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## School farming for school feeding: Experiences from Nakuru, Kenya

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**Abstract.** School *feeding* is an important development tool and is related to at least three Millennium Development Goals. School *farming* has been largely overlooked in the urban agriculture literature but with many parents nowadays unable to afford school lunches for their children, it can play a vital role in reducing the costs involved in providing nutritional meals for pupils. This paper examines school farming in an urban setting, namely Nakuru town, Kenya and looks at the current practice, the extent to which school farming contributes to school feeding programs, and the challenges it faces and how these can be overcome. Based on a survey done in almost all primary and secondary schools in Nakuru, it shows that school farming and school feeding are now common practice in the town and that in many cases school farming does indeed contribute to school feeding programs. However, much more is possible and the paper indicates how various constraints in terms of land, water, support and leadership might be overcome.

**Keywords.** School, farms, urban, agriculture, children, Kenya, feeding.

### 1 Introduction

Nearly all research on urban agriculture in Sub-Saharan Africa – and indeed worldwide – has focused on farming in individual urban households while farming by urban institutions has been largely overlooked.<sup>1</sup> The most prevalent and important type of institutional urban agriculture is, without doubt, school farming. It is common all over Africa and has for a long time primarily been considered as an activity for educational and aesthetic purposes. Only recently has school farming in combination with school feeding programs been seen to have great potential from a development point of view. The prospect of a decent lunch at school is supposed to lead to higher enrolment rates, better nutritional levels among pupils and improved school performance rates. In this way, school feeding falls within the ambit of at least three of the Millennium Development Goals – to eradicate extreme poverty and hunger, to achieve universal primary education, and to promote gender equality and empower women – and is high on the development agenda.<sup>2</sup>

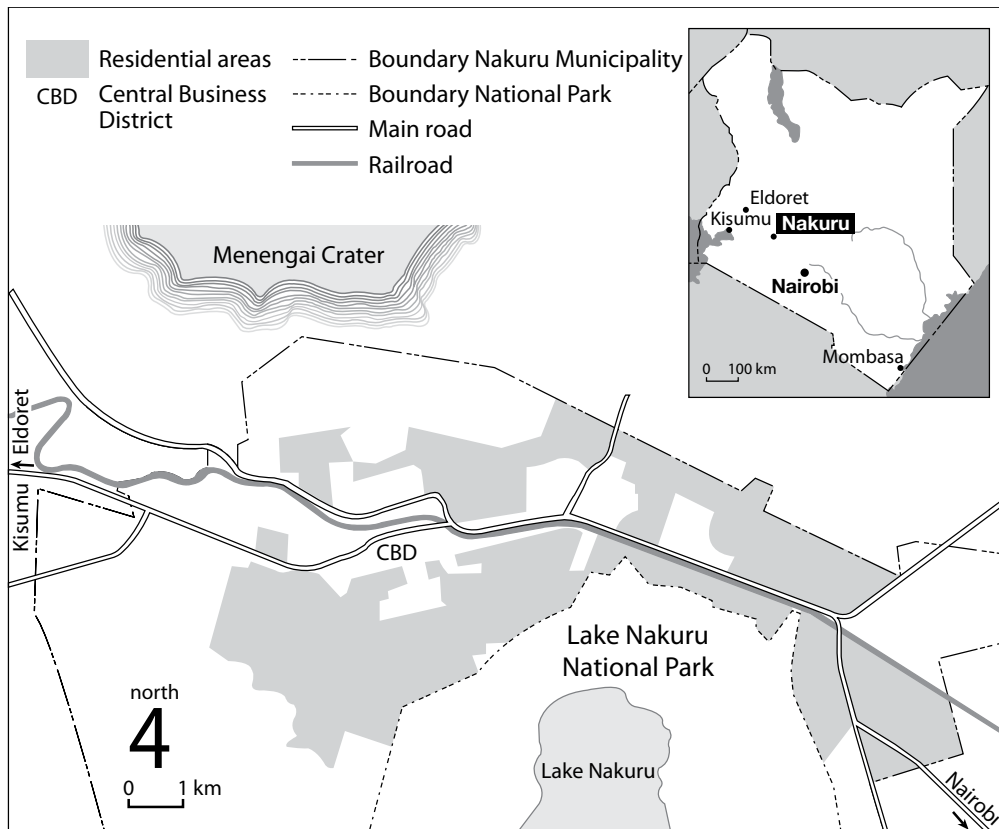
Primary schools that start offering lunch to pupils are known to experience a surge in attendance by boys and girls from poor households where they would have been unlikely to receive any lunch at all. Studies of the physical and mental condition of children participating in school feeding programs in different parts of the world have shown encouraging results.<sup>3</sup> However, a major obstacle to a well-functioning school feeding program, particularly in an urban setting, is a lack of funding. Food usually has to be purchased at the market, which is expensive. As a result, many parents are not able to pay for their children's school lunches. And due to the sharp rise in food prices over the last few years, the situation has only become worse. This is where school *farming*, as a crucial factor for a successful school feeding program, comes in. Despite its developmental relevance, school farming is a highly neglected research topic. The only study on urban school farming in a developing country we are aware of is the one carried out in Cagayan de Oro, the Philippines (Potutan *et al.* 1999). Some basic data on school farming can be found in the aerial survey of Dar es Salaam in the late 1990s (Dongus 2000). If a school is able to produce (part of) the ingredients it

<sup>1</sup>Institutions that practise urban farming include schools, monasteries and convents, factories, prisons, hospitals, the army, and state farms (if located within urban boundaries).

<sup>2</sup>See for instance NEPAD's Home Grown School Feeding Program ([http://www.africa-union.org/root/UA/Conferences/2007/fevrier/REA/13-14%20fev/NEPAD\\_Home\\_Grown\\_School\\_Feeding\\_Pogramme.doc](http://www.africa-union.org/root/UA/Conferences/2007/fevrier/REA/13-14%20fev/NEPAD_Home_Grown_School_Feeding_Pogramme.doc)), the school feeding program of the World Food Program (2008a, 2008b) ([www.wfp.org/food\\_aid/school\\_feeding/WFPApproach\\_INTRO.asp?section=12&sub\\_section=3](http://www.wfp.org/food_aid/school_feeding/WFPApproach_INTRO.asp?section=12&sub_section=3)) and the US\$ 212m Ghana school feeding

program (Government of Ghana 2006). See also [www.sign-schoolfeeding.org/default.aspx?guid=a962aa37-223f-4dd4-9270-318cc907ba73&live=true&print=true](http://www.sign-schoolfeeding.org/default.aspx?guid=a962aa37-223f-4dd4-9270-318cc907ba73&live=true&print=true)

<sup>3</sup>See for instance Rajalakshmi & Vanaja 1967; Wilson 1981; Hijazi & Abdulatif 1986; Moock & Leslie 1986; Simeon & Grantham-McGregor 1989; Pollitt 1990; Levinger 1986. For Kenya: Pieters *et al.* 1977; Meme 1996; Meme *et al.* 1998.



**Map 1.** Nakuru town

requires, the cost of producing meals will be much lower. This is the philosophy of the ‘Gardens for Life’ project that is currently underway in the UK, India, Kenya and The Gambia (see box). An additional advantage is that pupils learn to grow crops using organic farming methods, which raises their environmental awareness and is potentially beneficial for the urban environment (see e.g. Brock & Foeken 2006).

### The Gardens for Life project in Kenya

The Gardens for Life project is run by the Kenya Youth Education and Community Development Program. Its main objectives are to reintroduce agriculture into primary schools (since its exclusion as an examinable subject in 2000) as an essential and practical method of equipping children with easy and useful skills, and to encourage schools to grow crops for pupils’ lunches. The latter has two major benefits as it leads to an improvement in pupils’ nutritional condition, which in turn increases their attention span and performance, and it drastically reduces the cost of providing school lunches. Moreover, the farming techniques used are as organic as possible, for example using kitchen waste to make compost, and new and nutritious crops are being introduced.

The program started as a pilot project in 20 public schools in three districts (Nakuru, Laikipia and Nyandarua) and the results have been very promising. Nyandarua Boarding Primary School in Nyahururu town (750 pupils) saved KSh.

200,000 on lunches in 2004 and introduced (home-grown) carrots, spinach and courgettes as daily supplements to the usual maize, beans and potatoes. Chemicals were rarely applied and natural methods were used to control pests and diseases instead. The one-acre plot even produced surplus vegetables that were sold to local communities as ‘chemical-free’ foods. Another school, Muniyaka Secondary in Laikipia District, known as a ‘slum school’, saw a 38% increase in enrolment after its Gardens for Life project started. The school introduced radish, garlic, onions and beetroot, which are all known for their high vitamin contents. The students’ health improved as a result of the quality of the meals on offer at the school. Students from poor families who were unable to pay school fees also benefited from the work-for-fees program, in which they worked on the school plot to raise money to cover their fees. By doing so, pupils were able to stay at school to complete their education.

Source: [www.edennet.org](http://www.edennet.org) and *Daily Nation* (2005): ‘Schools in novel farm project’ ([www.nationmedia.com/dailynation/printpage.asp?newsid=46980](http://www.nationmedia.com/dailynation/printpage.asp?newsid=46980))

The aim of this paper is *not* to describe and analyze the results of the Gardens for Life project. Instead, it deals more broadly with school farming and school feeding in one, middle-sized Kenyan town: Nakuru,<sup>4</sup> thereby focusing on

<sup>4</sup>For detailed information on urban agriculture in Nakuru, see Foeken 2006.

three main issues: (i) the practice of school farming; (ii) the extent to which school farming contributes to school feeding; and (iii) its challenges and how to overcome these. The findings presented here are based on a general survey – undertaken in 2006 – of 116 of Nakuru’s 123 primary and secondary schools.<sup>5</sup> Of the seven schools not included in the survey, five schools declined to participate, while the other two were located in the extreme southwestern periphery of the municipality, which is very much an area with a rural character. Respondents were the deputy headmaster, a senior teacher or the agriculture teacher. Two schools appeared to participate in the Gardens for Life project, but had actually sold all the produce in 2006 (the donation of computers being the only benefit so far).

## 2 Nakuru town

Nakuru is in the heart of the Great East African Rift Valley, 160 km northwest of Nairobi, and, with an average annual rainfall of about 950 mm, it has a dry sub-humid equatorial climate (Municipal Council of Nakuru 1999). There are two rainy seasons: the long rains from March to May and the short rains from October to December. Over the past thirty years, the population of Nakuru town has increased fivefold from 47,000 in 1969 (Republic of Kenya 1970) to 239,000 in 1999 (Republic of Kenya 2000).

In 1997, the prevalence of absolute poverty<sup>6</sup> in Nakuru town was 41% compared to 30% in 1994 (Republic of Kenya 2001b). In 2000, many households had to live off a monthly income of KSh. 5,000 (US\$ 80) or less (Foeken & Owuor 2008), which translates to (much) less than the often-used definition of poverty of US\$ 1 per person per day. Such households are not only unable to meet their basic needs but struggle to put food on the table on a daily basis. With the recent steep increase in food and energy prices, their situation has only worsened.

## 3 School farming in Nakuru

Over half of the Nakuru schools cultivated crops (Table 1), predominantly in the schools’ own compounds. Crop cultivation was more common among secondary than among primary schools. Plots ranged from 0.1 to about 5 acres – the average being 0.8 acres – on which a variety of crops were cultivated. Livestock was much less common in schools and those schools that kept animals combined this activity with crop cultivation.

The large majority of the Nakuru schools had some kind of school feeding program (Table 1), in most cases consisting of the provision of lunch to pupils. Nearly all schools started a school feeding program “to make pupils stay for lunch” or

**Table 1.** Prevalence of school farming and school feeding in Nakuru town, by school category\*

Type of farming	All schools (N=116)	Primary schools (N=71)	Secondary schools (N=42)
School farming			
• crop cultivation	56%	45%	74%
• livestock keeping	16%	10%	21%
School feeding	85%	80%	93%

\* In this and the following tables and figures, the three schools with both a primary and secondary section are included in the ‘all schools’ column, but not in the ‘primary schools’ and ‘secondary schools’ columns. Source: School survey 2006.

“to make sure pupils get lunch”. However, in most schools – primary schools in particular – only pupils whose parents were able to pay were eligible for the school’s lunch program. These payments were either included in the school fees or were handed over by the pupil in cash on a daily, weekly or monthly basis. In ten primary schools, orphans and/or pupils from very poor households received free school lunches.

The most popular crops were basic food stuffs such as kale (*sukuma wiki*<sup>7</sup>), beans, maize, cabbage, spinach and potatoes. The use of inputs for these crops was quite common and all the schools used at least one type of input to enhance production (Figure 1). This shows not only their awareness of the advantages of using inputs but also the seriousness with which schools undertook farming. The frequent use of environmentally friendly organic fertilizers can be explained by the (then) strong presence of an NGO called SENVINET<sup>8</sup> and school environmental clubs, which advocate(d) organic farming in schools. The use of chemical inputs was much more prevalent among secondary schools and may have been due to economic considerations, as secondary schools are more likely to be able to afford inputs than primary schools. Also, primary schools might have been more inclined to use organic fertilizers due to SENVINET’s focus on this school category.

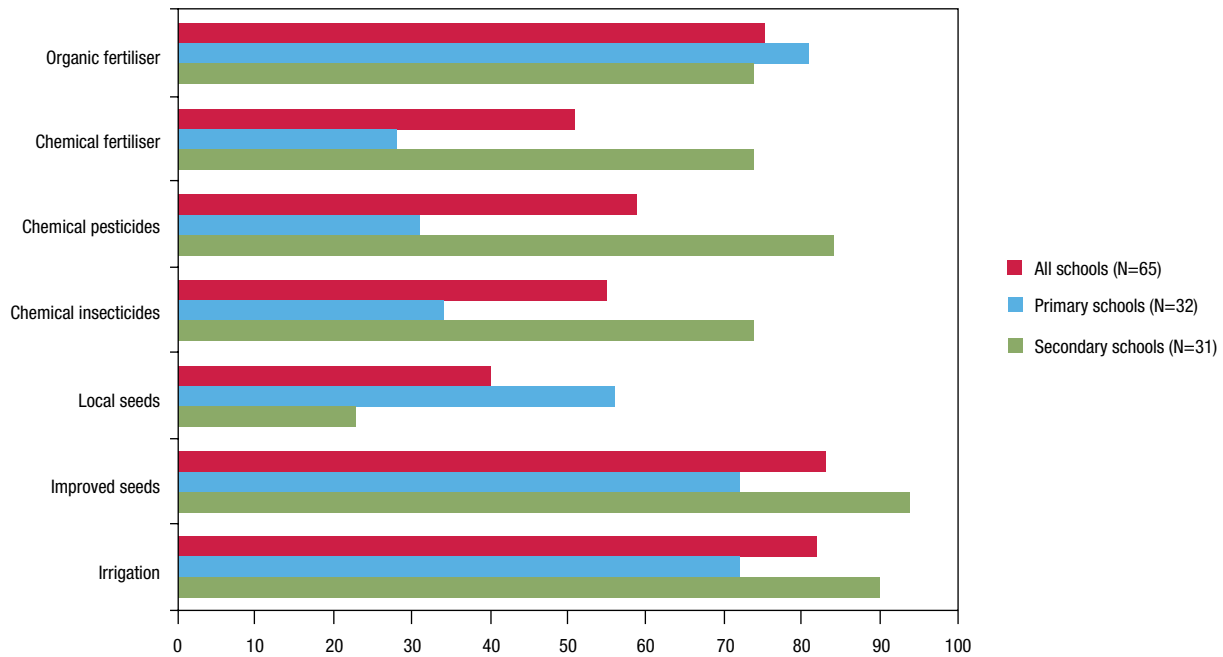
In a ‘normal’ year in terms of rainfall, an average of about 1,900 kg of crops per school was produced. The year 2006

<sup>7</sup>*Sukuma wiki* (*Brassica oleraceae* var. *acephala*) is the local name for a green, leafy vegetable in the cabbage family (kale). Literally it means ‘to push the week’, referring to its importance in the diets of subsistence dwellers due to its high yield and low price.

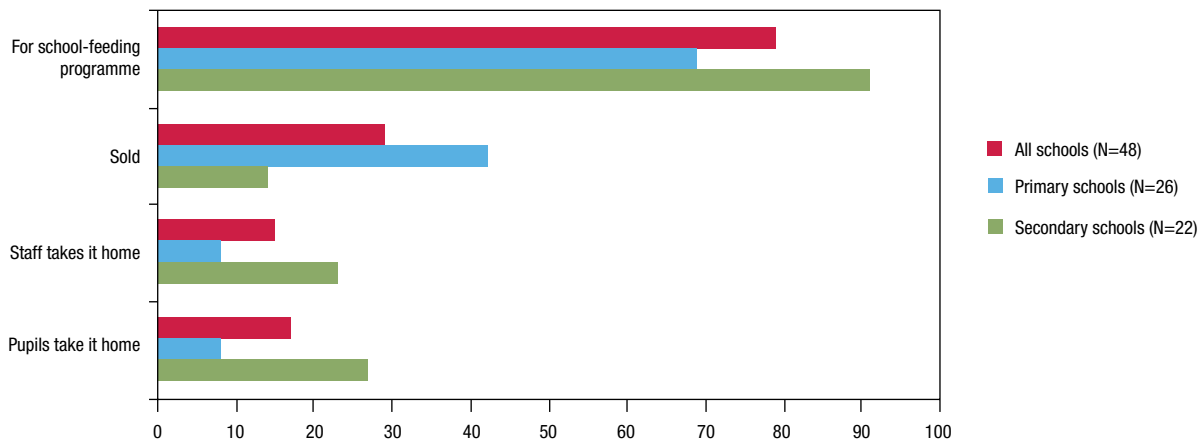
<sup>8</sup>SENVINET (Schools Environmental Network) actively promoted environmental sustainability by, amongst others, stimulating organic crop cultivation by schools. Many (especially primary) schools in Nakuru were members of this network. In late 2006, i.e. after the survey, SENVINET was forced to discontinue its activities following the withdrawal of its major partner and funder, MS Kenya (Nanna Jordt Jørgensen, former advisor of SENVINET, personal communication, 25 January 2010).

<sup>5</sup>Data collection was carried out by the two Kenyan co-authors. The study was funded by the African Studies Centre (Leiden, The Netherlands) as an extension of the larger Nakuru Urban Agriculture Research Project (NUAP; see Foeken & Owuor 2006).

<sup>6</sup>The absolute poverty line indicates a household’s (in)ability to meet its basic food and non-food requirements. In 2000, it was estimated at KSh. 2,648 (approx. US\$ 42) per month per adult in urban areas and KSh. 1,239 (US\$ 20) in rural areas (Republic of Kenya 2001a; SID 2004).



**Figure 1.** Inputs used in crop cultivation, by school category (%). Source: School survey 2006.



**Figure 2.** Use of crops, by school category (%). Note: Schools that had started to cultivate crops in 2006 (the year of the survey) are not included, hence the lower Ns than in Figure 1. For each type of use, it was asked whether it concerned “all”, “part” or “none” of the produce. In the figure, the categories “all” and “part” have been grouped together. Source: School survey 2006.

was such a ‘normal’ year, though primary schools harvested on average more (about 2,250 kg) than secondary schools (about 1,600 kg). Figure 2 indicates how this produce was used. It is clear that most of the produce was destined for school feeding programs. In fact, in most of those schools the entire produce was used for school meals. In a few schools, the harvest of common food crops like kale, beans, maize and cabbage was sufficient for the school’s lunch for a period of two to six months. However, this applied to a minority of the schools only. Some produce was also sold – mostly by primary schools – to school staff and parents or the school’s neighbors. Finally, in some schools, either the school staff or the pupils took (part of) the produce home.

Respondents were asked about the benefits of crop cultivation for the school (Table 2). The schools’ feeding programs figure prominently because the first two categories in Table 2 are both related to it – the first in the sense of products and the second in the sense of saving on the cost of food that otherwise would have had to be bought at the market. The latter is especially important for boarding secondary schools whose expenditure on food has been rising over the years, while the school fees paid by parents (which are inclusive of boarding costs) have not matched the increase in food prices. In a quarter of the schools, crop cultivation was considered a useful practical teaching tool. Finally, crop cultivation served as a source of income for some schools.

**Table 2.** Most frequently mentioned benefits of crop cultivation as perceived by the respondents, by school category

Benefit	All schools (N=65)	Primary schools (N=32)	Secondary schools (N=31)
It helps in school feeding program	62%	56%	65%
The school saves money on food	39%	22%	52%
It is used for educational purposes	25%	19%	32%
It is a source of income for the school	12%	19%	7%

Source: School survey 2006.

#### 4 Challenges

In an internal memo in 2007, the Municipal Educational Officer of Nakuru urged public primary schools to find a way of providing all pupils with lunch to avoid a situation where pupils would go hungry during the lunch break. For most primary schools, this was a difficult and challenging task. And since issuing the memo, it has become even more problematic due to the steep and rapid rise in food prices that has resulted in an increasing number of parents no longer being able to afford school lunch for their children. Respondents in many schools indicated the wish to expand the provision of lunch to all pupils, the major obstacle being the high prices of food at the market, however. As said, this is where school farming comes in, but then a number of fundamental conditions have to be met:

- *Sufficient land.* ‘Not enough land’ was by far the most frequently mentioned answer to the question about why *non-crop-cultivating* schools did not grow crops, while almost half of the schools that did cultivate crops saw their ‘lack of enough land’ as a serious constraint. Even though the compounds of some schools in Nakuru were indeed (too) small for a crop garden, the data suggested that for most schools the availability of land did not have to be a major constraint to start or expand crop cultivation. The example of Nyandarua Boarding Primary School in Nyahururu (see the box on page 2) shows that even a plot as small as one acre can be very rewarding in terms of yield, feeding capacity and (saving) money.
- *Sufficient water.* By far the most frequently mentioned problem with crop cultivation concerned the climate: lack of rainfall, irregular rainfall, and drought. Nakuru has a relatively dry climate, so most schools face problems with watering their crops. Not every school

has its own borehole (only four schools did), but catching rainwater and storing it in tanks – as was practiced by 20 schools – shows that this problem can be solved as well.

- *Professional support.* The sudden disappearance of the NGO SENVINET created a vacuum in terms of professional assistance. The role of the extension officers from the Ministry of Agriculture (MoA) has been marginal, judging by the fact that only two respondents said that their schools had received assistance from MoA extension officers in 2005. It is very important that this vacuum be filled.
- *Leadership.* School farming is usually the responsibility of one teacher, which means that the success of the school’s farming activities is not only dependent on factors such as land, water and support, but also on individual qualities like a teacher’s organizational skill, enthusiasm, dedication, etc. An example illustrates this. One of the public primary schools in Nakuru did very well in terms of school farming in 2006, producing sufficient quantities of kale, cabbage and maize to last the school a whole year. During a visit in June 2007, it appeared that in the course of 2006 (i.e. after the survey) the teacher in charge of farming activities had been transferred to another school. It took some time before another teacher could be found to take over these responsibilities and the garden had been noticeably neglected during the first half of 2007.

#### 5 Conclusion

School feeding – and in particular the provision of school lunches – is high on the development agenda. In Nakuru, only a few schools managed to provide all pupils with a lunch on a daily basis at an affordable price. They have been able to reach a relatively high degree of self-sufficiency in their feeding programs through their school farming activities, thus compensating for the otherwise very high costs involved if all ingredients had to be bought. These schools can serve as an example for others regarding school farming. As the study indicates, constraints in terms of land, water, support and leadership can be overcome. It is important to realize that many schools – and certainly not only in Nakuru – could benefit from the positive experiences of other schools, namely the best performing schools in the Gardens for Life project and also some successful schools in Nakuru town.

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