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# Argentina: Let's Revive the Land

Like many countries, Argentina is grappling with severe environmental challenges such as soil degradation, soil erosion, and biodiversity loss. These are not just significant problems but a looming crisis that demands our immediate attention, not just through mitigation but by reversal. The potential for change, for a brighter, greener future, is within our grasp.

Argentina has a population of 45.81 million people, with 93% living in urban areas and 7% living in rural areas (Data Commons 1). According to the *Buenos Aires Times*, 7 million people live in poverty and overcrowded areas. Households average 3.1 people, but over the last three years more than one in three people skipped a meal per day, while one in eight people were unable to eat in one or more days (Favre). This is because prices have climbed by 95% due to the decrease in value of the Argentinian peso (Favre). The peso has lost its value because the country is printing too much money in hopes of getting out of debt (Favre). According to the blog *Areco Tradicion,* only 15% of Argentina is cultivated, while half of the land is used for livestock or cannot be farmed due to poor soil. Argentina's primary crops are soybeans, corn, and wheat, while holding more than 297,000 farms, averaging 588 hectares or 7 Olympic swimming pools (Areco Tradicion Turismo).

Argentina is a beautiful country with plains, deserts, and forests. Its subtropical climate averages 80 degrees Fahrenheit in the summer and 50 degrees Fahrenheit in the winter

(Britannica). However, life isn't perfect, and soil degradation, deforestation, and biodiversity loss are destroying the country.

Those issues are connected to farms shutting down, water pollution, less productive agriculture, and decreased biodiversity. Over 100 million hectares of Argentina's 270 million hectares are affected by soil erosion, with an additional 2 million hectares yearly affected (Eco Americas). According to an article by *Jorgelina Hiba,* planting crops without rotation, overgrazing, lack of nutrients, and loss of organic matter all contribute to soil degradation.

Sadly, more than 60,000 small farms have shut down because the poor soil has affected their ability to compete with more significant agricultural farmers (Farm Progress). The loss of these farms has led people to flock to urban areas in search of jobs, which has caused overcrowding, loss of job opportunities, and higher poverty rates (Nevone). One problem leads to another, and soil erosion has decreased biodiversity by polluting water from loose soil, which flows into rivers (Jorgelina), causing aquaculture declines (WWF). Organisms that utilize water and the aquaculture it holds leave to find better environmental areas to live in. Lack of biodiversity generates less productive agriculture, resulting in desertification.

This devastating cycle can be broken. Argentina is progressing by rotating crops to increase nutrient cycling and improve soil health. This simple yet effective practice can profoundly impact agricultural productivity and soil health. Allowing the soil to replenish its levels of nutrients and minerals ensures a more sustainable and resilient farming system.

Argentina has also used cover crops, which increase organic matter by feeding healthy bacteria and fungi, building carbon levels, helping manage nutrients, and keeping the soil covered. First, feeding bacteria and fungi gives earthworms and other organisms food, which aids the health of the soil food web year-round. Organisms such as earthworms feed on bacteria

and fungi, helping aerate the soil and return carbon and nitrogen to the soil. Secondly, building carbon levels builds the soil's organic matter, improving accessibility to nutrients and moisture. High levels of carbon in the soil increase the ecosystem's activity and protect it against erosion by making the soil more stable. Lastly, cover crops act as a glue with their roots, keeping the soil in place, and the leaves protect it from wind blowing away the topsoil (Andy).

The most extensive action Argentina has taken to prevent soil erosion is no-till farming. According to the *USDA,* tiny grooves made by no-till planters are only big enough for seeds. This means farmers plow and plant fields simultaneously, leaving cover crop residue on the surface, protecting the soil from erosion, overheating, and moisture loss. No-till farming also increases organic matter and balances nutrient levels (USDA) and it costs farmers less money yearly by saving on labor costs/time, fuel, and tractor time in fields (No-Till).

These are three significant actions Argentina is taking to reduce soil erosion, but more can be done. I would start by planting rows of trees near fields. This would help restore biodiversity and provide a wind barrier to the soil, decreasing erosion. With 75% of Argentina affected by desertification (Nevone), I would counteract this by planting native grasses in these areas. I would use plant species capable of surviving on low amounts of water and nutrients and can put nutrients back into the soil to help revive it. Alfalfa is a type of plant that puts nutrients back. Knowing this, I would have a mix of alfalfa and other Argentinian native plants. This method also increases carbon levels, increases organic matter, holds more water, and protects the soil from further damage. Once these plants have grown, I would use controlled groups of rotational cattle on the land. Desertified land needs nutrients, water, carbon, and healthy bacteria to grow (Sullivan et al. 1). The use of rotational cattle would regulate plant growth, compact the soil, and supply natural fertilizer, which holds nutrients, carbon, and healthy bacteria, promoting

soil and plant health and biodiversity (Sullivan et al. 2). Proper rotation of cattle ensures better distribution of fertilizer and a reduction in the risk of over compaction (Velkov). In turn, cattle benefit from pastures because pastures are less stressed environments, they can express more natural behaviors, and because they have a four-stomach digestive system, they can easily obtain nutrients from plants, which is essential for their health and production of saliva to reduce stomach acids (Gliessman et al.).

The Argentine government would manage this plan, which could pay people to plant trees and grasses in desertified areas and along farm fields to reduce poverty rates. Supplying people with jobs can get them off the streets, reducing overcrowding. The government could pay people to fence off some of the desertified land for the cattle supplied by farmers. This helps both parties in the end as farmers have a place to raise their livestock and make money, while Argentina's economy improves because they have more products (cattle and better-yielding crops), and since they supply people with jobs, the more people who have money will spend money in turn, slowly pulling the country out of debt. Families who move out of urban areas would experience cleaner air and water (Johnson et al.), as well as less stress (Iffland and Grotenhermen), improving the physical and mental health of Argentinian people. Moving to rural areas and purchasing the by-products, such as beef, promotes this plan, the economy, and Argentina's local farmers.  My ideas are standard farming practices that can easily be incorporated into current practices. The significant part about my suggestions is that they can be applied to any country, and I hope that together we can solve some of the world's environmental problems.

To summarize my solutions, I encourage farmers to rotate their crops, plant cover crops, and utilize no-till farming. I would also plant rows of trees along fields, plant a mix of alfalfa and

native grasses in desertified areas, and put controlled groups of rotational cattle on the land. Returning to the whole circle, planting trees, cover crops, and native grasses increases biodiversity, organic matter, and carbon levels and decreases soil erosion from wind and water. Less soil erosion leads to better soil ecosystems, supporting higher crop yields. Conversely, cattle promote biodiversity, natural fertilizers for more organic matter, and soil compacting to decrease erosion. Then, on the economic side, Argentina can reduce poverty rates by supplying jobs and paying people to help manage this project, which will boost the economy.

In conclusion, Argentina and many other countries struggle with environmental issues such as soil degradation, soil erosion, and biodiversity loss. My solutions are affordable, economical, and beneficial to the environment. They will improve soil quality and, in turn, other aspects of the environment and economy, like a domino effect.

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