

Agripreneurship is coming of age. Opportunities for Youth and Women Empowerment in UPSCALE PROJECT.

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Abstract

Unemployment is among the problems that most developing economies are facing. These regions rely on agriculture for their livelihood and most of the farming systems are ineffective. Nevertheless, the agricultural sector employs the largest population in both the formal and informal. Self-employment through innovative ideas that develop products or produce cost-effectively, or a production process that is eco-friendly to promote biodiversity or value addition through processing, storage, packaging, or differentiation of the agricultural products is what is termed as agripreneurship. The aim is to make the production process affordable, sustainable, profitable, and optimal at the same time maintain the ecosystem. Agripreneurship is highly evident in production technologies such as the PPT technology that has been promoted by the UPSCALE project in the region. The project has offered women and youth opportunities to participate in research, production, value addition, and marketing of the products produced under the system. Women have been able to produce organic products, control the striga weed, and fall armyworms, promote soil fertility, prevent soil erosion, produce fodder, practice dairy farming, and production of desmodium seeds. Through this, household food security has been attained, increased income, reduced dependency ratio, reduced poverty, creation of employment, and improved standard of living. Agripreneurship is an important enterprise currently for the youths and women as it offers a range of opportunities from economic, social, and environmental benefits in the initiatives such as PPT farming in the UPSCALE project. Therefore, it is recommended that there is a need for Policy dialogue in both the seed and product value chains to create enabling policies that can upscale the PPT farming system, subsidize the inputs, and establish effective extension methods, advocacy, and lobbying government authorities to promote PPT.

Keywords

Agripreneurship, UPSCALE project, Youth and Women, Sustainable Agriculture, Push-Pull technology (PPT),

Introduction

Globally, over time, agricultural systems have evolved from the primitive agriculture of hunting and gathering activities to traditional simple ways of farming to sophisticated advanced agriculture as a result of technological improvement (Thrall et al., 2010). At the time when humans began to settle, farming was organically and highly dependent on the ecosystem. During the period, the farming systems did not rely on external inputs nor sophisticated technology as the land was fertile and the climate favorable for crop production (Singh & Singh,

2017). The traditional farming system focused on the food needs of the farmers' households. The land was large for crop production, livestock feeding was majorly grazing in the forests and swampy areas. Barter trade was practiced to access and exchange commodities among the people. Hunting and gathering was also major practice to supplement the diet in society (Fischer et al., 2012).

Over time as the population increased, globalization and industrialization occurred, the land holding reduced, and the occurrence of social, economic, and environmental pandemics instigated food insecurity globally, especially in the developing regions of Asia and Africa (Steenkamp et al., 2021). The need for more food has seen farming evolving from the traditional systems and intensive conventional farming emerged. This is a farming system where external inputs such as inorganic fertilizer, chemicals, irrigation, and machines are heavily used in the production of crops and livestock (Sharma et al., 2012). However, despite the success of the system in increasing food productivity, it has continuously destabilized the environment resulting in climate change, unreliable agriculture, and low-quality food products (Ncube et al., 2016).

This has resulted in land degradation, declining soil fertility, and low crop production. Consequently, the food supply cannot meet the food demand. Despite the agricultural sector being the main source of livelihood, over 50 percent of the population in the developing regions are poor and food insecure. Because of urbanization, most of these people have moved to towns and cities where the only way to access food is by buying. They do not participate in farm food production, this has further widened the farm food demand in the region.

To fill the gap, the efforts to encourage the youth and women to produce food and commercialize have been ignited. This has seen an opportunity for small-scale producers to supply urban centers with food products. The purpose of producing is no longer consumption but also commercialization. Many youth and female farmers have come up with ideas on how to produce and supply foodstuff affordably at the same time satisfying the consumers in terms of their pricing and the quality of the product.

This entrepreneurial concept in agriculture is what has been termed Agripreneurship. It is a business that focuses on the agricultural sector through the production of commodities or providing value addition to agricultural resources by engaging rural human resources (Mukhopadhyay et al. 2020). Agripreneurship is highly implemented and interlinked to the other sectors in agriculture such as agricultural inputs and output marketing, agricultural credit facilitation, extension service, and information access, and agricultural commodities value addition in the crop system, livestock, forestry, and even fishery. It has been well-taken in the dairy sector, fish farming, crop farming, agroforestry, agro-processing industries, agro-inputs manufacturing, and animal feeds and seeds processing. Agripreneurship does not only aim at getting profitability but also focuses on increasing production sustainably along the value chain, and reducing post-harvest losses (Dianga et al. 2020).

The UPSCALE project has been at the fore sustainably promoting agricultural production so that the resources could be used by the current generation and remain for the future generation without compromising their existence. The UPSCALE project has promoted education on agripreneurship among the youth and women through different programs. The project is focusing on raising the production of cereal crops, vegetables, forages, and livestock affordably and sustainably to get tradable surplus produce that can yield profits for farmers and improve their standard of living.

The UPSCALE project is promoting a farming practice called Push-Pull technology (PPT). It is a technology where livestock forages such as desmodium and brachiaria are integrated with cereal or vegetable crops on a farm to control pests and weeds affecting the crops and at the same time improve soil fertility. This increases crop production, maintains soil fertility, and provides feed for livestock production. Products from this technology are organic, which are highly demanded and can be differentiated for higher market premiums.



Methodology

As a reflection of the discussion on climate change and food insecurity in the region, sustainable farming systems, increased rate of unemployment, and gender equality in different conferences, meetings, and interviews, Kenya being an agricultural country, there is a need to critically assess the existing literature to look at any opportunity in the emerging agripreneurship as a solution. Therefore, this paper is a review of existing literature, scholarly articles, and both local and international reports to identify opportunities agripreneurship offers to youth and women. As agricultural economists evaluate and advocate for the need of youths and women to engage in agripreneurship, the main question is what opportunities does it offer and what are these opportunities in the UPSCALE project, and how can these opportunities in the UPSCALE project be widened to increase the benefits, what are the challenges and what are the proposed solutions?

Results and Discussion

UPSCALE project is a Research and Innovation project from the EU that advocates multi-actor community involvement in the food system to ensure sustainability. Since its inception in November 2020, a wider variety of actors have been involved including international donors, farmers, researchers, national governments, NGOs, agro-dealers, policymakers, and private partners. The UPSCALE project aims to sustainably increase the production of food through the realization of the transformative potential of PPT by expanding its scope and applicability. The overall goal is to address food security, livelihoods, and climate change resilience in the sub-Saharan region of East Africa while reducing the environmental impact of agricultural practices.

For decades, the Sub-Saharan region has experienced the brunt effect of climate change resulting in low food production. In eastern Africa, maize and sorghum are the main staple food for millions of small-scale farmers. Unfortunately, these cereals are susceptible to major constraints including pests stem borers and the parasitic weed *Striga* and low and declining soil fertility. Consequently, the larger population which comprises small-scale farmers especially women has remained food insecure. The cases of malnutrition have increased enormously in recent years among children. As the population continues to increase at the highest rate globally, the food demand is rising and the supply reducing as the land sizes are becoming smaller, infertile, and degraded, therefore, closing the yield gap in small-scale farming is a critical challenge. To address these, amid climate change, there is an urgent need to moot agricultural practices that are adaptive to the experienced dryness and low rainfall. The system of farming should be affordable for the farmers, eco-friendly, sustainable, and regenerative in nature to reduce the use of external harmful inputs and chemicals in the long run.

The UPSCALE project has provided a range of opportunities to small-scale farmers to uplift their economic status as well as social well-being. Through the project activities and multi-actor interaction, farmers have benefited from the researchers and the experts by accessing information, practicing the technology, and receiving farm inputs. As a result, many farmers have adopted the PPT farming technology in the region and are exploring all the opportunities that come along with the technology to earn a living (Fischler, 2010). There are two types of opportunities in the UPSCALE project. The benefits that come along with the project offer new opportunities and the solutions to the problems that are facing the project offer other opportunities for the small-scale farmers. The following are some of the agripreneurship opportunities that the UPSCALE project has offered to the farmers especially youth and women in the region.

Organic food production

The UPSCALE project is promoting PPT as an organic farming system where quality products are produced affordably. It is a climate-smart strategy (IPM) that is used to reduce the effect of fall armyworm in crops and



also suppress the growth of Striga weed which is a key challenge in cereal production. Through PPT technology, farmers have been able to increase crop productivity, especially of integrated crops. This has increased household food security. At the same time, the technology is key in promoting soil fertility as the desmodium intercropped is a nitrogenous fixing plant, it is a cover crop conserving soil water moisture, and it prevents soil erosion (Cheruiyot et al., 2022). This is enabling women who are the main small-scale farmers to educate their children.

Dairy production

The demand for dairy products especially milk in the region is enormously large and the product is scarce in supply which has seen milk prices increase over time. This business of milk venturing is largely practiced and controlled by women in the region. Through the UPSCALE project promoting forage or fodder production, most of the farmers have adopted mixed crop-livestock (ICIPE, 2011; Pickett et al., 2014). This system is effective as it promotes milk production as affordable feeds are readily available for the farmers. Milk consumption for the household improves the nutritional balance of the family, especially children, and women. In addition, surplus milk is commercialized to the market. Most farmers are now joining milk cooperatives which is a source of family income (icipe, 2015).

Forage/fodder production

The production of forages in a PPT farm establishment has emerged as an agripreneurship opportunity. The desmodium and brachiaria feeds produced are highly nutritious which attracts fair prices on the market as compared to other fodders. The surplus forage can be commercialized for other farmers, farms, research organizations, cooperatives, or other agro-dealers (Nyang'au et al., 2018). In addition, the PPT technology upscaling is facing the challenge of insufficient desmodium seeds. Farmers producing either the vines or the seed are receiving high prices per kg of seed or vine, especially in the East African region. Farmers the countries such as Rwanda, Kenya, and Ethiopia have been highly impressed with these seeds and vine production (ICIPE, 1998). In addition, these forages are highly adaptable and resilient to climate change and low rainfall in the region which makes it available for the animals most periods of the year.

Commercialization of the products

The UPSCALE project advocates less to no chemicals in production, the organic products are easy to market, and export and they sell at a higher market premium compared to other products. This can be done through product differentiation and eco-labeling. The milk produced under this system, the maize, the sorghum, and the vegetables can be differentiated by the sellers. The seed produced, the splits, and the vines can also be commercialized through agro-dealers (Chidawanyika et al., 2023). Mostly the youth and the women participate in the commercialization of the products. Most agro-dealers in seed marketing are women and the youth.

Value-chain addition

The products such as the milk, vegetables, and maize produced can be processed to offer more other ready products on the market. Milk can be processed for products such as yogurt which have a long shelf-life and higher prices or it can be used in agro-processing of other products such as biscuits, ice-cream, sweets, and cookies, or processed and packed as a product on the market. Vegetables can be processed, dried, and stored for future consumption, or processed and mixed in the production of other products such as flour. The vegetable seed can be harvested for selling or consumption. Maize can be processed into flour, can be roasted, and sold, and can also be used to prepare products such as ugali and porridge or other local meals in hotels that earn a higher income (Khan et al., 2011).

Creation employment

The UPSCALE project has offered opportunities to youths and women from the researchers, farmers, students, and agro-dealers in the products. The researchers are paid for the services and the training they offer to the farmers, the farmers and agro-dealers earn their daily income from the activities. Most youths and women are employed in the PPT farms as it is labor intensive when established. The agriprenourship has employed different sectors from research, production, harvesting, storage, packaging, transportation, processing, and retailing (Cheruiyot et al., 2022).

Improving the standards of living

Through agriprenourship, poverty has been reduced among households, a good housing environment has been created, employment, income from the sales, food security, and reduced dependency ratio among women (Cheruiyot et al., 2022).

Support research and development

Agriprenourship has supported research through farmers' participation and innovation activities. The farmers work together with the experts in the research area to expand the applicability of the PPT technology, demonstration plots establishment, and commercialization of PPT products. The farmers are willing to adopt the PPT technology and expand beyond the project life and this will develop new products on the market. There is a proposal to expand PPT to involve other cereal crops and garden farming. The farmers are focused on the elimination of Striga weed and the Stemborers organically (Koutsouris et al., 2017; Olarinde et al., 2017).

Impact on Society and Development

Agriprenourship is playing an important role in the social life of women and the youth. Through the PPT farming system, most households are food secured and experience an improved nutritional balance which leads to good health from the consumption of milk and other organically produced products. This is a creative achievement, especially for women whose greater responsibility has been ensuring household food security. Women have been able to pay school fees from the sale of surplus products from PPT farms.

Creation of new business

Agriprenourship is opening new businesses in the PPT farming system such as the production of desmodium seeds, vines, and brachiaria splits for planting. Agro-dealers are willing to stock the desmodium seeds and sell the feeds to dairy farmers.

Widening the opportunities

For the youths and women in the agriprenourship to reap more benefits the UPSCALE project has to ensure the adoption, expansion, and sustainability of PPT by explaining how PPT supports biodiversity, natural resources, and food systems. This can be done by creating awareness of the technology on social media and all the platforms of communication where farmers participate. In addition, effective extension methods, advocacy, and lobbying government authorities to promote PPT can be of help. The production of desmodium seeds among the farmers should be promoted, and entrenchment of the policies on PPT concerning seed systems, marketing, and a conducive environment to support PPT should be created as a climate-smart agricultural practice.

The main challenge youth and women are experiencing in agriprenourship in the UPSCALE project is the lack of sufficient and quality desmodium seeds in the region, weak policies to promote the PPT through inputs and

credit, land fragmentation has limited the land for the practice among farmers, and incompatibility of the project with the legume crops such as beans.

Conclusion

Agripreneurship is an important enterprise currently for the youths and women as it offers a range of opportunities from economic, social, and environmental benefits. The UPSCALE project through the PPT farming system has opened opportunities for many youths and women to innovate and develop ways of raising income and earning a living from the production of the products, harvesting, processing, packaging, distribution, retailing, and marketing of PPT products along the entire product value chain. This helps reduce unemployment, poverty, and dependency ratio and is an effort towards attaining food security. Agripreneurship has also been embraced in the area of desmodium seeds and vines production across the region. In addition, the PPT production system is a climate-smart strategy that offers an opportunity for the farmers to be part of the ongoing discussions on sustainable food production systems, organic farming, and the broader regenerative agricultural practices in the region.

Recommendation

There is a need for Policy Dialogue in both the seed and product value chains to create enabling policies which can upscale the PPT farming system, and evaluate the possibility of integrating PPT into the existing policies. Policymakers should be sensitized to the dangers of Striga and stem borers as a threat to food production. Efforts to certification of PPT products should be promoted by the action on the ground to promote PPT as conservation agriculture and distinguish the products such as maize and vegetables on the market through co-labeling. Other cereal crops should be integrated into PPT to promote crop diversification. There should be subsidies on PPT inputs especially the desmodium seeds and there is a need for capacity building for women and youths on the skills needed in PPT production.

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