FOOD SECURITY AND SAFETY: AFRICAN PERSPECTIVES

Abstract

Food is the most basic of all human survival needs. The safety of the food we consume directly influences our health, but its significance within the broader food supply system can scarcely be overstated. Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life. As a result of its agro-ecology, trade history, and position most African countries have diverse diets in terms of staple foods. This is a great advantage in terms of food security because many consumers will substitute among the five broad categories of staple - cassava, yams and tubers, plantain, millet, maize and rice - according to national and also tribal taste preferences and changing relative prices. Improved agricultural biodiversity through improved agricultural practices will also increase food supply. The latest 2015 data from the World Health Organization (WHO) suggests that each year, food borne illnesses cause's almost one in 10 people on the planet to fall ill. Some 420,000 deaths a year are believed to result from food borne illnesses, a significant proportion of these in children less than five years old. The problem of food security in Africa will persist until the challenges of unsafe foods are brought under control and solutions are implemented to manage their harmful impacts.

Keywords: Food security, nutrition, Africa, food borne disease, agriculture

INTRODUCTION

Food is the most basic of all human survival needs. The safety of the food we consume directly influences our health, but its significance within the broader food supply system can scarcely be overstated. Unsafe food cannot sustain human health and has tragic social and economic consequences. Africa is the world's second largest and second most populous continent, behind Asia in both categories. It contains 54 fully recognized sovereign states (countries). The agricultural transformation that Africa needs today has to be much more focused on a market driven, business agenda that encompasses the entire food system, not just agricultural production. By improving agriculture and food markets, there is an opportunity to lift millions of African people out of poverty. Therefore, it becomes imperative to have a discourse towards

ensuring the food security and food safety of this second most populous continent. Over the years, concerted effort have been made in improving the quality as well as the production of world food supplies, food insecurity remains prevalent particularly in the nations of Africa. African Food Security (AFSB) estimated that approximately one out of every three person in sub-Saharan Africa is undernourished. Achieving sustainable economic development in Africa will be elusive without well nourished and healthy citizens. Food safety has a critical role in ensuring food security. During the 1996 World Food Summit of November held in Rome, all heads of Government at the summit pledge their support and commitments towards achieving global food security and the alleviation of hunger with the aim of reducing the number of undernourished persons by the year 2015. Despite this unprecedented effort by international communities, the population of the undernourished people in the world still constitutes a major problem in many African nations and in parts of the world. Rapid changes in the global economy, in consumption patterns and in population and demographics are having a negative impact on the environment. In spite of the introduction of economic reforms in many Sub-Saharan African (SSA) countries, economic growth continues to be sluggish or negative, impacting heavily on the welfare of the people, especially the rural population. In addition, major environmental disasters in the continent such as recurrent drought and floods have serious devastating socioeconomic and ecological impacts. Poor land policies and management practices, which lead to land degradation and deforestation, contribute to increased flood disasters in some risk areas. This challenge contributes significantly to decline in agricultural production, poverty and food insecurity. Agriculture, of which 85-90 per cent is rain-fed in sub-Saharan Africa, accounts for 35 percent of the region's gross national product (GNP), 40 percent of exports and 70 percent of employment (World Bank 2000). Year to-year swings in GDP can be as high as 15-20 percent, largely due to the effects of fluctuations in rainfall on agricultural production. About one-third of the region has a mean annual rainfall of less than 700 mm, which is too little to sustainably support rain fed crop production. In SSA, domestic food production accounts for about 80 percent of consumption (UNEP 2002: 289).

CONCEPT OF FOOD SECURITY

The UN Food and Agriculture Organization (FAO) defines food security in the following terms: "Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life." A primary cause of food insecurity is the decline in global food production and productivity. A country is said to be food secured when there is access to

food of acceptable quantity and quality consistent with decent existence at all times for the majority of the population (Reutlinger, 1985; Idachaba, 2004; Metu, *et al*. 2016). According to UNEP 2002, Food security has three dimensions;

- Availability of sufficient quantities of food of appropriate quality supplied through domestic production or imports.
- Access by households and individuals to appropriate foods for a nutritious diet; and
- Optimal uptake of nourishment through a sustainable diet, clean water and adequate sanitation, together with health care.

Access to food

This refers to economic, social, and physical access to food by all people at all times. It is important to emphasize that more food production does not necessarily mean more food for those who need it. Most experts would agree that the largest part of the production increase has to come from yield increases. Current levels of agricultural productivity and production say little about potential levels, because they are simply a response to present levels of demand and price/market conditions. It is however important to note that food production is not the same as food availability (production minus exports plus imports), and that aggregate availability and the ability to acquire food (food entitlements) are very different things. The yield of roots and tubers in Africa is the lowest in comparison to the other regions of the world (McGranahm *et al* 1999:104). Whilst food production undoubtedly influences food entitlements, the connections are complex and there are also other matters involved. People's access to food depends both on the purchasing power of their income, and on their non-market entitlements, such as rights to land for subsistence farming and foraging purposes. Households seeking to preserve food security levels may resort to a number of coping strategies to gain access to food. These include: maintaining normal income generating patterns; adaptation by means of innovative use of

available resources or some divestment of liquid assets; divestment of productive assets, such as stock or land; and out-migration and destitution. However, the market economy is not expected to grow rapidly, and many non-market entitlements are in danger of decline. Food entitlements for urban dwellers are most often mediated through the market, whereas for rural dwellers in general and subsistence farmers in particular, these entitlements tend to depend more on the local production. Clearly, food insecurity is basically a problem of poverty, affecting those social groups with the weakest or most fragile food entitlements, both in terms of access to social networks and safety nets or productive assets (capital, land, agricultural inputs). Malnutrition can thus be a threat to urban and rural dwellers at different times and for different reasons. Urban-rural links are often created in the pursuit of food security, and hence urban dwellers will maintain rural contacts, or even land, to provide food security in case their purchasing power is disrupted, whilst rural dwellers will maintain urban contacts, in part to ensure against the loss of local food entitlements.

Availability of Food Supply

Availability of food plays an essential role in food security. Agricultural output in Africa has been lagging behind population growth since the 1960's. Between 1965 and 1990, agricultural production grew at an annual rate of 1.7 percent, while there was annual population growth average of 2.8 percent. Food imports including food aid in the African region have increased substantially to offset the deficiencies, and in early 1994 represented about 10 percent of the food consumed. At the current growth rates, the food gap is projected to increase to more than nine times the present gap by 2020 (Agyare-Kwabi P., 2003).

Acceptability of Food

As a result of its agro-ecology, trade history, and position most African countries have diverse diets in terms of staple foods. This is a great advantage in terms of food security because many consumers will substitute among the five broad categories of staple - cassava, yams and tubers, plantain, millet, maize and rice - according to national and also tribal taste preferences and changing relative prices. Women have distinctive roles to play in determining the acceptability of food basically because of their traditional role as wives and mothers who cook for their families.

Transforming food from its raw state into processed or cooked food has long been the preserve of women in Africa.

Determinants of Food Security

These factors are directly and indirectly interrelated. Available food must be accessible to all members of the populace. What is available must also be adequate and the populace must be willing to eat that which is available must be accepted as a preferred food.

Practically, a food glut in the rural communities may not necessarily be reflected on the market due to problems relating to accessibility- road and transportation networks, more market distributors are not willing to enter the hinterlands to cart food to the urban centers.

Monitoring Food security

The main indicator for monitoring food security in the world is per caput food consumption, measured at the national level by the average dietary energy supply (DES) in Calories on the basis of national food balance sheets(FBS) and population data (FAO 1996a:vii). However, there are no internationally comparable comprehensive data for tracking the evolution of access to food for individuals or population groups within countries. Under nutrition in a given country is determined by its DES in relation to a minimum threshold defined as corresponding to the average DES that represents a minimum level or energy requirements for individuals, allowing for only light activity. This level ranges from 1,720 to 1,960 Calories/day/person, depending on the country. For countries where the average DES is close to the threshold, the majority of individuals are undernourished, while experience shows that for countries with DES about a level of say, 2,700 Calories, the proportion of undernourished individuals becomes small, except under conditions of extreme inequalities.

Africa's Food Production Potential and Challenges

A Havard University study led by Professor Calestous Juma showed that Africa could feed itself by making the making the transition from importer to self sufficiency. Africa is starting to focus on agricultural innovation as its new engine for regional trade and prosperity (Science Daily,2010). Africa still has the resource base that if more intensively farmed could easily produce another 100 million tons of grain equivalents each year, equivalent to adding another US corn belt to the global supply and turning Africa into a net agricultural exporter. This potential is evidenced by the low yields Africa currently achieves compared with those of similar agro-ecological zones (FAO & World Bank, 2009), experimental trials, and best farmer practices (Jirström, Andersson, & Djurfeldt, 2011). FAO (2009) estimates that Africa still has a further 800 million hectares of uncultivated land with potential for rainfed crop production, whereas Fischer, van Velthuizen, Shah and Nachtergaele (2002) estimate 240 million hectares. However, it is certain that Africa is endowed with land resource that if transformed towards agricultural productivity has the capacity to ensure food security and sustainability. There is also considerable untapped irrigation potential and remaining uncultivated land that could be brought into production. The transition from subsistence farming to cash crop farming will offer the opportunity to increase income. Demand for food is growing fast, Ban Ki Moon, the UN Secretary General at a World food summit in Rome in 2009, warned that six million children die of hunger every year; 17,000 die of starvation every day and by 2050 the world will need to feed two million more mouths. Most African countries are still growing despite the slowdown induced by the decline in commodity prices in 2016, and the medium-term outlook is good for continued growth in international, regional and domestic markets. Africa's demand for food is projected to more than double by 2050, driven by population growth, rising incomes, rapid urbanization, changes in national diets towards greater consumption of higher value fresh and processed foods, and more open intra-regional trade policies, all of which are helping create new opportunities for Africa's farmers. Agriculture is also the best sector for addressing much of the remaining poverty in Africa. Since most farmers are small holders, many of whom are poor, and increases in agricultural output help keep food prices low, small farm led agricultural development typically has a big impact on poverty. Thirtle, Piesse and Lin (2003); estimate that a 1% increase in crop productivity reduces the number of poor people by 0.72 % in Africa and by 0.48% in Asia. Studies that compare growth–poverty elasticity across sectors typically find

much higher elasticity for agriculture than for non-agriculture (Christiaensen & Demery, 2007; World Bank, 2007). Yet despite the promise, Africa has not done well in modernizing its agriculture sector. Many attempts were made to bring the green revolution to Africa in the 1960s and 1970s, some of which were successful in raising productivity (e.g. the maize revolution in Eastern and Southern Africa (Smale & Jayne, 2010)). But they were typically based on top-down, heavily subsidized and state-led approaches that proved costly and financially unsustainable, and had to be pared back as part of the structural adjustment programs (SAPs) beginning in the 1980s. Although Africa's agricultural growth rate improved after 2005, averaging about 7% per annum, this was driven more by a commodity price boom and expansion of the cropped area rather than by improvements in the underlying fundamentals. Africa's cereal yields started to grow after 2000, but still remain low compared to other countries, and the gaps are widening. Moreover, the gap in land and labor productivity between Africa and Asia also widened rather than closed over 2000–2014. Within Africa, labor and land productivity improved the least in Southern Africa (excluding the Republic of South Africa), and improved the most in Eastern and Western Africa. Far from exploiting its potential of becoming a major breadbasket region, Africa continues to become more dependent on food imports. The aggregate annual food import bill is currently about US$35 billion, and is estimated to rise to US$110 billion by 2025 (Adesina, 2017).

Agicultural Production Trends in Sub-Saharan Africa

Agricultural resources are the mainstay of Africa economies and the deterioration of these resources threatens both their food security and overall economic well-being. For several developing countries, the 1970s was a decade of improvement in agricultural production faster than that of the 1960s. Rapid progress continued up to about the mid-1980s, and at a slower pace afterwards. But several countries and whole regions failed to make progress and experienced outright reversals, foremost among them many African countries, while South Asia made only meagre progress in the 1970s but more substantial gains in the 1980s. In many developing

countries, per caput food supplies may remain stubbornly inadequate to allow for significant nutritional progress (FAO 1996a: ix). Crop production are mostly carried out during rainy seasons (rain fed), or irrigated and can be maximized by matching climatic and soil attributes of the land with climatic and soil requirements of the desired crop. The type, timing and level of inputs also have a major effect on yield. A low level of inputs is associated with small scale production, capital intensity, manual labour, seed types, low fertilization, no pest control and small farm areas. A high level of inputs is associated with commercial production, moderate to high capital inputs, increased mechanization, improved seedlings, use of inorganic chemical fertilizer as well as pest control, medium to large farm lands, and accessibility to the market.

Table 1 –Farming systems in West Africa

Zone	**Dominant crops**		**Minor crops**	**Livestock**
Humid tropics/rain forest	Yam Rice Cassava Maize Plantain Cocoyam	Cocoa Rubber Oil palm Banana Coffee Coconut	Vegetables Cocoyam Tree crops Banana Sweet potato	Sheep Goats Poultry
Forest/savannah mosaic	Sorghum Millet Cassava Yam Rice	Soybean Sesame Sugar cane Cotton Tobacco	Cocoyam Cassava Cowpea Vegetables groundnuts	Goats Sheep Poultry Few cattle and horses
Guinea savannah woodland	Sorghum Millet Rice Maize Cowpea	Groundnuts Sesame Cotton Tobacco Soybean Sugar cane	Sweet potato Vegetables Banana Cassava Tree crops	Goats Sheep Horses Poultry Pigs Cattle
Sudan and Sahel Savannah	Millets Sorghum Cowpea	Groundnut Cotton Some rice	Vegetables Sweet potato Rice	Goats Donkeys Sheep

		Wheat	Sesame Tree crops	Horses Poultry Camels
Tropical Highlands	Millets Beans Sorghum	Arabica coffee Tobacco Irish potato Tea Sub tropical vegetables Cotton	Sweet potato Hausa potato (*Plectranthus* and *Solenostemon spp)*	Goats Poultry Horses Donkeys

Source: Okigbo, 1983.

Principal Agricultural Systems and their Impact on Food Security

Traditional Agricutural Systems

Farmers of traditional and low-input agricultural systems have long adopted crop diversity. Even today, there are still a huge variety of crop combinations cultivated, including cereals, legumes, root crops, vegetables and tree crops. In Africa, more than 80 percent of all cereals are intercropped, producing, in some cases, highly complex patterns, with up to 20 species grown in close proximity.

Biodiversity (Genetic diversity) in Traditional Agriculture

In very variable conditions, farmers rarely standardize their practices. They maintain diversity, develop a variety of strategies and so spread risk. Mixtures of crop and varieties clearly provide farmers with a range of outputs, and also represent a logical approach to coping with variable environments. Mixed crops can also be less variable in time and space, and combined yields are often greater, particularly if differences in root and shoot relationships allow the crops to use

light, nutrients and water more efficiently (McGranaham *et al* 1999:112). Intercropping can reduce weed problems, so influence labour requirements, returns to labour can be increased, and erosion and runoff may be reduced because of the greater ground cover given by the mixture.

Importance of Agriculture Genetic Diversity

Crop genetic diversity provides security for farmers against pests, disease and unexpected climatic conditions. In the highly variable environments of Africa, crop genetic diversity can help small-scale farmers obtain higher yields than they could with monocropping. Higher yields are obtained from a mixture of crops and crop varieties, each one specifically adapted to the microenvironment in which it grows. Genetic diversity also provides farming communities with a range of products with multiple uses and value. Some varieties of a particular crop may be good for immediate consumption, for example, while others are better for long-term storage. The mixed farm can be an almost closed system, making little impact on the outside world: crop residues are fed to livestock or incorporated in the soil; manure is returned to the land in amounts that can be absorbed and used; legumes fix nitrogen; trees and hedges bind the soil and provide valuable fodder and fuel wood, and habitats for predators of pests. The components of the farm are thus complementary in their functions, with little distinction between products and by-products. Both flow from one component to another, only passing off the farm when the household decides they should be marketed. Small grains, such as sorghum and millet, are more likely to meet these needs than maize hybrids, because they are more drought-tolerant, their seeds can be stored for much longer, and they can be relied upon to germinate after several seasons of storage. They also require fewer pesticides and fertilizers for cultivation. There is growing evidence to indicate that diversification reduces people's susceptibility to drought and other risks.

Erosion of Biodiversity in Agriculture

It is only recently that fields restricted to single species and varieties have become common. The introduction of modern varieties and breeds has almost always displaced traditional varieties and breeds. The 20th century saw the loss of some 75 percent of the genetic diversity of agricultural crops. Only about 150 plants species are now cultivated, of which just three supply almost 60 percent of calories derived from plants (McGranaham *et al* 1999: 112). Such erosion of genetic diversity in agriculture represents a major threat to the food security of the majority of the world's producers. Modern, uniform crop varieties will only reach their potential if the environment is also uniform, which means high quality land where the fertility and water status have been evened out with the use of fertilizers and irrigation. In areas where monocropping is prevalent, diseases and pests can spread quickly and cause devastation. Whilst improved methods of controlling animal and crop diseases are now available, the costs of these services have become increasingly prohibitive for the farmer, largely due to the introduction of structural adjustment programmes (SAPs).

Modern Agricultural Systems

The process of agricultural modernization has produced three types of agriculture: industrialised, Green Revolution, and all that remains – the low-external input, traditional and « unimproved » systems.

Industrialised Agriculture and Green Revolution

Industrialised agriculture and Green Revolution have been able to respond to the technological packages, producing high-input high-output systems of agriculture. For success, they require conditions that are either like those where the technologies were generated, or else environments that can easily be changed and homogenized to suit the technologies. These tend to be endowed with most of the following attributes : access to roads, urban markets, ports, coupled with ready access to inputs: machinery, marketing infrastructure, transport, agro processing facilities and credit ;good soils; adequate supply of water, either through stable rainfall or irrigation systems; access to modern crop varieties and livestock; and access to petroleum-based products and machinery. Most agricultural systems in industrialized countries are high-external input systems.

In developing countries, high-external input systems are found in the large irrigated plains and deltas of South, South-East and East Asia, and parts of Latin America and North Africa. However, in some sub-Saharan African countries, They tend to be monocrop and/or monoanimal enterprises, geared for sale of produce, and so include lowland irrigated rice, wheat and cotton ; plantations of bananas, pineapples, oil palm, sugar cane, market gardening near urban centers, and intensive livestock rearing and ranching. In the lands of the Green Revolution, the success of which lay in its simplicity, agricultural scientists bred new varieties of staple cereals that matured quickly, so permitting two or three crops to be grown each year. They were day-length insentive, so could be grown by farmers at a wide range of latitudes ; and that produced more grain than straw and were also much more responsive to nitrogen than traditional varieties. These modern varieties were distributed to farmers, together with high-cost inputs, such as inorganic fertilizers, pesticides, machinery, credit, and water regulation. These technical innovations were then implemented in the most favoured agro climatic regions, and for those classes of farmers with the best means of realizing them, the yield increased. Now, some 50 percent of the total wheat, rice and maize acreage are planted with modern varieties, although the uptake varies considerably across continents. As a result, average cereal yields have roughly doubled in 30 years, and this has led to an improvement of about 7 percent in the total food produced per capita over the same period. This average does, however, hide significant regional differences: in South East Asia, food production per capita has increased by about 30 percent, but in Africa it has fallen by 20 percent (McGranaham *et al* 1999: 114).

The Burden of Modern Agricultural System

The agricultural production increases brought about by high-input packages have brought many benefits. Without them, many people would be worse off than they are now and many others might have died of starvation. But in order to assess the true net benefits of high input packages, it is also important to understand some of the external costs. It is also important to keep in mind that in some circumstances, modern agriculture undermines food security and health by putting the rural poor at a disadvantage, threatening their land tenure, and degrading wild resources. Many of the environmental problems associated with agriculture are a direct result of intensive

and specialized farming. Intensification of agriculture has meant greater use of pesticides, fertilizers and water inputs, and a tendency to specialize operations. The inputs, though, are never used entirely efficiently by the receiving crops or livestock and, as a result, some are lost to the environment. Some 30 to 80 percent of applied nitrogen, and significant, but smaller amounts of applied pesticides are lost to the environment where they contaminate water, food and fodder, and the atmosphere (McGranaham *et al* 1999: 115). Water is often wasted or used inefficiently, leading to groundwater depletion, water logging and salinity problems. This is not only wasteful, but costly to those who want to use these resources and expect them to be uncontaminated. Many environmental and health-related impacts have increased in recent years, whilst others have persisted, all efforts to reduce them notwithstanding. Water systems have become increasing contaminated. Nitrates in water can give rise to methaemoglobinaemia in infants, pesticide contaminated water can harm wildlife and pollute drinking water, and nitrate and phosphates from fertilizers, together with organic wastes from livestock manure and silage, all contribute to algal growth in surface waters, deoxygenation, fish and coral deaths, and cause a general nuisance. Eroded soil also disrupts watercourses, and runoff from eroded land causes flooding and damage to housing, irrigation systems and natural resources. Various pollutants also harm farms' and local areas' natural resources. Pesticides damage populations of the predators that help keep pest populations under control, as well as other wildlife, whilst inducing resistance in target pests. Nitrates from fertilizers and ammonia from livestock wastes raise the metal content of soils, and pathogens in wastes can harm human and livestock health. The atmosphere is contaminated by ammonia (which plays a role in acid rain production), nitrous oxide derived from fertilizers (which plays a role in ozone layer depletion and global warming) and methane from livestock and paddy fields, (which also affects global warming). The consumer is most likely to be directly affected by eating food contaminated by pesticides residues, nitrates and antibiotics. In industrialized countries, the levels of pesticides in foods have been falling steadily since the 1950s, but there are, nonetheless, occasional public scares over particular products, and rare are incidents of severe poisoning arising from the spraying of illegal products. In African countries, however, daily intakes are often very high. These may be in cereals or fish, such as those from lakes and rivers of Kenya, Nigeria and Tanzania. The major hazard, however, lies in locally marketed food. Leafy vegetables are often sprayed twice a week and may come to market

with a high degree of contamination, especially in the dry season. In Africa, vegetables have been found to contain organophosphates many times in excess of human tolerance limits. Leafy vegetables have also been found to be contaminated with faecal material, although this is not confined to high intensity agriculture (McGrnaham *et al* 1999: 116). The costs of environmental damage are growing, and are dispersed throughout many environments and sectors of national economies. Recent analyses, meanwhile, have been characterized by the recognition that farmers themselves are suffering declining incomes or health-related effects as a result of these modern approaches to agriculture.

Causes of Food Insecurity

Menghestab Haile (2005: 2169) identified a number of factors that are responsible for the precarious food insecurity, in Africa. They are: low agricultural productivity, lack of agricultural policies, poor infrastructure and high – transport costs, lack of appropriate marketing strategies, frequent extreme weather events, high – disease burden including HIV/AIDS, weak financial support systems, lack of safety net systems and political conflicts. The greatest challenge facing food security in Africa too for Smith (1998:207) is poverty. Conflicts among herdsmen and farmers are major challenge in Nigeria and in some parts of West Africa. Corruption is also a major challenge in addressing food security and safety in Africa.

Towards Solving the Challenges of Food Insecurity

Effective agricultural policies:

People-Centered agricultural development puts the farmers first and attacks poverty with opportunities and education. Some sort incentives and responsibilities from the government such as social protection, cash transfers, provision of better but low cost technologies, securing land right, empowering women and other vulnerable groups will assist in better agricultural participation and productivity. This requires involving the rural people in decision making stages of agriculture productivity. The inability of government to involve these sets of people in defining and designing projects has led to the failure of some of these projects. There should be well designed social protection systems -such as risk insurance scheme and community empowerment- to help households sustain their resilience to shocks. Expanding the land resources used for agricultural production and expanding the water resources used for agricultural irrigation.

Improved agricultural productivity:

The place of research organizations in agricultural productivity cannot be overemphasized. Agricultural productivity can be improved through encouragement of research. Research Institutes should be funded so as to encourage innovation and participatory research. The universities, research institutes and national agricultural research centers are the centers of research in our continent. While remarkable achievements have been made by the various national agricultural research centers towards increased and more diversified food production, there is need for more improved research and more funding of the various research centers. There should be link between the research communities, extension workers and the farmers. This would enhance the dissemination of research findings. There should be storage facilities to enable farmers store their post-harvest crops. Farm products are perishables; farmers are forced to sell their products so quickly thereby making revenues that do not meet their daily need. The storage facilities can help them preserve their products before taking them to the

market for sale. The storage facility will also help provide enough food reserve for the countries of West Africa. Expanding the water resources used for agricultural irrigation.

Agricultural Biodiversity

Improved agricultural biodiversity through improved agricultural practices will also increase food supply. Large scale farming involves planting one type of crop on a large piece of land, but with improved farming, different genetically improved crop types and species may be planted on a piece of land. Mono-cropping also exposes crops to both pests and diseases and also increases the use of organic fertilizers and pesticides that erode soil biodiversity. In the highly variable environments of Africa, crop genetic diversity can help small-scale farmers obtain higher yields than they could with monocropping. Higher yields are obtained from a mixture of crops and crop varieties, each one specifically adapted to the microenvironment in which it grows. Genetic diversity also provides farming communities with a range of products with multiple uses and value.

Environmental Management:

Efforts to increase productivity have led to pressure on natural resources as well as environmental damage. Changing weather patterns as a result of climate change have played a part in reducing food supply in many African countries. Average crop yields are falling with shorter growing seasons and higher temperatures and more frequent and severe droughts. Efforts should be made at minimizing climate change through mitigation that maintains food security. Thus, there should be effective management of the environment by reducing the rate of deforestation. Trees should be planted as often as possible especially in the desert. providing habitat for agricultural pests and increasing resilience to shocks and long-term climate change can help in the improvement and management of natural resources. Tree planting should be encouraged because forest trees outside the forest helps in protecting soil and water resources, promotes soil fertility and provides protection from extreme weather events.

CONCEPT FOOD SAFETY

The safety of the food we consume directly influences our health, but its significance within the broader food supply system can scarcely be overstated. The economic impacts of food safety are clear, and have been extensively documented.

While the discipline of food safety has long been discussed and researched, its link to food security has yet to be fully appreciated. The UN Food and Agriculture Organization (FAO) defines food security in the following terms: “Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life.”

This is a deeply insightful definition, and should not be simplified. Food security has often been conceived merely in terms of having sufficient food. Nutrition and safety – critical components of that definition – are often afterthoughts, and in some instances are simply forgotten. The decoupling of food safety and food security is sometimes so overt that terminology such as nutrition security” has emerged, perhaps in an attempt to compensate for the lack of focus on anything more than the sufficiency aspect of food security. Yet all the elements of food security, including safety, must be addressed simultaneously in order to achieve the goal implicit in the FAO definition.

The latest 2015 data from the World Health Organization (WHO) suggests that each year, food borne illnesses cause’s almost one in 10 people on the planet to fall ill. Some 420,000 deaths a year are believed to result from food borne illnesses, a significant proportion of these in children less than five years old. Unsafe food cannot sustain human health and has dangerous social and economic consequences. New food safety threats are emerging. Aflatoxin is a particularly good example: the health and economic effects of Aflatoxin cause devastation, especially for the world’s poorest countries. The consumption of foods grown with chemical fertilizers and pesticides used in treating diseases of crops which usually find their way in the plants fruits constitute safety threats. Microbial contamination, mycotoxins, heavy metals, pesticide residue, veterinary drug residues and environmental pollutants are major safety threat in China and other parts of the world. Improving levels of food safety globally requires the development of new technologies, sustainable commitments, and human and institutional capacity, especially among farmers. Contaminated food causes some 230,000 diarrheal deaths a year; this is the best estimate of the global impact of food borne illness that we have yet seen, and represents a heroic effort on the part of the WHO, having required 10 years to compile. Collaboration among all stakeholders is necessary to leverage the right food safety knowledge, risk management methods and interventions across the global food supply chain.

CONCLUSION

Achieving sustainable food security means ensuring continuous access to food both quantity and quality for the present generation as well as the future generations. Sustainable and resilient global food security systems must be developed to provide consumers regular access to diverse diets with adequate amounts of nutritious foods that are safe and affordable. Each of these components is essential, and no single one is sufficient to overcome food insecurity; however, safety drives the ultimate availability and nutritional values such that without safe food, nutrition insecurity will persist for consumers, especially in Africa. The problem of food security in Africa will persist until the challenges of unsafe foods are brought under control and solutions are implemented to manage their harmful impacts.

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