

Innovations Leading to Transformation of Livelihoods for Peasants

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January 2020

The hardest thing for a low social class farmer is to identify the best and most productive enterprise he/she can put all her effort into. In most cases, they will engage in all possible production enterprises. For example, keep a cow for milk, grow some vegetables, pulses, and cereals in a small piece of land for the family and sell the very little surplus. Fruits will grow in the bushes and if planted, maybe one or two trees for local consumption.

Peasants are a majority of the world's poor (The School of Oriental and African Studies, 2016). These low-class farmers are found in the rural setup. On its studies on rural poverty worldwide, the International Fund for Agricultural Development (IFAD) states that approximately one billion inhabitants of rural settings are poor (Thomas Pogge's analysis of World Bank figures). This is majorly caused by some reasons such as lack of proper information on better agricultural practices; the Seasonality of Agriculture; Inadequate labor in the farms among others.

Like most Sub Saharan African countries, Kenya has registered a decline in the poverty rate over the past decade. The absolute poverty rate declined from 46% to 36% in 2016 (Timothy Njeru, Egerton University, 2018). Such decline has been due to improved agricultural extension services, the decline in illiteracy levels in the country, availability of resources to carry out profitable agriculture, etc.

Mr. Peter Njoroge, a farmer from Sasumua watershed, owns two acres of land at the bottom of Aberdare ranges where he lives with his family. He had very little knowledge of farming, hence just a peasant like any other from the region until he accessed agricultural services which marked his turning point to become a great farmer of tree tomatoes and other agricultural enterprises. He used to produce only for his family using a quarter-acre leaving the rest of the farm bushy. Surprisingly, he only practiced crop production in seasons as flooding was a major threat to his farm. Milk production was as low as 6 litres of milk per cow. Water was inadequate due to lack of good storage structures which attributed to that low productivity.

To change the situation to a more economical situation, the community of Sasumua watershed benefited from several interventions from the Upper Tana Nairobi Water Fund (UTNWF). Mr. Njoroge is one of the beneficiaries of the various interventions. Such technologies he has embraced and resulted in his life's transformation include;

- **Retention ditches and Grass strips**

His farm being 4% steep experienced flooding during heavy rains (1506-2000 mm rainfall, climate-data.org). Well-spaced 1 meter deep terraces were constructed to curb flooding and agroforestry trees and also, retain water to seep in the soil for use by crops during the dry seasons. On top of that, he received 30kg of Napier grass which he planted in strips on the terraces and retention ditches. He has used the Napier grass to feed his cattle. These have established good, well-partitioned plots for tree tomatoes production.

- **Agroforestry trees**



Trees are very important in protecting a watershed and most importantly the subwatershed being source water for the Sasumua dam. Trees gather water on the canopy, drips down to the soil, forms a stream than a river to a dam. They reduce erosion of the soil through binding up soil particles together, leaf litter decomposes fertilizing the soil. Mr. Njoroge received Hass Avocado trees, Tree Lucerne, Grevillea trees, Dombeya trees (3kg of dombeya leaves is equivalent to 1kg of nitrogenous fertilizer), Rosewood trees which are of several benefits to him up to date. Mr. Njoroge has planted 70 trees of the various species within his farm.

Planting trees is a nature-based solution to climate for a cleaner and healthier environment (Lynn Scarlett-Chief External Affairs, TNC)

- **Water pan**

Water inadequacy is a critical challenge facing many farmers today, Mr. Peter Njoroge being one of them especially during dry seasons considering crops are requiring a lot of water on the farm. For example, receiving 61mm to 283mm rainfall in January, February and other dry months is not enough for on-farm uses. Harvested and stored water is used during the dry season to crop production and is always used to feed cattle. A cheap and economical way of harvesting and storing water is through water pan installation which Mr. Njoroge did. The 50,000 liters of water from the water pan is used to feed his livestock, irrigate his tree tomatoes, and other crops on his farm.



In addition to the above interventions, he has also received a wide range of Agricultural Extension Services from the County Extension Assistants and Field Extension interns, which helped him identify tree tomato farming as the best enterprise to invest in and make huge profits. On-farm visits were made and are made every month to check on his progress.

Program/Interventions outcomes

In the past, Mr. Njoroge was a low-class peasant who earned KSH 20,000 monthly from his large farm but today he is a real farmer earning over KSH 400,000 per month as a result of improved agriculture using technologies brought to them by among other teams, Upper Tana Nairobi Water Fund. As a result of his warm embrace of these interventions, he has realized huge profits up to date and still expecting more.



Tree tomato being a fruit tree is considered an agroforestry tree since it plays roles similar to any other tree such as holding soil particles together controlling soil erosion and enhancing water drainage. Mr. Njoroge chose tree tomatoes since the fruits are having a very good market earning him a good income.

From the interventions, he has been able to produce 4,000 tree-tomato trees conveniently in the last four years with minimal production and price fluctuations. Every week, he can harvest 1000kg of the tree tomatoes, selling at an average of KSH 100 per kg. Cumulatively, he is earning KSH 4.0 million per year. In addition, he has established a tree tomato and passion fruit nursery where he is selling a seedling at KSH 50. From this tree nursery, he can sell about 5000 seedlings per annum totaling to KSH 250,000. He is planning to expand the nursery bed to meet the demand in the market which is very high. He is using water from the water pan to irrigate his tree tomatoes and seedlings in the nursery.

Apart from benefitting from the tree tomatoes, he has been growing other crops such as Cabbages, passion fruit, giant apples among others.

Never the less, he is harvesting Napier grass from the 300 m grass strips on the terraces which he is feeding to his 2 dairy cattle. This has raised milk yield per cow from 6 liters to 25 liters.



Of importance, Mr. Njoroge's farm has not been having floods as over 80% of excess water is retained in the terraces and retention ditches and improving Napier grass yield, also the farm has well-drained soils good for crop production. Many farmers in the area and outside are beneficiaries of his hard work as most of them are learning from him, buying seedlings from him, and seeking ideas from him. For example, his brother growing tree tomatoes, listeners of Inooro FM, Mr. Njau, Mr. Mbui-Thika, among others.

From all the above income, Mr. Njoroge is able to educate his children without any financial problems, feed the family well, and always keep it healthy.

Enterprise	Income before per month	Income after/current per month	Deviation
Tree tomato Farming	Nil	4000kg by 100/- = 400000/- 415 seedlings by 50/- = 20,750/-	+400,000/- +20,750/-
Dairy Farming	6litres by 25/- = 150/- 150/- by 30days = 4500/-	25litres by 25/- = 625/- 625/- by 30days = 18750/-	+14,250/-
Total(KSH)	4,500/-	Gross income p.m = 439,400/-	+435,000

If 50% of the member farmers could adopt the technologies offered by the Water Fund, the Gross income of the population in the Sasumua sub-watershed would rise to a great extent.

In an ideal case, where the 50% (1500 farmers) will work the same as Mr. Njoroge, then every farmer would earn KSH 400,000 every month and the entire region will show a big positive and impressive change from the past. The farms will be greener, more productive, the crime rate will reduce, more businesses would start among other benefits.

Conclusion.

It is clear that through improved agriculture, focus on specific farming enterprises, for example, tree tomatoes farming can earn a farmer a good income enough to transform his/her life from a peasant to a great farmer. The integration of agroforestry in farming is very important in water catchment areas like

Nyandarua to control soil erosion thus lowering water turbidity and sedimentation in dams like the Sasumua dam. It is also important to select the most beneficial form of agroforestry like that of tree tomato farming. Embracing support from different organizations' has attributed to the transformation of several such kinds of households. If 2000 households were to practice the same as Mr. Njoroge, then there would be a great positive change in the lives of people in Sasumua watershed.

“It doesn't matter how small your farm is, but how effortful, committed and visionary you are to make it as productive to its potential”, said Mr. Noroge