

Stephen Schwartz  
Homeschool  
Noblesville, IN  
Lesotho, Factor 6: Sustainable Agriculture

### **Lesotho: Innovating Farm Practices to Provide for its People**

Tucked away between the Drakensberg and Maloti Mountains in South Africa lies the small country of Lesotho. Nicknamed “The Kingdom in the Sky,” Lesotho revolves around the picturesque mountains that make up 80% of the country’s Maryland-sized land mass. Enclaved by South Africa, this nation relies on agriculture for food as 86% of the population, roughly 1.7 million people, are involved in subsistence farming, but only 5% of families produce enough food to provide for themselves (Country Profile-Lesotho). This food shortage creates quite a problem for Lesotho as only 10% of its land can be used for farming while less than 30% of the nations’ needs are met through agriculture as opposed to 80% just 30 years ago (Lesotho: A mountain of challenges). Dangerously, one quarter of the population relies upon food aid. The decline in agricultural production in Lesotho over the past few decades has greatly threatened food security in this nation as current rises in food prices put many in danger of starvation as the government cannot continue to provide for all of its people.

Life in Lesotho is very different from many other countries as their tribal heritage continues to shape the nation. The main ethnic group in Lesotho is the Basotho who mainly live in villages of turf or clay houses centralized around a chief’s hut and the enclosures for the animals (Lesotho-Agriculture). Their way of life is primarily rural as most Basotho are subsistence farmers. Lesotho families are made up of any number of the extended family as cousins are considered brothers and sisters, and grandmothers become official “mothers” (Lesotho). Education is free and required of all children from 6 to 13, however many boys skip several years of school to begin their lives as herdsmen. Secondary education is given in two cycles of three and two years as Christian churches administer both primary and secondary education under supervision from the government (Lesotho). Pap-pap, or papa, which is a cornmeal porridge that can be supplemented by almost any vegetable, is the main staple of the Basotho people’s diet. Tea, a holdover from English influence, and beer are the main drinks of the people as both are produced in large quantities throughout the nation (Cobbe). While health care is not readily available to everyone, most people are healthy in Lesotho with the main concern being the spread of HIV/AIDS. In Lesotho tradition, the men of the family take care of the livestock and are primarily herdsmen, while the women are responsible for the agricultural tasks and home making (Rural Poverty in Lesotho). With a rural population density of 461 people per 1 square kilometer of arable land, there is a critical land shortage which prevents good agricultural production as many small farms do not effectively produce good yields (Agriculture). The main crops grown in Lesotho are maize, wheat, and sorghum in a predominantly subsistence economy while any surplus is shipped out to other markets to be sold (Country Profile-Lesotho). Beneficial agricultural practices are almost nonexistent as people continue to farm the same way they have for decades. Because modern practices are not in use, there are many barriers to productivity that could be easily solved. Overgrazing pastures and the cultivation of subpar ground season after season has contributed to land degradation as erosion, brought about by deforestation and inclement weather, continues to remove the best topsoil.

In Lesotho there are many factors that negatively impact agricultural production, but the absence of sustainable agricultural practices is the root cause of the struggles in this tiny nation. As illustrated by the fact that 86% of Lesotho’s population is involved with subsistence farming while only 5% of those families can produce enough food to feed themselves, the inefficient agricultural practices in Lesotho are preventing larger yields (Lesotho: A mountain of challenges). Erosion, resulting from widespread deforestation, and soil depletion, due to farmers not properly caring for the soil, are the two major issues (Lesotho-Agriculture). Both prevent higher yielding crops and contribute to this nation’s economic and food shortage problems. Presently in Lesotho there is simply not enough money or knowledge on how to

combat these issues and therefore the situation is worsening as erosion continues to remove the richer, better topsoil (Lesotho). As a result of the erosion and deforestation, the environment is being negatively influenced as forests are disappearing and being replaced by bare hillsides with no agricultural value (Agriculture). While some other factors may not continually compound and get worse as time goes on, deforestation, erosion, and soil depletion do, and collectively they work to reduce the agricultural production and potential of Lesotho (Achieving Food Security in Sub-Saharan Africa through Conservation Agriculture). The trends for these problems cannot truly be measured with numbers. A .5% decrease in forest cover cannot represent the negative agricultural impact it entails, but this situation continues to become worse every time another tree is cut and a rainstorm washes away more topsoil (Lesotho-A mountain of challenges). Under these worsening environmental conditions, farmers can still plant a crop and get some yield, but not enough to sustain their families.

To combat this unique set of circumstances and the widespread food security problem, changes can be made to the current agricultural practices throughout the country which will remedy the situation and provide positive externalities for all people of Lesotho. By increasing yields in Lesotho, families all across the nation would not have to rely upon food aid and could instead provide for themselves. As food security increases, not only could the people of Lesotho feed themselves, but they could possibly create a surplus of food and then gain an income by selling the excess to the surrounding region (Lesotho: A mountain of challenges). With this sustainable agricultural push, the environment would be greatly benefitted as erosion would be reduced and the rapid deforestation would be slowed dramatically (Lesotho-Agriculture). In many developing nations the environment is not a priority. Through the use of sustainable agriculture practices the preservation of the environment will occur naturally. Without dependence on foreign nations for food aid, Lesotho would also be able to develop economically as increased income for many small farmers would lead to a greater demand for goods and therefore drive economic production as well (Rural Poverty in Lesotho). While the small farmers would benefit the most from agricultural development, a domino effect would result impacting all other groups in Lesotho. The farmer, the urban dweller, the herdsman, and others in Lesotho would benefit from greater environmental preservation and an increase in national production and income.

While this projection of sweeping improvements throughout Lesotho seems simple, conditions in Lesotho could prevent such growth from occurring rapidly. One such problem could be the climate volatility in this region. Over the past several years, the climate in Lesotho has varied greatly. In 2007, Lesotho experienced its worst drought in 30 years crippling the nation's agriculture for that growing season. In 2010, heavy rainfall during the planting season washed away the topsoil and seeds (Country Profile-Lesotho). The changing and variable weather patterns in Lesotho could hamper the effectiveness of the sustainable agricultural practices in Lesotho and keep many families in their current state of poverty. A negative for Lesotho of exporting mass amounts of surplus goods would be that the nation is not export ready as its infrastructure, such as transportation means, is very small and inefficient. Due to its mountainous placement and terrain, the transportation system in Lesotho has not matured and developed as it has in other nations. As a result of this, the nation is limited with how much it can export as well as import without spending vast amounts of money to make the nation export ready. While this would not completely prevent economic growth or hurt food security, it would impact the wellbeing of the Basotho as they could not gain an income from their food production (Lesotho). By resolving the issues with agriculture in Lesotho, a large number of the poor families of that nation could gain immediate food security and a possible income through agricultural development, but the limiting factors of the changing climate and weak infrastructure could dampen the improvements without completely impeding the benefit to the nation.

To successfully tackle the agricultural issues in Lesotho, the central problem with agricultural production, which is soil nutrition, must be dealt with first. The first recommendation to improve agricultural production would be to implement the use of cover crops. These plants can do many tasks that would benefit agricultural production in Lesotho, specifically, playing an important role in replenishing the

depleted Lesotho soil with the necessary nutrients while preventing erosion. Because cover crops are so diverse, they can provide a wide range of benefits to the land (Benefits of Cover Crops). Some cover crops grow deep roots into the soil which can help create new pathways for the money crops, such as maize, wheat, or sorghum, to send their roots down and extract the necessary nutrients. Others collect important nutrients from the soil such as nitrogen and then deposit them back into the soil so they are readily available for the next crops (Benefits of Cover Crops). Another key to maintaining soil health is keeping a high level of organic matter in the soil. As cover crops die, their dead but nutritional husks attract many organisms that digest these plants and deposit nutrients into the soil which greatly enhances the yield potential (Benefits of Cover Crops). Because of the erosion problem in Lesotho, cover crops would be ideal to combat this issue as they break up hard rainfall and their roots hold the soil tight to prevent the precious topsoil from washing away in a hard rain (Benefits of Cover Crops). An added benefit of using cover crops in Lesotho is that certain cover crops can be eaten by livestock. One of the main reasons why Lesotho's soil is so depleted is that its people not only plant crops on it, but when those crops are harvested they also herd their livestock on the same land (Lesotho-Agriculture). If cover crops were used in Lesotho, not only would the soil be replenished with nutrients and protected from erosion, but the Basotho people could feed and herd their livestock on the same farm land while protecting the yield potential in each acre.

While cover crops are one major way to improve the soil nutrition and health, the use of crop rotation, as well as no-till policies, could also make a large difference in Lesotho agriculture. As has been shown in American agriculture, planting the same crop on the same ground year after year can greatly deplete the soil of the specific nutrients needed to grow that crop well. This practice of planting the same crop, be it maize, wheat, or sorghum, has been in use in Lesotho and as a result, after a period of time, the soil is extremely nutrient deficient. A crop rotation of maize, wheat, and sorghum could be executed to sustain good soil health. Since different crops utilize various nutrients to survive, by implementing crop rotation a farmer can maintain a high level of diverse, vital nutrients year round (Baldwin). Another method that could be used along with cover crops to improve agricultural production and soil health is no-till policies. Similar to the benefits of cover crops, the use of no-till in fields can produce an increase in organic matter as the dead husks of the maize, wheat, or sorghum plants are digested by organisms that then return the nutrients to the soil for next season's crop (Plumer). A continued use of no-till policies allows these organisms to thrive and therefore benefit the overall soil health. The implementation of cover crops, crop rotation, and no-till policies can greatly benefit the agricultural production in Lesotho as soil health is increased through the depositing of additional nutrients and the increased level of organic matter present. An example of a similar countries' positive switch from outdated agricultural methods to modern ones can be found in Ethiopia. Central Ethiopia has great potential for agricultural growth and development, but it is held back by outdated methods such as random planting and tilling the ground (Murphy). Dr. Glenn Murphy traveled to Bochesa, Ethiopia as part of a non-governmental organization and was shocked to see the farmers haphazardly throwing their seed across the field after completely tilling it into mud. In an effort to improve not only their agricultural production but also their lives, Dr. Murphy slowly taught the people there how to plant in rows, the benefit of no-till or conservation tillage program, and the effective use of fertilizer on their crops. The effects were astounding as the ground benefitted nutritionally from not being tilled, the environment benefitted from less runoff, and the people benefitted from double the crop production on their previously almost wasted ground (Murphy). In a similar way, I believe, the people of Lesotho can be taught and benefit from modern agricultural practices.

These solutions for the Lesotho problem can be realized with the cooperation of the Lesotho people, government, and outside organizations working to implement these recommendations. In response to the many agricultural problems in Lesotho, the government is currently promoting conservative farming methods to restore the lost soil productivity (Country Profile-Lesotho). Increasing the practical application of these policies by providing incentives to farming families who use sustainable agricultural practices, the implementation of the use of cover crops, crop rotation, and no-till policies can effectively

benefit Lesotho. This begins as the government, and non-governmental organizations, inform families and communities about the steps needed to improve agricultural yields through these methods. To truly increase the implementation of sustainable agricultural practices across the nation, rural farmers, families, and villages need to be taught to use a crop rotation, grow cover crops, and not till their land. This could be done to a degree through formal educational institutions, such as universities working in the region, but because of the tribal nature of Lesotho, informal educational methods, I believe, would be most likely to have a lasting impact. By using the chief and his authority in each village, the message of sustainable agricultural practices could easily be spread through informal training supported by non-governmental groups or organizations (Kapa). In this way as well, the children, not just the adults could learn how to use a crop rotation and thereby begin a positive cycle in rural areas. If informal educational methods are attempted to try and begin a lasting work in Lesotho, it will be vitally important for ordinary citizens who wholeheartedly believe in sustainable agriculture to sell their neighbors, friends, and family members on the reliability and positive impact of conservation agriculture (Education). One way that informal education could be easily utilized within Lesotho in a way that is not only already established but also simple is through the internet. Because Lesotho already has available internet access due to its self-sufficient electricity supply, it would be possible for a motivated and intelligent agronomist in a developed nation to communicate with the rural people of Lesotho through the internet (Country Profile-Lesotho). The agronomist then could explain to the people on a personal level the necessity for and how to properly take care of the valuable soil. In this way, the Lesotho people could be met right where they are, in their villages following a tradition of listening to their chief, and conservation agriculture could be spread rapidly and effectively across the nation. Lesotho communities must be receptive to these new ideas, as well as patient to see the results of small improvements over several growing seasons. The burden for appropriately establishing these methods finally falls on the shoulders of the government as they act to improve the lives of their people. Those in authority must not only bring about direct change, but they also need to promote the influence of non-governmental organizations and influential university personnel in Lesotho communities. The Smallholder Agricultural Development Project is an example of a government funded program in Lesotho focused on increasing the market opportunities for small farmers, allowing them to benefit from their increased agricultural production (Lesotho Smallholder Agricultural Development Project). By bringing in knowledgeable foreigners and resources from other nations, the growth of the use of these methods will increase rapidly. The rural farmers of Lesotho can be involved in using these ideas as they accept new ways to improve agricultural production. Without popular consent, agricultural production in Lesotho will remain lacking as erosion and soil depletion continue to hurt yields. The most important piece to the success of these new methods to improve agricultural production in Lesotho is the farmer who must believe in the use of cover crops, crop rotation, and no-till policies to positively impact the agricultural production of the limited Lesotho soil.

Even though these small agricultural improvements may not seem very impactful in bringing about better food security for the people of Lesotho, they can be the beginning of a revitalization in Lesotho that helps to push this developing nation towards economic stability. With increased agricultural production, not only will food security increase, but many of the small farmers who were living day by day will now have an income and the stability to provide better food, clothes, and health care for their families. By shipping surplus food to other nations, the economy and people of the entire country will benefit. When every family can put food on the table and not have to rely on food aid from other nations, many of the other issues in Lesotho can be solved. HIV/AIDS can be properly addressed by the government which can only bring about better lives for so many Basotho people. Agricultural growth and improvement in Lesotho is the key to making this developing nation secure as improved yield and food security can lead to a changed Lesotho.

## Works Cited

- “Achieving Food Security in Sub-Saharan Africa through Conservation Agriculture.” *IFAD*. n.p. n.d. Web. 20 Jul. 2015.
- “Agriculture.” *The Lesotho review 2014*. Wade Publications. 2014. Web. 23 Feb. 2015.
- Baldwin, Keith R. “Crop Rotations on Organic Farms.” *Organic Production*. North Carolina Cooperative Extension Service. Jun. 2006. Web. 20 Jul. 2014.
- “Benefits of Cover Crops.” *Sustainable Agriculture Research & Education*. 2012. Web. 20 Jul. 2014.
- Cobbe, James Hamilton. “Kingdom of Lesotho.” *Encyclopedia Britannica*. 2 Sept. 2014. Web. 25 Feb. 2015.
- “Country Profile-Lesotho.” *New Agriculturalist*. WRENmedia. 2011. Web. 23 Feb. 2015.
- “Education.” *Help Lesotho*. n.p. 2014. Web. 20 Jul. 2015.
- Kapa, Motlamelle. “Chiefs, democracy and popular participation: the case of Lesotho.” *Democracy in Africa*. n.p. 9 Jan. 2014. Web. 20 Jul. 2014.
- “Lesotho.” *Countries and Their Cultures*. Advameg, Inc. 2015. Web. 25 Feb. 2015.
- “Lesotho-Agriculture.” *Encyclopedia of Nations*. Advameg, Inc. 2015. Web. 23 Feb. 2015.
- “Lesotho: A mountain of challenges.” *IRIN*. n.p. 2009. Web. 23 Feb. 2015.
- “Lesotho Smallholder Agricultural Development Project.” *The World Bank*. The World Bank Group. 2015. Web. 27 Feb. 2015.
- Murphy, Dr. Glenn. Personal Interview. 11 Apr. 2014.
- Plumer, Brad. “No-till farming is on the rise. That’s actually a big deal.” *Washington Post*. 9 Nov. 2013. Web. 20 Jul. 2014.
- “Rural Poverty in Lesotho.” *Rural Poverty Portal*. IFAD. n.d. Web. 23 Feb. 2015.