Soy Domination: The Impacts of Genetic Modification in Argentina and Paraguay

Lucy Griffith is a senior majoring in Global and International Studies and French. She is from Overland Park, Kansas. This International Relations, Agricultural Studies, and Biotechnology article was supervised by Dr. Brian Lagotte.

Abstract:

Genetically modified soy has experienced enormous growth in Latin America's Southern Cone nations since the beginning of the soy boom in the 1990s. The Southern Cone refers to the nations at the southern end of South America, typically including Argentina, Paraguay, Uruguay and Brazil. The exponential growth in the soy industry created significant problems for smallholder farmers and peasant communities in Argentina and Paraguay. The soy boom led to extensive displacement, job loss, and uncertainty among peasants and smallholder farmers. Genetically modified technology also threatens the health of surrounding communities. Agribusiness giants encouraged the growth of the soy industry in Argentina and Paraguay, creating an export-based economy reliant upon raw material output. This research explores the various impacts of the genetically modified soy industry, with particular emphasis on smallholder farmers and peasants in the region.

Bread, eggs, vegetable oil, candles, cereal, cough drops, and lotion—what do all of these products have in common? At first glance, the list seems unrelated aside from the fact that all of these items can be purchased at any neighborhood grocery store. In actuality, the correlation between the items comes down to one simple ingredient: soy. Soybeans are one of the cheapest crops in today's agricultural market, so the food industry uses soy, soybean meal, soya oil, and other soy byproducts in almost everything. Even the wax coating on fresh fruits and vegetables is composed of soy. Soybean meal is also used as one of the primary protein sources for animal feed in the animal agriculture industry, meaning even beef contains trace amounts of soy. Considering soy is an ingredient in so many different products, I began to wonder where all the soy comes from and why it is so cheap. After some preliminary research, I discovered that the soy industry, like most agricultural industries, is greedy, exploitative, and contributes to environmental degradation.

The soy industry is massive, and growing larger due to genetic modification. Genetically modified soy supplies are inexpensive, plentiful, and high yielding, creating increasing demand, so soy crops continue to expand geographically. As of 2009, more than 90% of all soy produced in Argentina and Paraguay is genetically modified (Abramson 36). Latin America is a main contributor to soy production, especially in Southern Cone nations like Argentina and Paraguay. Genetically modified soy technology was adopted in Argentina and Paraguay faster than the rest of the world, including the United States, where the genetically modified soybean originated (Leguizamón 150). The engineering involved in the genetic modification of soy creates soy crops

resistant to harsh weather conditions and guarantees higher crop yields. The soy-producing region of Argentina and Paraguay has been home to many peasant and indigenous families as well as smallholder farmers for centuries. The agricultural region is export-focused and the main source of work and income for peasants in the region is farming. However, with the rapid increase in land dedicated to genetically modified soy many peasants and smallholder farmers face uncertainty in terms of work, land, and overall wellbeing.

The research question the project revolves around is: how has the rise of genetically modified soy impacted smallholder farmers in the soy-producing region of Argentina and Paraguay? The "rise" in the question refers to the soy boom, beginning in the mid-1990s in the Southern Cone of Latin America, mostly Argentina and Paraguay; the "soy-producing region" refers to a traditionally agricultural area extending out from the Pampas region of Northern Argentina into Paraguay. The "smallholder farmers" in the question are individual, family, peasant, and indigenous farmers who have lived and farmed in the region for centuries. The theoretical framework of the project centers on a core-periphery system of exploitation based on Immanuel Wallerstein's world-systems theory. According to his theory, smallholder farmers are the periphery in the system, while agribusinesses act as the powerful core, benefitting from the soy industry in the peripheral region as well as labor from peripheral communities. The project fits into the current research conversation involving genetic modification in staple crop agriculture, with a focus on the qualitative impacts absorbed by peasants and smallholder farmers in the region. The question is significant because smallholder farmers in the region face abuse and exploitation due to the constantly growing soy industry threatening peasants' land, health, and opportunities for work.

The negative impacts of the genetically modified soy industry in the soy-producing region of Argentina and Paraguay threaten the health and livelihood of peasants and smallholder farmers, as part of a system only beneficial to large-scale producers and agribusinesses. The first section of my literature review discusses the rise in popularity of genetically modified technology in the soybean industry of Argentina and Paraguay. The second section of the literature review focuses on the theoretical framework of my project involving an unequal and transactional relationship between core groups and periphery groups, known as world-systems theory. In the next section I discuss the thematic coding of secondary sources for data collection and analysis. I then discuss the geographical and economic impacts of the soy boom on peasants and smallholder farmers and the major health risks associated with the use of agrochemicals in genetically modified crops. Finally, I address various counterarguments I encountered throughout the research process and discuss the significance of the exploitation of peasants and smallholder farmers in Argentina and Paraguay as a side effect of the big soy industry.

LITERATURE REVIEW

Genetic Modification in Rural Argentina and Paraguay

Genetically modified soy has threatened the property of smallholder farmers in Argentina and Paraguay. International agri-

businesses have more power than peasant and indigenous farmers, allowing corporations to repossess land for more acreage. In Argentina, 3% of agricultural producers control 70% of all farmable land, and in Paraguay, 1% of producers control 77% of land (Garcia-Lopez 199). Additionally, the need for large amounts of acreage for agribusiness has led the Paraguayan government to remove small farmers from public land previously allotted for smallholder and indigenous farmers (Abramson 34). The governmental repossession of land in Paraguay has displaced almost 100,000 small-scale farmers since the beginning of the soy boom in 1990 (Abramson 34). The dispossession of arable land allows large agribusinesses to continuously expand, while threatening small-scale farmers' access to farmable land. This immense rise in genetically modified soy may have contributed to the impeding property rights of peasant and indigenous farmers.

Genetically modified soy crops are constantly expanding onto more land in Argentina and Paraguay, jeopardizing the economic livelihood of many small-scale farmers. The simplified production method of genetically modified soy no longer guarantees as many jobs as previous agricultural methods, traditionally involving more laborious processes and more farm workers. Genetically modified soy crops are engineered with no-tillage production in mind; the specific genetic modification allows producers to skip the laborious tilling process and plant another crop immediately after harvesting the first (Brookes 18). While the production of genetically modified soy is more efficient for producers, the impact on small-scale farmers is severe, with 4 out of 5 farming jobs disappearing from 2000 to 2010 (Garcia-Lopez 196). Additionally, because soy production has dominated other farming in the soy-producing region, many other labor-intensive agricultural jobs once plentiful in the past, like cattle grazing and horticulture, have now disappeared as well (Leguizamòn 153). The soy-producing regions of Argentina and Paraguay are rural, and the changes leave many peasant and indigenous farmers without economic stability. Soy farming is no longer a reliable or even available job for the majority of small-scale farmers, which could potentially be due to the shortened production cycle of genetically modified soy.

Genetically modified soy also poses a threat to food security in rural Argentina and Paraguay. With more and more arable land transferring to soy production, land availability is minimal to produce many other subsistence crops previously relied upon by peasant and indigenous farmers. Large agribusiness continues to replace subsistence crops for domestic consumption with export crops, mainly genetically modified soy (Elgert 551). Although the soy-growing region in Argentina is producing large quantities of genetically modified soy, more than 90% is exported (Leguizamòn 152). The majority of exported soy is not for human consumption; China imports the majority of Paraguayan genetically modified soy for the animal agriculture industry, mostly as cattle feed (Abramson 34). Genetically modified soy's domination of other crops in Argentina and Paraguay creates a new agricultural system that benefits large-scale producers. Small-scale farmers cannot ensure food security not only for their own families, but also for other peasant and indigenous peoples,

potentially creating a kind of food drought in the soy-producing region.

The production process of genetically modified soy jeopardizes the health of small-scale farmers and peasants in the soy-growing region. Genetic modification works to create organisms capable of withstanding and surviving excess amounts of insecticide, pesticide, and herbicide. In Argentina, the use of agrochemicals such as glyphosate, a powerful herbicide, have led to a direct increase in cancer, miscarriages, and abnormalities at birth (Leguizamòn 155). The use of agrochemicals is particularly dangerous in large-scale agribusiness because producers often distribute herbicide and insecticide indiscriminately with airplanes, often spraying over housing areas in the process (Leguizamòn 155). In Paraguay, agrochemicals also pose a threat to public health particularly because the minimally-enforced environmental regulations have allowed big soy producers to dump more than 6 million gallons of pesticides and herbicides into the soil every year, even though the World Health Organization classified several of the agrochemicals as extremely hazardous (Abramson 36). The use of agrochemicals causes water and soil pollution by poisoning the food and water supplies of smallholder farmers in the area. The production method and the use of agrochemicals in the soy-producing region threaten the health of rural inhabitants. Small-scale farmers are often unable to protect themselves from the rampant use of toxic agrochemicals.

Inequality in a Core-Periphery System

Immanuel Wallerstein's world-systems theory analyzes the disparity between strong, developed nations and other more exploited nations. World-systems theory attributes the inequality in wealth and development between countries to the exploitative nature of many international relationships that often began with colonialism. The theory focuses on the existence of a core nation and a periphery nation participating in some kind of transactional exchange resulting in an unequal distribution of benefits ("Modern World-System" 633). World-systems theory recognizes social and economic patterns, which have developed over centuries and grown into modern-day core and periphery systems (Gowan 471). The relationship explained between core and periphery nations in world-systems theory relies upon inequality perpetuated by exploitation and foreign involvement, which is manifested today typically in the form of natural resource extraction and raw exports. The periphery does not benefit from the transaction nearly as much as the core, allowing the inequality between the core and periphery to increase over time. In Latin America, this pattern exists as many Latin American nations, including Argentina and Paraguay, have historically been peripheral countries for stronger countries.

In world-systems theory, core nations benefit unequivocally from the transactional relationship with peripheral nations. Core nations are able to take full advantage of the resources of peripheral nations because most core nations have been developed for far longer than peripheral nations. Fewer core nations exist in the system than peripheral nations; the abundance of peripheries allows core nations to pick and choose the periphery most fiscally beneficial, while peripheral nations have far fewer options for business ("Modern World-System" 633). Core nations continually grow stronger and

wealthier at the expense of peripheral nations, locking both groups into a cyclical system of inequality (Gowan 472). Core nations are rarely dependent on peripheral nations in the same way peripheral nations depend on the core for economic stability; Latin American nations typically depend on high volume exports to core nations in order to ensure some revenue. Core economies continue to strengthen using the resources of peripheral nations, while peripheral nations struggle to advance and remain stagnant.

Nations become peripheral to other core nations through a long history of exploitation and colonialism, which created unstable and dependent national economies and industries. Peripheral nations often share several common characteristics to qualify as peripheries; some characteristics include economic instability, abundant cultural diversity, an available labor force, and a frequently moving population (Wellhofer 507). The shared characteristics unite to create the ideal peripheral nation for core nations to employ, by ensuring a that rather fragmented population in need of work and money is willing to do almost anything in order to survive (Wellhofer 508). Core countries take advantage of peripheries at weak moments in history, creating asymmetrical relationships (Oviedo 8). Core nations have frequently begun to use peripheries at fragile and unstable moments throughout history, including times of weak national economies in Latin American countries in the post-colonial era. Many western nations have used Argentina and Paraguay as peripheral nations for expanding soy agribusiness, because they are rich in agricultural land and have successful infrastructures for exporting.

A small-scale model of world-systems theory exists even within the periphery nations. Divisions within the populations of peripheral nations create smaller core and periphery groups. Trade relationships often mimic international relationships in core-periphery systems, with more powerful corporations acting as the core to smaller businesses and individuals (Oviedo 9). Like the growing disparity between core and periphery nations, multinational corporations grow stronger as the beneficiaries of core-periphery systems while the periphery remains stagnant ("World-System Perspective" 168). The core-periphery system within peripheral nations hurts smallholder farmers and peasants the most, as these groups have the least amount of alternatives for survival.

FINDINGS

Transnational soy agribusinesses invested in Argentina and Paraguay as part of a strategic market expansion into the Southern Cone. Genetically modified soy was introduced and adopted quickly in the Southern Cone, creating an ideal environment for the soy boom. From 1997 to 2002 agribusinesses invested over $800 million into genetically modified agriculture in the Southern Cone region, with the majority of funding allocated to soy expansion (Sissell 21). For about a decade, agribusinesses have been working to develop a new biofuel from genetically modified soy produced in the Southern Cone (Borras 577). If successful, agribusinesses' initial investment into soy will create even more revenue than what is already created from the current production of genetically modified soy. Early agribusiness investors in the Southern Cone not only created a large and expanding market with a relatively low-risk investment, but also created the

potential for future returns going beyond the already profitable soy market.

The introduction of neoliberal governments helped agribusinesses to establish the genetically modified soy industry in Argentina and Paraguay as the soy boom began, as a result of newly relaxed economic policies with a laissez-faire structure. The opening and mostly deregulated market encouraged agribusinesses to work in the Southern Cone. Additionally, Argentina's President Carlos Menem, in office 1989 to 1999, approved the introduction of genetically modified soy in 1996 as part of a push for market liberalization (Lapegna 522). The wave of neoliberalism in the 1990s focused particularly on creating an agricultural export model with genetically modified soy in hopes that the production would help with socio-economic development and increase trade on a global scale (Leguizamòn 149). The neoliberal leadership successfully created an incentive for transnational agribusinesses to begin production in the Southern Cone, considering soy is now the main form of agriculture in terms of both export value and land area (Wesz 287). The emphasis on agriculture for export created a global demand for inexpensive soybeans and soy products around the world. The neoliberal governance and lax economic policies allowed the industry to continue growing, and today provides agribusinesses with relatively low-maintenance revenue in Argentina and Paraguay.

Argentina has been an important battleground for biotechnology and agribusiness since the introduction of genetically modified agriculture due to a combination of geographical, economic, and social factors. The availability of farmable land, pre-established agricultural infrastructure, and an impoverished population made Argentina the perfect country to test out newly developed genetically modified soy. The rural Pampas region of Argentina has long been an agricultural center, mostly in the production of animal agriculture; the region has always been export-focused, and soy agribusinesses were able to adapt the pre-existing export infrastructure (Delvenne 154). Genetically modified soy was introduced in the Pampas region of Argentina in 1996, enticing farmers by offering the modified seeds and the corresponding herbicides without charging the normal royalties (Joensen 7). The inexpensive start-up investment for genetically modified soy provided an impetus towards the rise of agribusiness in rural and impoverished communities without a total understanding of the technology. Agribusinesses have used the established agriculture infrastructure to expand the newly emerging biotechnology in Latin America, with low start-up costs and high payoffs.

The agriculture for export model in Argentina and Paraguay benefits agribusinesses and large-scale producers. Small-scale peasant and indigenous farmers struggle to make a living as soy exports continue to grow and subsistence crops for domestic consumption diminish. In just 15 years, over half of Argentina's farmable land was transferred to genetically modified soy crops, totaling near 46 million acres of genetically modified soy (Lapegna 517). Argentina is the world's third largest producer of genetically modified soy, and the world's second largest exporter, following just behind the United States (Delvenne 155). Of all the soy produced in Argentina, only 5.4% of it remains in the country for domestic consumption

(Leguizamòn 154). The export production system encourages the domination of arable land previously allotted for subsistence farming in order to increase yields for export to foreign nations, therefore increasing profits for agribusinesses and large-scale producers. Small-scale farmers and peasants never see the profits of the export model, and thus experience the negative impacts of the system.

Large-scale soy farms and agribusinesses continue to require more land for expansion, dispossessing peasants and smallholder farmers of farmland and homes. The soy-producing region is traditionally agricultural, with many families living on the same land for generations farming. Without land to work on, peasants and smallholder farmers face job insecurity and must move from the rural farming region. After the introduction of genetically modified soy in Paraguay, the population of people living in rural areas dropped significantly over the course of a few decades, from almost 5 million people in 1970 to less than 3 million people in 2010 (Leguizamon 152). Part of the relocation of rural peasants is sanctioned by the Paraguayan government; many peasants and smallholder farmers in the region have lived on government-allotted lands for decades, but since the beginning of the soy boom, the government has illegally sold and even given the land away to large-scale soy producers (Abramson 34). The Paraguayan government justifies the dispossession and land consolidation as necessary because the soy export industry is so lucrative for large-scale producers and draws more business to the country (Finnis 181). Land consolidation through dispossession is more efficient for large-scale producers, who are able to absorb neighboring properties at little to no cost. This pattern of dispossession, while profitable for the large-scale producers and governments, strips peasants of a home and a source of work, thus threatening peasants' entire livelihood.

Genetically modified crops can withstand heavy amounts of pesticides and herbicides, which are typically deadly for non-modified crops. Agribusinesses create various agrochemicals for specific strains of genetically modified crops, which work together to increase yields. Farmers distribute agrochemicals heavily several times each crop cycle to kill all weeds and invasive plants while protecting the crops genetically engineered to absorb the herbicides without harm, like genetically modified soy crops in Argentina and Paraguay (Mink 174). Once distributed, usually in a liquid spray form, herbicide attaches to soil particles and plants and kills all non-genetically modified plant life and bonds to the soil in order to prevent future growth (Peruzzo 61). The use of agrochemicals increases efficiency in crop production, because farmers spend less time fighting invasive plant species, as agrochemicals only need to be distributed a few times per crop cycle as opposed to gentler, non-genetically engineered herbicides requiring frequent application. The use of agrochemicals also increases profits for large-scale farmers due to the low cost of the herbicide in Latin America and the minimal labor required to protect the crops from weeds and invasive species.

The use of agrochemicals in genetically modified agriculture allows for higher crop yields, but also poses a threat to the health of surrounding communities. The frequent use of herbicide increases exposure to the agrochemicals thus increasing the threats to the physical health of smallholder farmers

and peasants in the soy-producing region of Argentina and Paraguay. The chemical makeup of agrochemicals as well as the typical distribution method on large-scale farms result in dangerous agrochemical drifts. Large-scale farmers often use small airplanes to spray the herbicides over large areas of land; the airplane method of distribution is efficient, but creates large agrochemical drifts carrying herbicide and spreading it into neighboring homes and water supplies (Lapegna 529). Under ongoing studies, agrochemical drifts have been linked with increased congenital deformities as well as a variety of less permanent health concerns, like blisters and respiratory issues (Leguizamòn 156). Increased exposure to agrochemical drifts elevate the toxicity of the agrochemicals, creating a more significant health threat for both peasants and smallholder farmers residing near continuously growing large-scale farms, including cancer and miscarriage (Ezquerro 707). The wide use of agrochemicals and the harm agrochemicals cause have significantly impacted the well-being of smallholder farmers in the soy-producing region.

Agrochemicals also create a slew of environmental issues in the soy-producing region, including soil pollution, water pollution, and non-genetically modified crop degradation. The continuous use of agrochemicals essentially poisons the farmland and makes the soil toxic for all crops except genetically modified crops. Soil toxicity takes years to rebalance, however the constant dispersion of agrochemicals makes neutralizing the toxicity nearly impossible. In Paraguay, soy production alone introduces over 6 million new gallons of agrochemicals into the soil each year with no indication of slowing (Abramson 36). Agrochemical drifts spread into neighboring farms, poisoning non-genetically modified crops and polluting water supplies (Lapegna 530). The bond between herbicide and soil particles is water soluble, so even small amounts of rainfall cause agrochemicals to run freely into nearby creeks and ponds poisoning aquatic plants and microorganisms necessary for environmental balance (Peruzzo 61). Agrochemicals expedite genetically modified soy production, however the use of agrochemicals causes nearly irreversible soil and water degradation.

DISCUSSION

The genetically modified boom in the soy-producing region of Argentina and Paraguay negatively impacted the livelihood and health of peasants and smallholder farmers, through consistent exploitation, environmental degradation, and mistreatment. The consistent use of agrochemicals threatens the physical health of surrounding smallholder farmers, while the expedited production method of genetically modified soy eliminates the main source of work in the region. The neoliberal leadership in Argentina and Paraguay successfully created an export-based economy, but also created widespread job loss in the rural area with the introduction of genetically modified soy technology (Welch 46). The expansion of large-scale soy agribusinesses displaced more than 300,000 peasant and smallholder farmer families in Argentina from 2000 to 2010. Peasant displacement due to soy expansion removes smallholder farmers from their land and condenses the work force, providing far fewer jobs than traditional non-genetically modified crops require (Garcia-Lopez 197).

Agrochemical drifts poison surrounding non-genetically modified crops, pollute water and food supplies, and lead to congenital defects among other health risks (Ezquerro 707). Soy agribusiness giants threaten the well-being and economic survival of smallholder farmers and peasants in order to protect their own interests.

The Roundtable on Sustainable Soy sought to unite government, agribusiness, farmers, and citizens internationally to work towards the common goal of a sustainable, profitable genetically modified soy industry. The Roundtable emerged at a difficult time for the soy industry, when reports of environmental risks and concerns for small farmers began to circulate. By 2013, the Roundtable, later renamed as the Roundtable on Responsible Soy, had 162 member groups, including agribusinesses, finance and trade experts, soy producers, local governments, and farmers. The purposes of the Roundtable were to reassure buyers and consumers of a responsible production method and to improve the public image of the industry (Elgert 541). The members of the Roundtable pledged to only support sustainable soy agriculture, which could create a market responsible to the community and environment (Garcia-Lopez 201). The principles of the soy Roundtable included environmental responsibility, strong community relationships, responsible labor conditions and agricultural methods, and overall "good business practice" (Garcia-Lopez 201). The Roundtable has the potential to be an effective effort for environmental sustainability and responsible community interaction, however not all groups involved in the genetically modified soy industry are involved in the Roundtable. The most notable groups missing from the Roundtable are smallholder and indigenous farmers, who, despite making up a huge portion of the soy industry, have no say in what should qualify as sustainable and responsible.

The use of genetic modification in soy agriculture increased profits for large-scale farmers and agribusiness. The farming method for genetically modified soy increases yields, while minimizing start-up costs. Genetically modified agriculture has a higher guaranteed yield due to the use of herbicides and pesticides but also requires less labor; the typical genetically modified soy starter package includes a no-tillage system, allowing a faster production of crops with less labor than in traditional agricultural practices (Leguizamon 151). Genetically modified soy in Argentina and Paraguay has seen a period of uninterrupted growth for the past twenty years, making genetically engineered soy a minimally risky crop, with profits coming relatively easily for agribusinesses (Wesz 287). The quick production method, high profits, and minimal labor force required for genetically modified crops referred to in combination as the *modelo sojero*, is a propaganda advertising strategy for other countries to adopt genetically modified technology as well (Newell 28). While profits are higher for some, agribusinesses' claim of higher profits for all farmers is false. In reality, the smaller labor force and the lack of available jobs has hurt small-scale farmers more than the increase in profits has helped.

World-systems theory exists in many forms but is especially prevalent on a small-scale within previously peripheral nations. In Argentina and Paraguay, the smallholder farmers are peripheral to large genetically modified soy agribusiness. International agribusinesses recognize peripheral nations—like Argentina, the third largest

agricultural market in the world—as the perfect market for production, and use peripheral populations within peripheral nations to benefit the core production method (Sissell 21). Agribusinesses began to target peripheral nations as the perfect place to introduce the genetically modified technology in 1990 because peripheral nations were in need of financial investment to help boost national economies (Glover 855). Agribusinesses work as core groups in Argentina and Paraguay because of the ability to buy out peripheral smallholder farmers. Due to the influence agribusinesses have in politics, the government rarely enforces property laws and environmental policies where agribusinesses are involved. The miniature world-systems model is abusive of the most vulnerable members of society because smallholder farmers and peasants face double exploitation. The soy industry consistently orchestrates a cycle of exploitation in Argentina and Paraguay solely for financial gain.

CONCLUSION

The soy industry and expansion of agribusinesses cause job loss and displacement, creating uncertainty in livelihood for peasants and smallholder farmers in the soy-producing region. With the growth of the soy industry following the soy boom, the traditional way of life in the region has almost disappeared, following the displacement of over 300,000 smallholder farmers and families. Smallholder farmers feel the effects of the big soy industry in all aspects of life. Peasants no longer have land to create personal revenue from small-scale farming, and also non-individual agricultural job opportunities are minimal due to the fast-paced and low-labor production of genetically modified soy.

The use of agrochemicals in the soy-producing region threatens the health and well-being of remaining smallholder farmers and peasants. By design, agrochemicals poison and kill any non-genetically modified plants, so agrochemical drifts often unintentionally spread poison into homes, water supplies, and soil. Agrochemical drifts caused an increase in miscarriage, birth defects, and cancer. Agribusinesses benefit from the efficient and inexpensive distribution of agrochemicals, while peasants and smallholder farmers face potential exposure to toxic chemicals and difficult farming conditions.

The lack of primary data in the form of interviews and fieldwork limited the qualitative information available in the research to secondary sources. While many secondary sources include pieces of interviews with peasants and smallholder farmers, the information is not as thorough or complete as the information direct firsthand interviews could provide. Firsthand interviews with smallholder farmers and peasants in the soy-producing region would have added a unique and more personal perspective to the research, providing a more comprehensive understanding of the impacts they have felt since the soy boom. If the time and monetary constraints of the project were different, firsthand fieldwork would provide a more comprehensive understanding of these impacts.

In the future, the project could expand to include firsthand interviews with both smallholder farmers and large-scale farmers and agribusinesses, providing more insight into the relationship between the two groups

in Argentina and Paraguay. The project would include fieldwork in Argentina and Paraguay, allowing access to interview subjects and a direct view into the soy industry and the effects on smallholder farmers in the region. By including information directly from the source—smallholder farmers and the soy industry—the project would add to the more quantitative research conversation already in place with new meaningful qualitative observations on the changes in the soy-producing region. A project based in interviews and fieldwork would also create a more emotionally driven project, given the inclusion of primary responses to the growing soy industry, and perhaps elicit a greater reaction to the impacts of the soy industry on smallholder farmers and peasants in the region.

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