

## **Growing More Food With Less Water To Ensure Food Security, Reduce Hunger And Poverty**

**Ndanitsa, M.A. and Umar, I.S.**

**Department of Agricultural Economics and Extension Technology.  
School Of Agriculture And Agricultural Technology  
Federal University of Technology Minna, Nigeria**

### **Abstract**

This paper examines the problem of hunger, poverty and food security as it affect man's survival. The paper highlights the importance of food to man, the danger associated with hungry nations. The methodology used was mainly a review of literatures and write-up from other authors and expatriates in similar or related fields. The paper revealed that the problem of food security in Nigeria is that of Distribution, Inadequacy of stock and Coordination, and that food security can be guaranteed if nations could increase their levels of agricultural Productions, especially through irrigation technologies or other technologies for growing food with less water.

### **Introduction**

Wellock (1986) defined food as the primary requirement of life. It provides the body with fuel and building block it need to function effectively because if the supply of food is inadequate, then a person's health suffers.

Food is the most basic primary needs of individuals of a household, both for growth and development. There are five (5) nutrients of value found in different kinds of food namely, carbohydrates, protein, vitamins, minerals and fats/oil. These are needed in specific amounts for proper functioning of the body and also for good health. The deficiency of these may cause serious diseases or malfunctioning of the bones and organs.

According to the Oxford Advanced Learner's Dictionary, consumption is using up of food or the quantity of food used.

The Nigeria economy was self sufficient in the early seventies (70's), until the advent of the oil boom period when there was acute shortage of food due to a drift of human and material resources from the agricultural sector, thereby marginalizing it. The demand for food has been because of ever-

increasing population and urbanization. This has created shortage of rural labour for agricultural production, which in turn reduced the food supplies to both urban and rural areas.

Okuneye (1986) maintained that Nigeria's domestic food supply has been far short of the needs of the populace. The most unfortunate thing is that despite abundant and wide variation of food found in Nigeria, nutritional intake of an average Nigeria is not quite satisfactory both in terms of protein and calorie intake.

Peter (2005) submitted that administration in developing economic must put solutions to this catastrophe high on its agenda and encourage other sister economics to do likewise for six reasons:

- Hunger spawns illness, instability, violent conflict, and refugees problems that one seldom contained within national borders.
- Poor and hungry people do not make good trading partners;
- Developing countries offer the most promising fortune market for goods and services for developed economies;

- Hunger fuels environmental degradation as desperate people try to eke out a living on even more marginal land and migrate to urban slum in search of livelihoods;
- Environmental degradation in developing countries affects the developed countries; and
- It is the morally right thing to do.

### **Methodology:-**

The methodology used was mainly a review of literature from journals, textbooks, articles from authors and expatriates of the same or related fields of study.

### **Poverty and hunger**

About 1.2 billion people in developing countries - almost five times the US population - live on \$1:00 a day or less (World Bank, 1999). These people cannot afford to, buy all the food they need, although they may spend 50 - 70 percent of their incomes trying (Dearcon, 1997) and many do not have access to land to produce food.

Ndanitsa (2005) also submitted that the greatest challenge facing West poverty, and that a country can only claim independence if it is self sufficient in the production of staple food for her citizens and fibre for her manufacturing industries.

The number of hungry people has fallen since 1970, but 500million people in developing countries (18 percent of the total) remain chronically undernourished (F.A.O. 1999). The largest number of hungry people is in the Asia-pacific region especially south Asia ( the Indian Sub-continent). The other global hungry hot spot is Sub-Saharan African, the only region in which the number of hungry people is expected to increase during the next 20 years. If the international community does not make significant policy changes, the developing world's hungry population will only fall to 65 million by 2015 with hungry

even more concentrated in African and south-Asia. This is far short of the 1996 world food summit goal, agreed to by the United States, to reduce hunger by half by 2015.

Olayide etal (1981) prepared a comprehensive food balance sheet indicating a total consumption of 53.8gms of protein, 56gms of fats per day. This falls short of the FAO minimum requirement of 65gms of protein and 2500kilocalories of energy per head per day that food nutritional needed of all sectors of the population are met (FAO, 2000).

Furthermore, Akinterinwa (1995) revealed that there are problems of food security in Nigeria, which includes distribution, inadequacy of stock and coordination. Distribution is the ability to give each person safe, nutritive and palatable food at all the times according to his/her needs to avoid malnutrition and under nourishment. Adequacy of stock refers to the storage system of the nation so as to have what to fallback on, in difficult times during the out-of-season periods. Thus the world is currently faced directly with the challenge of both developing adequate and safe methods of boasting food production, as well as evolving sound strategies of ensuring that food is distributed equitably to avert the calamity of starvation.

Meanwhile, several commentators have continued to finger another burden on the path of food sufficiency; the population monster that has continued to run alp.ok. During the 1990s alone world population grew by nearly one billion people and it expected to grow again by another billion during the first decade of the 21<sup>st</sup> century. It is projected to reach 8.3 billion by 2025 before stabilizing (hopefully) at about 10 billion towards point where they will approximate, or perhaps exceed the carrying capacity of the planet. Thus it is pointed out that given the fact that human already

utilized some 40 percent of all accessible fresh water on the cropping and can now be achieved only by clearance of already dwindling areas or cultivation of marginally productive areas, it is not clear according to experts, how traditional crops and farming systems will be able to provide the need of these many people.

In recent times, a particular technology has been development meant to assist mankind both for now and the future to negotiate the period required for population stabilization and subsequent reduction i.e. widespread deployment of crop varieties that have genetically modified to ensure their Agricultural attributes - namely transgenic crops [or Genetically Modified (GM)] crops" (Dall, 1998). Of recent, the development of this strategy has divided the world community (scientist, policy marketers, environmentalists, farmers, consumers etc) on the basic benefits and long made term safety of consuming food made from GM crop.

Another area of argument is on whether the teaming global population especially in developing countries would have any option for now than to avail themselves of this productive method of crop production. The apparent reactions to the serious shortcomings on the benefits of GM crops had led to a shift of emphasis toward the development of irrigation system that must become less wasteful and more widespread, in order to escape hunger ensure food security and reduce poverty.

#### **Technologies For Growing Food With Less Water**

Far more, people depend on irrigation in the modern world than did in ancient period. About 40 percent of the world's food now grows in irrigation soil, which make up 18 percent of global cropland. "Top 10 irrigators world wide (U.S, china, India, Russia, Uzbekistan, Pakistan, Thailand, Indonesia, Iran, Mexico) reap two or more

harvest every year and get higher crop yields. As a result, the spread of irrigation has been a key factor behind the near tripling of global grain production since 1950. Done correctly, irrigation will continue to play a leading role in feeding the world. Severe water scarcity presents a single biggest threat to future food production. Even now many freshwater sources-underground aquifers and rivers are stressed beyond their limits (River Niger, River Kaduna and River Benue are good examples).

Despite these challenges, agricultural specialists are counting on irrigated land to produce most of the additional food that will be needed worldwide. To fulfill its potential, irrigated agriculture requires a thorough redesign organized around two primary goals: cut water demands of mainstream agriculture and bring low cost irrigation to poor - resource fanners such as the small-scale irrigation projects of the Fadama types. More efficient economically sound technologies exist that could reduce water demand on farms by up to 50 percent. These technologies include:

#### **Use of new low-energy sprinklers:**

Traditional high pressure irrigation sprinkler spray water into the air to cover as large a land area as possible. The problem is that the more time the water spends in the air, the more it evaporates and blows off course before reaching the plants. In contrast, new low energy sprinkler deliver water on small does through nozzles positioned just above the ground. Numerous farmers in Texas who have installed such sprinklers have found that their plants absorb 90 - 95 percent of the water that leaves the sprinkler nozzles.

#### **Measurement of climatic variables.**

Much potential of plant-water relation lies in scheduling the timing of irrigation to more precisely match plants' water needs. Measurement of climatic factors such as temperature and precipitation can be fed into



a computer that calculates how much water a typical plant is consuming. Farmers can use this figure to determine quite accurately, when and how much to irrigate their particular crops throughout the growing season. Farmers in California, USA and Netherlands found that on average farmers who used this tool reduced water by 13 percent and achieved an 18 percent increase in yield a big gain in water productivity.

#### **Use of recycled water**

An obvious way to get more benefits out of water is to use it more than once. Some communities' use recycled wastewater. Treated wastewater account for 30 percent of Israel's agricultural water supply, for instance and this share is expected to climb to 80 percent by 2025.

Developing new crop varieties offers potential as well. In the quest for high yield scientist have already exploited many of the most fruitful agronomic option for growing more food with the same amount of water. The hybrid wheat and rice varieties that spawned the green revolution, for example, were bred to allocate more of the plants' energy and thus their water uptake into edible grain.

#### **Reconfiguring of diet**

The typical North American diet, with its large share of animal products, requires twice as much water to produce as the less meat intensive diets, common in many Asian and some European countries. Eating lower on the food chain could allow the same volume of water to feed two Americans instead of one, with no loss in overall nutrition.

Reducing the water demands of mainstream agriculture is critical but irrigation will never reach its potential to alleviate rural

hunger and poverty without additional efforts. Among the world's approximately 50 million under nourished people are million of poor farm families who could benefit dramatically from access to irrigation water or to technologies that enable them to use local water more productively.

#### **REFERENCE**

- Akinterinwa, K.O (1995). The Nigeria nutritional problem, a case study of preprimary school children in Ibadan metropolis. Msc thesis submitted to University of Ibadan, Ibadan, Nigeria (Unpublished).
- DaB, D. (1998). Using transgenic Crops: A Necessity, not an option: In 21<sup>st</sup> century Trusty, News and Journal PP. 13 - 16
- Dearcon, A. The analysis of household ways: *A microeconomic approach to development policy* (Baltimore and London: Johns Hopkins University Press for the world Bank, 1997.
- Food and Agriculture Organization of the Un'ited Nations (FAO). "The state of food insecurity in the world" 1999 (Rome: FAO, 1999).
- Food and Agriculture Organization (2000). *Agriculture and industrialization in the state of food and agriculture*, FAO, Rome, 2000.
- Ndanitsa, M.A. (2005): *Economics of Fadama Crop Production in Niger State of Nigeria*". Unpublished MSC. Thesis submitted to the Department of Agricultural Economic and Farm Management, University of Ilorin, Ilorin, Nigeria. PP89.
- Okuneye, P.A (1986). Farmers' production behaviour and agricultural labour productivity in Nigeria: social change. *Journal of the council for social development*, 16(4): 12 - 19.
- Peter, A. (2005). Accessed via <http://www.worldbank.org/poverty/data/trend/s/income>. Htm on 15 October, 2005.
- Wellock, V. (19986). *The food revolution*, Pp10.