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Effects of Training Small-Scale Farmers on Food Security in Moiben Sub County in Uasin Gishu County

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Food security revolves around equality in the availability, access, and intake of nutritious food. The main purpose of this research is to determine the effectiveness of the adoption of agricultural technologies by small-scale farmers on food security, with a particular focus on Moiben Subcounty in Uasin Gishu County. The research adopted a mixed-methods design. A sample size of 179 small-scale farmer households was obtained using purposive and simple random sampling. The instruments used for the research were both questionnaires and interview schedules. To assess validity and reliability, the instruments were piloted. The data collected was organised and analysed using frequencies and percentages and then presented with the aid of Statistical Package for Social Sciences (SPSS) version 23.0. The findings of the research will enable better training methods for small-scale farmers to enhance food security in the Moiben Subcounty of Uasin Gishu County, Kenya. The researcher used inferential analysis of the study data to determine the strength of the relationship between the food security variable and the success of the adoption of agricultural technology. The researcher did a correlation analysis and examined the study's correlation coefficient in detail. Adoption of agricultural technology was significantly and positively connected to food security ($r = 0.943$; $P < 0.05$), according to the findings. The correlations were higher than 94.3%, implying that there are large positive relationships between the adoption of agricultural technology and food security. The study findings revealed that an increase in one unit of training small-scale farmers on agricultural techniques decreased food security by 0.146 units. The study will be beneficial to students and other researchers' intent on the knowledge of small-scale farmer training and its relationship to food security. The adoption of agricultural technologies increased food security by 52.1%. The recommendation of the study was Agricultural technologies will make the work on the farm efficient and will result in more first-grade production of farm produce, improving food security.

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INTRODUCTION

Food security has a relevant role in the livelihood and well-being of human beings. In recent years, the importance of food security has escalated as illustrated by efforts from the United Nations (UN), World Food Program (WFP), World Bank (WB), and the Food and Agricultural Organization (FAO). The main components of food security, therefore, include the availability, access, utilisation, and stability of food. Godfray *et al.* (2010) explain that farming is directly linked to food security, thus making it an avenue within which food security can be improved on. According to a report by Bii (2020), there is particular reluctance around the adoption of new strategies in farming, especially among small-scale farmers on Food security and this drives the need for a study on the adoption of technology on Food security. Kimiywe (2015) reported that large-scale farmers are used to the utilisation of research and technology to maximise farm produce, small scale farmers rely on their traditional knowledge and patterns of farming; this reliance can be considered as a barrier to technological innovation that would have assisted small scale framers in improving food security.

LITERATURE REVIEW

Training interventions emphasise facilitating knowledge or skills transfers on the topic of food security for the benefit of not only the farmers but also the entire global population (Stewart *et al.*, 2015). In relation to the region or area that is a target for concern, the objectives for training small-scale farmers are customised accordingly. One of the most important roles of small-scale farming or domestic and family farming is providing food and nutrition security for society starting from the basis of the family (Gray *et al.*, 2014). Global agricultural production has kept pace with the population growth over the past half a millennium, mainly because of the intensification of agricultural practices (Tilman *et al.*, 2011). This intensification has further been accompanied by the call for sustainable agriculture since there is increased competition for land, water, and agricultural resources (Garnett *et al.*, 2013). Despite the global appreciation of production, access to food remains unequally distributed. This is therefore, a core objective for training small-scale farmers on food security. This implies increased training for increased food production sustainably. It is also important to make out and research more on the relation of the population and its growth to the production of food.

Technological innovations are particularly important for small-scale farmers as they can maximise the output from agricultural practice through the use of sustainable technology. Ton et al. (2013) identified interventions that had been used to train farmers in promoting new technology to improve food security. Some of these technologies include genetically modified foods, conservation agriculture, and new fertilisers (Meena et al., 2016). For farmers to adopt these new technologies, they have to be trained so that they maximise the yields from their agricultural produce. While large-scale farmers are used to the utilisation of research and technology to maximise farm produce, small-scale farmers rely on their traditional knowledge and patterns of farming. This reliance can be considered a barrier to the training of technological innovations that would help small-scale farmers improve food security.

Davis et al. (2004) explain that the lack of adequate government support and technological infrastructure to support small-scale farmers has created a very extensive gap between small-scale farming and food security. This implies that technological input in the training of farmers is affected by both political and economic tensions, which limit their technological application of training to small-scale farmers. The use of technologies in farming has been successful in other developed countries and this means that Africa and Kenya, in particular, can benefit from the training of technological input in farming and small-scale farmers, which will eventually address food security.

RESEARCH METHODOLOGY

Descriptive research designs were used in this study to analyse the effectiveness of training on food security of small-scale farmers in Moiben Sub-County, Uasin Gishu County. The descriptive design enabled the researcher to acquire both qualitative and quantitative information from the population. Descriptive research designs provided answers to the questions of who, what, when, where, and how associated with a particular research problem. The

study targeted population was 200 small-scale farmers from Moiben Subcounty, County Government of Uasin Gishu. Population refers to an entire group of individuals, events or objects having a common observable characteristic. The target population was drawn from five selected wards. The five wards included Sergoit, Kimumu, Karuna/Meibeki, Tembelio, and Moiben. The sample size for this study was 179. Random sampling was determined as the best form of sampling because it allows members of a population to have an equal and unbiased chance of appearing in the sample. The data in this study was collected using self-administered research questionnaires. The study used 5-point Likert scale structured questionnaires to collect the information from the small-scale farmers and interview schedules. Data was analysed using descriptive data analysis techniques such as frequencies, mean, mode, %ages and standard deviation. All data were analysed at a level of significance of 95% or $\alpha = 0.05$, and the degrees of freedom depended on the particular case as was determined. This value ($\alpha=0.05$) was chosen because the sample size was adopted from the figures calculated on the basis of a 0.95 level of confidence. This was done with the aid of Statistical Package for Social Sciences (SPSS) version 25. The regression model was used to determine the strength of the relationship between the independent variables and dependent variable.

SUMMARY OF FINDINGS

There were more female small-scale farmers within Moiben Sub County, Uasin Gishu County, as compared to their male counterparts. The majority of the small-scale farmers were between 35-50 years old. Most of the small-scale farmers had their secondary education as their highest level of education. Most (55, 30.7%) of small-scale farming was practised in the Kimumu ward.

The use of machines for tilling made the land preparation process easier; this was confirmed by 82(45.8%) as well as 55(30.7%) of the small-scale farmers strongly agreed and agreed, respectively.

Apparently, 69(38.5%) and 68(38.0%) of the respondent's farmers agreed and strongly agreed that fertiliser application significantly improved soil fertility and crop yield. However, planting hybrid seeds resulted in better quality crops and increased as it was strongly agreed by a majority of 95(53.1%) of the small-scale farmers. Apparently, good preservation techniques helped extend the quality of produce as confirmed by 138(77.1%) of the small-scale farmers who strongly agreed on it. Finally, the use of chemical pesticides helped control insects and pests that damage crops, as it was strongly agreed by a majority (96, 53.6%) of the small-scale farmers.

The study used inferential analysis of the study data to determine the strength of the relationship between the food security variable and the success of agricultural technology adoption. The study used correlation analysis and examined the study's correlation coefficient in detail. Agricultural technology was significantly and positively connected to food security ($r = 0.943$; $P < 0.05$), according to the findings. The correlations were higher than 94.3%, implying that there are large positive relationships between agricultural technology adoption and food security. The effect of the adoption of agricultural technologies was statistically significant ($p < 0.001$). This explained that there was an indication that 11.1% of the adoption of agricultural technologies was accounted for by food security. At a p-value greater than 0.05, the analysis was sufficient to support the conclusion that the adoption of agricultural technologies had a significant influence on food security. The results indicate that there was a significant relationship between the adoption of agricultural technologies and food security.

CONCLUSIONS

While the study zeroed in on the effects of training small-scale farmers on food security in Uasin Gishu County, Moiben sub-county, however, it is apparent that:

- There was a significant effect of the adoption of agricultural technologies on food security.

Based on the study findings, the study makes the following recommendations.

- There is a need for improving the small-scale farmers' training on the adoption of agricultural technologies training.

Suggestions for Further Research

There are many other factors that affect the training of small-scale farmers on food security in Uasin Gishu county, Moiben sub-County. This study has only focused on a few. A further study may consider the effects of training small-scale farmers on food security and related factors such as Post harvest practices and Food nutrition in other counties of Kenya.

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