

Reflections on crop productivity, poverty and hunger alleviation using a gender lens: The case of women in push-pull agriculture

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Personal Statement

Greetings, my name is Angel Lindsey. I participated as a World food Prize Borlaug-Ruan Intern for the International Centre of Insect Physiology and Ecology during the summer of 2022. Some of the challenges I endured during my research experience are researching virtually, the rigorous research, as well as becoming a freshman in college. Researching and working virtually was definitely a challenge for me and my superiors. Zoom meetings were difficult, due to poor connection, and the six hour time difference, which also resulted in poor communication between myself and my mentor. Also, not having a mentor to guide me for some of my research. Although I was blessed to have a wonderful team of mentors and supervisors, it was very difficult to communicate and be on the same page at times. This is my first experience as an intern, so I was not prepared for the meticulous research this work would require.

I am also a first year student at Tuskegee University, so you can imagine I am swamped with work, as well as adjusting to my new life. A few ways I have coped with these issues are using my time wisely and taking a breather. To work efficiently as a student and an employee, I had to learn how to plan my week accordingly and use my time wisely to get as much work done as possible. Some new skills I have gained from performing my research are probing. My mentor Matilda Ouma always told me when interviewing, “probe the question”. Probing the question means to go deep, and ask a question within the question. This technique has allowed me to become a better communicator, as well as enhancing my professional skills. Once I started

interviewing the women farmers, I immediately noticed the cultural differences. One of the most common cultural differences was the lack of education the women had. The education level ranged from high school diploma to no education at all. Although these women have never been to college, have a lack of educational resources, they have still managed to be so intelligent. In America, it is almost required to, at the very least, have a college degree to even be considered for a good paying job. These outstanding women have made a living with little to no education and are feeding their families. Majority of the farmers have about 1.5-2 acres of land that they own. This shows that you do not necessarily need an education to fulfill your dreams and aspirations. Another cultural difference I noticed were the household dynamics. Many of the women who were married, their husband was the head of the household and made all the household decisions. Others may think that this is a normal household dynamic, however, women in America are constantly trying to change the standard of a woman needing a man to make decisions for her. Some insights that I gained from this are to never underestimate the possibilities of the unfortunate. During my interviews, I noticed that while the husbands are at work, the women are on the farm working to feed their family. Also, the children and families of these women are on the farm with them from sun up to sun down. Pulling maize is one of the main duties of the children of the farm. While the rest of the family works, the elder of the farm watches over and keeps things in order.

Acknowledgements

Before we dive into my research, I want to first thank the World Food Prize Foundation for the continuous opportunities they have afforded me in the past 4 years. Thank you to my wonderful mentor Matilda Ouma, my supervisor Zeyaur Khan and the ICIPE Staff. I want to thank Rebecca Picard, and Keegan Kutzy for their never ending support to all the interns. Last but not least, I want to say a special thank you to Ms. Barbara Stinson, President of the World Food Prize Foundation, for granting us interns this amazing opportunity.

Abstract

Push-Pull Technology is an intercropping strategy for controlling agricultural pests by using repellent “push” plants and trap “pull” plants. This research topic matters because PPT is one of the main sources of food security in Sub-Saharan Africa. PPT protects crops like maize, sorghum, millet and rice, etc; These are also the staple and the main cash crops for millions of small-scale farmers, including many women farmers. This technology could possibly reduce the usage of pesticides in America. With that, crops would be sold at a higher rate, GMO’s would be produced less, and our crops would be safer to eat. Push-pull plants are also used to control stem borer pests. A stem borer pest is an insect larva that bores into the stem of a plant. Cereal crops like maize or sorghum are often infested by these stem borers. Their feeding habits on maize and sorghum result in yield losses of up to 88%, depending on the cultivar planted, the developmental stage of the plant at infestation, infestation rate, and prevailing environmental conditions, among other factors. This has been a major challenge to high quantity and quality harvest of the cereal crops and a direct initiator of food security. This article attends to the fact

that stem borer pests are putting the food security of the residents in Sub-Saharan Africa in danger. In addition, the farmers use livestock to graze the farm, to potentially increase the income from products. Female farmers in Kenya have had a tremendous impact on Push-Pull Technology, therefore, increasing crop productivity. The objective of this research is to focus on the effects that women farmers in Kenya have on PPT. The methods and materials played a major role in dissecting the information from the research.

Introduction

The International Centre of Insect Physiology and Ecology (ICIPE) is an international scientific research institute, headquartered in Nairobi, Kenya that works towards improving lives and livelihoods of people in Africa. Cereals, which include maize, sorghum, millet and rice, are the main staple cash crops for millions of small-scale farmers in most of sub Saharan Africa (SSA). However, their production is hugely constrained by insect pests, notably stem borers, etc; Over the past 20 years, ICIPE and Rothamsted Research, United Kingdom, have developed the Push-pull technology , which tackles these issues along with others.

Methods

Participants

- The supervisor over my internship program is Dr. Zeyaur Khan. My mentors were Matilda Ouma and Phil Olunda. In addition, I interviewed thirty women farmers that were also apart of my study. Gender was a major demographic that had an impact on my results due to the main objective of my study.

Apparatus and materials

- The materials used in my study were only a survey. The survey included specific questions such as level of education, head of household, main source of livelihood, years of being a PPT farmer, etc; Other survey questions included being asked if the participant(s) could be involved in the dissemination of PPT, from what sources the participant learned about PPT, what are the benefits of PPT, and does the participant experience constraints receiving and sharing information on PPT.

Procedure

- The design of the research study was to target an agriculture topic or issue in the Kenya and Sub-Saharan Africa area. The interviewing of farmers was to get very intimate with our participants and understand first hand what the farmers life was like.

The independent variable of my experiment was the PPT planting experience of the farmers. The dependent variable were the health of the crops. The controlled variable was the soil the plants were rooted in. Some important instructions Matilda gave me and my co-worker were to probe the question, learn the farmers behavior, and listen. The variables of this research played such important roles in the extensive work that was being done. Identifying the variables allowed for myself and my supervisors to effectively outline our work and our mission.

Results and Discussions

The results of my research were difficult to understand in the beginning. As I continued to do my data analysis, I charted all the similarities in the women's behavior and farming habits. My main objective was to learn about the women farmers in Kenya and their effect on PPT. With this, the results of my research gave the experiment extensive results on how much women farmers have impacted PPT. While the women's husbands are at work, the wives and the family are on the farm all day picking crops and providing for the family. In Kenya, the wife is typically in charge of the farm and the crops produced. These women have taken on the responsibility of going to farmer school and/or learning from fellow farmers on how to increase crop productivity with this technology. They have endured the long process of trial and error with the push-pull plot and reaped the benefits. Analyzing at the trend of the surveys, the women farmers mostly see an increase in yields, control in striga, and the control of stem borers. Also, the majority of the women have said, to improve PPT and increase the knowledge of PPT in women, the farmers need more resources for the new farmers. Some farming groups the women mentioned target young, new farmers who are willing to learn. These groups can provide resources such as savings and credits, seedlings, fertilizers and healthy drinking water. Also, the main source of livelihood for an estimate of about 90% of the women was crop farming and livestock farming. The farmers use crop farming and livestock farming as a way of income by selling livestock, or selling crops. In continuation of my research, myself and my supervisor unveiled that the results of how women effect PPT are very intense. Our studies have proven that the women are the household farmers, and studies have also shown that the women are the providers of food and food security.

Conclusion

My supervisor has further instructed me to continue my data analysis and continue to make connections. Interacting with the women farmers and experiencing a different culture first hand has heightened my passion for true agriculture. In hope to continue this research, I would travel to Nairobi, Kenya, meet my supervisor, as well as my interviewees, to truly get the intimate feeling of learning.

References

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