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Lithuania: Developing new Agricultural Practices

Evelina loves fruits and vegetables! When she came to America all she wanted to eat was oranges, apples, and cucumbers! When she lived in the orphanage fresh fruits and vegetables were not always available. In fact, when she did get orange slices she tried to hide them in her locker! My family adopted Evelina from a Lithuanian orphanage in 2008. Since then she has grown and thrived. The cardiologist said that her new nutritional diet is part of the reason her heart is healing. Like Evelina, many Lithuanians don't have access to proper nutrition from fresh foods. This is due to the fact that many farm fields have been polluted by poor past Soviet agricultural practices and industry, overuse of pesticides, inadequate disposal of agricultural waste, and inadequate infrastructure and vehicles for the transport of fresh foods.

The country still has several orphanages which is unheard of in many developed countries. As with many areas of the country, the orphanage has poor nutrition and many other health problems. Many orphans in the orphanage suffer from Fetal Alcohol Syndrome (FAS), which is a condition in which the pregnant mother consumes various levels of alcohol which affect the health of the fetus. Proper nutrition would be the first step to treating orphans with FAS. Reviewing health concerns along with the affects of other inadequate agricultural practices in Lithuania, we can see that we need to focus on this question, "How can we combat inadequate agricultural practices so that we may have more sustainable agriculture for the greater good of the people living there?"

Lithuania is located in Eastern Europe, bordering the Baltic Sea, by Latvia, Poland, Belarus, and Russia. Lithuania is about the size of West Virginia. It lies at the coordinate 56.00 N, 24.00E. With 44.81% of arable land, 0.9% of it is permanent crops. The other 54.29% is used for other purposes.¹ Lithuania is located on the Eastern shore of the Baltic Sea which creates deposits of the country's national gem, amber. The country lies at the Eastern European Plain as its landscape was shaped by the glaciers of the last ice age. The glaciers had an affect on the major terrains that cover Lithuania. Covering Lithuania are lowlands, many scattered lakes, and fertile soil. The soil is used to grow some of their main crops such as barley, wheat, and rye. The climate which covers the country is transitional, between maritime & continental. It is wet, with moderate winters and summers.

The Roman Catholic Church was adopted as the state church around the 1300's. Roman Catholic is the primary religion in Lithuania. Religion plays an important role in the country's culture and the daily life of the people that live there. The Church has helped preserve the country's identity during the Soviet years. Holidays and festivals are influenced by the Church. Religion and family are the center of daily life for most people in the country. The predominant language is Lithuanian which is considered one of the Baltic languages. 80% of the 3.8 million people living there are of Lithuanian descent. The primary currency in the country is called, "Litas", displaying famous Lithuanian figures.²

Lithuania's government issues can be easier to identify by explaining it from the beginning of its history. Lithuania has been taken over by different forms of government and many borders of the country changed

¹ CIA- The World Factbook- Lithuania. Web. 23 Aug. 2011. <<https://www.cia.gov/library/publications/the-world-factbook/geos/lh.html>>

² "Lithuania-Language, Culture, Customs, and Etiquette" Kwintessential <<http://www.kwintessential.co.uk/resources/global-etiquette/lithuania.html>>

during its country's history, which most of the times was taken over by Russia. Lithuania has tried to unite with other countries in the past like Poland. During World War I, the German Army occupied Lithuania. Soviet pressure and a complicated international situation forced Lithuania to sign an agreement with the U.S.S.R. on October 10, 1939. In 1940-1954 there were Nazi and Soviet occupations and Lithuanians were sent to labor camps and 91% of the 200,000 in the camps were killed in the Holocaust. When German armed forces left Lithuania in 1944, 120,000 to 300,000 Lithuanians were killed. In the 1980s communists rule started to erode and Lithuania became one of the first Soviet republics to claim its freedom. Soviet forces had become unsuccessful in suppressing Lithuania secession. In 1991, Iceland and other countries started to recognize Lithuania's independence at that time³, *except* for the U.S. The history of this country can tell that it has never been stable for a long enough time and with its independence today still is not stable yet because it is still trying to adjust to its own system of democracy, rather than having another government control it.

The history of Lithuania's government has affected the current government dramatically. Since the release from Russia in 1991, the government has been scrambled. If a person today from the U.S were to go to Lithuania, they would see that there are many buildings and industries that remain from the communist Soviet period. The country has faced the worst recession since they gained independence from the Soviet Union in 1991. There were many budget cuts that cut into social benefit programs by the government. The form of government today is a parliamentary democracy. There are still parts of the country today where basic needs such as a safe water supply, reliable telecommunication, and decent roads are not as developed as the rest of the country, which the government is trying to improve.

Even though the labor force is 1.6 million, the government and country's economy is still in a state with little organization leaving many people unemployed. The current average unemployment rate in the country is 18 %. The employed citizens of Lithuania generally earn 13,123 Lit (Lithuanian currency) per year. This would be about \$9,367 in U.S. currency.⁴ The average annual earnings for a U.S. citizen are \$31,410. In Lithuania the inflation rate has also gone over 1.3% per year making prices higher than ever before. This has in turn affected the cost of everything from housing to food purchases citizens make.

The health care in Lithuania is considered poor in comparison to American standards. The quality of healthcare providers varies quite a lot because specialists tend to be in cities, but the top experts can not be found in all cities. The major problem is that many citizens cannot afford healthcare. The healthcare system went through a significant decentralization process after the former USSR dispersed because they relied on funding from them.⁵

Lithuanians have some choices when it comes to paying for healthcare in their country. They can pay for social health insurance or another option is that it could be paid for through where they work. Their employer is required to contribute 30.7% and the employee is required to contribute 30% of gross earnings to the social security system. If you do not have the social health insurance you must pay for everything, but the consistency and availability of care is different. Most family doctors don't feel responsible to coordinate care for someone not on social insurance. Generally, citizens end up going for one time visits and advocate for themselves.

³ "Lithuania : History." *Lithuania : History*. N.p., n.d. Web. 08 Sept. 2012. <http://www2.omnitel.net/ramunas/Lietuva/lt_history.shtml>.

⁴ "Lithuania Average Salaries & Expenditures" *World salaries* 2005 <<http://www.worldsalaries.org/lithuania.shtml>>

⁵ "Lithuanian: Healthcare System " *Global Surance* , 9/11/2011 <<http://www.globalsurance.com/resources/lithuania/>>

Lithuania has developed many environmental problems coming out of control from Soviet Russia in 1991. They are trying still today to re-establish their government while facing an economic recession. Soviet Russia left dangerous environmental problems in the country that are still a concern today, especially in under-developed rural areas including power plants, military bases, and other industries.⁶ Environmental problems are also causing health concerns that should be identified and solved because of the effect on the citizens. Chemicals such as pesticides and insecticides are being overused in farming. Petroleum products and chemicals at military bases are contaminating the soil and groundwater of the country. Many Lithuanians are sensitive to use of pesticides and this contributes to the health problems of many citizens.

Many of these areas have polluted water systems which have been a legacy of the Soviet carelessness. Only one-quarter of sewage water is processed in cleaning facilities. “We drink tap water. Some places it is not safe... you always ask in a new place before drinking. Many people are used to boiling their water for tea and few really drink water from the tap anyway”, says Sharon Brubaker a worker at LCC (Lithuania Christian Fund College) International University and missionary in Lithuania.

Chemical pollution not only affects water systems in the country, but also other areas such as dunes, forests, but most importantly is agricultural land that is used for crops. Misuse of chemicals and poor handling of animal waste in the past has led to agricultural pollution. This causes soil erosion which covers 20% of the country and drainage of land for agriculture leads to the suffering of the wildlife that includes plants and animals in the country. How can the country switch to new bio-organic agricultural practices instead of the overuse of chemicals as in the past? What can we do to combat erosion in land? How can we develop new agricultural practices to achieve these goals?

Lithuania’s government is broken into fifteen ministries, each performing the duties they are responsible for. The ministry that is primarily responsible for agriculture and rural development in Lithuania is the Ministry of Agriculture. Another ministry that plays a part of environmental protection of agriculture is the Environmental Protection Ministry. Some of the duties of the Ministry of Agriculture that are important are to reduce or prevent the spread of agricultural pollutants to other land, reduce concentrations in water, such as phosphate in water, and letting pollutants affect agricultural land. The country has created an agricultural policy on sustainable agriculture with three main objectives. They are: satisfy the demand of rural population for the main food products from the national resources, increase the competitiveness of agricultural products in both internal and external markets, and develop the exports of agricultural and food products. Through these objectives the country of Lithuania is trying to take initiative towards its agricultural and environmental problems. Sharon Brubaker a worker at the LCC International University and missionary says, “There are agricultural schools so there is potential”.

Agriculture in the country has gone through many historic developments leaving some big problems for Lithuania; the major problems are soil erosion, poor soil quality, and irresponsible pesticide/ herbicide use. Now how can these factors be of a problem in the first place? Erosion, which is the loss of soil from land due to effects of wind and water currents, can occur faster by over grazing or poor farming practices. Soil erosion decreases soil fertility, decreases crop production and crop quality, and it also can be a safety hazard if soil gets deposited into roads making driving difficult. If soil is eroded it leads to crop failure. Consequently, crop failure leads to financial losses for farmers and the country as a whole.⁷ Pesticides and herbicides are chemicals used to destroy unwanted pests (insects like the European corn borer or

⁶ “Lithuania” Mongobay 9/16/2011 <http://www.mongabay.com/reference/country_studies/lithuania/GEOGRAPHY.html>

⁷ “What is Soil Erosion” Buzzle.com December 1, 2010 Kulbhushaan Raghuvanshi 9/21/2011 <http://www.buzzle.com/articles/what-is-soil-erosion.html>

western corn rootworm) or vegetation (weeds and other invasive plants) that may affect crop production. The overuse of these chemicals leads to soil pollution. The effects of soil pollution are: decrease in soil fertility and yield, soil erosion, and soil being unfit for use.⁸ If soil is unfit for use and humans consume crops produced in the soil many people experience various health problems. The unfit soil can also have a major effect on the native ecosystem around it also resulting in health problems in animals that are consumed by humans.

Almost 20% of agricultural land in Lithuania experiences some type of soil erosion and nutrient depletion. By utilizing different farming strategies, erosion can be reduced and soil quality can be stabilized. Wind and water are the biggest contributors to soil erosion. To prevent soil erosion, the topsoil of the land needs to be protected. Building shelterbelts around the fields where crops are grown can reduce that amount of wind that passes by. Shelterbelts are rows of trees or shrubs planted around a certain area to act like a barrier against wind erosion. Since these types of plants used in shelterbelts are perennials, they provide protection year after year without the need of replanting them. Planting perennials on barren agricultural lands helps reduce erosion from these elements because of their extensive root systems, which keep the soil particles together. Perennial plants have the ability to live year around.

Crop rotation is the practice of alternating the types of crops planted in the same area. Combined with recommended tillage practices they play an important role in reducing the depletion of soil fertility. Organic matter like crop residues and animal manure can help enrich the soil by adding the essential nutrients and components needed for healthy plant growth.

Pesticides, herbicides, and other chemicals used to help protect crops have caused more problems than solutions and their dangerous effects have been ignored in Lithuanian agriculture. The best way to reduce the amount of chemicals used in the agriculture industry and promote a healthier environment is the adoption of effective bio-organic farming and other farming techniques to avoid crop-destroying pests. Bio-organic farming is basically farming without the major use of chemicals. Bio-organic farming can help maintain soil quality, water quality, and sensitive ecological balances. An effective technique to control pests is the use of crop rotations. This can control pests by eliminating a pest primary food source, like the European Corn Borer, every other year making it difficult to survive.

Another way to improve Lithuanian agriculture and reduce the need for pesticides and herbicides is by planting high- yielding hybrids that are pest resistance, drought resistance, and are designed for to flourish in this Baltic environment. This can be done by inserting a certain gene into a crop plant, for example maize, where it can give the maize plant certain proteins in its body to poison the pest trying to feed on it, but without making the part of the crop that humans consume toxic. Another way of genetically engineering a crop plant like maize is to breed with other kinds of maize. To create this hybrid maze, corn with heterosis, a corn plant is inbred a certain number of times creating “inbred depression” to single-out a special dominate trait which may be for, example drought tolerance, that will be Parent 1. The same will be done to another corn plant so it has one dominant trait and will be Parent 2. When they are bred together artificially they produce a strong powerful hybrid with both dominant traits.⁹ Plant breeding and genetics can open and unlock many new paths to new bio-organic agriculture in Lithuania.

⁸ “Soil Pollution Causes and Effects” [Buzzle.com](http://www.buzzle.com/articles/soil-pollution-causes-and-effects.html) September 20, 2011 Ujwal Deshmukh 9/21/2011 <http://www.buzzle.com/articles/soil-pollution-causes-and-effects.html>

⁹ *Plant Life*. Alexandria, VA: Time-Life, 1993. Print.

Some of the obstacles in promoting crop rotation and responsible agro-chemical use would be lack of understanding by farmers and economic factors. The way to overcome this would be to better educate farmers on the long term benefits of crop rotations and chemical management, the end results would produce healthier crops and higher yields over time. It is also important to persuade the farmer to not always choose the most profitable crop over the most beneficial crop to the soil. The government should offer economic incentives to promote crop rotation and responsible herbicide/pesticide usage.

The Lithuanian government can improve agriculture in the country through education, regulation, and incentives. The government should set up educational programs that teach farmers innovative agricultural techniques and responsible practices. An example of this would be the Lithuanian Fund for Nature (LFN). The LFN educates and promotes environmental and biodiversity friendly farming practices.¹⁰ Next, they need to carefully regulate the agricultural industry. They need to ensure that the crops produced are safe for consumption and the farmers are being responsible to the environment. Guidelines must be set for agro-chemical use and tillage practices. They need to provide incentive to make farming economically viable. This can be done through low interest loans, tax rebates, and specialized grants. By the Lithuanian government using these three methods, healthy practices in agriculture can be insured.

The Lithuanian government should also encourage the development and research of specialty crops. This would include incentives for foreign and domestic enterprises to develop hybrid crops that are tolerant to the unique Lithuanian environment. The Lithuanian government would be responsible to make sure hybrid crops were safe for the consumer and environment.

The ordinary citizens of Lithuania and farmers can become involved in the transition to the more sustainable agriculture by electing leaders that are sympathetic to this cause. As a democracy, citizens can send a clear message to their government to demand agricultural reform for the betterment of the people. As consumers, they have the choice to purchase produce from responsible farms that reduce the amount of agro-chemicals used. They must research and investigate these topics to become better informed and how responsible agriculture can affect their lives. Farmers can join organizations, such as the Lithuanian Farmers Union, to take advantage of consulting and training to improve farming methods.

Lithuania may be an industrialized country in the world, but there is more than meets the eye. Released from a history of changing government and control, Lithuania is trying to make its mark in the world. The country's history greatly affects the problems in Lithuania today. The country faces the obstacle of trying to organize from a system in which others make decisions for them to a country that makes their own rules and decisions. Many countries still need to recognize Lithuania as an important contributor to the world economy. Lithuania deserves as much attention as any other country in the world. In a way Lithuania is being left behind from the rest of the world just as Evelina was left in an orphanage for years. "Tačiau yra viltis, kad Lietuva kaip buvo viltis jai." Translation- But there is hope for Lithuania just like there was hope for her.

¹⁰ "Lithuanian Fund for Nature - The Main Projects." Lithuanian Fund for Nature - The Main Projects. N.p., n.d. Web. 08 Sept. 2012. <<http://www.glis.lt/?pid=44>>

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