags of 50 kg	13.55
Kenya Karibu	2.5 acres,	252 bags of 50 kg	12.6
<b>Totals</b>	<b>7.5 acres</b>	<b>806 bags of 50 kg</b>	<b>40.25</b>

The market for Shangi is extremely high but it was not possible to do more due to scarcity of basic seed for multiplying. The harvesting was on done on the 15<sup>th</sup> of September 2019 manually. There was an attempt to use machine for harvesting but it was not possible due to heavy rains causing soil dampness.

## 22. Rapid Multiplication of seed potato at Egerton University

The CARP+ seed potato value chain (CARP+ SPVC) project funded by MasterCard Foundation through Ruforum, has established a rapid seed multiplication facility at Egerton University. The facility consists of a hydroponics and aeroponics units both of which can support at least 1500 in vitro plants. The aeroponics unit can support upto 264 plants while the rest is supported by the open and closed hydroponics units. The rapid propagation techniques using soilless growing media will allow the University seed unit to produce high status breeder's material through tissue culture technology. The yield under the aeroponics system varies from variety and can go as low as 30 minitubers per plant to as high as 60 minitubers per plant in one production cycle. Under the aeroponics unit, one production cycle of four months can yield from 8,000 to 16,000 Basic Seed minitubers for Shangi and Kenya Karibu respectively. The minitubers will be bulked in certified field in Tatton Agriculture Park (TAP) at Egerton University. The CARP+ project have collaborated with ADC Molo and International Potato Centre who are providing technical training and germplasm for multiplication and bulking. Two graduate interns and 6 staff members from Egerton University and Baraka Agricultural College (TVET partner in the project) have already been trained on tissue culture, hydroponics and aeroponics propagation at ADC Molo. The first crop was planted in the unit on 21st November 2019. First harvest is expected to begin in February and end in March 2019.

## 23. Construction of Seed Potato Store

The CARP+ seed potato project constructed a 40 by 20 feet (13x7m) seed potato store at research field 7 to enhance the shelf life of harvested seed potato from demos and bulking units. The store will also be used for training of farmers on post-harvest handling and

storage of seed potato. This is occasioned by the need to sensitize farmers and reduce post-harvest loss of seed potato.

#### 24. Launch of the Climate and Water Smart Agriculture Center

The CaWSA Center was launched on 1<sup>st</sup> October 2019 at Egerton University Field 7. The event was attended by Potato and irrigation stakeholders including Sunculture Kenya, Stockman Rozen, ADC Molo, Eunidrip, County Government officials (CECM Agriculture, CO Irrigation, CO Agriculture, Potato liaison officer, ward extension officers), farmer representatives (NASFA board) and over 100 students. On showcase were irrigation technologies, potato demonstrations, apical rooted cuttings and solar pumps.

### **SEED POTATO CARP+ MSc/PhD STUDENTS PROGRESS REPORT (As at 31<sup>st</sup> Jan, 2020)**

	<b>Name</b>	<b>Course Msc</b>	<b>Reg no</b>	<b>Status</b>
1	Lamech Amwine	COSE	EM21/12025/17	Submitted final thesis draft for examination and defense
<p><b>Thesis Title:</b>  <b>Supervisors: Dr. Agnes Nkurumwa and Dr. Milcah Mutuku</b>  <b>Publication:</b> Socio - Economic Factors that Influence Adoption of Clean Seed Potato (<i>Solanum tuberosum</i>) by Small Scale Farmers in Njoro, Kenya. <i>The Authentic Knowledge: African Journal of Pure and Applied Science Research Volume 1 No.1, 2019 ISSN 2618-0626-p, 2618-0634-e</i>  <b>Authors: Amwine, L, Nkurumwa, A. O and Mulu-Mutuku, M.W.</b></p>				
	<b>Name</b>	<b>Course Msc</b>	<b>Reg no</b>	<b>Status</b>
2	Lucky Nyasulu	COSE	EM21/12028/17	Submitted final thesis draft for examination and defense.
<p><b>Thesis Title:</b> Influence of Group rules and Market Types on Small Scale Farmers' Participation in Collective Marketing of Potato in Molo Sub County, Nakuru, Kenya.</p>				

<b>Publication:</b> Participation of Small-Scale Farmers in Collective Marketing of Potato in Molo Sub-County, Nakuru County, Kenya. <i>The Authentic Knowledge: African Journal of Pure and Applied Science Research Volume 1 No.1, 2019 ISSN 2618-0626-p, 2618-0634e</i>				
	<b>Name</b>	<b>Course</b> Msc	<b>Reg no</b>	<b>Status</b>
	Judith Cheruiyot	COSE	EM21/12059/17	Has defended at Faculty and Data Collection ongoing.
<b>Thesis Title:</b> Influence of Access to Agricultural Information on the choice of seed potato systems among the small scale farmers in Nakuru Kuresoi North. <b>Supervisors:</b> Dr. Milcah Mutuku and Dr. Mariam Mwangi <b>Publication:</b> Not yet				
	<b>Name</b>	<b>Course</b> Msc	<b>Reg no</b>	<b>Status</b>
	Redemptor Mutinda	AGRD	KM23/12039/17	Submitted final thesis draft for examination and defense. Submitted manuscript to the African Crop Science Journal on 3 <sup>rd</sup> Feb, 2020.
<b>Thesis title:</b> Factors Underlying Agripreneurs' Participation and Level of Investment in Clean Seed Potato Enterprises in Molo, Nakuru County, Kenya <b>Supervisors:</b> Dr. Edith Gathungu and Prof. Antony Kibe <b>Publication:</b> Submitted manuscript				
	<b>Name</b>	<b>Course</b> Msc	<b>Reg no</b>	<b>Status</b>
	John Atsu	AGRD	KM23/12037/17	Submitted final thesis draft for examination and defense
<b>Thesis title:</b> Effect of Agripreneurial behavior on competitive advantage and performance of micro and small potato enterprises in Molo Sub County. <b>Supervisors:</b> Prof. Patience Mshengai and Dr. Isaac Maina Kariuki <b>Publication:</b> Submitted Manuscript.				

	Name	Course Msc	Reg no	Status
	Jerusa Ong'ayo	AGRD	KM23/12038/17	Writing thesis
<p><b>Thesis Title:</b> Networking Capability, Adoption Tendencies and Commercialization: Case of Decentralized Clean Seed Potato Multiplication Agri-Enterprises in Nakuru County, Kenya.  <b>Supervisors:</b> Dr. Eric Gido, Dr. Oscar Ingasia and Dr. Mariam Mwangi  <b>Publication:</b> Not submitted.</p>				
	Name	Course Msc	Reg no	Status
	Judith Natabona	PhD Plant Breeding	<b>KD21/13080/17</b>	Defended Proposal at Department awaiting defense at Faculty.  Research work ongoing.
<p><b>Thesis Title:</b> In vitro and Field Screening of Selected Potato (<i>Solanum tuberosum</i>) genotypes for water stress tolerance in Nakuru, Kenya.  <b>Supervisors:</b> Dr. Maurice Oyoo, Prof. Antony Kibe and Dr. Mariam Mwangi  <b>Publication:</b> Not yet.</p>				
	Name	Course Msc	Reg no	Status
	John Nganga	PhD Agronomy	KD121/13033/17	Defended at Faculty. Research ongoing
<p><b>Thesis Title:</b> Management of Potato Cyst Nematode Using a Trap Crop and Selected Biofumigants  <b>Supervisors:</b> Prof. Antony Kibe, Dr. Miriam Charimbu and Dr. Solveig Haukeland  <b>Publication:</b> Not yet</p>				