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To cite the article: John Baptist Ogwal, Job Amot & David Mwesigwa (2020), Impact of agri-input on food security in lango sub region of Uganda, *Journal of Agricultural and Rural Research*, 5(2): 22-35.

Link to this article:

<http://aiipub.com/journals/jarr-200323-010096/>

Article QR



Journal QR



IMPACT OF AGRI-INPUT ON FOOD SECURITY IN THE LANGO SUB REGION OF NORTHERN UGANDA

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ARTICLE INFO

Article Type: Research

Received: 17, Mar. 2020.

Accepted: 5, Jul. 2020.

Published: 8, Jul. 2020.

Keywords:

Agri-inputs impact, Food Security, impact and Lango Sub Region

ABSTRACT

Lango sub-region, which is found in Northern part of Uganda, has the greatest number of its communities relying on agriculture for food security and for commercial purposes. The Agricultural activities, which they engage in, require several Agri-inputs for enhanced production. The purpose of this study is to find out the impact of Agri-input supply on food security in Lango Sub Region and three research questions are answered, namely: what impact does input supply have on food security? What is the implication of timeliness of the input supply to food security? And, what is the quality of the inputs supplied on food security? Valuable secondary data including literature that was conducted different related studies from different sources are used. We depended on mixed-method where both qualitative and quantitative methods of data collection and are used and the same is applied during the analysis. The results reveal that there is a high correlation between the supply of input and quality of food security and, it is suggested that when Agri-inputs are sufficient, timely supplied in good quality, there is a likelihood of food security in the region.

1.0 INTRODUCTION

This article presents the state of food security in Lango sub-region. In September 2017, there is jointly launched The State of Food Security and Nutrition in the World, marking the beginning of a new era in monitoring progress towards achieving a world without hunger and malnutrition, within the framework of the Sustainable Development Goals (SDGs). This report monitors progress towards the target of ending hunger (SDG Target 2.1) and provides an analysis of the underlying causes and drivers of observed trends. While monitoring hunger, the prevalence of severe food insecurity based on the Food Insecurity Experience Scale (FIES) introduced in the year to provide an estimate of the proportion of the population facing serious constraints on their ability to obtain safe, nutritious and sufficient food (Smith & Archer, 2020). Of great concern is the finding of 2015, after a prolonged decline, the most recent estimates showed global food insecurity is still increasing in a number of countries around the world. Examples include USA state of New Hampshire, Libya, Scotland, and South Africa (see Davidson & Morrell, 2020; Swesi, El-Anis & Islam, 2020; Marshall & Cook, 2020; Jonah & May, 2020). Food insecurity is affecting

both the rural populations and the urban populations (Middlemass, Cruz, Gamboa, Johnson, Taylor, Gomez & becker, 2020). New evidence in the year's report corroborates the rise in world hunger, thus demanding an even greater call to action.

According to the International Fund for Agricultural Development (IFAD, 2017), the number of people who are food insecure is estimated to have reached 821 million around one person out of every nine in the world, and severe food insecurity appear to be increasing in almost all sub-regions of Africa, as well as in South America and the food insecurity we are witnessing today also contributes to overweight and obesity, which partly explains the coexistence of these forms of malnutrition in many countries. In 2017, childhood overweight affected over 38 million children under five years of age, with Africa and Asia representing 25 percent and 46 percent of the global total, respectively (IFAD joint report, 2018).

In Sub-Saharan Africa (SSA), food insecurity has been on the increase and it is a growing concern to states institutions in Africa. It is estimated by the Food and Agriculture Organization that the number of malnourished people in SSA indicates a shoot up from 165.5 million in 1990-92 to 198.4 million in 1999-2001 (FAO, 2003). This statistic collabaores with a recent study regarding the food insecurity situation in South Africa and Senegal (Drysdale, Moshabela & Bob, 2020; Akpaki, Galibois, Sall & Blaney, 2020). Obtainable studies reveal a similar trend in the Eatsern African region parts of Uganda (Mayanja, Rubaire-Akiiki, Morton & Kabasa, 2020). Despite the various interventions to enhance food security in East Africa, low productivity which tantamounts to food insecurity is still a challenge. The enhancement of productivity which is paramount in attaining food security in East Africa and this can be achieved with increased public spending on agricultural production such as on the supply of agricultural inputs to farmers at all levels of production which unfortunately receives inadequate development support from partners at all levels (Sers & Mughal, 2019). This is compounded by the tendency of most interventions being implemented independently targeting only a few segments of the value chain thereby robbing the production process of a holistic flow which would address food insecurity in a more systematic and efficient way.

Rural areas have suffered most compared to urban areas such as Johannesburg, Nairobi and Kigali. For example, the final statement of the World Food Summit organized by the FAO in 2002 concludes: "the goal of halving the number of hungry requires that the most food insecure and impoverished countries promote the alleviation of rural poverty, especially through sustained growth of agricultural production, particularly in Sub-Saharan Africa" (FAO, 2002). The idea behind this statement is that agri-input can both increase the supply of food and be the main tool for generating the income required to ensure access to food by food-insecure people. In Uganda, agriculture forms the backbone of the economy and close to 80percent of all households in the country are involved in agriculture (Uganda Bureau of standards, 2016). The sector contributes to over 70percent of export earnings (World Bank, 2016) and accounted for 26percent of GDP in 2013/2014 (MAAIF, 2015c). However, agriculture in Uganda is largely dominated by smallholder farmers who occupy much of the land and produce most of the crop and livestock products. They compose 85percent of the total population in agriculture (Balya, 2010). A study by Masaba (2014) reveals that the challenges to food security in Uganda as high costs and limited access to improved farm inputs and production technology. Timely and convenient availability of these inputs is a critical factor for attaining production targets in the sector thereby upholding food security in the country. The Government distributes inputs

through various ways, these include Public-Private Partnerships (PPPs) arrangements as in the Vegetable Oil Project; community procurement under Operation Wealth Creation, Northern Uganda Social Action Fund; and the MAAIF through provision of seedlings; and the private sector and cooperatives. (Budget Monitoring Reports for Quarter 2 Financial Year 2013/14), (Mugasi, 2017).

1.1 The state of food security

In December 2016 to January 2017, there is food security assessment in Uganda and this is concluded with the production of the Uganda Emergency Food Security Assessment report and this is conducted by a number of government Ministries, departments, agencies, as well as international agencies such as World Bank, World Food Programme, United Nations Development Programme, FAO, United Nations Children Emergency Fund, and individual researchers, with key informants being the District Production officers and District Agricultural officers (Hamann, 2020). The main objective of the exercise is to establish the food security situation using the integrated food security Phase Classification (IPC) for Uganda for the period from January to March 2017. It is preceded by a nation-wide food security assessment which is done in three phases using the same tool.

The IPC analysis estimated 69 percent of the total population in the country is minimally food insecure (IPC Phase 1). This population's food security situation is stable and has access to a variety of adequate food both from household stocks and the market. The analysis further reveals that 26 percent of the total population in the country is facing stressed food insecurity (IPC Phase 2). This population has minimum adequate food consumption, employing insurance strategies and are unable to afford some essential non-food expenditures. The analysis finds that 5 percent of the total population in the country is in Crisis (IPC Phase 3). This population has widening food consumption gaps with deteriorating dietary diversity and high malnutrition rates. The affected population includes the poorest households with poor food consumption score, low meal frequencies of up to 1 meal a day and low dietary diversity of less than 3 food groups. They have poor purchasing power as their incomes are low and no food stocks at the household level. They are mainly coping through food assistance, remittances from relatives, begging, stealing food, wild food gathering and irreversible sale of productive assets to buy food. This population currently needs assistance to bridge the widening food consumption gaps and avert worsening malnutrition (IPC, NECOC 2017).

In developing the food security situation of Lango Sub Region the assessment of food security and findings by Action against Hunger which is conducted in 2011 in Lira and Otuke Districts has been used in this discussion to be representative for Lango Sub Region. The reported Food Security and Livelihoods Assessment is conducted by Action against Hunger Uganda (AAH) in the two districts of Lango Sub-region, in early December 2010 in coordination with the district agricultural officers of the two Districts. The main objective is to carry out a situation analysis and create vulnerability profiles disaggregated by the geographic area to project scenarios for the coming year thereby helping to identify the food security situation and appropriate response interventions to potential food insecurity and livelihoods in the short, medium and long-term. The survey comprised a total of 402 household interviews in 5 parishes of each district. Parishes and villages are selected according to geographical criteria to represent the total of the district's population (excluding Lira town).

The main findings for most indicators, had lower scores, indicating a worse food security

and livelihoods situation in Otuke. Households are composed on average of 5.9 members. On average, 2.4 household members contribute actively to the household income. Women contribute slightly more to household income than men. Household Dietary diversity and food sources 67.7percent of adults and 80.5percent of children had two meals the previous day. On average, the population consumes products from 3.9 different food groups (HDDS score), mainly roots and tubers, pulses, vegetables and cereals. Animal products (including dairy products and eggs) are included in 16percent of the respondents' diets. Household food expenditures take the biggest share of household expenditures with 53.9percent of total expenses against other things like Health care is next with 13.1percent, followed by education-related expenses (7.9percent). However, agricultural equipment like ox-ploughs to labor the land, are owned by 20percent of the households. Half of the respondents have a bicycle; half of the respondents have a radio, 20percent have a mobile phone. (ACF, 2011).

This results above indicate that the food security situation in the region is not yet very safe given the statistics provided above and besides all other factors the food systems at household level must go on through any means.

1.2 Household food security

Household food security refers to the situation where all members of a household always are consuming enough safe and nutritious food for normal growth and development, and for active and healthy life (UBOS, 2010). Food insecurity continues to be a major development concern in Uganda despite its well-endowed natural resource base with good biannual rainfall amounts received (Zizinga et al, 2017). Low and declining yields of food crops are the primary causes of this condition. Smallholder farmers are vulnerable to food insecurity, especially in times of environmental stress, drought and floods because of high dependence on unreliable rain-fed agriculture (Turyahabwe et al, 2013; Kikoyo & Nobert, 2016). Whereas, food insecurity exists when people lack sustainable physical or economic access to enough safe nutritious and socially acceptable food for a healthy and productive life. It can be chronic, seasonal or temporary Fawole et al (2015).

Agri-input

Agri-input, as a form of social protection, is often considered an important means of improving agricultural productivity in low- and middle-income countries. In recent years, there has been a resurgence of interest and investment in Agri-input mainly in Africa resulting from the need to boost agricultural productivity and food security (Jayne & Rashid, 2013). In many countries, poor farmers are unable to afford the inputs and technologies needed to increase productivity; an important means of improving food security (Wiggins and Brooks 2010). Agri- input is defined as those components and materials that are used during agricultural production with the aim of improving the yield and high productivity such includes: seeds, fertilizers, farm machinery like tractors, hoes, ox ploughs among others.(Jaynes and Rashid 2013)

It is worth noting that the supply of Agri-input by the different channels like Government through Ministry of Agriculture, Animal Industry and Fisheries, Civil Society Organizations like Action Fame (ACF), Welt Hunger Hilfe, AVSI, among others created positive impact on high productivity and the inadequate supply lead to low productivity. The level of yields at all levels is determined by the type of input invested in the production process and many families in Lango sub-region either have food security or food insecurity basing on the nature and amount of the input used. The different organizations specialize in different fields of input supply.

The problem statement is derived from the existing paradox that despite the various interventions to enhance food security in Lango sub-region, low productivity which tantamount to food insecurity is still a challenge. The enhancement of productivity which is paramount in attaining food security in Lango Sub-region and this can be achieved with increased supply of agricultural inputs to farmers at all levels of production which unfortunately receives inadequate Agri- input support from partners. This is compounded by the tendency of most interventions being implemented independently targeting only a few segments of the value chain thereby robbing the production process of a holistic flow which would address food insecurity in a more systematic and efficient way. Food poverty is still a big issue in Uganda. UBOS assessed the situation in the country. The findings show that more than a third (37percent) of the households in Uganda had food poverty. By residence, households in rural areas are nearly twice as likely to be food poor compared with their urban counterparts (40percent and 26percent respectively) (UBOS 2017) and a separate survey conducted by UBOS 2008/2009 and reviewed in 2015 revealed that out of an estimated 3.6 million Agricultural Households (AG HHs) that responded, 2.0 million Agricultural Households (AG HHs) (56.7percent) reported that their members could not afford to eat what they would eat during the reference period (UBOS, 2015).

The purpose of the study, therefore, is to establish the impact of Agri- input supply on food Security in Lango Sub-region within the period of 2015 up to 2019. The objectives of the study will be threefold, namely: to find the impact of the input supply on food security, to find the implication of timeliness of the input supply on food security and to find out the quality of the input supplied on food security.

2.0 METHODOLOGY

2.1 Methods of data collection

Valuable secondary data are used from various sources, using both qualitative and quantitative techniques together yielding more than the sum of two approaches used independently. Hence, both quantitative and qualitative methods of data analysis are employed through documentary review.

2.2 Methods of data analysis

Several research reports are analyzed to give documentary reports on the same subject, there is an analysis of other journals that did a similar study on agri-input and food security including analysis of ministerial statements that made several related statements. Works by several non -state actors that are specializing on the same are reviewed.

2.3 Significance test

There is provision to compare the consistencies of different kinds of literature and documentaries reviewed during the production of this article and to detect if there are inconsistencies and reliability in the results. This is done by sampling them from different years of study.

3. RESULTS AND DISCUSSION

Different researchers conducted several types of research and concluded that there are impacts of Agri-input on food security. The results have retained that there is both positive and negative impact of agri-input on food security. The findings and the results will be handled on specific objectives independently as presented below.

3.1: The impact of agri-input supply on food security

Through a number of government organs and civil society organizations, there is indeed input distribution that to some extent yielded a positive fight against food insecurity including Lango -sub-region. Here, we sought to the impact of enough and distribution of agri-input on food security. Due to inadequate supply of Agri-input to smallholder farmers, low output which is an element of food insecurity has resulted due to poor soil fertility management and use of rudimentary production methods at institutional level (ASSP, 2016). As a consequence of the above aspect of inadequate supply of agri-input to farmers, it is suggested above that the agricultural output which is a factor for food security is reduced and this obviously has impacted negatively by causing food insecurity since without such input like good seeds, fertilizers farm implements among others, there will definitely below production. We hereby assert that if these inputs are adequately supplied to these small-scale holder farmers, the impact of this supply would be realization of high level of production qualitatively and quantitatively, which would result into food security in Lango Sub Region.

Another issue raised in attempting to increase agricultural productivity to increase food security is high prices of Agri-inputs in general and fertilizers. It has been noted that even the use of inorganic fertilizers at the minimal level does not yield the desired outcome due to the relatively expensive fertilizers to farmers. On this note, agricultural production can be increased by formulating deliberate policies that reduce the prices of fertilizers as part of Agri-input for realizing high yields (Matsumoto & Yamano, 2010). The above factor limits access to such input by farmers of Lango Sub Region as majority of the farmers are on subsistence basis with very minimal level of income that does not provide capacity for buying such very expensive input and they end up going for farming with rudimentary tools and thereby reducing the level of farm productivity. This results in food insufficiency which is a factor for food insecurity.

There is the low quantity of supply of input and if the prices of this input are affordable to the small scale farmers and or supplied to all farmers as agri-input grants by government or the civil society organizations, there would be access and utilization of such input and that would improve their level of productivity resulting to food access and food availability and therefore, food security to the population of Lango Sub Region (ACODE, 2015). As a result, the central Government as well as NGOs' interventions in providing Agri-input has been downplayed by inadequate skills on the side of service providers as farmers reported lack of technical skills from the military in Agri-input supplies.

There is inadequate technical skills and knowledge on the side of the service providers like in operation wealth creation and from some civil society organizations poses a high risk in the utilization of the different input especially fertilizers and the different improved varieties of crops that need very close monitoring during administration and plantation up to harvest. This is coupled with the very inadequate level of technical knowledge and skills on the side of the farmers who may know very little about this input. There are a lot of risks of errors in using chemicals and complicated farm implements like tractors and its accessories. The low level of skills and knowledge here results in a low level of productivity and eventual food insecurity.

It is appropriate to say that if the aforesaid personnel, who are engaged in agri-input supply, are trained and skilful, they would supply these input with more efficiency and effectiveness and emphasis on how to apply and use these input and this would result into a high level of productivity, which would secure food sufficiency and access. This notion has been successful in a number of nations within and outside SSA such as Ethiopia, Trinidad and Tobago, Tanzania, Iran

and Nigeria (Olorunfemi, Olorunfemi & Oladele, 2020; Momeni, Choobineh, Razghi, Ghaem, Azadian & Deneshmandi, 2020; Ortiz-Crespo, Steinke, Quirós, Van De Gevel, Daudi, Mgimiloko & Van Etten, 2020; Gow, Chowdhury, Ramjattan & Ganpat, 2020; Birke & Knierim, 2020).

In a Report, 82percent of farmers lacked machinery for efficient land preparation and 90percent of farmers did not have adequate access to quality seeds and the few who acquired seeds received poor quality supplies with poor germination and subsequent yield hence food insecurity. Yet, Nations (such as Italy) that have reported efficient use of agri-machinery have achieved greater strides in terms of agri-output (Vigoroso, Caffaro, Cremasco, Bagagiolo & Cavallo, 2019). 72 percent of farmers reported a lack of access to fertilizers which further compounded food insecurity in Lango region (ICCO, 2017).

Important to note is the finding that inadequate Agri-input to farmers leads to food insecurity right from household level to the wider community along the agricultural value chain and the supply of Agri-input, on the other hand, is paramount in enhancing food security. This means the supply of Agri-input (in terms of timing) either impacts negatively or positively on food security.

3.2 The implication of the timeliness of agri-input supply on food security in Lango Sub Region

According to MAAIF (2015) standing orders of procedures for Operation Wealth Creation, inputs are delivered in the month of March/ April and August/ September corresponding to the two rain seasons. This pre-set time frame must be adhered to in order to ensure good Agricultural productivity. Food and nutrition security improvement is reported after the timely supply of maize and beans to the rural farmers by Operation Wealth Creation (Plan R A, 2014). However, the late and untimely supply of this input are attributed to delays in procurement processes and verification processes and once those inputs are supplied late to farmers, the result is low production which causes food insecurity.

According to Ministry of Finance Planning and Economic Development, Semi-annual budget monitoring report F/Y 2018/ 2019, poor accountability by District Local Government caused further delays in release of funds to the agriculture sector and such delays ended in delay in procurement of farm input such as seeds, seedlings, and implements as well as embarking on genetic adjustments of traditional varieties for better yields (Schnurr, Addison & Mujabi-Mujuzi, 2020). Such timing of distribution is likely to impact on agri-productivity hence resulting into food insecurity.

The significant finding here is that delayed supply of Agri-input leads to food insecurity because planting seasons can pass when the required input has not yet been delivered, example seeds that are supplied past the season and cassava cuttings that have already dried due to outsourcing delays. For example, a study by Alemayehu, Jemberie, Yeshiwas, Aklile & Moral, 2020) attests that delivery of fertilizers affects on the ultimate production of irrigated tubers in plateaus of Ethiopia. Delayed supply of Agri processing machinery such as threshing machines for maize leads to post-harvest losses, therefore causing negative impact on food security. On the other hand, when Agri-inputs are supplied in time, food security is guaranteed, for instance seeds supplied during the beginning of planting season and fertilizers supplied before planting.

3.3 The quality of input supplied on food security

In relation to the complex input-output relations, the agricultural sector has very strong linkages with other sectors like infrastructure like education, security, energy among others.

Keeping other production means constant, which provides quality and ensuring market for Agriculture outputs, where maximum production relies on the quality of inputs such as fertilizers, seeds, pesticides, or insecticides. (Dione et al 2017). Therefore, this sector supplies the animal husbandry and fisheries -sub-sectors feeds and the three feeds into the Agri processing industrial sub-sector with inputs across Uganda (Aryemo, Akite, Kule, Kugonza, Okot & Mugonola, 2019). This requires a carefully planned value chain approach in planning for the sector and a strong public sector that can regulate and control all processes and systems delivering inputs and outputs across the entire Agriculture sector.

Food security is not guaranteed when there is limited access to production inputs supplies such as quality and reliable seeds, pesticides, farm implements and fertilizers. Other factors include inadequate access to production skills, finance, a well-structured, and reliable and low quantity of agricultural output of different qualities supplied to the market by a multitude of farmers; and poorly structured and inefficient markets (Nyende, 2011; Pervez et al. 2019). This has resulted in food insecurity to small scale farmers.

On the seed supply sector, quality provision is important because quality managed seeds lead to high yields and hence food security and planting which leads to a good harvest (Mutebi-Kikulwe & Asindu, 2020). On the other hand, Uganda has a plant breeder bill pending approval by the Parliament of Uganda and this dearth of legal protection of plant breeders is a challenge to ensuring quality certified seeds. A study by Wekundah (2012) shows that companies rely on legislation which does not exert stringent quality assurance but also hold seed houses accountable and competitive in supplying quality seeds.

Poor quality of planting materials distributed is yet another challenge to food security. This is worsened by the small volumes and poor quality of seeds distributed to farmers by the NAADS/OWC program. Many farmers have expressed dissatisfaction with the poor quality of seeds that had a low germination rate. For instance, John Okwir of Ewopayita village, Abuto-Adi parish, Amach Sub County Lira District who expressed dissatisfaction with the first pineapple variety that had a low germination and growth rate, resulting in low output. This challenge is attributed to inadequate verification of inputs at source by MAAIF, inadequate involvement of district technical officials in the input quality assurance processes and damage of planting materials during transportation by service providers (Kazigati, 2019). High-quality Agri-inputs such as quality certified seeds, effective pesticides, quality implements and seedlings guarantee high farm yield, are essential in enhancing food security. Whereas low-quality Agri-inputs leads to poor yield and as a result, there is negative impact on food security.

CONCLUSION

Food insecurity has been a global challenge for millennia and several strategies have been initiated and implemented to address the matter. Sustainable Development Goal 2.1 aims to end hunger by 2030 and on this note, a global call to action has made nations across the globe to embark on enhancing food security. One approach is by increasing the supply of Agri-input and Lango Sub-region in Northern Uganda is one place where supply has been happening by the Ministry of Agriculture, Animal Industry and Fisheries, NAADS through Operation Wealth Creation, Civil Society Actors and private business companies. It has been found out that the provision of timely and quality Agri-input enhanced food security in the region. The supply of poor-quality input such as adulterated seeds contributed to poor harvest, hence food insecurity.

Delayed supply of Agri-input like implements, insecticides, seeds and post-harvest handling equipment also led to more food insecurity. The authors recommend that effective measures to ensure quality and timely supply of Agri-input should be adopted by all responsible stakeholders like MAAIF, Local Governments, Civil Society Organizations and private business companies to fight food insecurity in Lango Sub-region and fertilizer utilization should be enhanced.

ACKNOWLEDGEMENT

Our sincere gratitude goes to the Department of Public Administration and Management whose lecturers devoted their time and knowledge to guide us in writing this article and we cannot forget Akena Patrick Rolex and Akullo Pamela Stella who jointly spared their precious time out of their busy schedules to review this work.

Disclosure statement

The authors declare no competing interests during the study.

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