



**Sweetpotato Genetic Advances and Innovative Seed Systems (SweetGAINS)
SpeedBreed and Seed Systems Community of Practice
Summary of online Discussion**

TOPIC 1_2020: Increasing adoption of newly released sweetpotato varieties through innovative and sustainable seed delivery pathways

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Introduction

Great investments have been made towards development of improved sweetpotato varieties. This has borne fruit with release of a significant number of improved white-fleshed, orange-fleshed and more recently purple-fleshed varieties. However, traditional varieties still dominate the smallholder farm systems despite the declining yields. Changing this requires that diverse user-preferences are incorporated in the early phases of breeding to ensure that newly developed varieties are suitable to local conditions and at the same time respond to market requirements.

It is therefore important for breeders to understand key traits preferred by different end-users. At the same time seed system experts must understand how to sustainably disseminate the improved varieties. This requires innovative approaches where all the value chain actors are well connected and better trust with good governance set up and respond to each other. Building sustainable linkages depends on the understanding of push and pull factors across the value chain.

The major difference between supply-push and demand-pull strategy in the value chain is the role of the customer/or end-user. The push strategy focuses on taking the product directly to the customer by ensuring customers are aware about the product and know that it comes from recognized sources (i.e., labeling, source of seed, fake seed identification, trade show, direct selling points, modern packing materials, sales point display, etc.). Whereas, the pull strategy involves motivating customers to buy the product (i.e., distributing free sample seed, discount prices, additional services if customers buy the product such as free access to extension and credit services, door delivery if they order in advance through digital platform etc.). In this discussion, members of the SweetGAINS SpeedBreed and Seed Systems Community of practice sought to find:

- a) Examples of supply-push and demand-pull factors that can lead to greater connectivity within the seed supply chain and how to harness them

b) Ways of using key traits in developing push/pull strategies for greater varietal turnover
Below is a synthesis of the key points from the discussion.

a) Understanding informal and formal seed systems

In exploring ways of making sweetpotato seed systems sustainable it is important to consider characteristics of the two common seed systems i.e. formal and informal seed systems. Informal seed systems characterized by farmer-farmer exchange of planting material are currently predominant in sub-Saharan Africa. Varieties disseminated through informal systems are mostly white-fleshed with high dry matter content. They are the most preferred varieties among majority of African consumers because they have a floury feel in the mouth. This influences what traders will buy from farmers and what farmers will plant. In the informal system seed is mostly shared through non-cash transactions. The system is threatened by the burden of viruses which is exacerbated by recycling of planting material. It is assumed that informal systems are predominantly functional because they have been in existence for a long time and supply popular varieties. However, they may not be optimal because innovation and introduction of new improved varieties may be slow. On the other hand, formal seed systems are nascent and spearheaded by select farmers and groups trained to produce quality planting material for different seed classes. Most countries have made significant progress in developing standards for production of quality seed. The trained farmer-multipliers commonly referred to as decentralized vine multipliers (DVMs) source their planting material from trusted places such as national agricultural research institutes and private tissue culture laboratories. The starter material in formal systems is virus-tested therefore guaranteeing that farmers sourcing seed from the system get quality seed.

Development of a formal seed system was informed by the need to shield farmers from yield losses associated with recycling of diseased planting material and to provide a pathway for delivery of improved varieties. Formal systems have been used to disseminate improved varieties, mostly orange-fleshed varieties (OFSP). This is largely because most efforts geared towards formalizing sweetpotato seed systems are supported by nutrition-focused projects promoting use of OFSP to combat vitamin A deficiency. The projects support selection and training of DVMs, acquisition of starting material and multiplication of seed. They would then buy the seed from DVMs and distribute to farmers for free. This has short term benefits to the DVMs but impacts negatively on sustainability of the seed system. Most of the DVMs drop out once projects come to an end. Free distribution of new varieties also threatens sustainable adoption because most farmers will plant not because they see the benefits but since they did not incur any costs in acquiring the new seed.

b) Market segmentation

Promotion of OFSP varieties and use of virus-tested planting material has relied heavily on push strategies. This has led to continued dominance of local varieties because most OFSP varieties lack traits such as high dry matter which can create a 'pull' effect. Proper 'market segmentation' and 'product differentiation' can lead to development of effective push and pull messages for the different varieties and audiences. Market segmentation ensures that the needs of different end

users are considered. For instance, high dry matter content is a key pull factor for white-fleshed varieties which are popular among subsistence farmers whereas nutrition can be a key pull factor for OFSP varieties which are increasingly being sought after by health-conscious consumers in urban areas. Other pull factors that have been shown to work well in formal seed systems include discounted prices, free samples and use of digital platform. These are part of the pricing strategy incorporated in business models for early generation seed in several national agricultural research institutes in sub-Saharan Africa.

c) End user preferences

One important aspect in varietal turnover is preferences of different farmers. Farmers are not homogenous and they differ in preferences, motivations and farming goals etc. Their agroecologies and markets also differ. These differences affect adoption rates. Consumer preferences determine what farmers will grow hence development of new varieties should consider end-user preferences available in existing varieties and improve on that. They should have superior traits to what is already available. It is also important to adapt quickly to changing consumer preferences. However, sometimes farmers need to have an experience with a variety in order to identify beneficial traits. It can be difficult for farmers to ask for what they do not know. Promotion is therefore necessary when a product is novel even if it contains preferred traits.

d) Social factors

Adoption of new varieties is also influenced by social factors. Vibrant connections enhance social capital in the value chain by making it easier to access information, credit and technical support. It should be noted that relationships are not only shaped by economic considerations but also trust, reputation and power. Use of champion farmers linked to other smallholder farmers has been shown to be effective in promotion and dissemination of new varieties. These can be influential people or commercially oriented farmers. It has been shown that early adopters of agricultural technologies are usually economically stable farmers.

e) Efficient linkages across the seed system

Sustainability of sweetpotato seed systems also needs value chain actors to be well-connected vertically and horizontally to improve production, marketing and pricing efficiencies. This requires multi-stakeholder consultation and engagement and having a good feedback mechanism. This way, it is easier to understand and address the needs of the different actors.

Conclusion

Uptake of any new product among customers depends a lot on perceived benefits. Sometimes customers know what they are looking for in a product and sometimes they do not. In most cases pull strategies work when the customer knows what he/she is looking for while push strategies tend to work in the second scenario. However, this can easily change. For instance, pull strategies can easily work when promoting improved white-fleshed varieties (WFSP) because majority of farmers are already aware of WFSP and can therefore pay for a variety and/or clean seed that outperforms what they already have. Equally, the strategy can work when promoting a variety e.g. purple-fleshed or OFSP, that farmers have not interacted with a lot as long as they are made aware of the benefits and diverse ways of utilization. It is also important to take note of the low

commercial value of the crop compared to e.g. cereals. This has an impact on how much a farmer is willing to invest. Therefore, any strategy should consider user-preferred traits and socioeconomic aspects of the crop.

In developing strategies for better varietal turnover, we need to consider an integrated approach or participatory approach where plant breeders, farmers and DVMs exchange ideas on the new products (varieties). It is important to understand what smallholder farmers and other end users expect in a sweetpotato variety otherwise it will not be possible to achieve rapid dissemination and adoption of new varieties especially in smallholder farms. The Sweetpotato Genetic Advances and Innovative Seed Systems (SweetGAINS) project is doing that by liaising with AbacusBio to analyze and capture markets needs for sweetpotato in Uganda, with expectation to extend to other countries. This information will be used to inform breeding decisions and to develop the Product Profiles that each African sweetpotato breeding program needs to start from. It will also provide insight into seed research and seed pathways leading to the smallholder's farm. Lastly, there is need to continue with well-planned promotion activities to increase adoption of improved varieties and use of quality seed.

Summary of the respondents:

Duration	No. of contributions	No. of unique respondents	No. and type of institutions	Number of countries
3/2/2020 – 13/2/2020	23	15 (13 male and 3 female)	NARIs: 3 CIP: 9 Universities & NGOs: 3	13 (Burkina Faso, Ethiopia, Ghana, Kenya, Mozambique, Netherlands, Peru, Rwanda, Tanzania, Uganda, UK, USA and Zambia)

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