

Environmental Change & Maize Innovation in Kenya: Exploring pathways in and out of maize

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7 Getting the Value Without the High Risk? The Rise of Horticulture in Sakai

NON-TRADITIONAL CROPS, TRADITIONAL CONSTRAINTS

One of the success stories in Kenya's agricultural sector has been the rise of the horticultural industry, which has shown remarkable growth both in the domestic and export markets. After Independence, many farming areas were encouraged to produce global agricultural commodities like coffee, tea and pyrethrum, which became the mainstays of the rural economy. Over the past two decades, however, production of non-traditional export crops such as horticultural crops has grown much more rapidly than production of these traditional exports. Currently, horticulture is Kenya's leading foreign exchange earner, surpassing the coffee and tourism sectors, and the industry earned an impressive Ksh 73 billion (US\$1 billion) from exports in 2008. Today, horticulture employs two million Kenyans directly in production and processing, according to the Fresh Produce Exporters' Association (FPEAK).

Despite this remarkable growth, the export sector remains a relatively small part of the overall horticultural system in the country. Over 90% of all fruit and vegetable production is consumed domestically either on the farm or in domestic markets. Many of the producers of these horticulture products are smallholders, who are diversifying out of traditional cash and food crops, including maize. The STEPS Kenya team encountered this shift out of maize and into horticultural crops in our field studies in Phase 1 of research. Thus, in our assessment of 'pathways in and out of maize', two of the nine pathways analysed in the multicriteria mapping exercises in Phase 2 involved individual (pathway 6) or group-based (pathway 7) horticultural crop commercialisation, where farmers diversify into high-value, but high-risk crops, such as tomatoes, onions and fruit trees, particularly mango and citrus. In both pathways, maize is gradually replaced on the farm by these high-value, non-traditional crops, and maize is

increasingly purchased for consumption with the proceeds from their sale. These horticultural crops are grown with external inputs (certified seeds, chemical fertilisers, etc.) and require access to a reliable water source and/or water storage techniques.

In our field studies in Eastern Province, we found that an increasing number of Sakai farmers were looking to join this horticultural revolution. But while these non-traditional crops offered some opportunity for diversification and commercialisation for relatively rich and poor farmers alike, it was clear that they were still faced with some traditional constraints – such as limited technical training and knowledge, lack of access to quality inputs, lack of pre- and post-harvest storage, packing and grading facilities, and the challenge of organising and maintaining viable groups to 'cooperate to compete' in highly volatile markets.

Mango farmer



NEW HORTICULTURAL PATHWAYS – MUCH POTENTIAL, MUCH UNCERTAINTY

The 'group-based high-value crop' pathway was one of the highest ranking pathways for all Sakai farmers regardless of gender or income level (Figure 1). However, these high-risk, high-reward pathways often had the lowest performance rankings under pessimistic scores, indicating they are highly uncertain options in terms of their potential to lead to successful outcomes for the farmer.

In addition to being a high-ranking pathway, there was an interesting relationship between the 'group-based' horticultural pathway and the 'individual' one. The performance ranks for the two income groups in Figure 1 below indicate that pathway performance was dependent on the level of income of the respondent. That is, lower-income farmers believed they would have a much lower chance of success with horticultural pathways on their own (a difference of 25 base points between the optimistic scores of the two pathways), whereas higher-income farmers thought they could have a similar level of success (a difference of only 4 base points between the two pathways).

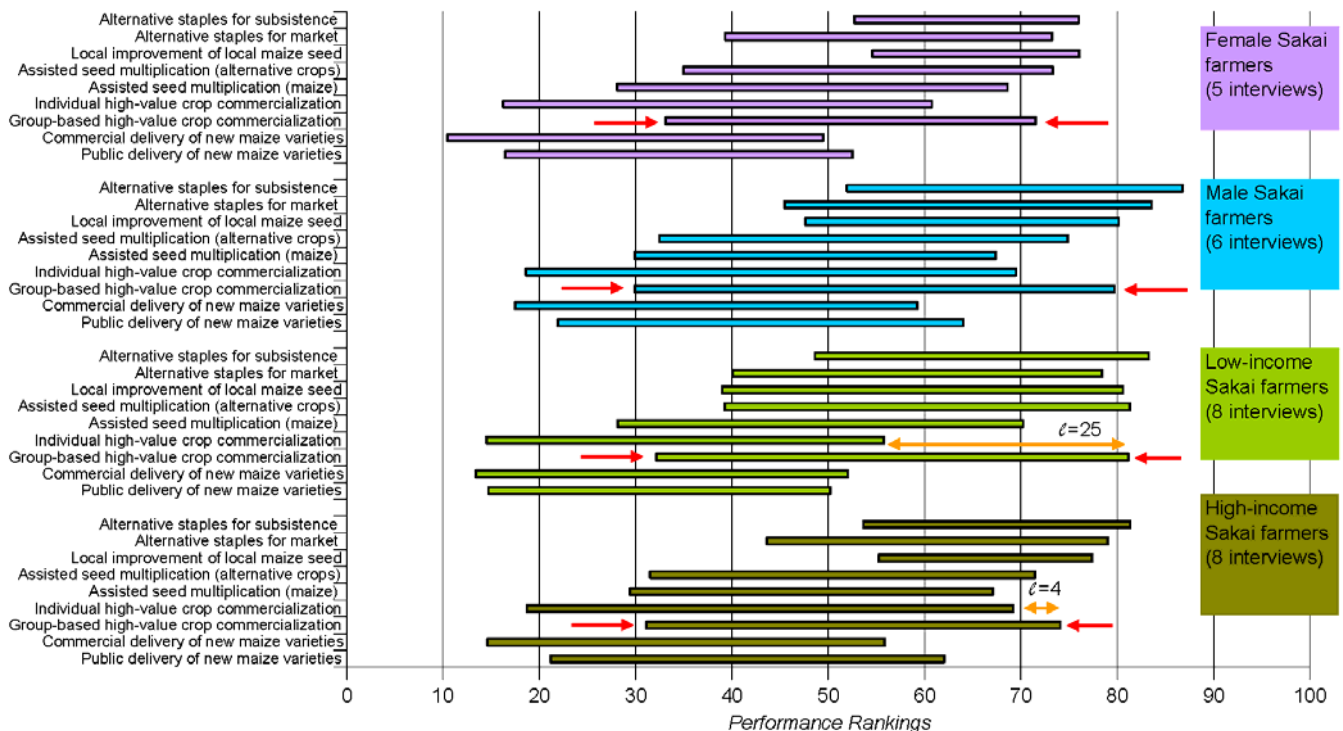
Further evidence of the potential for these types of interventions to aid Sakai farmers in their adaptation to climate change are seen in other interview findings. Many sets of conditions were seen to affect perceptions of uncertainty within the assessment of these two 'high-value crop' pathways. It is in

understanding these uncertainties that we can identify what the challenges and opportunities are for minimising risk and maximising the value of these horticultural pathways.

Firstly, high uncertainty was expressed under the issue of stress tolerance, particularly evaluations of the two criteria 'water availability' and 'pest and disease control' (Figure 2 opposite). However, the evaluations show that while resource-poor farmers find group-based approaches better because they can pool resources to gain access to inputs and collectively develop and manage water supplies, resource-rich farmers preferred only to pool resources to purchase inputs for pest and disease management, such as pesticides and herbicides. When it came to saving money on things they can purchase in bulk, they favoured the group-based pathway, but they indicated they preferred to keep water as a privately held resource to use on their own crops and did not have an interest in collective water management efforts.

Thus, there is not only a link between income level and the perceptions of farmers of these alternative horticultural pathways, but also a further economic indicator of the relative importance of different types of resources farmers need to successfully grow horticultural crops. While there was more common agreement between farmers that the issue of pest and disease-control has more to do with the increased purchasing power one could gain by being

Figure 1: Performance rankings of the nine pathways by Sakai farmers, differentiated by gender and income



a member of a group to obtain inputs, there was clearly a premium placed on one's ability to gain access to reliable water supplies. As one well-off male farmer observed, "Having a group will give us better buying power to get pesticides and this will help a bit with preventing pest and disease from attacking crops." But when it came to water issues, it was pointed out that there was greater potential for groups to "disagree" and so they might do less well. Another resource-rich farmer commented that it would be harder for a group to get all the water it needed, or struggle to make the required investments. In both cases, individual access to water was clearly preferred, if they could afford it.

Secondly, uncertainty was found in relation to economic and market issues. Again, there was an important difference in the evaluations of resource-rich and resource-poor farmers. Wealthier farmers did not evaluate either pathway differently under economic and market issues like 'access to market' or 'resource costs'. This suggests that because of their relative wealth, these sorts of concerns are not significant barriers and the pathway performance is the same whether they work on their own or in a group.

Resource-poor farmers, though, did find there to be significant differences between the two pathways. There was not only more uncertainty expressed about the individual-based pathway, but it also had consistently lower performance scores. Regardless of

the type of economic and market issue being discussed, they believed they would struggle independently, and so the group-based pathway was the better option. However, this finding was particularly notable for criteria related to 'resource costs', revealing this to be a particularly high barrier for resource-poor, horticultural farmers in Sakai.

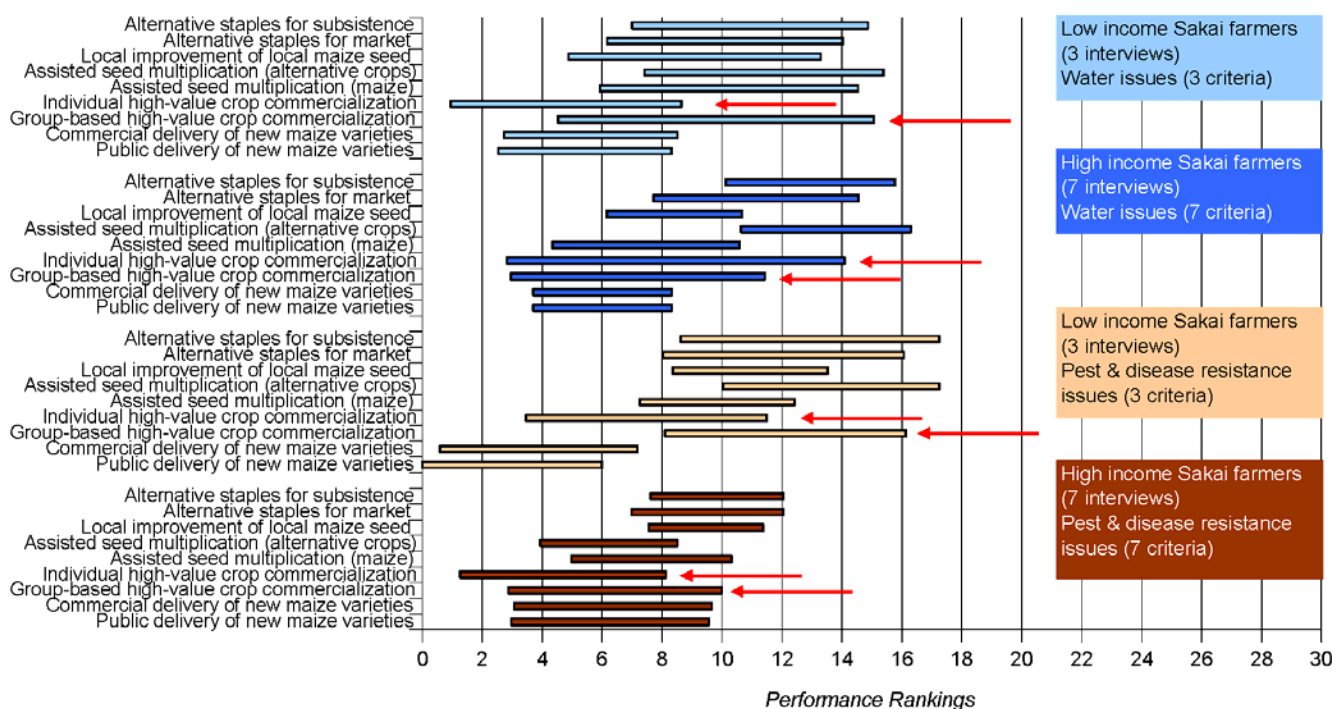
Generally, there were mixed views on whether the pathway would do well under 'social, political, and cultural' issues. The main impact on performance under this macro-issue related to training and extension support to improve management skills and marketing knowledge. The farmers thought that such training and extension support would help them succeed at this pathway.

This training is not only to be found through support from outside government and NGO service providers, but from other farmers. As one poor female farmer noted:

"When we are in a group, there is joint learning. We will need less training since we bring our knowledge together and can share [it] better."

The low-income female horticultural farmers all said they were involved in a 'co-op' type group. One group grew onions, kale and cabbages, while the second grew kale, tomatoes and fruit trees. They said the advantages of the group were that it made the seed more available and more affordable. They used the vegetables for subsistence and for income generation.

Figure 2: Performance rankings of the nine pathways by Sakai farmers differentiated by income, according to stress tolerance criteria



But there is also a painful recognition that the traditional constraints facing the production and marketing of these non-traditional crops can be daunting. Commenting on the 'group-based pathway' one Sakai self-provisioning seed selector commented:

“Even with the training, we can't get 100% production. Good training and information may only help so much with this pathway. Group marketing is difficult, as traders are unreliable and might delay collection and then you can lose your crop.”

A well-off male farmer, reflecting on the knowledge and skills for the 'individual high-value crop commercialisation' pathway stated:

“Because these are perishable, risky crops, the threshold is lower all the way from planting to post-harvest management. Control of pests and diseases is hard... because it's an individual approach, even with maximum training and education, you are still constrained by too many other factors for there to be success in the pathway.”

Horticultural production is increasingly practised in Sakai, as in many other dryland areas of Kenya, and there is strong orientation towards commercial production for domestic markets. A key challenge for both rich and poor horticultural growers in Sakai will be to find ways to grow these profitable, but perishable, crops in such a risk-prone environment.

Adoption of relatively drought-tolerant tree crops, such as mangoes and citrus, can be one approach to increasing value, while reducing risk. Another way is to develop reliable water resources, individually and collectively, to reduce the impacts of drought, extend the growing season and increase production for market. For this to be happen, however, there is need for investment in affordable and effective water capture and storage systems, such as the sand dams that have been promoted by ALRMP II. This will only be possible for poorer producers if credit services are made available, along with technical training and support.



Farming family in Sakai, diversifying from maize to horticulture

With that support and better information and assistance in group formation and coordination to improve production and marketing, horticulture could be used as a key pathway out of poverty for low-income households with little land. However, these households, together with younger families, often suffer from at least two disadvantages. They tend to face both labour and capital constraints and are less likely to own their own irrigation equipment. Since poorer and younger households are often less commercialised than their wealthier counterparts, group-based schemes that improve access to agrochemicals and other inputs, along with low-interest loans to access simple water extraction and storage technologies are required.

All of this should be done in an integrated way that ties these households to reliable market outlets (a difficult task in itself). Thus, two possible avenues are:

- 1 use of appropriate technology to improve water management while overcoming labour constraints;
- 2 micro-finance targeting the low-income horticultural growers' groups to reduce capital constraints and enable access to new inputs and technologies.

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