



Tropentag 2015, Berlin, Germany
September 16-18, 2015

Conference on International Research on Food Security, Natural Resource
Management and Rural Development
organised by the Humboldt-Universität zu Berlin and the Leibniz Centre for
Agricultural Landscape Research (ZALF)

Controversies and Possibilities: Managing Land Use with Kenyan Young Farmers

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Abstract

We present an analysis of land use changes observed among young farmers and their relationship to food security and agricultural sustainability in Kenya. Existing literature suggests that the future of African agriculture is in increasing its human capital, particularly in a new generation of farmers who can respond to the impacts of climate change, by adopting and scaling up agricultural innovations, diversifying the agrifood sector, and tapping into new markets. However, there is limited research on the emergent land use practices of these new farmers. This poster paper is based on doctoral research investigating youth agricultural livelihoods in Kenya, and seeks to establish i) the extent to which young farmers understood sustainable land use practices; ii) their application of sustainable farming practices and; iii) the implications on food security. Using qualitative methods of field observation and interviews, we found that young farmers' practices were motivated by profits, access to resources, and risk perception in that order. We conclude that new farmers are equally in need of awareness of sustainable agriculture as they are of financing, policy incentives, and resources to facilitate their contribution to food security and decent employment.

Introduction

The controversy presented here is that of increased efforts to attract young people to agriculture as a way of creating youth employment and increasing food production in African countriesⁱ; while on the other hand failing to pay critical attention to the resultant land use changes after the introduction of new actors in the agrifood sector. The prevailing narrative that the burgeoning and unemployed youth population should be encouraged to join agriculture, a productive sector likely to benefit from the growing (and educated) human capital, who are also more likely to adopt and scale up technologies and seek new agricultural markets is a valid one. However, there are contestations on how the systemic challenges of smallholder agriculture and marginalized groups such as youth access to landⁱⁱ, interplay with the increased emphasis on their participation in agriculture through practices such as high value horticulture farming, agricultural intensification, and value addition.

Agricultural and environmental researches have shown that sustainable land use practices such as maintaining soil fertility, land restoration, water conservation, and ecosystem services enhance farmers and farm's adaptive capacities, increase yields, enhance agro-biodiversity, hence food security and improved economies and landscapesⁱⁱⁱ. Development practitioners have also increased their attention to equipping the growing youthful human capital in Africa to participate in the productive sectors, particularly in agriculture, through innovative approaches that provide youth with incomes and employment^{iv}. However, some of these programmes, if not accompanied

by sustainable land use approaches might pose a threat to biodiversity, water, soil and in effect increase the vulnerability of communities and landscapes to the impacts of climate change already prevalent in Sub-Saharan Africa^v. In Kenya, there is a growing population of young people who are becoming farmers to earn quick incomes. As part of a doctoral research project examining youth agricultural livelihoods, we assessed i) how young farmers understood the need to adopt sustainable farming practices; ii) the extent to which they were adopting these practices and finally; iii) evaluated the implications of their practices on food security and youth employment in Kenya.

Methods

Following qualitative data collection and analysis methodologies, we purposively sampled 60 young farmers in three regions: Western, Central and Eastern regions whom we interviewed and visited their farms. This paper is based on Nvivo-analyzed data of four key themes relating to sustainable agricultural practices: *Land use changes* (being the understanding of and changes in land use patterns with the entry of young farmers in smallholder agriculture); *Water conservation strategies* (being the factors considered in water conservation and management strategies); *Soil fertility approaches* (being how young farmers understood and practiced fertility measures on their farms) and; *Awareness of biodiversity and ecosystem services* (being the extent to which they were aware of the implications of their activities on biodiversity and ecosystem services).

Results

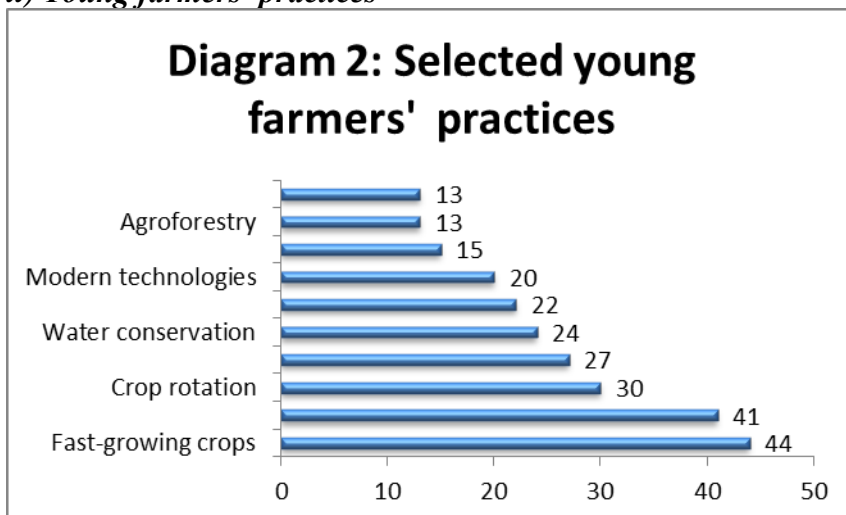
i) Young farmers understanding of sustainable farming practices



Diagram 1: An illustration of the contradictory narratives, realities, and resultant changes in youth and agriculture in Kenya

Most youth in agriculture programmes in Kenya have emphasized quick incomes often earned from intensive farming practices of short-season crops, utilizing small pieces of land, and requiring intensive use of resources, especially as water and nutrients. Over 50 young farmers emphasized the need to make profits over the need to contribute to food security, or maintain the fertility of their farms. Only 40 of the participants were aware of sustainable farming practices; of these only 27 had adopted one or two of these practices in their farming period. Awareness and limitations to adopt sustainable farming practices were expressed as the same thing: e.g. farmers who knew about organic farming but did not have the means to do so, disregarded their knowledge as useless in their endeavours to earn an income. The 11 young farmers owning land and the 31 farming on family land were more likely to practice tree farming, terracing for erosion control, use organic fertilizers and crop rotation, while the 18 who were leasing land were more inclined to intensification requiring continuous irrigation and use of fertilizers and pesticides. However, of those owning land or farming on family land, the switch from sustainable to unsustainable practices was determined by the need for quick incomes, size of farms, and access to agricultural information.

ii) Young farmers' practices



Land use changes: All young farmers changed the land uses from rain-fed to irrigated agriculture; from subsistence crops to intensive horticulture farming; from perennial cash crops to short-season horticultural crops; or from open field grazing to zero-grazing of dairy cattle and intensified poultry farming. A third of them had introduced new techniques such as greenhouse farming, hydroponics, and new crops such as strawberries, stevia, and exotic vegetables. Profits, access to land, agricultural information, and technology adoption influenced most of the decisions on land use types and changes.

Water conservation strategies: Young farmers prioritized water availability for irrigation over long-term land fertility concerns. The lack of water encouraged conservation practices such as runoff harvesting for irrigation, drip irrigation and planting of drought resistant crops; while the presence of public and/or permanent water sources such as rivers and irrigation canals encouraged ineffective practices such as furrow irrigation and horticultural farming during the dry season. Both practices were geared towards maximizing profits and producing when the market prices were high.

Soil fertility: Young land owners were more aware and willing to adopt practices to maintain soil fertility such as erosion control, crop rotation, agroforestry and use of organic manures. Those leasing land were unlikely to mention the long-term implications of their intensive use of fertilizers and pesticides, and some migrated from farm to farm with every season. The size of land determined the fertility approaches: tree planting was common with those who had been farming for over three years and with large pieces of land, usually over three acres (and often inherited). Those leasing large pieces of land preferred chemical fertilizers due to the economics of transport and labour for application while those with small pieces of land, would apply organic methods which were cost-effective and easy to manage.

Awareness of biodiversity and ecosystem services: Most young farmers were unaware of the impacts of their farming activities on biodiversity and ecosystem services. Only 10 of them mentioned agro-biodiversity without the researcher's prompt. These were involved in agroforestry, integrated farming, fish-farming, and organic farming. Three of those planting trees were aware of carbon trading but only one of them would pursue that route in the future. Even though most of the young farmers were aware of the weather changes, only a few could describe their adaptive strategies, and they often attributed their practices to increasing productivity. Three farmers were practicing integrated farming systems of organic farming, water conservation,

biogas production, erosion control, crop rotation, and mixed farming of drought resistant crops and animals.

iii) Young farmers' implications on food security

Even though young farmers were unaware of the mechanisms to increase the fertility of their farms, they were aware of the mechanism to increase their productivity, for instance, they were influenced by the government subsidies on fertilizers in 2014 and the Agri Vijana loans for greenhouse farming and drip irrigation. Awareness was equated to the capability of the young farmer to adopt the sustainable practices at the time, and implied the displacement of young people's knowledge into the future while their present actions remained unchanged and threatening to the future of food security and natural resources management. There was an understanding of the economic and ecological benefits of trees on farm, but these were limited to 11 who owned large pieces of land, and only 10 of those farming on family land. Trees on farm were equated to fruits, fodder, fuelwood, fertilizer, and timber. Facilitating young people to access the land rental markets might have a long-term impact on land fertility, given their current intensification approaches. By overcoming the systemic challenges of smallholder agriculture, young farmers can focus on sustainable land practices such as agroforestry, integrated farming, soil fertility and water conservation and management strategies, thereby contribute to food security.

Conclusions and Further Research

New/young farmers introduced by the development narratives of youth agribusinesses are changing the land use patterns in smallholder agriculture from subsistence rain-fed to intensive market-oriented irrigated smallholder agriculture. While our research found that young farmers by adopting new technologies and changing the land use patterns they were able to increase their profits, we predict a unsustainable process whereby their intensive use of natural resources and agro-chemicals, and the changed land use patterns will affect the availability of certain resources; and in the long run, if not abated, might lead to increased vulnerability to climate change. Furthermore, sustainable land use practices are contingent of other systemic barriers in the agrifood systems such as land tenure, accessibility, and applicability of agricultural information; availability of resources; policy incentives and markets. We recommend quantitative research to analyze the factors of (un)sustainability of new/young farmers in land use changes in smallholder agriculture and their implication on food security.

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Acknowledgements

The authors would like to thank Lynette Achieng who assisted in the data collection and the young farmers who participated in the research. The World Agroforestry Centre (ICRAF) funded the fieldwork and the main author would like to acknowledge other academic scholarships towards her doctorate namely the Rhodes Scholarships, St. Hilda's travel and research grants, and 2015 Tropentag conference.