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Armenia: Education for Improved Implementation of Ag. Research and Technology

Developing countries face many restricting factors affecting food security. Armenia is no exception. Prior to 1998, Armenia was one of the wealthiest republics in the former Soviet Union. In the late 1980's, agriculture was less than 17% of Armenia's economic output. The majority of its approximately 1.2 million acres were devoted to specialty crops. Such crops included grapes and fruit trees. However, 80% of the country's wheat was shipped in from other republics. With the collapse of the Soviet Union in 1989-91, Armenia found itself cut off from resources and left to fend for itself. Lacking the seed, fertilizer, herbicides, insecticides, fuel, and machinery that were once funded by the Soviet government, Armenia could not sustain the funds to keep their processing plants open. By 1992 and 1993, the country reached its worst state ("Agriculture in Armenia..."). The economic output plummeted to one fifth of its previous level. They were described to be in "pre-famine" conditions according to the United Nations World Food Program. Once where food security was at its best, inhabitants had to scrounge just for a loaf of bread. A privatization program was implemented to hopefully help the state of these farmers. Unfortunately, many of them lacked agricultural knowledge and technology which proves to be a great hindrance to the country's development.

Armenia's trade regime was halted and had to be rerouted due to the continuing blockade by Azerbaijan and Turkey and financial and economic issues in Russia. Accounting for 20% of imports and 18% of exports, Russia is still the main bilateral trading partner for the country. The Commonwealth of Independent States' share of Armenian exports plunged from 73% in 1994 to 24% in 2000. Now countries of the European Union make up 36% of exports and 34% of imports as opposed to 16% of exports and 9% of imports in 1994. More than 55% of the total food consumption in Armenia comes from imported items ("IFAD").

The primary crops in Armenia include potatoes, wheat, barley, tomatoes and other vegetable crops, and fruit growing. Dairy development is common in the Ararat valley region of the country. In the mountains and foothills, families raise cattle and sheep. Pig keeping is found in the mountain forest zone, and poultry keeping is now being developed in many places. Due to the lack of machinery and high cost of fuel for farm families, horse breeding is beginning to grow in importance (Tumanian).

Today, subsistence farm families still often barely make a living from their small fields. Roughly 20% of farms cultivate only crops, and a small 2% specialize in livestock. The production of both of these products is low owing to the limited use of agricultural inputs, which are lacking quality anyway, and inadequate farming practices of the families ("IFAD"). These farm families tend to be larger than those living in urban areas. Many of their diets lack proper nutrients, especially protein. It is high in carbohydrates, and starchy roots and sweeteners provide two thirds of their daily intake of energy ("Armenia Fund USA"). Almost all children attend school in Armenia. Unfortunately, 25% of this majority does not reach high school. These dropout rates are most noticeable in rural areas and among minorities and refugee children ("Education"). Without proper education, there can be no hope for the country's technological and agricultural state to advance.

Back in 1991 when the land privatization went into effect, Armenia's large farms were broken up into segments and were divided up among the people who tilled the soil. Each new segment was just over 3 acres large ("Agriculture in Armenia..."). The country went from a situation where primary production was controlled by approximately 400 public state farms, to over 300,000 family owned farms that produce 98% of all agricultural produce. A large number of these new farmers have little to no technical knowledge and skills. This being so because they were forced to farm their allotted land as means of survival after the downfall of the Soviet Union. Consequently, poor crop and animal management, including excess seeding rates, lack of fertilizer and plant protection use, inadequate feeding, health, and sanitary practices took place. Even after all the years these subsistence farmers have had to adjust, they still have a huge gap in knowledge about instruments and institutions needed to operate a market-oriented rural economy ("IFAD").

Poverty is a huge issue in Armenia and tends correlate with the altitude of this mountainous country. Harsh conditions severely affect agricultural productivity ("IFAD"). The earthquake that tore through Armenia's countryside in 1988 destroyed their only fertilizer plant. With the state of poverty the country is in, very few can afford imported fertilizer. Soil nutrient levels have declined sharply. The long winter season and high poverty rates often give way to food shortages in May and June when most food supplies are depleted and new crops have yet to be harvested. The stock of agricultural machinery Armenians have access to is another large concern. Almost no new equipment has been brought in since the 1990's. What tractors, combines, and other equipment farmers do have, will soon reach there limit of durability. Paying for fuel is too difficult for many farmers, so naturally spare parts for their out dated equipment is virtually not even an option ("Agriculture in Armenia...").

Armenia is affected by serious ecological degradation, such as lack of drainage, high salinity in many valleys, and degradation of pastures in the high mountains which results in soil erosion in those areas. The small scale family farmers have seemingly disregarded the need for solid conservation measures in their agricultural practices. During the first few years of independence, numerous trees were chopped down in order to meet the need for firewood that arose as the need for energy went up.

Clearly soil plays a huge role in the production of crops. If these farmers are unable to obtain the necessary nutrients for their fields, their yearly crop yields won't increase. In turn, leaving them to suffer through another year of a poor diet and very little, if any, income. Crops would be able to be produced on a lager scale if they could obtain the technology places like the U.S. and other industrialized countries have access too. Being able to mass produce certain crops for export would get a boost to Armenia's economy. Granted, the country isn't as bad off as it was in 1991, but it still has a way to go before it will quit fighting the food security battle.

The rural poverty in Armenia isn't resulting from human poverty. It's resulting from income. The citizens are almost universally literate, there's a high life expectancy, and the infant mortality rate is low. Gender discrimination also adds a new factor to the poverty Armenia is experiencing. The independence transition period has caused a negative impact on the economic and political status of women. The number of employed women has risen to 52.4% of the workforce, yet they only earn about 75% of the average monthly wages men make. Women have not been appointed a position of power as governor, deputy governor, or as head of a municipality. Of the country's 859 village councils, women make up a mere 2% or the chairpersons ("IFAD").

In the decades ahead, these Armenian rural farmers will have to be prepared to cope with a number of factors that could affect the productivity of their farms. With a growing population, there will be the increased demand for food. If a solution is not found to help these farmers expand from the subsistence level to efficiently producing and selling a greater crop yield, the level of food insecurity will be dangerously high. It's vital that the farmers of this country become educated on how to treat their environment to prevent soil erosion and pollution. If these small farmers are unable to continue producing their crops, it will affect not only their family, but their entire community as well.

Investing in education for improved implementation of agricultural research and technologies in Armenia should be a high priority. With the number of people who had no choice but to farm when the land became privatized, knowledge would do them a world of good. If the families had a way of gaining access to new technology and machines, their crop efficiency would greatly increase. This would help provide sustenance for the whole community, and income for the family to expand. Understandably, this is impossible without capital. For some of the more ambitious of Armenia's farmers, micro-credit could go a long way toward jumpstarting their farm practices. If they take full advantage of the opportunities such a loan could create, they will soon find themselves making more of a profit off of their crops. Profits mean more disposable income to spend on improving housing, nutrition, education, and sanitation (Yoveva). More spending means more money stimulating the nation's economy. Essentially, micro-credit has the potential to give Armenia a good jumpstart to fixing their state of poverty.

However, micro-credit alone can not fix this country completely. Education is key, as Dr. Jennifer Lyman states:

"Poverty reduction and healthy and well-educated Armenians, along with rigorous protection of the natural environment, should be the goal of any post-Soviet society. Regular visits to nature centers where children and adults can learn about nature and how it makes human life possible and beautiful should become an inherent part of Armenian life. Armenians can lead the south Caucasus region in implementing eco-solutions for the 21st century rather than stagnating in an economic model that never worked sustainably for any society" (Sargsyan).

Plant biotechnology can be used to compliment the conventional agricultural research to improve the current crop production in Armenia, which has been decreasing for the past three decades. Tissue culture has proven to have the possibility to increase agricultural productivity for home consumption, as well as income productivity. This goes hand in hand with empowering the farming households by improving their marketing infrastructure and increasing capacity of production in order to add value. The biotechnology must focus on the urgent needs of Armenia's small scale, subsistence farmers. Public sector involvement in research and development and in delivery of the biotech products can help guarantee that poor farmers have access to the new technologies (Kirakosyan).

The Armenian government needs to develop laws to govern the selling and leasing of land. With only three or four acres of land, the subsistence farmers can't commit to investing in expensive machinery or taking a chance on new technologies. They just don't have enough land for these actions to be justified. Privatization was intended to help the country survive when it was suddenly left to fend for itself, but the small plot sizes simply aren't efficient for farmers to be able to expand their yield ("Agriculture in Armenia...").

There are already programs in place that are doing their part to better Armenia's standings as a developing country. The North West Agricultural Service Project (NWASP) has worked on institutional development designed to transition to a market economy, especially at the beneficiary level. The International Recovery Platform (IRP) strived to relieve immediate food security constraints by focusing only on irrigation development. Issues relating to financial services and market linkages have been addressed by the Armenian Service Program (ASP). The ASP also worked to create small rural enterprises that, which in turn created employment opportunities for the rural poor (IFAD). Armenia needs to reach a state of self reliance and sustainability. Outside help can get the country started in the right path out of poverty, but it's up to the farmers to understand their task how to efficiently continue to carry it out. Programs intended to aid this country must "capitalize on achievements to date in institutional development; continue to use projects and implementation experience as entry points for policy dialogue with government institutions and attempt to reach target groups who, while eligible, have not yet benefited from any support" ("IFAD").

In 2001, a Project Completion Evaluation (PCE) of NWASP was undertaken by International Fund for Agricultural Development ("IFAD"). In regards to community development, it describes to have "effectively implemented the community development component using a combination of community sensitization, motivation and provision of resources to allow communities to meet their objectives. The field evaluation indicated that activities had generally assisted a cross-section of the village community. Priority projects were addressed in target villages." (IFAD) According to the PCE, the programs already in place in Armenia have been for the most part successful at completing their goal.

Now that Armenia is getting a grasp on its economic situation, it's time to set the country up to sustain itself. There is still a long road ahead of Armenia if it plans to one day beat the oppressing poverty, and no longer struggle with food security. The importance of education for improving research and agricultural technologies can not be stressed enough. Without the insight the Armenian farmers can gain from that information, their production and marketing will never expand and move forward. Because of the improved implementation of knowledge that programs such as IFAD have already supplied Armenia with, the developing country is slowly climbing its way out of the poverty stricken state it was dealt with the downfall of the Soviet Union. Now it's just a matter of keeping the country moving forward.

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