

Potato Multi-Stakeholder Experiential Learning through On-Farm Production and Processing of Potato Varieties for Determining Consumer Preferences in Nakuru Kenya

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Abstract

Low potato yields are mainly attributed to the use of poor seed potato propagules at planting time, along with poor crop husbandry. Lack of good agronomic practices (GAP) is associated with lack of adequate practical training of students, extension officers and farmers along the seed potato value chain. This situation can be reversed by training potato value chain (PVC) stakeholders through experiential learning as proposed by the seed potato community action research project plus (CARP+) hosted by Egerton University. This process involves seed potato stakeholders participation in a joint learning process along PVC. Through a multi-stakeholder platform, (MSP), Egerton University (academia-cum-researchers), seed producers (ADC-Molo, AGRICO, Stockman Rozen in collaboration with the international potato centre (CIP), Nakuru farmers associations and cooperatives, input suppliers (Baraka Fertilizer), and the Nakuru County government, extension services of the Ministry of Agriculture (MoA) set out on-farm demonstrations with the aim of supporting experiential, i.e., learning through active participation. This process was jointly supported by the seed potato Community Action Research Project plus (CARP+) and above mentioned seed potato private sector. Furthermore, stakeholders jointly harvested the crop at maturity, the descriptive statistical analysis was performed and all varieties evaluated for suitability for processing as chips, crisps or boiled. The potential yield performance revealed that manitou had the highest tuber yield of 71.2 tons/ha (88% Market yield), followed by Unica at 54.5 tons/ha (80%), compared to shangi (control) with 56 t/ha total yield and 70 % marketable yield. All potato yields obtained from apical rooted cuttings (and no of stems and no. of tubers /plant) were lower than those obtained from tubers. This was attributed

to their high status (breeders – pre-basic) as compared to tuber propagules that were at certified 2 (C2). The highest proportion of seed tubers in all varieties was Size 1 (28 – 48mm) with Shangi having the highest number of tubers/plant, at 12 and 6 tuber/plant, from crops produced through tubers and apical rooted cuttings, respectively. For ware potatoes, only Manitou, Unica and Rudolph had tubers bigger than 100mm. The latter prove to be better for chips processors due to their large size and ease at peeling. When it came to suitability for processing, the overall average scores reveal that Dutch (48.7 %) followed closely by Manitou (46.7) and Wanjiku (44/6%) were generally better scored across the three processed products. However, Dutch performed highly (73 % preference) for crisping. Wanjiku (47%), Manitou (40%) and Dutch Robijn (33%) were found to be satisfying the consumers for French fries. Concerning consistency of boiled potatoes, it was found that only Sherekea (40%) was the most satisfying variety. All the stakeholders, in particular the farmers students and faculty, were able to appreciate the importance of discriminating the choice of varieties to grow for different market and processors.

Introduction

Low seed and ware potato yields are mainly attributed to the use of poor seed potato propagules at planting time, in association with poor crop husbandry (GAP). Lack of good agronomic practices (GAP) is associated with lack of adequate practical training of students, extension officers and farmers along the seed potato value chain. The disconnect between the producer and processors (markets) potato varietal quality expectations add to the disillusionment/exasperation that potato farmers have in meeting market requirements. The multi-stake holder platform (MSP) approach aims to allow the meeting together of both seed potato and ware potato VC actors and enable them to jointly agree on the choice of seed potato varieties to cultivate, the use of appropriate GAP that give best yields in select agro-ecological zones, considerations of food safety and appropriate post-harvest handling (including storage), marketing and processing of potatoes.

Since early 2018, Egerton University seed potato Community Action Research Project plus (CARP+), in collaboration with the Nakuru County Government ministry of agriculture, have been spearheading the development of a potato MSP in Nakuru County. The MSP includes the

potato farming community and various seed and ware potato growers (public and private firms and farmers) along with input and up-take markets. In a joint meeting held at the County government offices in early 2019, it was agreed that joint demonstrations be planted during the long rains of March to July 2019 in various farmers' fields to help evaluate and train farmers in the best agricultural practices for growing seed and ware potato. These farms were to be tested and certified by KEPHIS to be free from Bacterial wilt and potato cyst nematode infestation after which the seed growers, AGRICO East Africa, Agricultural Development Corporation (ADC Molo), supplied tuber seed potato and CIP through Stokman Rozen supplied apical rooted cuttings for multiplication by participating farmers.