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Kenya, Factor 1

Within the cities and towns of Kenya have been a series of droughts and short rains since 2007(WFP 1). According to the United Nation's World Food Programme (WFP), the annual agricultural production in Kenya is at nine-teen percent. As many as twenty percent of Kenyans under age five are underweight, and thirty-one percent of the entire population goes under nourished. The World Factbook notes that pollution, degradation of water quality, deforestation, and soil erosion are causing a negative effect on the Kenyan environment. In return the Kenyan economy has been suffering. These environmental factors have caused goods from Kenya to seem unreliable. Along with environmental issues Kenya's government has done nothing to help its hunger crisis. The government has its own issues which in some cases have hindered loans Kenya needs. These loans would ordinarily help to provide Kenya with food and other resources after long periods of drought. The consequences of the government's actions have caused great suffering for Kenyan farmers. Without the suitable resources being provided to these farmers improving crop yields has been a struggle. The Global hunger index labels Kenya's hunger crisis as being serious. WFP is working with farmers in Kenya to try and bring their goods to the market(WFP 1).

Another program dedicated to solving hunger issues in Kenya and all of Sub- Saharan Africa, is the U.S. Agency for International Development or USAID. This American-based program has global partners that are working to raise the agricultural growth rate of Sub- Saharan Africa up by six percent. With America involved U.S universities and institutions have been conducting research and developing solutions to the hunger crisis in locations such as Kenya (USAID 1).

As a result, the United Nations and USAID have put forth great efforts but their actions alone have not been enough to restore the Kenyan economy.

Researchers at the Kenyan Agricultural Research Institute (KARI) have teamed with other organizations like, the National Council for Sciences and Technology. The headquarters is in Nairobi, Kenya. Yet, the institute is composed of several different locations all throughout Kenya. The organization itself is composed of six appointed members and seven members from partnering organizations. All of the members are either scientists or managers of work conducted through KARI. Their main goal has been responding to problems of smallholder farmers. Main programs that KARI has been working on are food crops research on cereals as well as root and tuber crops. They are working with the applications of horticultural research, animal production, animal health research, economics and the bio-metrics of the crop. They are also focusing on land management, water management, and biotechnology research for crops and livestock. Their land and water management involves research in soil fertility, survey and conservation, vegetation survey, irrigation and drainage (KARI 12).

Collectively, the programs at KARI have been addressing the problem of crop yields with the help of their agricultural programs. Food crop research is helping to develop crop varieties with high genetic potential. The research also helps crops become resistant to another issue Kenya faces, disease. Their research also has been geared toward ways of making crops more resistant to disease and pests. Due to droughts and

short rain fall most of the research at KARI goes into solving production of crops in cold and dry highlands. (KARI)

Current achievements of KARI are introducing improved crop varieties management practices to farmers. When these practices are put into use by at least fifty percent of farmer's food security and Kenya's overall economy will be expected to see great improvements. What this strategy basically does is adds value to crops during the pre and post harvesting of them. The strategy also integrates crop and livestock farming to reduce the cost of production for the farmer. KARI has recently released several improved crop varieties. (KARI)

In reflection to strategies created by KARI, farmers have found that growing mixed crop varieties of maize and beans with pest resistant fertilizers have increased their total crop productivity. Villages in Kenya have been introduced to new methods of farming through field schools. These schools teach and promote inputting vegetables, early maturing of crops, drought toleration in bean varieties, soil fertility in soybean varieties, and grain storage (RIU 1).

One answer to increased crop yields lies in the research being conducted by the Kenyan Agriculture Research Institute (KARI). This institute's headquarters based in Nairobi, Kenya is the main research center and is dedicated to figuring out the issues causing the hunger crisis and ways to increase crop yields in Kenya. This particular center has been given a legal mandate to conduct research in the areas of agriculture and veterinary sciences in order to collect accurate and relevant data.

The Rockefeller foundation has funded efforts to improve the ground nut varieties in Western Kenya. For many regions years of cultivation by hand or by disc ploughs have caused major constraints on crop production. These practices have made it more difficult for crops to achieve their yield potentials. The use of ploughs can not only reduce labor for women and small holders but it can also mean an increase in crop yields. (RIU 1)

In an article by Siri Eriksen entitled, "Linkages between climate change and desertification in East Africa Part 2," Eriksen looks at two measures the Kenyan government may consider in terms of drought resistance. The measures include agricultural resistance to climate variability and drought, or enhancing drought coping strategies. According to Eriksen's research few measures were aimed at reducing agricultural resistance. Eriksen references a plan that was created to address problems with droughts and famine in the Kitui District of Kenya. The plan was created by Kenya's National Environmental Agriculture Plan (NEAP). The plan encouraged drought and famine resistant crops for agricultural and food security to farmers in Kitui. In the 1990's research showed the Kitui District as being more in need of crop damage resistance than any other Kenyan district.

Siri Erikson has noticed the problem that there is a lack of cooperation by many farmers. Eriksen states, "Farmers are reluctant to adapt to certain drought resistant species." A solution Eriksen has suggested may help regions suffering from drought. The proposal suggests that farmers should import the water used for their crops. The cost of labor and damage resistant crop varieties is seen as too high for many Kenyan farmers. Therefore, Eriksen proposes that currently the best solution for these Kenyan farmers

would probably be to either acquire donations of resistant crops from outside sources or to focus on increasing their water supply.

Although there has not yet been a permanent solution to crop yields and drought resistance in Kenya, scientists have determined where to focus their research. Research programs like the ones conducted by the USAID and KARI in Kenya are coming very close to seeing their strategies begin to bring positive changes in the economy of Kenya. Many of these methods and strategies will need a significant amount of time before their effects can be noticed. KARI's program to increase crop yields requires the cooperation of at least fifty percent of Kenya's farmers. The USAID also depends on the cooperation of Kenyans as well as its global research partners. So far as a combined effort researchers are coming close to changing Kenya's hunger situation. As the Kenyans and relief organizations begin to work better together small holder farmers will be more prepared in the face of drought and famine.

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