

**IMPACTING NUTRITION THROUGH SCHOOLS:  
RURAL OUTREACH PROGRAM (ROP) AFRICA 4H PROGRAM PROFILE****Karanu MN<sup>1\*</sup> and RK Oniang'o**

One of the ways that ROP works to impact nutrition and health in the community is through school-based interventions. 4H (a USA concept) works to develop in young people good citizenship, leadership, responsibility and life skills through experiential learning and positive youth development approach. These concepts are applicable and beneficial to school going children in Kenya. The 4Hs (Head, Heart, Hands, Health) are complementary to Kenya's 4K (Kuungana Kufanya Kusaidia Kenya) which translates to: *to unite, to work with one's hands, to help develop Kenya*. 4K's guiding principle is to empower the youth with agricultural and life skills to contribute to better nutrition, health and higher standards of living, working through agriculture clubs in schools.

4K was formed in 1969 in Kenya after local leaders visited the United States and saw the 4H program in action. They adopted 4H concepts and principles, and customized them to 4K for ownership and identity.

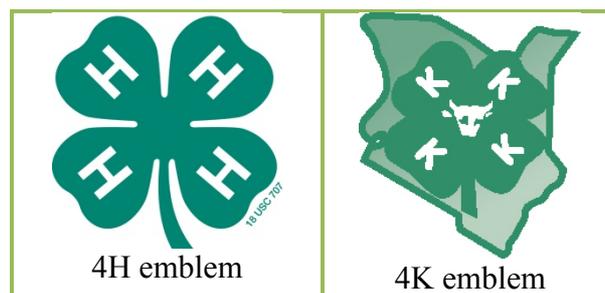


Figure 1: 4H and 4K emblems

The 4K emblem is a map of Kenya with a four leaf clover laid upon it (figure 1). On each leaf is a K and in the center is the head of a Boran cow, symbolizing domestication. The color green is used to indicate nature, youth, life and growth.

The 4K club motto is *Kujifunza kwa Kufanya* which translates to “to learn by doing”. People learn best when they actually do a task than by reading, learning and saying. “It has indeed been demonstrated experimentally that ‘learning by doing’ can produce a much higher retention rate than ‘chalk and talk’, rising even higher when students also teach other students.” Source: Revisiting garden-based learning in basic education. [www.fao.org/sd/erp/revisiting.pdf](http://www.fao.org/sd/erp/revisiting.pdf)

It has been found out that we remember:

- 10% by reading
- 20% by learning
- 30% by seeing
- 50% by seeing and learning
- 70% by saying it ourselves
- 90% by saying and doing it ourselves

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## **4H and ROP**

In the last quarter of 2014, the Global Clover Network, a subsidiary of the National 4-H Council, made out a sub-grant to Rural Outreach Africa (ROP) for a collaborative effort with Nyamninia Primary School towards replicating the school's 4H/4K Club model in other public primary schools in Siaya County and the neighboring Kakamega County. Nyamninia Primary School 4H club had excelled in teaching school-going children the importance of food and nutrition security through farming and how that contributes to good leadership, good citizenship, an innovative and entrepreneurial society and national security. These aspects of the Nyamninia Model were in line with ROP's mandate of leveraging on local strengths to mobilize resources for empowering rural communities for the realization of good health, through improved food and nutrition security, improved family income, environmental protection, and enhanced literacy levels in an equitable, just, sustainable and gender sensitive manner. Nyamninia's success is credited to Ms. Millicent Obare, a hardworking; action oriented Head of School, who has since been transferred to Ng'iya Girls Boarding Primary School to replicate the same there. In fact, we refer to the Millicent Nyamninia Model as we go round the schools.

### **Forming the 4H Club**

In this program, ROP works with schools that have functional 4K clubs; an indication of the eagerness and enthusiasm to embrace the 4H concept by both the pupils and their teachers and parents.

With guidance from the club patron, the 4H club of about 50 members, with a good balance of boys and girls from class 5-8 is formed. Bright children are encouraged to become part of 4H because they can balance academics and co-curricular activities well, plus it also removes the mentality that only poor performers should be engaged in farming.

As a way to register club members, teachers will ask students to donate planting materials like banana suckers, sweet potato vines; or vegetable seeds/seedlings; or a chick, to start the club. This is also a way to get only seriously interested learners who will be responsible for their projects.

Once a good number is attained, the learners will elect club leaders: chairman, secretary and treasurer. The club members also select a parent representative, who together with the club patron and headteacher, represent the club in parent-teacher meetings.

A 4H club bank account, separate from the school's account is required for depositing of funds and proceeds from sale of produce. The bank account has 3 signatories:

headteacher or deputy headteacher, club patron and parent representative. Schools are given small grants, usually between Ksh. 15,000-40,000 (USD 150-400), to expand their agricultural projects. The club members keep records of income and expenditure. Clubs account for 4H grant at the end of the year.

As of January 2017:

- 50 schools have benefited from the program (28 in Kakamega County and 22 in Siaya County) in the western part of Kenya, under ROP (Table 1).
- 2,146 primary school children in both counties have been reached in the program
- 214 school heads/teachers (including club patrons) and 18 stakeholders (Area Education Officers, Teachers Service Commission Officers, Ministry of Agriculture extension officers and area administration-chiefs and assistant chiefs) have been trained and sensitized about 4H in the community.

Club activities vary, but most clubs practice:

- Crop farming (maize, vegetables, legumes, horticulture)
- Poultry keeping
- Animal husbandry (cows, goats, sheep, pigs)
- Agroforestry

**Table 1: Schools that have received 4H funding in the period 2015-2017**

s/n	Kakamega County Schools	Siaya County Schools
1	Ekapwonje Primary School	Nyamninia Primary School
2	Eshikomere Primary School	Tatro Primary School
3	Eshibimbi Primary School	Nyang'anga Primary School
4	Mwiyenga Primary School	Bar K'Odhiambo Primary School
5	Shisango Primary School	Nyanginja Primary School
6	Esokone Primary School	Bar Chando Primary School
7	Matioli Primary School	Sidok Primary School
8	Eshikholobe Primary School	Got Bondo Primary School
9	Shilibo Primary School	Kaudha Primary School
10	Eshimboko Primary School	Rasugu Primary School
11	Lunza Primary School	Pap Oriang' Primary School
12	Eshiandukusi Primary School	Malunga Primary School
13	Eshisiru Primary School	Masinde Primary School
14	Lufumbo Primary School	Unyolo Primary School
15	Inaya Primary School	Pap Olengo Primary School
16	Eshibeye Primary School	Ng'iya Girls Primary School
17	Ebuchinga Primary School	Malomba Primary School
18	Buchenya Primary School	Bar Kawango Primary School
19	Shitsitswi Primary School	Wagwer Primary School
20	Muluwa Primary School	Udenda Primary School
21	Emukangu Primary School	Rambo Primary School

22	Eshishebu Primary School	Katuda Primary School
23	Emahondo Primary School	
24	St.Gerald Shitaho Primary School	
25	Nyayo Tea Zone Primary School	
26	Eshikoti Mixed Primary School	
27	Musaa Primary School	
28	Emusala Primary School	

## Partnerships

Strategic partnerships with organizations working in the same areas and schools as 4H have enabled ROP to reach more teachers for sensitization and awareness. One such partnership with Nestlé's Healthy Kids Program enabled ROP to train 158 teachers from Kakamega schools in October 2016 on health and nutrition. Nestlé is conducting nutrition education training in Kakamega schools where teachers are taught how to incorporate nutrition education and hygiene in the school curriculum for lower classes (1-4).

The two programs complement each other, especially since they are both addressing food and nutrition in primary schools.

The partnership with ROP is to build upon the nutrition education foundation that Nestlé Healthy Kids has laid. ROP was founded in 1992 to address the then growing malnutrition and poverty in sugarcane growing Mumias area. ROP was started to move smallholder farmers beyond relief to sustainable self-reliance by providing them with the tools and resources needed to provide for themselves. For nearly 3 decades, ROP has provided assistance to families in Lurambi, Butere/Mumias, and wider Vihiga sub-counties in western Kenya. Currently, with support from AGRA's (Alliance for Green Revolution for Africa) Soil Health Program, smallholder farmers are able to produce several tonnes of Soya beans which are processed to produce high protein flour for human consumption and by-products for animal feed.

Working cooperatively with Ministry of Education, Ministry of Agriculture and local administration ensures that 4H programs are allowed in schools, technical expertise in agriculture is given to 4H clubs and projects in schools are protected, respectively. Sensitization and training helps to gather support for 4H in the community. Where the community is supportive of school programs, the club thrives and club projects are taken care of.

## **Agripreneurship**

4H clubs are encouraged to engage in entrepreneurship by selling their produce: maize, vegetables and milk to the school and community. In successful cases, they contribute to the school feeding programs. Income generation keeps the program sustainable. The money is used to buy inputs for the following planting season, to expand projects, for example, buying dairy cows, pigs and goats, and support learners by paying exam fees, books and uniforms for club members. Agripreneurship proves to learners and parents about the profitability of agriculture.

Club members also learn about post-harvest management; for example, harvested maize is stored in chemical-free hermetic bags like PICS bags. Club members learn proper harvesting of vegetables and bananas and how to appropriately package their produce for market. Produce marketing is an opportunity for learners to develop positive relationships with adults (teachers and community) as they interact during buying and selling. They learners develop marketing, book keeping and entrepreneurial skills.

## **Climate change effects**

Drought brought about by climate change is a challenge for school gardens. All the schools in the program are affected by erratic/short rains and long dry spells. Vegetable gardens are especially vulnerable and maize succumbs too. However, the clubs are diversifying and innovating to address this problem: planting water efficient maize varieties (WEMA), growing indigenous crops that are well adapted (cassava, local vegetables, sweet potatoes), planting vegetables in sacks in order to conserve water, using organic manure, intercropping maize with legumes and keeping goats which thrive better in semi-arid conditions.

As is common in rural areas, communities depend on rain water for farming. Some schools have water tanks for rain water harvesting, which is used for gardening and cleaning around the school. However, climate change has resulted in water scarcity. Boreholes in some schools help to support year-round farming, especially of vegetables, which are very nutritious.

**Table 2: Summary of 4H activities carried out in Siaya and Kakamega Counties from January 2015 to January 2017.**

Year	Month	Activity
2015	January	<ul style="list-style-type: none"> <li>The inaugural 4H conference was held at Siaya Agricultural Training Centre, Siaya Kenya. Training brought together 41 school heads and club patrons who were trained on their role as facilitators of 4H.</li> <li>4H club monitoring visits in 11 Kakamega schools by ROP field officer to give technical support and ascertain the respective clubs preparedness to be included in 4H program.</li> </ul>
	May	<ul style="list-style-type: none"> <li>4H monitoring and mapping visits in 17 Siaya schools to determine their level of preparedness for support from the 4H funding, following the inaugural forum of school heads.</li> </ul>
	June	<ul style="list-style-type: none"> <li>Funds disbursement to 25 selected phase I 4H clubs (15 in Siaya and 10 in Kakamega County). Funds were used to buy inputs: seeds (maize, beans, vegetables), planting materials (banana suckers, sweet potato vines), chicks and rabbits, small animals (goats, sheep), and for others, to lease land for farming.</li> </ul>
	December	<ul style="list-style-type: none"> <li>Reporting by 4H clubs. The report includes information such as: name and location of school, name of school head, club patron and their contact information, club membership (boys: girls), amount of funding received, activities embarked on and description of outcomes.</li> <li>Monitoring visits of sampled participating schools was carried out based on reports submitted. Schools that faced challenges in execution were visited and given technical advice on how to best implement the program. Schools near participating schools were visited for future inclusion in the program.</li> <li>Year-end reporting for the donor (National 4H Council) including the narrative on program activities and financial reporting.</li> </ul>
2016	January	<ul style="list-style-type: none"> <li>Teachers' training workshops in Kakamega and Siaya. The workshops centered on linking schools to agriculture so that schools understand the need to ensure food and nutrition security and how that is directly linked to good academic performance in children. Participants brainstormed on ways to change attitudes in the community about agriculture, teaching community members how to run profitable farming enterprises on small pieces of land and how to maximize on available information resources to improve agriculture.</li> </ul>

	April	<ul style="list-style-type: none"> <li>Funds disbursement to 13 newly selected 4H clubs in Phase II (8 in Kakamega and 5 in Siaya). 10 clubs from phase I (5 in each county) which were ran effectively, showed innovation and had dedicated support from the school administration and community received additional funding to expand on their programs.</li> </ul>
	July	<ul style="list-style-type: none"> <li>Mapping was carried out in 17 Kakamega schools to ascertain the level of preparedness to be included in 4H program.</li> </ul>
	October	<ul style="list-style-type: none"> <li>Teachers' Training Workshop in partnership with Nestle's Healthy Kids Program convened 158 teachers (including headteachers) for a full day nutrition education workshop. The meeting was sponsored by Nestle Healthy Kids. 20 teachers from 10 Kakamega schools selected for phase III of 4H visited 3 successful 4H clubs after the training to learn how to effectively implement the program and get ideas of what they can do in their schools.</li> </ul>
2017	January	<ul style="list-style-type: none"> <li>Funds disbursement to 16 4H clubs selected for phase III (10 in Kakamega and 6 in Siaya*). 10 schools from phase II (5 from each county) that ran successful clubs were given additional funding to expand their programs. *Siaya schools were hard hit by drought. 4 of the schools in phase III were previously funded in phase I but projects did not take off due to climate change effects.</li> </ul>

Some of the benefits for 4H club members are:

- Receiving training on modern agricultural technologies.
- Subsidized contribution to the school feeding program, and in some cases club members participate freely in the feeding program.
- Profits from sale of produce are used to pay school levies and buy school uniforms for club members.
- Gains in entrepreneurial, leadership and life skills.
- Participation in County agricultural shows and farmer field days in the area.

Where the program is successful we have observed that there is:

- Holistic development of learners who can adapt easily to life changes.
- Informed food preferences based on a balanced diet, especially in nutritious vegetables.
- Transfer of knowledge to the learners' home gardens.
- Improved nutrition and food security among young people at critical developmental stages.

- Improved academic performance in schools due to instituting and supplementing school feeding programs with farm and animal produce.
- Increased completion rates of boys and girls in standard 8.
- Change of attitudes towards farming and agriculture in learners and parents.
- Nurturing of leadership skills and good citizenship among club members.
- Instilling of good governance early in the young people's lives as they themselves run the clubs and elect their leaders with guidance from the club patron.

#### **Challenges faced by 4H clubs:**

- Climate change is a major challenge. Rains are inconsistent and short. Planting is delayed and in some cases clubs had to plant more than two times. Harvests have been adversely affected.
- Capacity building and training is needed for club members, club patrons and school administration in: agronomy (in the face of climate change), agribusiness, post-harvest management of crops and value addition.
- Financial support for the program in schools is currently inadequate. Funds are needed to support already existing 4H clubs and build them up to established model schools. Most clubs are supported by parents and teachers, but this support wanes due to financial constraints.
- Plant diseases and pests like army worms.

#### **Opportunities for 4H clubs in the schools and community**

- The children involved in club activities serve as change agents in their community. Learners report that they practice what they learn in 4H in their home gardens.
- 4H activities help to strengthen agronomy and horticultural skills in an economy dependent on agriculture. Agriculture is no longer an examinable subject in primary schools in Kenya. Getting children interested in food production early in life exposes them to new technologies that they could use for future careers apart from active farming. These opportunities are in fields such as: agricultural extension, post-harvest management and storage, value addition, food science and technology, nutrition, agricultural mechanization/engineering, and many more.
- 4H involvement allows children to practice leadership, responsibility and accountability at an early age. These are qualities that will make great leaders for Kenya in the future.
- Mentoring is an integral part of 4H and contributes to improved academic performance. Children who go through 4H are able to make good life choices, have high self-esteem and they serve as role models to their peers.

- Children attend school with big landholdings that can be used to impart knowledge on agriculture, food security and nutrition, yet most children in rural schools go hungry. 4H involves these children and their teachers in designing sustainable projects to address hunger in their schools.

### **Recommendations**

We recommend that national and county governments support this program, financially and with expertise. There are many schools that have yet to be reached. We recommend connecting county agriculture departments to school programs to offer technical support in extension, agronomy and animal husbandry services.

### **Conclusion**

Knowledge of nutrition in young people affects the health of their families, especially adolescent girls, as they are tasked with food preparation. These young people are future parents and they need to be aware of and self-monitor their personal food security and nutrition needs.

So far, ROP believes primary school interventions hold the best promise to transform Africa's economic and food and nutrition prospects.

**See pictures below**

**Pictorial**



Nyamninia primary 4H members in 4H vegetable garden.



Eshibimbi primary 4H members weeding the vegetable garden.



Peterson Mutsotso, 4H club patron Shisango primary addressing other teachers and community leaders at a 4H workshop in Kakamega.



4H club members at Nyang'anga Primary pruning tomatoes in their greenhouse.



4H club at Shisango keep goats. They bought an improved breed which gives birth to twins every time, therefore they are able to increase their herd quickly.



Mwiyenga primary 4H students gifting bananas to Ms. Njeri Karanu (ROP 4H program officer). Standing by is Mr. Moses Osale (Mwiyenga primary headteacher), and chairman of the school's board of management.



Julius Awandu, Bar’Kawandu primary 4H club patron. Planting vegetables in sacks conserves water especially during dry spells.



Founder ROP, Prof. Ruth Oniang’o with the kids. Schools located in areas where ROP is working are invited to farmer field days organized by ROP.



A good maize harvest at Buchenya primary (August 2016).



Teachers participate in a “food game”, a practical demonstration of healthy diets, led by Ms. Jayne Wandera of Nestle Healthy Kids.



Hermetic storage of maize in Matioli primary (October 2016).



Teachers' training workshop in Kakamega (2016) in partnership with Nestle Healthy Kids.



Steve Andala (ROP staff) giving technical advice on how to manage tomato plants at Shitsitswi primary.



Water tanks/community water-point in Musaa primary. Access to water is important for successful gardens especially during drought.



Eshikomere primary 4H members with goats. The school is on rocky ground unsuitable for crop farming.



Ituti primary 4K club students inspecting a tomato nursery with their teacher. Club members get a seedling each to plant at home.



Fish pond at Pap Olengo primary dried up due to prolonged drought.



Njeri (ROP) and Ms. Celestine Omollo (headteacher Masinde primary) in vegetable garden run by 4H club.



Mr. Keya, Kakamega County Director of Education, addressing teachers during training workshop at Bukura ATC.



2 local cows at Sidok primary.

The 4H club sells the milk to teachers and the cow dung is used to make organic manure.



Organic manure at Shisango primary. The black tanks contain a foliar feed that club members make from goat droppings, pepper and Tithonia.



Barchando Primary School 4H club member Sam showing where the sheep graze in the school field



Chicken brooders at Nyanginja primary school. The school keeps over 100 free range chickens and sells to the community.



Tatro primary used 4H funds to expand the fishpond project initially started Millennium Villages Project. The school supplies fingerlings in the commun