

# case 05

## Promoting agroforestry and indigenous seed varieties for healthy agroecosystems and livelihoods in Kenya

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FOR THE LAST DECADE, THE INSTITUTE FOR CULTURE AND ECOLOGY (ICE) HAS BEEN SPEARHEADING AGROFORESTRY AND THE RECUPERATION AND MULTIPLICATION OF INDIGENOUS SEEDS VARIETIES (MAINLY OF TRADITIONAL FOOD CROPS) IN CENTRAL AND EASTERN KENYA. BY SUPPORTING SMALL-SCALE FARMERS, THE INSTITUTE AIMS TO ENHANCE HEALTHY AGROECOSYSTEMS WHILE IMPROVING FOOD SECURITY IN THE REGION.

Sustainable Development Goals:



NO POVERTY



ZERO HUNGER



CLIMATE ACTION



LIFE ON LAND



Collection of various indigenous and traditional seed varieties.  
(Photo credit Institute for Culture and Ecology)

## PRACTICES THAT LEAD TO LOW AGRICULTURAL PRODUCTIVITY

Agriculture continues to play a vital role in the Kenyan economy. It is the leading economic sector, accounting for around a quarter of the country's Gross Domestic Product (GDP).<sup>1</sup> In 2017, it also provided for almost two thirds of Kenya's total exports and constituted employment for at least 56 per cent of the population.<sup>2</sup> Almost 90 per cent of farmers in Kenya are small-scale farmers (operating on less than two hectares) whose majority depend on rain-fed agriculture for their livelihood.<sup>3</sup> These farmers experience low agricultural productivity, mainly due to degraded agroecosystems arising from ecologically and economically unsound soil management practices and a lack of crop diversification. Persistent nutrient depletion coupled with soil degradation have resulted in low overall soil quality. Crop diversity has been seriously eroded by farmer's focus on only a handful of crops, of which just two (maize and beans) were grown on 85 per cent of Kenya's cultivated land in the 2015/2016 growing season<sup>4</sup>, with maize yields stagnating or even decreasing among small-scale farmers.<sup>5</sup> The aggressive promotion of a few exotic crops resulted in the abandonment and neglect of indigenous and locally adapted crop varieties, which has led to considerable genetic erosion.<sup>6</sup> Next to both biotic and abiotic factors, also policies can be attributed to this development, which, to a large extent, advocated for the use of high yielding cultivars and the displacement of traditional plant varieties.<sup>7</sup> Climate change, particularly the increased frequency of droughts, has worsened the situation for many small-scale farmers.<sup>8</sup>

## ENGAGING SMALL-SCALE FARMERS TO IMPROVE FOOD SECURITY

Not only does Kenya's small-scale farming sector currently contribute the vast majority of the country's food production, it also remains the most important income source for the majority of the rural population.<sup>9</sup> Hence, it is crucial to include these farmers in interventions geared at climate adaptation and sustainably improving food security in Kenya. Since 2008, ICE has engaged more than 5,000 small-scale farmers in implementing projects geared towards environmental conservation and improved food security. The group promotes agroforestry and recuperation of lost indigenous and traditional varieties as a means to restore degraded agroecosystems and increase agricultural productivity. By doing so, ICE is addressing



Agroforestry in Mrs. Ruth Kirimi's farm where a variety of fruit trees are integrated in the farming system. (Photo credit Institute for Culture and Ecology)

small-scale farmers' poor access to seeds as well adaptation to the threats of unpredictable weather patterns.

After conducting a research on indigenous seed varieties in its project areas in Central and Eastern Kenya, ICE started to recuperate and multiply various indigenous seed varieties, including sorghum, three types of millet, black and green grams, four types of cow/pigeon peas and castor bean, mainly in the semi-arid areas of Kivaa (Machakos County) and Tharaka (Tharaka-Nithi County). It then embarked on a campaign to promote seed sharing among members of farmer groups. Simultaneously, also the vegetative propagation of arrow roots, cassava, yams, sweet potatoes and indigenous vegetables has been encouraged. The results indicate that households' stock of seeds, food and incomes have increased significantly. At the same time, ICE has also tapped into the potential of increased tree cover on farms as a means to adapt to climate change. Farmer groups have been trained on agroforestry practices and supported in initiating nurseries to raise trees and shrubs suitable for use in agricultural systems.



## STRATEGIES FOR SUSTAINABLE DEVELOPMENT

ICE's strategies are geared at contributing to several of the Sustainable Development Goals (SDGs).

Despite Kenya's rapid economic growth in the last decade, resulting in the country acquiring lower-middle-income status,

the increased wealth has not benefited the population equally. Over one third of all Kenyans still lives under the international poverty line of \$1.90 a day and social, economic and gender disparities remain.<sup>10</sup> This is especially the case in rural areas, where nearly one in two people are poor compared to only three in ten in

Kenya's urban areas.<sup>11</sup> Hence, ICE has taken up the challenge of SDG 1 on ending poverty in all its forms by engaging 500 households per year. By focusing on improving and diversifying agricultural production, the organisation's interventions have helped to improve household incomes by up to 30 per cent – thereby contributing to SDG 1 Target 1.1. of reducing extreme poverty. Equally, a diversified income stream and seed saving have built the resilience of marginalised farmers, which has *“reduced their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters”* (SDG 1 Target 1.5).

At the same time, ICE is also focusing on SDG 2 of achieving food security and improved nutrition in its target communities in Central and Eastern Kenya. Given that access to adequate quantities of nutritious food remains a challenge for many people in rural areas, both agroforestry practices as well as indigenous seeds are able to provide households with diversified sources of food. In Kenya, indigenous food crops like sorghum, millet and various of the traditional legumes mentioned above have shown significant nutritional superiority over the corresponding exotics like maize and field beans<sup>12</sup>, indicating that their preservation and dissemination helps in tackling SDG 2 Target 2.1 of *“ensuring access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round”*. Including different fruit trees in the farm through

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agroforestry practices on the other hand increases overall production and diversifies the system, thereby *“ensuring sustainable food production systems through the implementation of resilient agricultural practices that increase productivity”* (SDG 2 Target 2.4).

Another SDG that is influenced by the organisation's interventions is SDG 13 on climate action. A study on agroforestry in Western Kenya has shown the practices to be an effective strategy to help farmers reduce their vulnerability

to climate change<sup>13</sup>, which is at the heart of SDG 13 Target 13.1 on *“strengthening resilience and adaptive capacity to climate-related hazards and natural disasters”*. At the same time, the integration of trees in farming systems also constitutes an effective way of bringing carbon back into the soil, highlighting the important role agroforestry can play in mitigating climate change.<sup>14</sup> By recuperating traditional crops like sorghum and millet known to be relatively drought tolerant, ICE also helps farmers to diversify and increase the resilience among their staple crops, something crucial given the increased frequency of droughts in the arid and semi-arid parts of Kenya.

Finally, also SDG 15 (life on land) has been addressed by ICE's interventions through tackling both soil and genetic erosion. Agroforestry practices have shown to address the former through significantly decreasing surface run-off while at the same time increasing soil fertility<sup>15</sup> – a considerable contributing to SDG 15 Target 15.3 of combating desertification and restoring degraded land and soils. The recuperation and multiplication of indigenous seeds varieties on the other hand helps in maintaining genetic diversity of food crops, which helps safeguarding and promoting the benefits arising from the utilisation of genetic resources (SDG 15 Target 15.6).

## MOVEMENTS BRINGING AGROECOLOGY FORWARD

ICE has been working with small-scale farmers in promoting agroforestry and the use of indigenous and traditional seeds as a sustainable way of enhancing food security and adapting to climate change, particularly in Kenya's semi-arid areas. Next to the work on the ground, ICE is also engaged in different networks throughout the country and abroad. ICE is a member of Participatory Ecological Land-use Management (PELUM) Kenya, the African Biodiversity Network (ABN), Greenpeace Africa and the Alliance for Food Sovereignty in Africa (AFSA).<sup>16</sup> Being present in such networks has been instrumental in spearheading advocacy initiatives collaboratively as a movement on both national and region level, calling for policies to protect farmer's rights, access to indigenous seeds and the preservation of agrobiodiversity.

These efforts are crucial given that over the years, indigenous seeds have been under threat as they are either undermined by the radical introduction of hybrid varieties or attempted to be commodified to serve corporate purposes.<sup>17</sup> Hence, there is a need to counteract genetic erosion and protect farmer's rights as agreed upon in several international agreements like the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). While lobbying responsible institutions can help in publicly supporting those struggles, there is also need to upscale activities that build the capacities of farmers on how to effectively protect their both their rights as well as indigenous seeds. Given the recent wake up calls on the alarming trends of agrobiodiversity loss<sup>18</sup>, initiatives like this are crucial for achieving food and income security while preserving our planet's biodiversity.

## NOTES

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2 See 1

3 See 1

4 See 1

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15 See 13

16 For more information, see: [www.afsafrica.org](http://www.afsafrica.org)

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