

**Vegetable Gardening in Primary Schools and Its Impact on Community Livelihoods in Uganda**

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**Abstract**

A pilot study of agriculture and vegetable growing in particular was conducted in 40 schools and 50 homesteads around 10 schools. Meetings were convened with district agriculture staff. Structured questionnaires were administered and interviews conducted. It was established that at least 95% for the schools and communities visited were growing vegetables and consuming them. Results showed differences among urban, per-urban and village schools. Farming knowledge availability was found to be average and not matching identified consumption levels. There were no variations in knowledge among UPE schools in respect of having been supported in vegetable gardening or not. Farmers' ideas on improvement of agriculture in schools and its impact on development were collected. Key research issues to improve during subsequent studies are reported.

Key words: Agriculture, education, community development

**Introduction**

Agriculture is currently part of primary education syllabus in Uganda (ME and Sports, 2002). Previously the syllabus had science in general. Teachers that taught science have now turned into agriculture teachers. This being the case, in many schools agriculture teachers use their home experience to teach school children, and yet some come from urban homes while others leaved on smallholder farms lacking adequate agronomic practices. Furthermore, under the current government decentralization policy there is limited sharing of knowledge among teachers across districts. Often remote districts do not get good

teachers, majority of whom are not professional. This situation is aggravated by mushrooming, sometimes poor standard private primary schools (Ssekyewa, 2004). For urban and per-urban districts, agriculture teachers commute from the city, and are not involved in agriculture at all.

Universal Primary Education, which is one of Uganda government's multi-sectoral efforts towards sustaining districts (GoU,2000; MAAIF, 2002), was expected to yield many school drop outs if parents would not support these children in secondary schools. In this case, children who benefit from school gardening projects would have better agricultural skills, in addition to what is acquired from home, to enable them earn a living and ably contribute to basic community development planning in decentralized districts. This study was conducted to assess the current situation in one district of Uganda, i.e. Rakai district, before the activity could be spread to other schools; and to investigate the impact of previous sustainable agriculture activities on primary schools leavers and on livelihoods of communities around project schools, as a basis for policy decisions on the training of teachers and overall agriculture training in primary schools in decentralized districts. It focused on, determining teachers' attitude, capabilities and the related level at which sustainable vegetable gardening technologies were being adopted/ sustained and utilized by schools; finding out attitude towards agriculture, and levels of involvement of all schools and the surrounding community; and determining contribution of vegetable gardening to livelihoods of schools and families that adopt demonstrated practices.

## **Materials and Methods**

Both qualitative and quantitative data was collected during this study. In order to determine teachers' attitude, capabilities and adoption of sustainable vegetable gardening technologies by UPE schools including those previously covered by the vegetable gardening project, and also identify challenges to agriculture education in UPE primary schools, a questionnaire was designed and administered to 20 randomly selected vegetable project schools and 20 non-project schools in 10 sub-counties of Rakai District (23sub-counties). A ten questions quiz was also set according to existing primary school agriculture syllabus (ME&Sports,2002) and subject mater imparted through the vegetable project, and was given to 50 students of primary five and above in each of these 40 schools. Then filled questionnaires were analyzed and quiz answers assessed. Data was analyzed for scores, averages and frequencies. Visual assessment of vegetable gardening activities was also done at a scale of (1-5), whereby 1= no vegetable gardening, 2= poor gardens, 3= fair gardens, 4= good gardens, 5= very good gardens.

To find out attitude towards agriculture, and status of vegetable gardening by the surrounding community, and determine contribution of vegetable gardening to livelihoods of the community, as well as the contribution to basic planning at sub-county level, another questionnaire was designed to assess

on going vegetable growing activities by farmers, and accruing benefits to the community in respect of livelihood and capability to participate in agricultural planning for their sub-counties. The questionnaire was administered to 5 randomly selected families living around one school in each of the 10 sub-counties. It was administered to one respondent from each selected family. Collected data was analyzed using SPSS 11.0 statistical program for ANOVA multivariate tests of significance. Statistical charts were drawn using MSEXCEL program.

## **Results**

### ***Agriculture in school communities***

According to responses from school teachers in the 40 schools visited, 92.5% of respondent teachers were interested in agriculture. The remaining 7.5% were reported indifferent. Of the 92.5%, 22.5% was very much interested in conducting agriculture at their schools. The same respondents were assessed for their ability to teach and it was found that 50% respondents were able to teach, 40% were not able to teach while 10% was not sure of their teaching agriculture abilities. When we investigated the benefit schools got from having agricultural activities, it was found that all schools benefited but at varying levels. Thus, 47.5% benefited a lot, another 47.5% benefited somehow, while 5% felt that they had minimal benefits from these activities.

Considering the relationship between knowledge, type vegetables grown (exotic or indigenous), actual growing or not growing, and frequency of eating vegetables (Table 1), it was found that agricultural knowledge availability was negatively related to lack of vegetable gardens at the school with t value of -3.47 at 0.001. Another interesting direct relationship was between knowledge availability and production of exotic vegetables, thus where good knowledge existed, the school was growing exotic vegetables, with t value of 3.5 at 0.001. To some extent availability of vegetable growing knowledge was directly related to the growing of vegetables, with t value of 3.2 at 0.003.

However, there was a general trend of relationship between knowledge and other variables of 10.2% at 0.01 significance level, which according to anova results was significant with t 0.634, p53 and df 39.

Table 1 Schools visited knowledge levels, vegetables grown and eaten, and frequency of eating them.

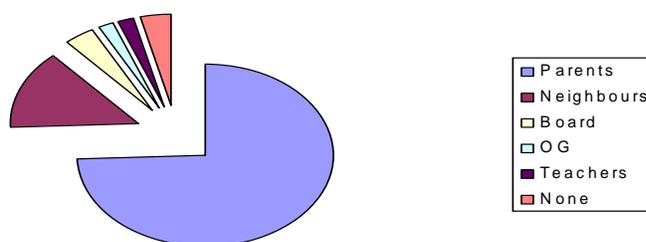
Schools	Knowledge	Evs	IVs	Grow	No grow	x eaten
Bbaale	2.8	1	2.2	48	2	1
Bethalem	3	1.5	2.1	50	0	1
Bikiira	4	2.3	5.2	50	0	1
Bisanje	3.8	3.8	2.8	50	0	2.8
Bulinda	2.4	0.9	2.3	38	12	0.8
Buyiisa	3	2.6	2	50	0	1
Dbikiira	3.9	2.6	3.6	48	0	1
Kabira	3	2	2.2	48	2	1
Kabuwoko	4	1	4	48	2	1.5
Kaganda	2.6	1.2	2.7	50	0	1
Kakoma	3	1.5	2.2	45	5	1
Kalisizo	2.9	1.5	2.6	49	1	1.1
Kampungu	3.4	1	3.5	50	0	1
Kanoni	3.4	1.5	3	50	0	1
Kifukamiza	2.7	1.8	1.6	50	0	1.4
Kikondo	2.9	1.7	1.8	45	2	1
Kirembwe	3	1	2	41	9	1.1
Kirinda	2.9	1.8	1.3	47	3	1
Kisunku	2.7	2.2	1	43	7	1
Kisuula	2.7	0.6	2.8	50	0	1
Kkisalizi	2.9	1.8	1.1	50	0	1.6
Ksabina	3.6	3.5	2	50	0	1
Kyakonda	3	1.3	1.5	49	1	1.5
Kyampagi	3.4	4	1.7	50	0	1
Kyango	3.1	1.7	1.7	50	0	1
Kyotera	3	1.3	1.6	49	1	1.3
Lkirumba	3.1	0.5	3.7	50	0	1
Luti	3.2	2.2	2	46	4	1
Lwankoni	3.2	1.3	2.6	47	3	1
Mabaale	2.9	1.1	3.3	48	2	1
Manyama	3.4	1.4	3.2	48	2	1.1
Mbuye	3.5	1.8	3.5	50	0	1.5
Nabbunga	3.4	1.5	1.9	48	2	1
Nakasoga	3.3	1.4	2.5	50	0	1.3
Nalukoola	3.5	2.2	2.4	50	0	1
Ngando	2.8	1.8	3	38	2	1
Njeru	3	1	3	47	3	1
Nkenge	2.6	1.4	1	47	3	1
Nninzi	2	0.5	0.7	43	7	1
Ssanje	3.4	2.3	1.2	50	0	1.2

### ***Agriculture in communities around schools***

It was established that the main link between the community and the school, apart from pupils, were parents. Out of 50 homesteads visited, 76% had linkage with the school beyond sending their children there. Other respondents either were neighbours (14%), board members (4%), old girls (2%), or were teachers (2%). Among the respondents, 4% did not have any relationship with the school (Figure 1).

**Figure 1:** Relationship between 40 school communities and communities around them, in Rakai District

**Relationship between community and school(%)**

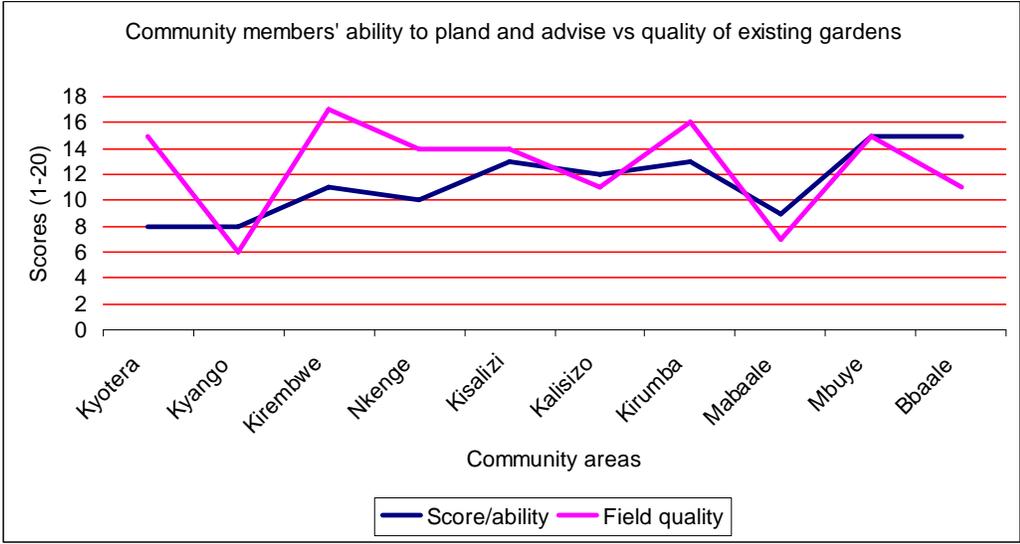


On investigation of the awareness of 50 homes in communities about school agriculture activities, it was found that 80% of the community was aware of school agriculture programs while 20% was not aware at all. However, among respondent homesteads 75% indicated that it was beneficial to the community to have agriculture programs, while 35% did not see any benefit. It is worth noting that 66% of respondents were females while 44% were males. The following were listed as their experienced benefits,

- Pupils learn agriculture skills to use in future
- Schools could sell surplus to the community
- Vegetables contribute to improvement of their nutrition status
- School food costs are reduced
- Teachers and pupils health is improved
- School's reputation is built
- Pupils learn to appreciate the nutritional value of vegetables in a balanced diet
- Pupils get certificates in agriculture
- The community gets practical experience through school visits
- The community gets seeds and seedlings
- Parents learn from their children
- Youth are empowered with skills to earn a living in future
- The community learns how to diversify from traditional crops

Furthermore, the ability of the community to participate in agriculture planning and advising at sub-county level was studied. Results from 10 communities around schools indicated that all communities had over 50% members qualifying for the planning / advisory role in community. The most able communities were in Mbuye, Bbaale, Kirumba, Kisalizi, Kalisizo, Kirembwe, and Nkenge. This was confirmed by good quality gardens owned by respondent homesteads. Both ability to plan, and advise as well as quality of fields had a similar trend except in case of Kyango, Kyoteera, Kalisizo, Mabaale and Baale, which had disparities between ability to plan and quality of agriculture activities in homesteads visited. A situation, which requires further investigation (Figure 2).

**Figure 2:** Ability of the community to plan and advice as related to the quality of field activities seen among homesteads visited



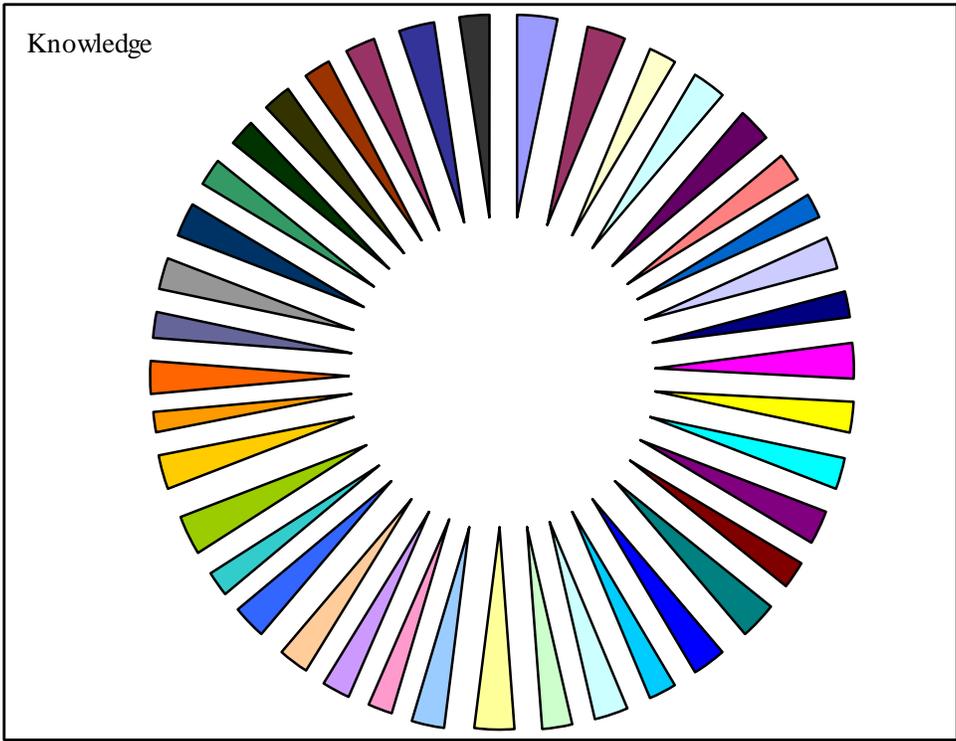
### ***Impact of vegetable gardening activities***

It was established that generally all 40 schools had same trends as regards growing of vegetables, eating, and types of vegetables grown (Figure 3). And also in figure 4 all schools had more or less similar levels of understanding vegetable gardening. Nevertheless, study findings indicated that 95% of the 40 schools understood vegetable gardening very well. The remaining 5% had schools whose understanding of vegetable gardening issues was still below average.

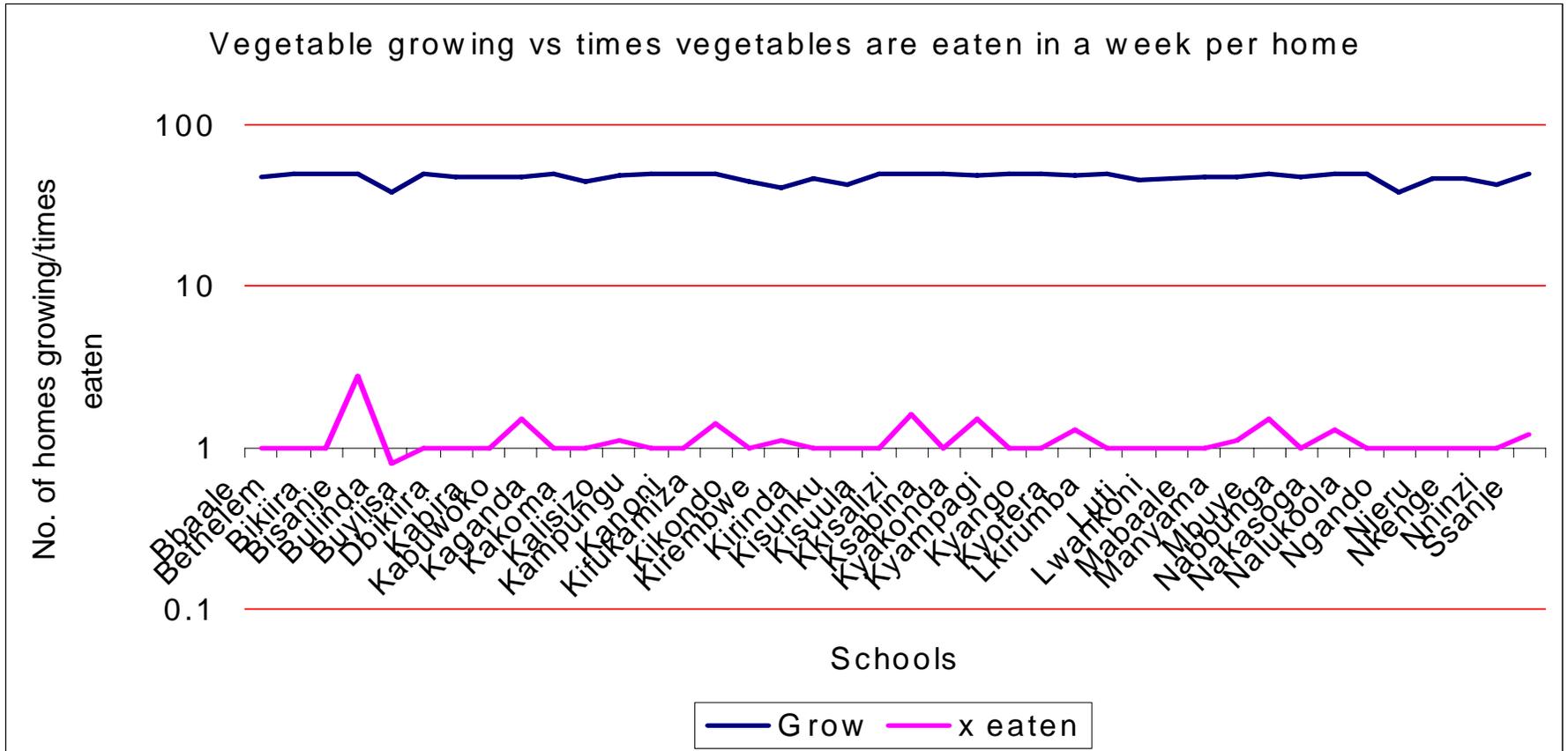
In figure 5, it was evident that some schools, more so Bulinda and Bisajje, had more frequent consumption of vegetables and low growing of vegetables. This explained the situation of urban and peri-urban schools, where consumed vegetables are mostly bought than self-grown. In figure 6, it is still evident that Bulinda and Ninzi had low knowledge of vegetable production, but also low production. Ninzi is another school that is peri-urban.

According to figure 7, vegetable consumption was not very high. All respondent consumers had less than 3 times of eating roots/leafy vegetables in a week, while roots/leafy vegetables should have been part of every meal.

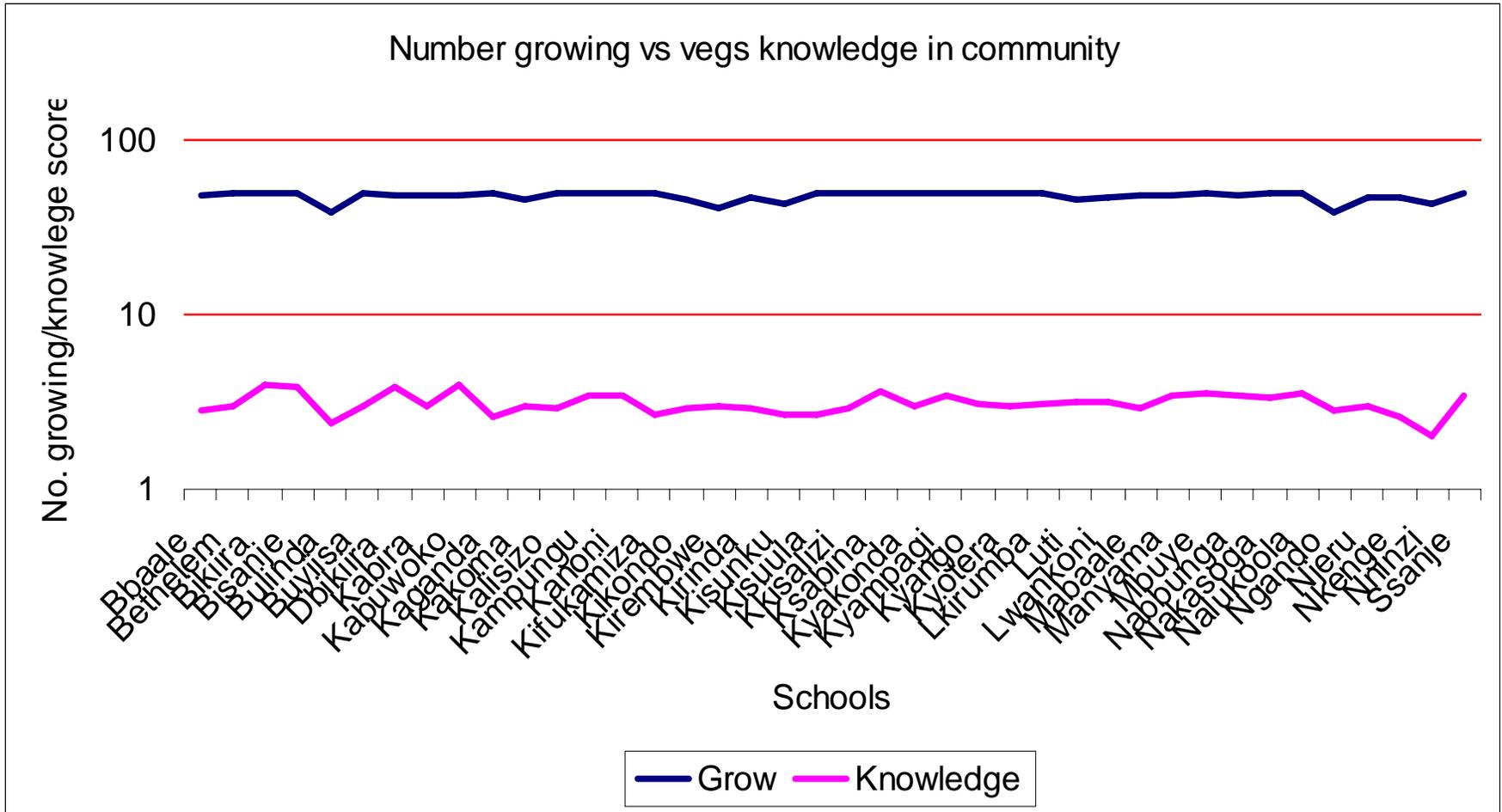




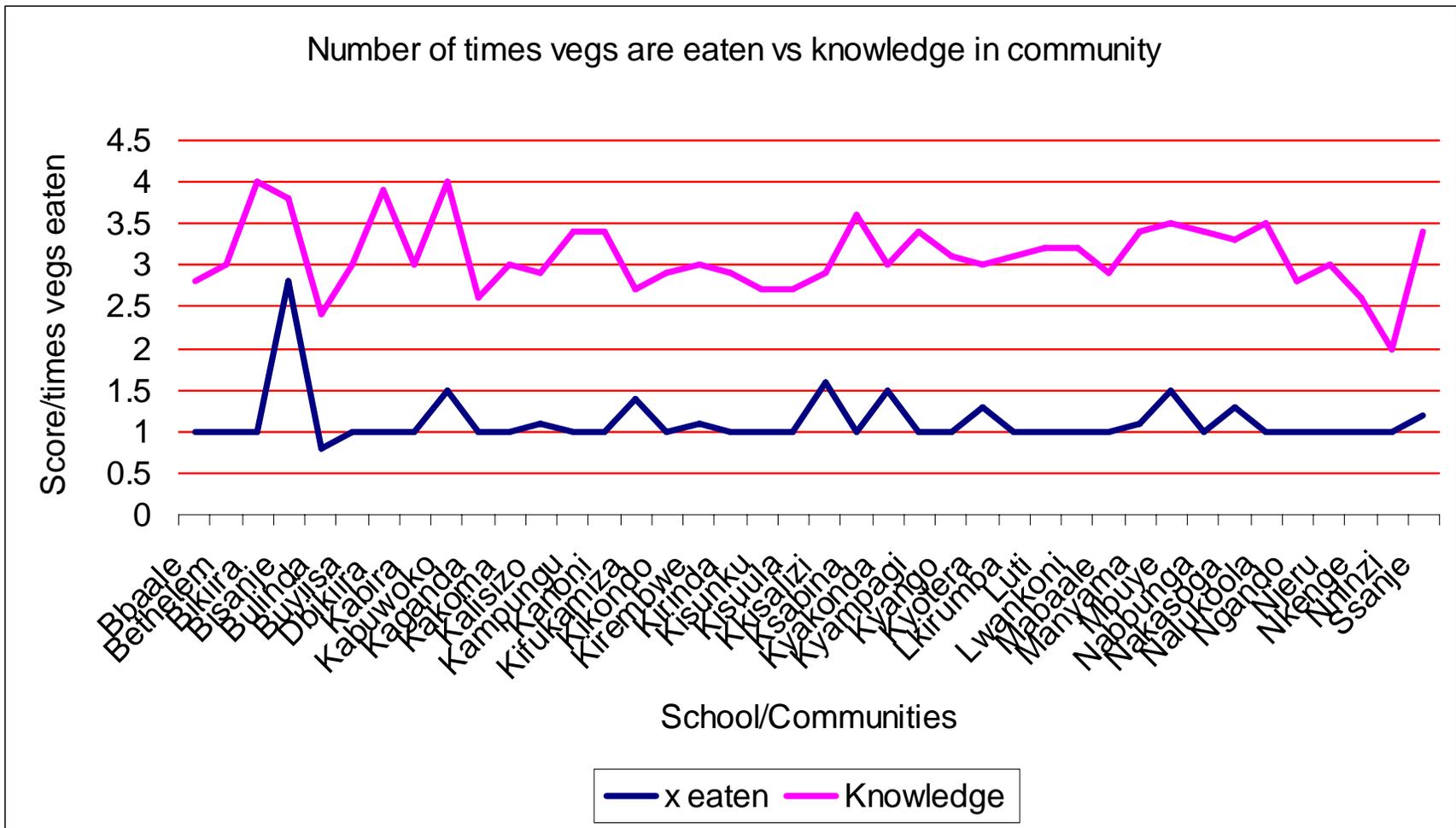
**Figure 4:** Knowledge distribution among the 40 Primary Schools, which had the quiz administered, in Rakai District.



**Figure 5:** Variations in growing of vegetables as related to eating them among the 40 Primary Schools selected in Rakai District, Uganda



**Figure 6:** Variation in trends of production of vegetables and understanding of vegetable production in 40 Primary Schools, in Rakai District.



**Figure 7:** Trends in number of times vegetables are consumed per week and knowledge levels in schools and surrounding communities.

### ***Areas suggested for improvement***

- The 50 respondent farmers around 10 schools suggested the following activities if agriculture in schools would make meaningful impact to community development.
- Assist pupils to have own demonstration plots at their homes
- Produce large areas of vegetables at school to substitute food expenses
- Conduct open days at school for others to see agriculture activities of the school
- Give seeds and seedling to pupils to take home
- Make schools center for distributing/ sharing agricultural information
- Let schools sell surplus to the community
- Strengthen linkage between schools and community
- Introduce other crops and fruits to the school garden
- Integrate crops and animals at the school
- Train more teachers in agriculture
- Make school gardening a continuous activity
- Encourage teachers to do gardening at their homes
- Let pupils eat what they produce at school
- Give seeds and seedlings to school surrounding communities
- Involve extension workers in school agriculture activities
- Provide irrigation facilities to the schools
- Give more tools to the schools
- Train farmers in seed production
- Provide market information
- Train communities in vegetable growing and consumption
- Provide security to school gardens
- Engage schools in agriculture competitions
- Conduct school to school visits
- Establish at least one demonstration plot in the community around the school

### **Discussions**

The study revealed plenty of research opportunities both at school level and in the community. It was evident that there were knowledge gaps, which could best addressed through putting in place relevant curriculum and teaching guides. In order to contribute to the decentralization policy, it was evident that school children and teacher had to be farther empowered with knowledge and skills needed for rural smallholder farming systems.

As regards interest, attitude, ability, benefits and contribution to decision-making, a number questions arose. One wondered as to how sustainable was the interest expressed among respondent schools; to what extent policies and practices within schools influenced attitude, and interest; and what were the profiles for each of the responded schools. Furthermore, it was not evident that schools schools were aware of the inter-disciplinary nature of the existing agriculture curriculum.

The issue of ability to teach raised some questions, too. One wondered whether teachers were referring to inability to do practical gardening or to actually understanding and teaching agriculture in school. It was also amazing to find teachers that could not teach agriculture but had the responsibility to teach it! It was also of concern to try and get to know how the teaching of practical agriculture was fitted into the whole school program. Although the community around the school suggested how agriculture in schools could be made better in order for the community to benefit, teachers also should raise issues for improvement to make teaching of agriculture in school more of a reality than myth.

The issue of income accruing from vegetable growing was marginalized and yet it is key to agriculture production. Income streams in vegetable growing in the community should be clearly investigated. It would be worthwhile finding out whether there is any surplus and one would like to know how this is disposed off. At the same time, crops grown along with vegetables should also be understood together with their roles in the whole scenario. It was observed that the questionnaire had to be streamlined to better deal with issues on general community awareness and ability to contribute to planning at sub-county level.

In order to better understand consumption dynamics, it was found necessary to also deal with favourite vegetables for the communities in an area, and to understand how cooking and eating is organized at the school. Knowledge of nutritional value of vegetables should be clearly separated from the rest. One should be able to understand whether the eating is deliberate or is due to circumstances. Like sometimes eating vegetables is referred to as for the poor by some communities in this area.

Furthermore, while all schools/communities had similar trends as regards production, consumption etc., there were evident difference hinging on urban/per-urban status of the school/community. Therefore, it is worthwhile in building this factor in the study to clearly differentiate between those categories. On the same basis it may be in order also to differentiate between UPE schools that have had any agriculture/ vegetable gardening project from what support and those that have never had any such support. Most of the schools investigated during this pilot study had had some sort of support either by Seeds for Africa or some other organization.

In conclusion, the primary data obtained suggested a high level of involvement in agriculture and vegetable growing in particular at both vertical and horizontal scales. As a strategy for enhanced involvement, there is need to examine the internal factors affecting the activity, that is teacher education, time tabling, school planning, financial allocation to agriculture etc., and to analyze the official curriculum of the school. In all, the

aim should be to focus the teacher, pupils and the school better onto improving agriculture and understanding its role in daily life, and then the accruing impact to the surrounding community.

The pilot study has generated good information and highlighted areas of improvement. Thus, extending this study to other districts is worthwhile as it will reveal key issues that should be improved on in order to improve agriculture teaching in schools in order for the youth to benefit and the community to be empowered with knowledge and ability to contribute to apparent planning at sub-county level.

## **Acknowledgment**

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