

*Original Research Article*

# Agri-Environmental Communication Interaction Strategic Link to Food Security Solution

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Abstract

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Developing countries face challenges of food production (food insecurity) and malnutrition on daily basis and this mainly affects women and children who are culprits of hunger and death. Kenya faces the worst scenario over food deficits and malnutrition. Meeting sustainable food requirements as it is in developed countries becomes an uphill task. Kenya imports more food grains such as maize, rice, sugar and wheat among others. Nearly 40% of our food stores contain imported foods. What could be the reason for this shortage of food? Information captured by local farmers indicates the scientific language used in training and instructing farmers is foreign and scientific hence difficult to conceptualize and interpret to a local environmental language that is simple to understand and implement by farmers. Farmers therefore end up not doing the right things. This essential agri-environmental communication technique between farmers and instructional language complexity contributes significantly to poor agricultural output. The farmers' claim has been thinly covered in research studies regarding the food production system. This is the reason for carrying out this research. This paper seeks to address the claim that agri-environmental communication interaction can be key to enhancing food production and nutrition as well as improving human health. The objective was to find out the causes of low food production due to lack of agri-environmental communication interaction; To assess the effect of food insecurity and malnutrition on human health due to agri-environmental communication interactions and to make recommendations towards enhancing food production and nutrition in improving human health in Kenya through agri-environmental communication interaction. The research study and data was collected from secondary sources, media observations and focus group discussions from the forty-seven counties in Kenya. The findings revealed that, food production is very low due to poor communication in scientific agricultural terminologies interpretation in local language for effective use by farmers. The recommendation is that, government and stakeholders should take action and improve on effective agri-environmental communication interaction in order to solve food insecurity and malnutrition. The scientific language used in instructions product labels should include local languages.

**Keywords:** Agri-environment interaction, Communication, Food security

## INTRODUCTION

The economy of Kenya primarily depends on agriculture and contributes 33% to the Gross Domestic Products. Seventy percent (70%) of rural people are associated with agriculture. Food security nationally, indicates that there is gradual decline of food commodities' supply to the markets while market demand continues to increase. The study observes that the dwindling supplies are a

result of the below-average 2016 crop production, from both the long and short rain harvests, and reduced regional imports from neighbouring countries that also had below-average production. The survey estimates that 2016 long rains maize production was about 2.6 million metric tons, which is up to 10 % below the five-year average. For the 2016 short rains crop production, the

poor rains severely affected cropping activities, and the Kenya State Department of Agriculture (SDA) projects that maize production is likely to be up to 70% below the five-year average, at 0.15 million metric tons. According to the Kenya National Bureau of Statistics, between February 2016 and February 2017, the food and non-alcoholic drinks index increased by 16.5 %, mainly attributed to increases in the price of vegetables, dairy products, and cereals/grains, due partly from lower production of these commodities, against a sustained high demand (FEWSNET, 2017).

In Africa, most of the foods grown is by conventional farming system and relies heavily on inorganic fertilizers and pesticides to increase yields and control various pests, fungal diseases and weeds. According to the Agrochemical Association of Kenya (AAK), pesticide imports to Kenya have short up from 6,400 tonnes in 2015 to 15,600 tonnes in 2018. This high volume of inorganic chemicals speak volumes of the risks to humans, animals, and the environment. The other significant impacts are the toxicity of the substances, methods of application, application rates, or the frequency of application, which play a role in unhealthy food and low yields. Little information or statistics on the use of pesticides per crop in Kenya and many other African countries are not available. The application instructions in the labels are too complicated and scientific which is hard for the local farmers to interpret presenting another challenge (Heinrich, 2022).

It has been envisaged that, food shortages in developing countries especially in Africa results from several challenges such as droughts, extreme weather conditions, climate change, tropical diseases pests war and conflicts, agricultural policies, and high cost of agricultural inputs among others. Other studies indicate that inappropriate application of pesticides and heavy use of inorganic fertilizers are contributors to low agricultural production as well as unhealthy foods leading to serious health effects. Farmers' level of knowledge on the safe usage of agricultural chemicals and biosafety is a serious challenge, that needs to be, addressed (Muhammad et al., 2019)

The findings also reveal that the farmers employ unhealthy and poor practices by not following the recommendations regarding the safe usage of pesticides. The study also reveals that more than half of the farmers (54.4%) use unsafe storage practices on their farms, and about 48.2% do not follow the instructions (Muhammad et al., 2019). Due to high illiteracy in the area, farmers mainly seek advice of neighbouring farmers, having ignorance of the biosafety issues. Variables like education level, land ownership, total land size, and training on safe pesticide usage significantly influence the knowledge level of farmers on the safe usage of pesticides. Farmers do not follow the recommendations of the extension department or the instructions printed on pesticide bottles/containers, therefore educational (formal

and informal) and training programs are necessary on safe pesticide usage to upgrade their skills and expertise on safe usage of pesticides and the importance of biosafety (Muhammad et al., 2019).

There are 1500 types of chemicals used as pesticides worldwide, and owing to their chemical nature, pesticides can cause serious environmental and health problems (Bolognesi and Merlo, 2011). It was found that, the information displayed on product labels was not effective in promoting protective and safety measures. Farmers do not read the labels, reporting that the fonts are too small and that the instructions are too long and in overly technical Portuguese. They also understood a few of the pictograms directed at the illiterate. In many cases, the inability to understand the information displayed on the labels led to the adoption of practices that actually increased exposure, risks to human health, and environmental contamination. This is alarming considering that 42% of farmers use methyl-parathion which is extremely hazardous by the WHO classification and whose use was banned in the European Union (WHO, 2022). Farmers' adopted practices and understanding of product labels is presented and possible alternatives are discussed, including changes to the Federal law on pesticide product labelling (Andrea et al, 2006)

The major question asked is, is Africa able to grow enough healthy food? There is a need to change our way of producing food to serve the nation and fight diseases due to unhealthy food served on our tables. Since independence in 1963, little effort has been made to fight three enemies of human life; such as disease, poverty, and illiteracy. Since then there has been little progress. The International communities have come up with remedies-informed strategies such as the Structural Adjustment Plan, Millennium Development Goals (MDGs) among others. The Kenyan government plan has developed Vision 2030 and the New Constitution to guide Kenya on the reduction of the problems facing humanity specifically on food insecurity strategies, environmental management, and nutrition. Currently, there are 17 Sustainable Development Goals for developing countries such as Kenya; the question is whether all these plans will be achieved based on what we have learned from the past (United Nations, 2018).

The failure to solve food problems and unhealthy products has a significant negative impact and the blame cannot be wholly on Kenyan environmental conditions such as droughts, arid and semiarid conditions, or lack of technology. There is a missing link needed to address the problems of human health.

A society whose population of over 60% is poor and high rate of illiteracy coupled with scanty information about food production systems cannot rise to the occasion of being self-reliant on food eating a well-balanced diet and healthy foods and living a healthy environment compared to developed environments (UNDP, 2017).

All the International strategies focused on Kenya as one of the developing countries have made efforts, especially in Africa to solve food insecurity, hunger, diseases, and malnutrition but have failed because they have missed the bullet point. All government efforts, NGOs, private sectors, business communities, farmers, and other stakeholders keep on singing the same song repeatedly but doing things in a competitive manner while the citizens are disadvantaged in all these programs. African environment which is endowed with resources to enhance food production and take care of human health is deteriorating at an alarming rate in the eyes of all these stakeholders including planners, decision policymakers and international communities are in wonderland and asking themselves, what is wrong with Africa south of Sahara. With all the financial aid, grants, and loans why are there no significant differences? Why are things getting worse? Hunger, poverty, disease, and malnutrition are the main problems of developing countries. Countries like Israel are in desert environments but are food secure and have a healthy diet why? Farming systems in Kenya require immediate overall if we want to improve and become food secure.

## Literature Review

Before colonization, Africa had its form of food production system which married well with the environment in which they lived for millions of years. Every African farmer had indigenous knowledge regarding their environment and could communicate very well with the environmental dynamics. The foods that were grown adapted well to every changing ecological condition and the farmers understood this. When the new system of agriculture was introduced in Africa with new methods of food production, the Africans lost it because they needed to learn the new crop and livestock production, marketing strategies, food storage, and a new system of dietary needs. The language of the environment and food production strategies changed and there was a disconnection between agricultural practices and environmental dynamics. With a new form of economic production, which brought up industrial revolution and technology, a new order of food production and environmental protection needed to be addressed which is claimed to have led to food insecurity and malnutrition in Kenya among other developing countries (Michura, 2016)

This paper argues that Agri-environmental communication interaction in a new economic, ecological historical, psychological, social, and spiritual dimension needs to be considered as a way of solving food problems and malnutrition in Kenya, which has made human health a disaster. The purpose of the study is to address the claim that, agrienvironmental communication interaction can be key to improving food production and nutrition needs towards improving human health. The

paper addressed three key objectives; causes of food production and human health due to malnutrition, assessing the effect of food insecurity and lack of nutritional values which is linked, to how human health can be improved through increased food security and availability of good healthy nutritional foods through environmental communication interaction. Food security and livelihood interventions save lives safeguard livelihoods, strengthen resilience in conflict situations, and can contribute to generating peace dividends and to sustaining peace.

## General Objective

The purpose of this study was to address the claim that agri-environmental communication interaction can be key to enhancing food production and nutrition as well as improving human health in Kenya.

## Specific Objectives

1. To find out the causes of low food production through lack of agri-environmental communication interaction.
2. To assess the effect of food insecurity and malnutrition on human health due to agri-environmental communication interactions.
3. To make recommendations towards enhancing food production and nutrition by improvement of human health in Kenya through agri-environmental communication interaction.

## METHODOLOGY

The study adopted desk top research, personal observation through visiting small scale farmers in 10 counties as representatives of the 47 counties in Kenya, key informants and focus group discussions. Other secondary information was obtained from Ministry of Agriculture, NGOs focusing on small scale farming,

## FINDINGS AND DISCUSSIONS

In an era of rapid change and growing risk and uncertainty, agricultural policy and practice in the developing world is encountering a number of limitations which reveal inadequacies in its long-term sustainability and its capacity to meet the range of objectives that it is expected to deliver specifically in food security facing over one billion of its people (Thomson et al., 2017). These include concerns about chronic hunger and malnutrition, adverse environmental changes, the limits of technology-enhanced productivity gains, increasing land degradation and the loss of biodiversity, livelihood

insecurity and the continuing poverty of agricultural communities. Worries about food safety, hygiene and nutrition, and growing demands for the re-localization of agri-food systems from citizen-consumers have also emerged. These worries raise important questions about whether the forms of agriculture developed over the past century, and celebrated as technically advanced and 'modern', are able to respond to the complex and diverse array of challenges they will encounter in the 21st century. It is sad for a country like Kenya to boast of its economic development when its people are getting hungry and die of malnutrition daily (Thomson et al., 2017).

Previous studies across the African continent indicated that socio-economic factors, farm characteristics and agro-climatic zone characteristics were the main factors influencing the adoption of SAPs by smallholder farmers (Lindumusa, et al., 2019). Therefore, factors influencing the adoption of agricultural programs vary with countries and regions because of differences in cultural and political ideologies, natural resources community access to education, adequate information on the technical details of the SAPs, extension services, credits, and infrastructure. The studies have not mentioned the silent factor affecting low food yields and unhealthy foods which is agri-communication technology-how local farmers understand the language of a conventional farming system which is foreign (Lindumusa et al., 2019)

The high use of highly hazardous pesticides (HHPs) in Kenya is worrying because no continuous monitoring of the uptake takes place. Pesticide residues on crops are mostly unknown and chronic health effects are difficult to establish. Environmental contamination of surface water, groundwater, and soil, are not recorded. Maize, wheat, coffee, potatoes, and tomatoes currently require the highest volume of toxic pesticides. Many of these pesticides cause cancer or genetic defects, impair fertility, or harm unborn children. To ensure consumer protection, these foods in particular need continuous monitoring for pesticide residues (Heinrich, 2022)

It is a recommendation that the adoption and application of safety measures are necessary to avoid the detrimental effects of pesticides. Thus, the right balance between the need to increase food production with the need to ensure the safety of people, food, and the environment should be considered a priority. It is written on the labels that, "Use plant protection products safely. Always read the label and product information before use. Pay attention to the risk indications and follow the safety precautions on the label. Very few farmers follow these instructions because of lack of agricultural extension officers to train them (Greenlife, 2022)

The major challenge facing farming in Africa is the cause of inappropriate usage of pesticides in most of the farming areas within the country. Farmers seek advice from neighbouring farmers, who may not be agricultural

experts or choose to venture into crop farming following some experience they got from another farmer. Besides, some farmers may choose to employ illiterate persons, because they provide cheap labour. *For instance*, the farmers may not be able to read the instructions provided on the pesticide label (Greenlife, 2022).

Other problems associated with the destruction of farmland, unhealthy food products, and poor yields are significantly attributed to unhealthy and poor practices, where farmers double quantity against the standard in the labels, Poor utilization of protective gears (PPE), unconcerned agrochemical companies, unsafe storage practices.

In this paper, we argue these concerns arise because the prevailing approach to agricultural science and innovation often fails to provide sustainable outcomes, particularly at larger scales and for large numbers of poor people in developing countries. Recent research on socio-ecological interactions in agriculture has demonstrated how human transformations and uses of the resources to produce food and fiber can cause unexpected, precipitous, and possibly irreversible changes in the natural environment. Natural sciences have made some progress in understanding how ecological 'surprises' the qualitative gaps between perceived reality and expectation – and system 'flips' come about (Thomson et al., 2017)

By contrast, relatively little progress has been made in understanding surprises in agri-food systems, and in defining management practices that might contribute to poverty reduction and help systems become more resilient and robust in order to cope with shocks and stresses, together with the social and institutional mechanisms behind these practices. The paper further discusses the development of a common conceptual framework to understand how the different levels, from farms to entire agroecosystems, are related, and how farmers communicate with their environment for better results in food production and nutritional values for human health.

The missing link is the understanding of how Agri-environmental communication interaction can be used as a model to improve food security and reduce malnutrition through a farmer and other stakeholders understanding the environmental language and farming system language and linking the two to create a positive impact for the improvement of our food systems (Stephanie and Brandi 2016).

Agri-environmental communication interaction tends to aim at encouraging consumers to "know their farmers" because, as the bumper sticker tells us, "know farmers, and know food." In part, these statements aim to broaden agricultural knowledge beyond the farm sector, creating a more agriculturally literate population. In a larger sense, though, they aim to make visible the intricate web of farming practices, market and state dynamics, and individual food 'consumer' actions that, together,

condition food access, food security, and agricultural sustainability. The paper brings together ideas about two elements of that web: agricultural producers' knowledge and practice of food production and on the one hand; and concepts of good environmental conservation and management practices. What the environment communicates to the farmer is very vital because the earth has all the essential resources to sustain life through food. Food is life and life needs food. All living organisms are the products of what they get from the earth as their host and for this matter; we must understand how the environment affects our lives (Stephanie & Brandi 2016). We must listen to it, treat it well, and preserve its values for now and generations to come. In doing so, the earth will also give back positively to us. But the main issue why we fail to meet the world food demand and why there is a large human population facing malnutrition is that we are quickly losing environmental value. We have become immoral, too greedy, and insensitive and that is why we are paying the price more particularly in developing countries where the law of the environment is flouted (Michura & Njuguna, 2017). What do we need to understand about farmer knowledge and learning, as farmers respond to changing conditions? And what do we need to know about increasing food security, especially in the context of long-standing social, political, and economic conditions that have worked to create economic and food insecurity (Stephanie & Brandi 2016)

### **Theories of Environmental linkage with Agriculture through Communication**

Glenn Davis Stone starts the issue out by ambitiously outlining a new theoretical approach to agricultural knowledge towards a general theory of Agricultural Knowledge Production, Environmental, Social and Didactic Learning. Stone closely examines anthropological theories of agricultural knowledge, including well-known ideas about farmer experimentation and decision making, and the nuances of social learning in agriculture. He adds another element to these theoretical approaches by including "didactic learning," in which third parties, including NGOs, agricultural input dealers, and government agencies, contribute to agricultural knowledge, even as their interests are at times different from those of farmers. Veronica Pérez Rodríguez uses an innovative methodological approach to reflect on questions of continuity and innovation in farming knowledge. In *Monilia (Moniliophthora roreri) and the Post-Development of Belizean Cacao*, Erik Stanley offers a case study of the causes of and responses to the emergence of disease in Belize's Maya-dominated Cocoa production. Stanley's exploration is a good complement to Stone's expanded theory of farmer learning, as it tracks the effects of "didactic learning" in a particular time and context. Stanley is concerned with the ways in which

"Western" agri-science not only works to change indigenous relational interactions with nature, but how, in creating the physical conditions for plant disease, it also further perpetuates its dominance in attempting to resolve them. Interestingly, Stanley's exploration raises questions about ways in which the knowledge politics of agricultural extension and development both do and do not succeed in transforming Maya knowledge and practices.

In this context, Amish communities are known to be the best farmers in the world producing food which is chemical free, healthy and nutritious. The Amish farmers produce food enough for their families, in a traditional method because for a long time they understand the language of the environment and how they interpret it to suit them to grow food which is healthy and at the same time protect their environment for sustainability. These make Amish farmers as the best farmers in the world producing the best food in the world and have enough food in the stores for their families (Michura, 2016).

In developing countries agriculture is one of the world's leading producers of food, and guarantees food security for over one billion people in Africa. The farmers are also the first stewards of the natural environment, as they care for the natural resources of soil, water, air and biodiversity and provide essential carbon sinks and the supply of renewable resources for industry and energy. They also depend directly on these natural resources. In this context, there is a need for a communication link between agriculture and environment in order to achieve our food security and human health through engaging on nutritional food values (European Commission, 2017). All stakeholders in the food industry, I boldly say, lack or ignore this important fact: the communication interaction between agricultural practices and environmental dynamics. How do stakeholders especially farmers are prepared to respond and echo to the different environmental dialects, changing attitudes, perceptions, consumption demands, social, financial, land use changes, population pressure, emerging new career development, psychological, spiritual, climate change, depletion of soil nutrients essential for farming, effects of acidification rain on crops, pollution. Ozone layer depletion, global warming, pest invasions, new diseases crop up, invasive species, use of new technology, relevance of indigenous knowledge in agricultural production in order to reduce poverty, hunger and malnutrition? (European Commission, 2017).

Kenya is looking to develop agricultural activity that recognizes the benefits of biodiversity and climate-friendly land management (Kavagi, 2018). Agriculture is at the centre of human well-being and sustainable development. It has influenced our value systems, our cultural heritage, the structure and location of our communities, and the development of other sectors in the economy. However, the ties between food systems and human health and cultural heritage are increasingly becoming invisible, as are the impacts our production

systems are having on nature. This invisibility discourages stewardship of our natural resources and fosters their unsustainable use, generating negative impacts for both present and future generations (Kavagi, 2018).

Several recent studies have shown that Kenya is going through food insecurity and malnutrition which affect human health as a result of disconnect between all stakeholders. Their major problem lies in the communication between environment and food production. Environment provides all the necessary essentials for farming and hosts both farmers and natural resources needed by farmers to succeed in food production. It has been observed that, through partnerships, with a variety of resources and capabilities, we can help make food security and nutrition aspirations a reality. Six key steps that will help us reach these targets were suggested: Have a strong joint leadership – bringing together public and private institutions to create breakthrough solutions in communication interaction processes; Build the capacity of farmers. Let's explore what we can do to improve capabilities through effectively sharing best practices, for example, to improve yield or manage the environment better using appropriate environmental and agricultural languages and marrying the together in practice; Empower women farmers and entrepreneur's. We should, with the help of partnering companies, set up social enterprises that are self-sustaining and lift the quality of life of these people and their communities; Disseminate knowledge and technology. Not foreign language but grassroots language, interpreting actual environment and what it can produce in terms of quantity and quality of food, use mobile technologies that can help provide access to relevant information such as weather data, fertilizing requirements or up-to-date pricing levels. Improve access to financial services. Let us find ways to provide financing solutions that are cost effective for the farmers and technology enabled; Invest in processing and logistics. We should identify innovative ways to share infrastructure or equipment in a meaningful way. The above six are key and important how all stakeholders should communicate in an interactive way to solve food insecurity and malnutrition (Franky, 2015).

Victor Amadala (2017) suggested that today's reality represents a combination of challenges that includes poverty, especially in remote areas, and an unresolved threat to food security. To ensure food security for all in the years to come, we will need to produce more food using fewer environmental resources while reinvigorating rural economies. This confirms that the reality of maximizing food production has not been reached but argues that there are ways to achieve food security.

### **Can Agri environmental Communication Solve Kenyan Food and Nutritional Problems**

Yes it can. From the above literature, it is a proven fact

that lack of food and poor nutrition are the products of misunderstood interaction between environment and engagement in food production at all levels of development. Environmental communication refers to the study and practice of how individuals, institutions, societies, and cultures craft, distribute, receive, understand, and use messages about the environment and human interactions with the environment. In the simplest terms, environmental communication is communication about environmental affairs. This includes all of the diverse forms of interpersonal, group, public, organizational, and mediated communication that make up the social debate about environmental issues and problems, and our relationship to the rest of nature (Robert and Phaedra, 2016).. Whether you are using environmental communication to advocate for a policy, raise awareness, change behaviour, influence public opinion, collaborate to address conflicts, pass legislation or challenge assumptions, how you communicate will affect your outcomes. Whether you seek technological, political, economic, behavioural or cultural solutions, you need effective communication to succeed. Whether you are using environmental communication to advocate for a policy, raise awareness, change behaviour, influence public opinion, collaborate to address conflicts, pass legislation or challenge assumptions, how you communicate will affect your outcomes. Whether you seek technological, political, economic, behavioural or cultural solutions, you need effective communication to succeed (Robert Cox and Phaedra, 2016).

Agricultural communication is a field that focuses on communication about agriculture-related information among agricultural stakeholders and between agricultural and non-agricultural stakeholders. Agricultural communication also addresses all subject areas related to the complex enterprises of food, feed, fiber, renewable energy, natural resource management, rural development and others, locally to globally. Furthermore, it spans all participants, from scientists to consumers and all stages of those enterprises, from agricultural research and production to processing, marketing, consumption, nutrition and health. Agricultural communicators are expected to have a certain amount of knowledge and familiarity with agriculture. One could also add to that definition and say the communicator also brings with him or her appreciation, or even affection, for the agriculture industry (Doerfert, 2011). Nearly 70% of farmers both large and small scale are engaged in farming because they just want food to eat or cash crops for their income but very few less than 30% understand what they are engaged in. They have no passion for farming, no passion for the environment. They do not care whether their farming practices impact negatively on their lives.

Many farmers have less knowledge how the amount of fertilizers, pesticides, herbicides they apply on their crops and livestock would affect their health and health of other

consumers, health of the environment and how their future farming will be affected with what they apply now. According to several surveys done, many farmers have reported that their farms are no longer producing enough yield per acre and they do not understand what has happened when in the past they used to produce high yields. These are evidence to show that the language of and its interaction with the environment is limited. Many farmers do not understand the important interaction between the insects such as bees and fruit formation. Bees are the main pollinators of major fruit trees such as citrus fruits. If you want more citrus fruits in your farm, one needs to keep bees. Destroying bees or habitats for bees lead to no bees hence less or no fruit formation. It is that simple. A farmer therefore needs to master the language of bees and their connection with fruit formation. The presence of bees communicates to a farmer that you need me to have food, not only honey but other essential requirements for your survival. Destruction of forests have far reaching implications which turn against farmers and produce lethal environmental impacts which lead to poverty, drought, disease, floods, soil erosion, climate change, global warming, ozone layer depletion, habitat loss, species extinctions reducing ecosystem services. When ecosystem services are interrupted or reduced, the effect is felt on less food production and poor quality of food which is detrimental to human health.

### **Link between Agriculture and Environment**

The links between the richness of the natural environment and farming practices are complex. Many valuable habitats in the world are maintained by extensive farming, and a wide range of wild species rely on this for their survival. But inappropriate agricultural practices and land use can also have an adverse impact on natural resources, like pollution of soil, water and air, fragmentation of habitats and loss of wildlife. Food production and nutritional value chains can only be achieved through biodiversity preservation, sustainable development, establishment of natural farming, forestry systems, traditional agricultural landscapes, water management and use and addressing climate change. Sound agri environmental communication interactions ensures that its rules are compatible with environmental requirements and that food security measures promote the development of agricultural practices preserving the environment and safeguarding the countryside and encouraging farmers to continue playing a positive role in improving food security and enhancing ecological biodiversity (European Commission, 2017).

### **CONCLUSION**

To understand Kenyan Food Security and nutritional

standards, the range of factors influencing food security are drawn from decades of research collected data and information on livelihoods, household vulnerability, nutrition, trade, and agro-climatology, as well as an array of other sources. It provides an overview of the food security context, the main determinants of chronic and acute food insecurity and malnutrition affecting areas at most risk of food insecurity. Little research has been focused on the interaction between the agricultural industry and communication with environmental dynamics (Specca, 2013). Our research efforts are only limited to strategies, policies, decision making researching on various environmental, economic and social aspects and the biochemical and technological innovations but failing to address the knowledge of the farmer to his her environment, whether he understands the dynamics of the environment communicating with it and knowing that to produce more quality food he/she must communicate with the environment which is the host and the mother of all resources for agriculture to flourish (Specca, 2013). There is a lack of information and the governments in developing countries, researcher's technologists, educators' politicians, customer's farmers, and all stakeholders if the food industry has ignored this important aspect of solving food insecurity and malnutrition in our society.

This paper brings all gaps that can be filled to ensure that new scientific adoption in food production and nutritional values are achieved for the well-being of human health.

More and more, we are realizing the value of healthy ecosystems for agriculture. Biodiversity in soil, pollinator habitats on farms, and restored ecosystems surrounding farms can help build productivity on farms and decrease their susceptibility to pests and disease. Healthy on-farm ecosystems can also play a role in providing services outside of agriculture, such wildlife habitat and groundwater quality. Managing farms and agricultural landscapes to build and use ecosystem services is an essential component of sustainability. Better incorporating agriculture and natural ecosystem functioning will improve agriculture's resilience in the face of the long-term uncertainty of resource availability and climate change. This can be effectively achieved by understanding how the environment communicates with the farming systems.

In Agricultural practices, the system of farming comprises three interrelated and mutually dependent levels, the farming knowledge, the environment, and the communication on how the agricultural production relates with the environmental conditions and its dynamics. These are, in the first place, a specific farming cultural repertoire composed of shared experiences from the farming practices, knowledge of the environmental conditions, insights, interests, prospects and interpretations of the agri environmental communication interaction context in which farmers operate. Taken

together, these specify the way farming ought to be organized for maximum food production and nutritional values of every food crop grown. Second, a style of farming is an integrated set of practices and artefacts. Fields, crop varieties, instruments, cattle, cropping schemes, and so on are combined in such a way that they constitute a rational and internally consistent total food production and nutritional needs.

## RECOMMENDATIONS

1. Agriculture and environmental studies and their interactions be part of the curriculum from primary to tertiary levels to motivate and give young people passion and need to change their attitude towards food production
2. All stakeholders need empowerment on agri-environmental communication interaction to help solve food problems and nutrition requirements
3. All farmers be encouraged to take fresher courses or form of training to understand and practically apply appropriate farming techniques that respond to environmental conditions
4. All media communications to be made available to producers and consumers on how to do farming in God's way and eat healthy nutritious foods to prevent diseases caused by ignorance of what type of food to grow and eat.
5. The government should allocate all arable farm areas solely for agriculture and develop non-agricultural areas for non-agricultural economic development.
6. Food security and livelihood interventions save lives, safeguard livelihoods and strengthen resilience in conflict situations and can contribute to generating peace dividends and to sustaining peace.
7. The government should provide educational (both formal and informal) and training programs on the safe use of pesticides in order to upgrade the skills and expertise of the farmers.
8. Farmers (especially the literate ones) should stop being ignorant- they should ensure that they carefully read and understand the instructions provided on or alongside the pesticides before application.
9. Farmers who employ other people to take care of their farms should ensure that they are present at least during pesticide applications (if they must employ illiterate persons). They should also guide them on how to handle the pesticides especially on storage and observation of the re-entry and post-harvest intervals.
10. Agrochemical companies should take part in capacity building of farmers by enhancing their knowledge, introducing new technologies and replacing the old and wrong practices with new and better ones, among other practices that contribute to sustainable agriculture.

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