Educational innovation for Ugandan capacity development: Lessons from a new OFSP school book

W. Nelles

Head, CIP Capacity Strengthening Department (CSD)
Email: w.nelles@cgiar.org

Abstract

This paper suggests more and better quality learning about Orange-Fleshed Sweetpotato (OFSP) in the context of school or community gardens and broader food/agricultural systems has the potential to strengthen personal, institutional and community innovations and capacities for reducing extreme poverty, hunger, malnutrition and environmental degradation. It can also help enhance the quality of educational systems, curricula, and teacher training while supporting entrepreneurial innovation and food security. This paper examines such ideas in theory and practice discussing implications of a recently published (2009) school-book in Uganda - ***Growing orange-fleshed sweetpotato for a healthy diet. A supplementary learners' resource book for upper primary schools.*** The paper discusses how the book is currently being used as well as results of an informal participatory evaluation of the school-book in selected pilot schools. It further identifies additional learning resource needs and capacity development challenges. Theoretically the paper presents an interdisciplinary approach to integrate educational, agricultural and food systems theory, research and practice. It further reviews related new participatory research planned to systematically study student, teacher and parents' learning issues, innovations and capacities for understanding or growing OFSP in food and community learning systems while lessons from the book are adopted, revised, applied and scaled-up.

Keywords: Orange-Fleshed Sweetpotato (OFSP), Uganda, Agricultural Education, Schools, Community Learning

School gardens history and OFSP education in Uganda

As early as the 1920s and 1930s Uganda's national education system had school gardens. However, these were not always popular since they were hard work for pupils and teachers often used them as punishment (hard labor). Although 90 per cent of the population had been engaged in agriculture many parents also did not appreciate agricultural education. They wanted their children to be better educated in clerical or vocational skills or more potentially prestigious jobs or careers with better incomes in cities away from rural farms. Other long-standing problems stemmed from the colonial history of agricultural education in Uganda which encouraged learning modern sciences mainly to produce key cash crops. This discouraged farmers from planting traditional crops and using ancient husbandry practices or knowledge (Ssekamwa, and Lugumba, 2001, pp. 44-47, 51-52, 65-68; Mubiro and Ojacar, 2001).

Despite Uganda's long history of agricultural education children and families still lacked food security, adequate nutrition and sufficient knowledge or economic incentives to change their circumstances. Many related activities continued to be unpopular among students, teachers and parents. In response to some of these challenges recent projects used schools (and their gardens) to demonstrate growing, harvesting and production techniques while transferring new agricultural technologies and innovations to influence household decision-making, health and community livelihoods. One major new initiative beginning in 2004 was *"Promotion of Orange-Fleshed Sweet Potato Varieties through Schools in Urban and Peri-urban Communities of Kampala"* (Schools OFSP Project). The project used eleven pilot schools in peri-urban Kampala as meeting places for training and learning with students, parents and farmers. It established OFSP gardens and taught rapid multiplication techniques (RMT) for sweet potato vines while also teaching production agronomy and post-harvest processing. It used various learning approaches including drama, farmer-to-farmer extension and posters distribution for training and knowledge transfer. It monitored schoolchildren's home OFSP gardens/RMT plots and developed a training of trainer (TOT) manual to broaden potential audiences and impacts. Research has demonstrated that learning about OFSP as part of nutrition education in a formal science curriculum and non-formal community education has been a unique and substantive contribution to African agricultural development, poverty reduction, income generation and health. However, more work is needed to

measure effectiveness or impacts of OFSP school learning and other food-based interventions, or how knowledge or life-time preferences and technologies are transmitted to households (Andrade et al., 2009, p. 82, 86; and Loechl, et. al. 2009).

The "Schools OFSP Project" ended in 2006 but CIP still later published a school-book (Kapinga, Byaruhanga, Zschocke and Tumwegamire, 2009). CIP scientists, local experts, Uganda school teachers the National Curriculum Development Center and others contributed (through a participatory and community-oriented approach) to the content of a supplementary reader (mainly for teachers' use) to upper primary curriculum. In early 2009 some 500 copies were published and 220 copies distributed for classroom piloting in the same eleven peri-urban Kampala schools from the earlier project.

Initial OFSP schoolbook observations and perceptions

With support from the CIP Uganda office CIP's Capacity Strengthening Department (CSD) in June 2009, conducted a field visit to: 1) better understand how CIP's new schoolbook was being used; 2) gather general perceptions of the book's value as well as types of other educational needs and learning resources expressed by users; 3) explore how this book and related materials could be better integrated with the national curriculum while supporting quality learning about agriculture, health and environment; and 4) assess the viability of a related new education research and agricultural development project. We visited three of the eleven peri-urban schools in the "Schools OFSP Project" which received copies of the book in early 2009 and were now using it in classes. We also visited several possible partners or donors who might collaborate in designing, supporting or implementing a new inter-disciplinary research and capacity development project. The visit was not conducted as a rigorous formal research initiative with quantitative data collection. Rather it was intended as an informal information gathering and consultation activity producing preliminary qualitative data to be used in a more formal research design. Observations below are without direct attribution or intended as a definitive and conclusive. However, the present paper can serve as a discussion document after revision, then circulated among potential partners to help facilitate a dialogue on future funding proposal and project.

School Observations and Discussions Overview. Although 220 copies of the OFSP book were evenly distributed to all eleven original Kampala schools, time for this June 2009 mission only permitted a visit to three - Kitebi Primary School; St. Andrew's Komamboga Primary School; and Ttula Church of Uganda Primary School. Informal discussions raised and observations among them were similar or overlapped regarding the obvious value of the present OFSP book, school gardens and future learning needs.

Value of OFSP Schoolbook. With respect to the immediate value of CIP's OFSP book some teachers clearly found it useful as a supplement to the existing Upper Primary (P5 & P6) curriculum in which agriculture and horticulture is already taught. We observed one teacher's class lesson on natural enemies of agricultural pests and diseases illustrated through information in the book. He used the OFSP book referring to the text's pictures, explanations and drawings to illustrate bigger concepts while children were actively engaged in questions and answers (see Pics 1, 2 and 3 in Appendix below). Some teachers had contributed the OFSP book content so were also happy to see it now available. Discussions with Headmasters and some teachers confirmed that the book was a valuable complement to the existing science curriculum. One teacher praised the book for showing (still in light of some negative attitudes among parents and students) that farming did not have to be a "punishment" but could be a "source of income."

School-Community Gardens. CIP's 2009 OFSP book evolved out of a school garden project. Many of the original eleven schools facilitated OFSP vine multiplication in communities so they were not just children's or teachers gardens, but de facto community gardens and learning centers based in schools. Some teachers during our visit reported such activities made the community more interested in the school, while parents also learned by observing gardens and gaining experience from children. But after the initial project ended OFSP growing in some school gardens had not continued well (Pic 4 below). One apparent challenge was lack of a dedicated manager to tend the gardens and or supervise and facilitate ongoing activities with communities beyond the school curriculum or calendar alone. In some cases school gardens were overgrown, vine multiplication systems had been discontinued or broken down while students, their families and communities had lost some vine growing knowledge as well as associated health and income benefits from OFSP. However, new research is needed to assess specific knowledge and economic outcomes from past OFSP growing in school gardens or as part of an ongoing monitoring and evaluation of any new initiatives.

Future Needs Identified (Learning Resources & Support Tools). *These schools clearly found this new OFSP book valuable. However, our* discussions raised t*hree main themes. First was demand for more copies,* provided to the schools we visited, but also that the book be distributed to all schools in the country. *Second was identification of additional learning resource needs including revisions to the OFSP book;* lesson guides for teachers; and simpler, shorter books for students*. Third, beyond this book alone, there was a clear demand for complementary materials* on roots and tuber crops generally, or adding beans and leafy vegetables, or livestock to complement the official curriculum and demonstrate more rounded nutritional, ecological or food systems education. One related suggestion was that other school books could cover more crops, intercropping practices, and nutritional information for balanced diets and food security. Building on previous successes this could still be linked to better understanding of agricultural techniques and vine multiplication in a revived school garden better linked to community learning (with students key knowledge transmitters) and income generation. Some teachers also expressed that, in any future project, that they need garden tools (which most schools can't afford) so children can do practical demonstration work of classroom lessons. .

Research and Capacity Development Partner Discussions

Aside from visiting schools we discussed potential collaboration in a new OFSP related inter-disciplinary research and educational capacity development project with other national, regional and international partners or donors. These partners variously identified seven key themes for future research and design of a new project, including: 1) better integration of OFSP learning with education about other crops into the formal national curriculum, currently undergoing revision; 2) a more holistic and comprehensive approach linked to national curriculum reform; 3) linking these to other education-related initiatives such as farmer extension programs; 4) linking agricultural research and teacher training with broader capacity development efforts; 5) developing complementary resources and support systems such as teacher's guides and orientations as part of pre-service training in teachers' colleges; 6) doing education research itself (not just agriculture research); and 7) being more strategic about targeting the whole country with new learning resources.

With respect to national curriculum integration and reform, among practical suggestions for developing or monitoring on any project or ongoing program would be how to introduce OFSP themes into various parts of the curriculum and how to prepare lesson plans and teach the topic in relation to different subjects (science, math, health, culture/religion, etc., not just agriculture). The curriculum should also better provide not just theoretical knowledge but life-skills. Future research needs to study teachers' lesson plans and build in an onsite monitoring, record keeping and guidance system to assess what was taught and how to improve teaching.

A future OFSP-related research project might be a capacity building initiative for education researchers and teachers, as well as for agricultural researchers, professors and students. Graduate research fellows might finish a related education or agriculture thesis. University Schools of Education might help with training as well as research for science and agricultural teachers while graduate students do research degrees (Masters or PhD) on education topics with interdisciplinary approaches including study and teaching of agro-ecological and environmental issues. OFSP text themes could be also be adapted for other teaching or learning purposes and audiences. The existing text could be repackaged in parts using simpler resource materials, particularly since farmers only have 60 % literacy and need different types of learning materials including posters and non-traditional delivery systems. Children's (and adults') agricultural learning might also more holistically involve livestock with better nutrient cycling, natural (organic) fertilizers, etc., OFSP as animal feed, and explore potential for new income and livelihood opportunities. Learning could better integrate educational, environmental and agricultural research including cultural factors in OFSP use. Complementing school feeding or nutrition awareness programs new work should target rural areas, especially poorer Northern Uganda to broaden livelihood sources assist with vines multiplication etc. OFSP school book themes also need to target different class room grade levels, and be translated into up to 10 different native languages, address gender, environment, etc.

Such themes were discussed in meetings with Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA); Department of Science and Technical Education (DOSATE), Makere University; Makere University Centre for Continuing Agricultural Education (***CAEC*****;** National Curriculum Development Centre (NCDC), Uganda; Regional Universities Forum for Capacity Building in Agriculture (***RUFORUM***); Ugandan National Commission for UNESCO; United Nations Food and Agricultural Organization (FAO); and World Food Programme (WFP). We also visited the United States Agency for International Development (USAID), since prior to this field visit informal conversations with the Bill and Melinda Gates Foundation BMGF) suggested we should consult USAID as a potential partner/donor for a new project

OFSP school book lessons - conclusions and next steps

This present paper is a "work in progress." The findings are not definitive or conclusive. But it seems clear that CIP's recently published OFSP schoolbook was an educational innovation with clear value even with limited distribution so far. Future work might expand its thematic scope, scale and availability complemented by new research. As should be evident above selected schools as well as potential research partners consulted in June 2009 raised common themes, noted similar needs and helped clarify some key research and development priorities. Preliminary analysis and feedback in sum suggests at least three principal themes and identified community needs should be considered as lessons for developing any new project.

1. New Educational and Resource Needs

- Demand for more OFSP books distributed across the country.
- Additional learning resources needed including OFSP book revisions, teachers' lesson guides, and simpler books for lower student levels
- Demand for other agricultural/horticultural learning materials on other crops, intercropping and nutritional, ecological or food systems education
- Rural/regional targeting of learning resources beyond urban centers.
- School garden tools for children to better demonstrate classroom lessons.

2. Interdisciplinary Educational-Agricultural Research and Teacher Training

- Participatory research to study student, teacher and parents' learning issues, innovations and capacities to understand or grow OFSP and other crops
- Capacity development for research on agricultural and science education (in cooperation with University Education Departments)
- Support for graduate thesis work as well as professors to design and conduct education (not just agricultural) research

3. Capacity Development (scientific, teacher-educational, farmer, community)

- Collaboration with regional organizations to scale-up/out
- Support school gardens with a holistic education approach in "community learning centers" to broaden sources of family and farmer livelihoods.

References

Andrade, M.; Barker, I.; Cole, D.; Dapaah, H.K.; Elliot, H.; Fuentes, S.; Grüneberg, W.; Kapinga, R.E.; Kroschel, J.; Labarta, R.; Lemaga, B.; Loechl, C.; Low, J.; Lynam, J.; Mwanga, R.O.M.; Ortiz, O.; Oswald, A.; Thiele, G. 2009. Unleashing the potential of sweetpotato in Sub-Saharan Africa: Current challenges and way forward. Working Paper 2009-1, Lima, Peru. International Potato Center (CIP),

Kapinga, R., Byaruhanga, P., Zschocke, T., & Tumwegamire, S. 2009. Growing Orange-Fleshed Sweetpotato for a Healthy diet: A Supplementary Learners' Resource Book for Upper Primary Schools. Kampala, Uganda. International Potato Center.

Loechl, Cornelia, Abdelrahman, Lubowa, Jan Low, Donald C Cole and Gordon Prain. 2009. "Impact of and lessons learned from school-based community nutrition education and promotion of OFSP in urban and peri-urban areas of Kampala" (DRAFT) Paper Presented to 15th Triennial Symposium of the

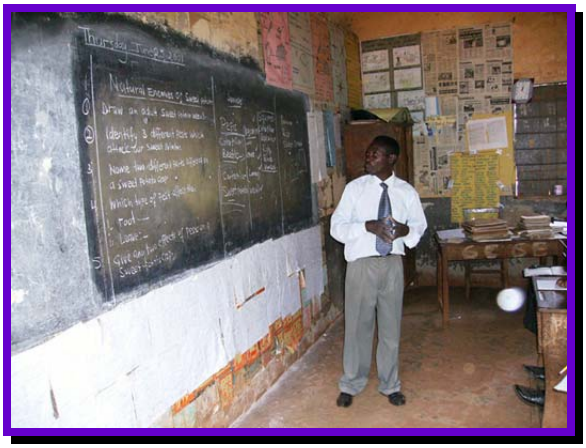
International Society for Tropical Root Crops, 2-6 November 2009. Lima, Peru

Mubiro, J.B and Ojacar, F.A. 2001. "Agricultural Extension and Education" In Joseph K.

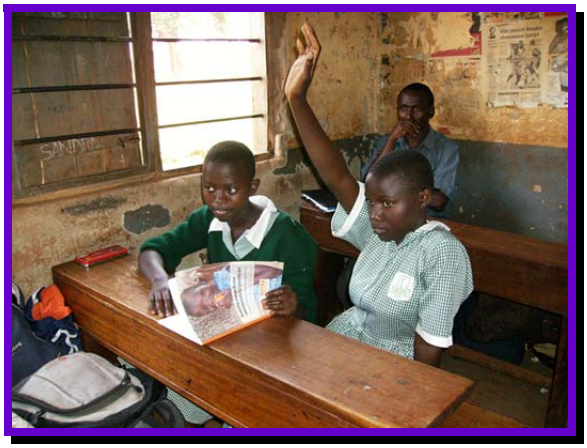
Mukiibi, ed., Agricultural in Uganda, Vol. 1, General Information. Kampala: Fountain Publishers/National Agricultural Research Organization, pp. 294-306.

Ssekamwa, J.C. and Lugumba, S.M.E. 2001. A History of Education in East Africa, 2nd Edition. Kampala, Uganda: Fountain Publishers

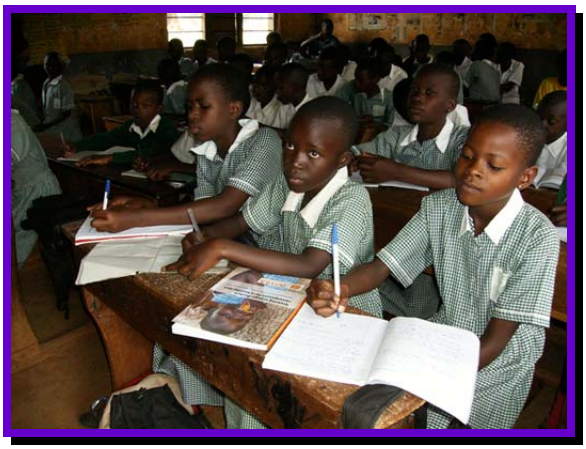
Appendix 1 - Pictures



Pic 1. Kitebi Primary School Teacher
(P 5-6 Class Lesson on Agricultural Pests and Diseases – Sweetpotato case)



Pic 2. Kitebi Primary School P 5-6 Class Lesson
(Students consulting the OFSP Book while answering teacher questions on pests and disease.)



Pic 3. Kitebi Primary School P 5-6 Class Lesson
(Students listening to teacher with CIP/OFSP book in P 5-6 Class Lesson on Pests and Disease)

Pic 4 St. Andrew's Komamboga Primary School Garden (Sweetpotato section inspection with children lookingon)