



Women and bees: adapting to climate change impacts in arid and semi-arid areas of Kenya

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Abstract

The livelihoods and food security of small-scale farmers in Sub Saharan Africa are particularly threatened by increasing weather variability and frequent droughts due to climate change. Climate change could cause serious deterioration of rural livelihoods and increase food insecurity in Sub Saharan Africa. Given these multiple challenges, the region's small-scale farmers and pastoralists must adapt, in particular, by adopting technologies that increase the productivity, stability and the resilience of their production systems. Beekeeping has been shown to be a low-cost income generating activity which can produce rapid returns on relatively low investments. Farmers can easily adopt modern beekeeping as an additional activity to diversify their sources of income and encourage land users to manage forest and woodlands better, therefore creating win-win-benefits. However, farmers are not taking up this enterprise despite these benefits, and hence continue living in poverty. The current study examines the status of improved beekeeping as resource diversification for addressing climate change risks in Kajiado County in Kenya, and possible solutions. Analysis of data collected from household surveys and focus group discussions revealed that men owned a greater percent of the livestock in the study area than women. Absconding of bees, lack of credit facilities and lack of marketing information were cited as the major constraints in beekeeping as an enterprise. In an effort to solve these problems, pastoral farmers in the Okiroriti women group were facilitated to purchase modern bee keeping langstroth hives. The group also received training and demonstrations on improved bee keeping technologies. Creating awareness about the existence of funding institutions to these farmers and linkage to market outlets will help them acquire capital which will enable them take up modern bee hive technologies, thus enhancing their living standards and food security in vulnerable populations, mainly women and children.

Women adaptation to climate change through enhanced income from modern bee keeping technologies



Figure 1: Women involved in setting up of langstroth hive. (Photo credit: Beatrice Mugo)

Women play a crucial role in farming activities. However, the risks associated with climate change may reinforce gender inequalities and even erode the progress that has been made towards gender equality in many developing countries. Poor women's limited access to resources, restricted rights, limited mobility and voice in community and household decision-making can make them much more vulnerable than men to the effects of climate change. This unfair situation can lead to unfortunate consequences for all, as women play a unique role in the stewardship of natural resources and support to households and communities. With their knowledge, they can shape adaptive mechanisms in vulnerable areas. It is therefore vital that women are empowered so that they can gain

knowledge and skills to enable them to be in the front line of poverty eradication and resource management. Since food security is not possible without income, honey production through modern bee keeping technologies could be a useful avenue for improving rural economy. Bee keeping could be a potential high value income generating enterprise for poor, marginalized, and even the landless farmers to support their livelihoods, given the fact that it can be started even with limited resources to provide income and nutrition.





Figure 2: Training of members. (Photo credit: Beatrice Mugo)

Beekeeping in Kenya and Africa at large is mostly carried out using traditional methods. In these methods, beehives are made out of logs, bark, reeds, gourds and pots, among other materials. Traditionally, bees were kept in hollow tree trunks and honey production involved open fires and smoke. This often resulted in bush fires that also killed the entire colony of bees. The honey tastes strongly of smoke and is often contaminated with wax. The enterprise is quite adaptable to various environments and circumstances, although farmers are unable to access better markets due to the poor quality and low quantity of honey produced. Beekeeping is a source of food (e.g. honey, pollen and brood), raw materials for various industries (e.g. beeswax candles, lubricants), medicine (honey, propolis, beeswax, bee venom) and income for beekeepers. Modern beekeeping techniques and the production of high-quality products help to ensure that natural resources are used sustainably and new sources of income sources are created for the local population.

Beekeeping activities have the potential to increase the resilience of farming communities as a means of livelihood diversification. Beekeeping is particularly attractive to these farmers as it has low investment costs but promises high returns in the immediate and longer term. Thus, promoting beekeeping will lead to sustainable livelihood options, household food security, and improved incomes—particularly to the most vulnerable groups.



Figure 3: The apiary. (Photo credit: Beatrice Mugo)

Possible research interventions

Farmers from this particular location (Sajiloni) did not have another source of income when the project started, save for the charcoal burning which had significant impact on environmental degradation. With EATIRI support, the project created awareness on benefits of

resource diversification, and bought 15 modern hives for this group. The group will be able to harvest 225kgs of honey in the first harvest, which is due in early April, 2015, which can be translated to \$1589 per one harvest (Table 1). Honey harvesting is done three times a year particularly in Kenya's rangelands. Therefore within one year the group will obtain \$4,767 in income from beekeeping ($\$1589 \times 3 = \4767). Given that the cost of living is lower in drylands than in the cities and their outskirts, this income is capable of improving the economic status of these marginalized communities. Research findings show that absconding of bees and lack of credit are the major constraints preventing farmers in this particular area from taking up the enterprise. One major reason why bees abscond is due to the smell of smoke, which is a sign of danger to their colonies. Generally, there is a lot of observed charcoal burning in this region, mainly by women who have no access and control of livestock among the Maasai communities. Although these women earn some income from charcoal sales, it has some environmental and ecological risks associated with global warming and ecological distraction where bees abscond. Therefore, the current promotion of modern beekeeping is an enterprise that will solve these problems.

“With EATIRI support, the project created awareness on benefits of resource diversification, and bought 15 modern hives for this group.”

Table 1: Anticipated benefit analysis of bee farming (in US \$) using langstroth hives among the Ekirotiri women group in Kajiado County-Kenya

No. of hives	Estimated honey yield (kg)	Cost per kg	Monetary valuation per harvest
1	15kgs	\$7.06	$\$7.06 \times 15 = \106
15	$15 \times 15 = 225$	\$7.06	$\$7.06 \times 225 = \1589

Way Forward and Recommendations

Traditionally, bee keeping was a male domain but this is slowly changing due the introduction of modern bee keeping technologies making it possible for women to venture into this enterprise. In this respect, a particular focus needs to be given to women when considering the development of the bee keeping sector. However, women face barriers, for example cultural and social, which do not allow them to participate actively in commercialization of what they produce. Promoting and facilitating women's beekeeping groups can provide a wide range of benefits that can help them not only improve production know how but importantly give them more voice within the sector.

Access to credit will be vital to farmers who intend to have more apiaries to enhance their incomes and food security using a bee farming enterprise. A loaning system could be developed to increase number of farmers engaging in bee keeping. There is a need to link farmers to external markets. Replication of modern bee keeping technologies in the entire area of Kajiado County and other counties would be highly beneficial. 🐝

Further Reading

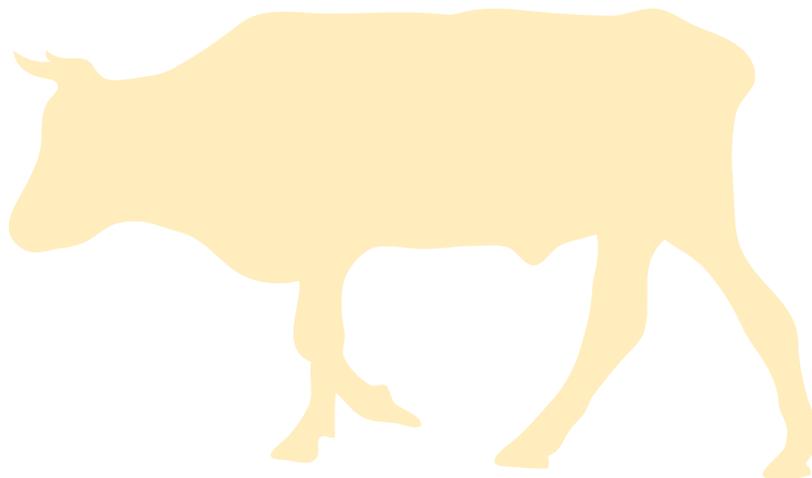
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TIRI, Targeted Investment for Research Impact, identifies early-career researchers who are interested in tackling livestock production problems through innovative approaches and fresh perspectives. This small-grant program is open to early-career researchers (five or fewer years into research career) in any discipline, from student to professor, and from any organization that is engaged in applied research on livestock production in South Asia and East Africa — colleges and universities, government research centers or laboratories, or non-profit organizations.

Proposals are selected based on their potential to make livestock production systems more resilient to increasing climate variability and severity. At the end of one year, TIRI scholars are expected to demonstrate concrete outcomes and real potential for future impact. The 10 selected East Africa TIRI scholars and the 18 selected Nepal TIRI scholars are addressing research problems on various livestock and climate research themes.



Feed the Future Innovation Lab for Collaborative Research on Adapting Livestock Systems to Climate Change is dedicated to catalyzing and coordinating research that improves the livelihoods of livestock producers affected by climate change by reducing vulnerability and increasing adaptive capacity.

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