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Algeria: A Nation of Hunger

Introduction

Approximately 840 million people in the world are malnourished and a vast majority resides in developing countries. In Algeria, malnutrition is the cause of 3.5 million deaths a year. The cause of this extensive dilemma is the high demand and low supply of crops, which leads to each grain of salt becoming priceless to the hungry eye. Crops wither in the parched environment and unworkable land because of mere inches of rainfall received yearly upon already poor soil. The government policy currently in effect over this nation supports the increase of fertilizers and 'miracle' seeds to alleviate the lack of productivity, but will the use of these tools lead to deeper land devastation and create the framework for further long-term effects?

The Algerian population reaches 33.3 million with 90 percent dwelling on the Algerian coast. To complicate this matter, Algeria had one of the highest birthrates in the world from 1970-1980, leading to an even larger population. Currently, a majority of the age demographic consists of youth with citizens aged fifteen years old as a quarter of the population. Though urbanization and an increasing population, rural villages transformed into large cities rapidly. In the mid 1980s, 87 percent of the population thrived on 17 percent of the land, creating a high concentration of inhabitants per square kilometer and volatile rural populations. Government-sponsored programs came into action to create agrarian reforms for rural stabilization and investments into rural housing to improve the quality of farm life. The members of a typical Algerian family thrive under patriarchal lineage. Each share work and live upon a family common land with harmonious solidarity and independence. New trends shift towards a smaller sized family, which consists of a husband and wife along with their unmarried children. Once a youth male is married, he sets up a household of his own. This modern family is becoming the concrete family structure, which has evolved over a period of time due to the expansion of urbanization and the creation of wage labor. Education in Algeria is free of charge and essential for a livelihood towards any vocation such as agriculture. Education provided for children ranges from ages 6-16 years old. The literacy rate of the country as a whole is 72 percent. A trend among the educated is the formation of small families with a limited offspring in households of respected space and independent decision-making.

A History of Devastation

Mere decades ago, Europeans controlled agricultural productions in this region and were credited with approximately two-thirds of the vegetable production. Other agricultural activities resided in smaller farms consisting of a maximum of 25 acres but accounted for the national production of livestock. In 1962, the agricultural standings were thrown askew as the nation gained independence and the Europeans vacated their farmland. Algerian peasants responded to this by establishing self-managing systems. These changes allowed the expansion of agricultural knowledge and practice to able-bodied common citizens. During this time, the government

launched more than 2,300 state farms upon annexed French territory. This addition in workable land provided two-thirds of the agricultural production and 500,000 careers in farm management and labor. Nine years later, new ground broke for a new agrarian program announced by President Boumedienne, which led to the break up of Algerian-owned farms reorganized into manageable cooperatives. But in 1983, 1.1 million acres returned to private ownership in plots of 25 acres or less, which progressed to the further divide of large state-owned farms into private cooperatives. In these private farming businesses, farmers acquire the right of autonomy in production and investment decisions along with the right to keep profits. Disputes within most cooperatives led to a dispersal of cooperative works and the land was further divided into individual plots by 1995. The Ministry of Agriculture considers land privatization as a way to simulate private investment for the benefit of the agricultural economy.

This continuous swing of the agricultural pendulum from government to private management and operations of Algerian farmland did not assist in eliminating the relentless shadow of malnourishment and hardship. A sample nutrition survey of refugees in camps at Tindouf in 2005 showed a high level of micronutrient deficiencies in a range of ages. The major health effects from acute malnutrition were anemia and stunting. In women aged 15-49, health problems were night blindness and vitamin A deficiency. Along with malnutrition, a contaminated water source caused high toxicity problems with a high concentration of iodine.

Recent governmental programs emerging into action benefit the agricultural knowledge of farmers throughout Algeria, which lead to better farming practices. The Rural Renewal Program was approved after a pilot phase in 2007, which pointed towards implementing a program that will affect areas of commerce, tourism, culture, education, the environment, and industry along with agricultural practices. The intentions of the program are to improve working conditions, standard of living, and food safety. Increasing amounts of foreign aid through other organizations such as the World Bank have also stemmed agricultural renewal to counteract the poverty and malnutrition of Algeria's citizens.

The Algerian government believes and acts as a supporting foundation for the development and usage of fertilizers and technologically advanced crop seeds, termed as biotechnology. The use of this modern technology aims to increase the farm yields to counteract the high pricing of meager crops produced on Algerian soil. This aid in farming provides significant assistance towards rapidly responding to food scarcity due to the barren conditions that dominate a majority of land in Algeria.

The Quick Fix

Biotechnology is defined as the manipulation of living organisms or their components to produce useful commercial products. Some see biotechnology as a quick fix to an eminent problem of a food shortage. To begin the process of biotechnology, one must accept the responsibility of hindering the normal process of a basic plant. This act projects towards disrupting a plant's natural need for human sustainment. Through the process of hybrid vigor, plants cross with others to reproduce something that is exceptionally hearty in growth and disease resistant for more productive yields. These advantages make a career in farming more impersonal and easier, allowing more land to be enveloped into cooperatives and corporation

farms. No one fully understands biotechnology process or its long-term effects, but it is still harnessed into a supply line of the human food consumption in one small way or another.

In the United States, the general farming industry accepted the idea of technologically advanced seeds in the 1930s. In the 1970s, development for pest and herbicide resistance corn began by inserting a toxin into the DNA of corn to interrupt the natural process of a Lepidoptera insect and to exterminate its nuisance in the fields. Today, additional toxins are inserted in a variety of field plants to remove other hindrances of crop yields. Supporters of biotechnology claim that some varieties of crops are not in the direct human line of consumption and are fed only to animals. But in 2000, a form of unapproved biotechnology corn named Starlink ^{TM} was discovered in Taco Bell taco shells sold in grocery stores nationwide in the United States. This issue pertaining to the varieties of biotechnology used for animal consumption is the connection to the human food chain. Although the long-term effects are unknown, biotechnology crops are flourishing on the food market.

Another controversial issue is the insertion of ampicillin, an antibiotic, into a plant. This insertion identifies the gene choice in the transformation of genetically engineered species. With the designated BT gene comes a gene resistant to ampicillin. Those opposed to biotechnology argue that the antibiotic resistance may transfer from plant to human through a direct or indirect consumption of the crop. The antibiotic resistance inside the human anatomy could end fatally because of the dependence upon antibiotics to resolve infections. Since this pharmaceutical is used globally, a large resistance could end catastrophically. Currently, no solid data supports this argument.

Another issue related to the use of biotechnology is the high use of chemicals in relationship to the genetically engineered crops. Round Up herbicide, for example, is a benign chemical that leaves a slight residue upon the crop. Opponents of chemical use argue that a light residue is virtually harmless, but regardless, the residue of the chemical is still evident. The disadvantage of pesticide use is that the water pollution from field run-off may contaminate ground water used by non-biotechnology plants and for basic water supplies for human and animal consumption.

The Solution

Organic farming, although a minority in the agricultural community, is steadily increasing in the industry with advantages and disadvantages in the productivity of crop yields while minimizing environmental impact. Organic farming is defined by its disdain of pesticides, synthetic fertilizers, and genetic engineering tools for natural alternatives of raising animals for manure, growing nitrogen-fixing legumes, and producing non-synthetic fertilizers. Since organic farming requires expansive land, water, and other resources, a leading argument against organic farming in areas like Algeria is its feasibility. For example, Norman Bourlaug, a Nobel Peace Prize-winning breeder of plants and World Food Prize Laureate states, “We are not going to feed six billion people with organic fertilizers. If we tried to do it, we would level most of our forest and many of those lands would be productive only for a short period of time.” On the other hand, to produce chemicals needed for the process of biotechnology crops, massive amounts of petroleum are required. Such reliance upon petroleum has led the Bush Administration in 2001

to target the Alaska Wildlife Refuge as a key place to drill for oil. So expansive areas would either be used to produce more oil or more crops.

Studies have shown that organic farming can match and, in some cases, exceed the production of conventional farming. In agriculturally developing nations, any evidence of yield gaps between the two methods is nonexistent. Over two hundred projects in nine million farms spanning thirty million hectares in developing countries around the world result in increased yields of 93 percent. Studies in Kenya provide evidence that poorer land areas using organic farming methods can consistently out-yield conventional farming in the same region as well as earn higher net profits, return on capital, and return on labor. Also, scientists at the University of Michigan came up with the same general conclusion that the use of organic practices in growing major crops of the world improves yields at a higher percentage in developing nations. Some studies dispute these results. For example, scientists at the Research Institute for Organic Agriculture in Switzerland found conventional farming 20 percent more productive than organic farming in test plots over a twenty-one year study period. More studies result in a narrower percent gap, but the variance in studies may contrast because of seed type and growth region.

In addition to yields, these studies also made conclusions based upon nutritional value of the crops. In the University of Michigan's first study model, 2,641 calories per person were yielded through organic farming. This is right below the entire world production and much higher than the daily human calorie requirement. A second model produced a caloric intake 75 percent higher than the current availability of crops fostered by farmland. This discovery may suggest that organic farming could potentially support a much high world population.

Organic practices will not only increase yields and secure environmental protection but also insure social justice. This is an integral portion of the organic agriculture, which is ideal for malnourished developing nations such as Algeria. Organizations such as IFOAM believe that all parties of the food production process, including workers, farmers, traders, and retailers should be incorporated into a fair social process. So not only will the consumer benefit, but the common human in the process will benefit as well.

Conclusion

The food security is shrinking in availability and sustainability in an era of increased demand. With Algeria as a beacon of hope, the entire world can abolish hunger and poverty by starting at the governmental level by implementing programs and policies to bring the public into a new era of stainable agriculture beginning with its youth. At the educational level, hands-on vocational classes can teach students about organic practices. An addition to such classes would bring career opportunities in agriculture along with education in health, which would aid in the future economy of Algerian agriculture and the all-around health of the nation. Similar educational classes are already required in nations such as Cuba. Further governmental changes would include immediate removal of the current Rural Renewal Program to create a more agricultural-based program centered upon organic farming practices. And to regulate the agricultural industry, restrictions will be placed upon the biotechnology farmland and its proximity to organic crops and water sources to minimize contamination of crops and ground water. Further implementations would include strict growth limitations of biotechnology to discourage its inefficient practices. Social justice programs instated will insure a fair economic

status to encourage and sustain the agricultural industry. The government will provide stipends in the beginning of a farming career to those joining the organic farming industry. The money provided towards these stipends will be acquired through the exporting of organic crop surpluses. With these policies in place, Algeria can achieve a more nourishing future for its agricultural economy and its people.

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