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Integrating Seed and Crop diversity within the United States Agriculture Management System

Rhodes College

Dylan Morris

AUDIENCE

This policy review is a research project intended to challenge the economically motivated seed production model present within the U.S. agricultural sector. This subsidy based system prioritizes producing the most crop per acreage of land while overlooking the potential negative health effects of a minimal diet availability (Gholizadeha et. al., 2018). I hold the USDA (United States Department of Agriculture) and big agricultural companies responsible for the injustices on how narrow our seed market has become. I also contend that the USDA and big agricultural companies are directly responsible for the minimal amount of crop diversity in the United States resulting in increasing rates of diabetes and premature heart disease due to a lackluster and highly processed diet. The effects are even more confounded within marginalized communities consisting of Indigenous tribes in North America (Massawe et. al., 2016). These policy recommendations are intended for USDA agency representatives to foster proper representation and fairness within the seed market. These changes would be instrumental in creating more diversity within the seed market and provide opportunities for seeds to be available to farmers for production and further expand our dietary choices as consumers.

EXECUTIVE SUMMARY

The United States agricultural market is one of the largest economic segments within the American economy, totaling over hundred forty billion dollars this past year (USDA). The seed market shares within those profit efforts comprise over fifty billion of the hundred forty generated last year (USDA). Although billions of dollars are generated each year in the seed industry, companies such as *Bayer*, *Corteva*, *Syngenta*, and *BASF* combine to receive over 80% of the profits and production costs for the three major crops grown in the United States: corn, soybeans, and cotton (USDA, 2018-2020). The seed market is heavily dominated by these four

conglomerates and trends indicate that only these top companies are profiting exponentially from modified seeds compared to the average conventional or organic farmer especially in Native American communities. During the pandemic, it was estimated that over half of Native-owned food producers had to close or were forced to partially close because of the decreased revenue and being left out of most of the profits (Mucioki et. al., 2022). The trend to benefit the uppermost agriculture companies stems from the introduction of individual property rights and the exclusion of outside collaboration with local farmer and community groups. Now is the time to incorporate better farming practices and implement policies that benefit not just the major companies but also those struggling to keep their farms running. Within this current market environment, the top companies maintain control over what crops are desired and where the research is focused upon, which ultimately has negatively affected the surrounding environments (Campbell and Veteto, 2015). The solution must involve techniques that favor a symbiotic management relationship between Indigenous and local farmers with the top agricultural companies to ensure fair representation and environmentally friendly crops that have been disfavored solely based on production costs. Thus, the question remains, **how can the USDA improve intellectual property regimes to better support crop diversity, while addressing their negative impacts on marginalized Native American communities, and mitigate contributions to climate change?**

CENTRAL ISSUE

The clear problem within the United States agricultural sector is the interdependence on new technologies and how competitive companies are limiting collaboration between diverse groups. Dependence on technology leads our nation to lean solely on agricultural companies to come up with new innovative solutions consistently (Campbell and Veteto, 2015). The agricultural companies base their decision matrix solely on profitability and being able to apply their

proprietary products on the largest number of acres (Winders, 2018). Thus, solutions to the problem with food production is not a matter of developing new agricultural technologies, but rather to encourage policy officials and researchers to try to find new types of solutions that minimize or eliminate harm to the environment (Pathak et al., 2024). Technology is not always the best answer despite how large agricultural companies want it to be, especially for those who can't afford technology, so it is time to consider a new system. We must utilize other methods that are easily being overlooked because of those in power and their governmental influence.

BACKGROUND

PRE-EXISTING POLICY

Intellectual property rights (IPR) have long been used in the agricultural sector to stimulate research, development, and innovation. Intellectual property rights are legal instruments in place to protect companies from theft of ideas and information where there has been a shift to upholding them within the new system. Intellectual property rights are of utmost importance because historically plants and seed material were regarded as communal resources to be freely shared among growers (Angelo, 2010). Farmers were incentivized to save, replant, and resell seeds to other farmers, the dominant paradigm for trait development being farmer sharing (Angelo, 2010). Monopolistic practices and IPRs implore companies to desire to prevent others from profiting off their inventions, including their proprietary seeds and the chemicals used to maintain their crops. Growers of these major crops are prevented from collaborating with partners to produce traditional food sources or alternative food options. This prevention is based on companies wanting to maintain power and control while being driven by economic indicators rather than environmental stressors. There is a power imbalance between top crop producing companies and everyone else,

but the USDA continue to subsidize large, privatized companies such as *Monsanto*, to continue to propagate high-end production approaches.

IPRs are agreed upon through Trade Related Aspects of Intellectual Property (TRIPs), and there have been unforeseen consequences (World Trade Organization, 2024). As IPRs incentivize economic interests rather than collaboration across platforms, the developed nations now take advantage of developing nations by abusing power relationships in order to gain access to viable knowledge produced by companies in developing countries. Rather than working with these smaller companies, big, developed country agricultural companies just hoard the research and primary access to the economic profit associated with said research gain (Lianos, 2016). More reliance on technology has only intensified this relationship of companies isolating themselves and their researchers from each other and outside sources such as Indigenous voices to maintain power and control. Property rights also lead to questions surrounding whose property is truly theirs', so it only intensifies the disinterest from working with others as property means money in this system and companies need to ensure property and profits are kept to themselves and not shared (Lianos, 2016). Small farmers, marginalized groups, and Indigenous communities ultimately have no "rights" under these set of rules as it pertains to seeds and variety of seeds since the companies with the deepest pockets patent their work and can buy out the research from other smaller companies or farmers who are struggling all within this system as well.

IPRs are becoming more and more of an issue as the world is tasked with trying to fight climate change. One solution that has been heavily researched is genetic modified organisms (GMOs). Within the last half century, farmers in America have become significantly more reliant on genetically modified crop technologies and advancements in synthesized chemicals to attempt to maintain an unsustainable rate of production as new pest pressures continue to develop at a

faster rate than the current tools can address (Rótolo et al., 2015). IPRs are at the forefront of the agriculture industry since GMOs rely heavily on technology and the vast number of resources needed to invest in such large complex manufacturing. The privatization of physical traits and intellectual property within the USA legal framework has allowed genetically modified technology-based companies to outcompete conventional seed and chemistry-based companies by directing the industry to rely more on recombinant technology in addition to heavy pesticide loadings.

IPRs have specifically targeted Indigenous community groups through the reinforcement of settler colonialism and dissolution of Indigenous culture and sovereignty. Settler colonialism is a system of oppression that aims to displace and replace an indigenous population with a new settler population (Veracini, 2013). It's a capitalistic system that has pioneered settler colonialism in America for centuries since first contact with Hernando De Soto up to force removal and forced assimilation into American Culture (Bowles, 2014). Indigenous members are incentivized through government resources and seed access to plant seeds and crops that are promoted by these top companies. Settler colonialism is also seen through the federal assistance and recognition process maintained in America since there are more than 400 tribes within the nation's boundaries and our county only services up to 300 of those (Anderson, 1978). Thus, Native American communities severely lack funding and can only afford to buy food that has been cheaply produced based on tribal needs (Farrell et. al., 2021). Native American communities are also heavily reliant on the USDA in the form of food programs to provide access to alternative foods that diversify uniform diets (Mucioki et. al., 2022). In every asset of food production, Native American communities show little autonomy in the foods they can produce so the need to feed their people is met through ways not originally from their culture. IPRs reinforce this system of oppression through large

corporations gaining all the profits and limiting Indigenous communities from gaining access to those resources. These issues with Intellectual Property Rights in agriculture make it clear that we need to look at other approaches, such as Native land management practices, which focus on caring for the land, sustainability, and working together as a community rather than chasing profits.

NATIVE LAND MANAGEMENT PRACTICES

Historically, Native Americans have cultivated North American land for hundreds of years through a system that is not shared by Western capitalistic principles. Their approach revolved around a system of responsibilities and land reclamation. Systems of responsibilities refers to one viewing themselves as a caretaker of nature, with a deep responsibility to protect and maintain ecological balance through sustainable practices and considering the land as a sacred entity to be passed on to future generations (Duran, 2002). This includes practices like careful resource management, honoring natural cycles, and a strong belief in the spirit of the land and its creatures (Duran, 2002). This relationship is seen where Native Americans did not completely exhaust the soil of nutrients (Russell, 1983), and they typically farmed fields for a maximum of ten years, and they frequently burned their fields, which returned nutrients to the soil (Albert and Minc, 1987). Disruptions are essential for some native species to reproduce and drop their seeds to then re-harvest, without disruption these species are lost and extremely hard to reproduce into the environment, which is why disruption techniques should be utilized and not prevented. Numerous Indigenous groups and tribes use and have used understory burning to remove environmentally dangerous underbrush that contributes to forest fires and the consumption of underground water sources (Fritz, 2022). Only through controlled burns can the proper nutrient cycling take place since it requires the absence of plants or crops sucking the nutrients from the ground (Anderson and Moratto, 1996). Controlled burns have been highly productive in helping increase growth rates

in endangered plant species such as *Hudsonia montana* or mountain golden heather (Gross et. al., 1998). Controlled burns and beneficial ecosystem disruption tactics have been banned by the United States Forestry Service. Under these bans, forest fires and nutrient cycling have been more severely harmful to the ecological health of the geographic areas where these bans are stricter (Wonkka et. al., 2015).

Indigenous communities have been partaking in a systems of responsibilities approach toward caretaking the earth for thousands of years and have accumulated vast banks of knowledge according to protecting and caring for the earth (Scarry and Scarry, 2007). This knowledge commonly referred to as, *Traditional Ecological Knowledge* (TEK), and is useful in combating problems that have been occurring with higher frequencies of nutrient exhaustion and hunger (Russell, 1983). TEK often involves utilizing cultivation techniques and harvesting strategies that depend upon types of disturbances that contributed to changes in structure and function of the vegetation (Anderson et al., 1996). TEK often involves knowledge regarding how natural processes allow for plants to naturally grow well together, and knowledge about certain specific crop cycle rotation periods that allows for optimal growth. Understory burning is beneficial in increasing water resource availability and allow traditional plants and trees to grow with the absence of brush outcompeting native plants (Fritz, 2022). The "Three Sisters" crop technique is another traditional Native American method of planting with corn, beans, and squash together in a symbiotic relationship. Within this system, the corn provides a base for the beans to climb, the beans fix the nitrogen in the soil, and the squash acts as ground cover to suppress weeds. Ultimately this creates a self-sustaining ecosystem within the garden plot free from synthetic fertilizers or pesticides (United States National Park Service).

Traditional Ecological Knowledge is completely abolished by Intellectual Property Rights. The natural environment is neither respected nor cherished under this system that operates within a cost profit margin balance sheet. Large companies don't prioritize ecosystems and focus on how much money they can make avoiding environmental restrictions year after year. According to the USDA, the agro industry is one of the top emitters in the spectrum of American carbon emitters as eleven percent of our total emissions in this country result from the agroindustry (USDA, 2023). In the past year, America used 20 million metric pounds of fertilizer to help support the seeds and crops we wish to produce from the top companies (USDA, 2023). It's from thinking of oneself outside of a capitalistic methodology mindset into one who doesn't define success with how much money they make that the fundamental shift can be made. This shift is essential in dissolving the monopoly of the seed market and allowing other groups who aren't focused on producing the cheapest food to gain access to resources so our world can replenish our natural resources. The sustainable principles of Native land management, rooted in harmony with nature and ecological balance, provide a foundation for understanding why crop diversity is critical today.

WHY IS CROP DIVERSITY IMPORTANT?

According to the USDA, in the United States over half of the acreage available for harvest was dedicated to two crops: corn and soybeans. In some areas, such as the Midwest, that number is almost three fourths of the acres of farmland that was allocated for those crops. In the past year, there was a record high 15.3 billion bushels of corn produced, which was a 12% increase from the previous year (United States Department of Agriculture, 2023). This highlights how much of a focus we place on producing cash crops that the government helps subsidize and incentive farmers to produce under their policies. This overproduction of corn has led to an outpacing of corn usage resulting in a major surplus in the production where acreage could have been used supporting other

species of crops or plants. It's important to realize that there are over 3 billion of acres available to grow whatever crops we wish to produce but over half of them are spent and exhausted to maximize the strategies implemented within the modern scope of agriculture in the United States.

Crop diversity is essential for a multitude for reasons. The most glaring case for crop diversity is the impact it has on human health. Eating a healthy mixed diet means you are partaking nutrients from different sources and can digest healthy unsaturated fats which are enclosed in fruits and vegetables and many traditional plant species (Massawe et. al., 2016). Traditional nuts and fruits produced in the environment around native groups have been heavily utilized in medicine and diets which have been threatened by climate change and ecosystem changes to monoculture (Gurney et. al., 2015). Monoculture prevents the production of native nuts and fruits needed in a well-balanced diet as fields of corn and soybeans subsidized by the US government take up valuable space that otherwise could be used to grow native trees that can produce fruits and nuts (Campbell and Veteto, 2015). The shift toward consumption of corn and its highly saturated and processed fatty and sugary foods including high fructose corn syrup are cheaper and easier to mass produce within modern agricultural practices. This annual cascade of ultra-processing is leading directly to high rates of type II diabetes in the United States and more importantly to marginalized communities in the United States (Gholizadeha et. al., 2018). We are one of the wealthiest countries in the world, yet still rank within the top 10 of countries globally in diabetes rates and within the top 3 for development of type II diabetes (Magliano and Boyko, 2021). As a nation, we are motivated by large multibillion conglomerate agricultural companies and their processing facilities whose primary focus is on mass producing corn, maize, and other carbohydrate rich foods and that has led to a trend toward unhealthy eating patterns and cheaper food sources that are consumed by vulnerable populations.

Another key characteristic of crop diversity that is often overlooked is the fact that a diversification of crops allows for an abundance of diversity to help increase resilience in crop yields. For example, different crop species can act as a safeguard to help withstand drought, flooding, temperature extremes, pests, and diseases (Massawe et.al, 2016). This is a natural evolutionary process to help combat these persistent issues that we try to use technology to solve. Plants that create toxins, pheromones, and secretions to naturally repel pests is an extremely valuable commodity and should be utilized more instead of increasing the usage of pesticides. Seed diversity is as if not more important than crop diversity as it pertains to maintaining genetic diversity and resistance to extreme weather events. Locally adapted seeds and traditional seeds act as a source of autonomy, genetic diversity, and technology transfer (Da ViÀ, 2012). Climate change is highly unpredictable, and trends indicate that drought and other severe weather patterns are going to be more prevalent and have stronger impacts so the need for crop diversity is stronger than ever (Massawe et. al., 2016). It is highly unsustainable to combat the never-ending changing climate patterns with more usage of water, pesticides, and fertilizers, or any modern agricultural practice. Recognizing the importance of crop diversity highlights the urgent need to rethink modern agricultural practices. By shifting focus toward providing diversity in what we grow and what is being sold to grow, we can address the environmental degradation, health concerns, and resource exhaustion tied to monoculture systems.

POSSIBLE SOLUTIONS

Option 1: The USDA helps in implementing policies and monetary incentives for companies and other groups such as Indigenous community members to move the land and seed market from a model of privatization to profit sharing between all shareholders.

This option is very bold as it means that the USDA is needed to shift the current market system to that isn't privatized. Privatization is undesirable as it drives environmentally harmful competition between companies whose focus is seed market domination and nothing else. An alternative method will allow for Indigenous communities and other communities desperate on funding to obtain profits and bring back the imbalance of power. Companies who aren't of the big four could offer products that will be bought by local farmers and not have to worry about competing against companies with much larger resources. This will de-incentivize Intellectual property rights because IPRs are fundamentally about making the most money as possible and this policy option will limit companies from trying to make the most money. I envision profit sharing to incorporate allocating portions of farmer payments to specific groups and not all to one group and these proportions can vary based on input in a seed being produced but if any seed is helped produced by many companies the seed's profits isn't only being made by *Monsanto* for example. Within this scope, patents and legal documents that enforce one companies claim over a product compared to the next would have to be dissolved so products won't be shut down from one company to the next.

Option 2: The USDA incorporates and adds penalties upon companies who keep information from other companies as it pertains to seed knowledge or access to seeds. You can also add fines to companies who who refuse to work with Indigenous communities and local farmers in the cultivation of research.

This policy option is straightforward as it explicitly states involving penalties to large corporations who refuse to work with groups who excel in environmentally farming practices and knowledge. These penalties could be increased for every refusal and adding penalties helps the seed market as it a monetary incentive for companies to work with Indigenous groups and smaller

organizations. Money that is made upon fines can be then re-distributed back to marginalized communities who depend upon funding as a means for access to healthier food options. Companies withholding information from other groups of people reinforce the negatives regarding IPRs so this option will help alleviate those problems and try to add cross communication between a wide diverse group of people. Communication can be had at conventions and other large group events, where Indigenous community members can also be incentivized with land access and tribal sovereignty for attending said events. While working with Indigenous communities, companies will learn about seeds that aren't just regarding increasing profits so it can ultimately teach companies about crops that help increase crop and seed diversity.

Option 3: The USDA backs nonprofit and other organizations to reintroduce and add traditional seeds into the market. The USDA contracts Indigenous communities with helping to pick out the seeds to specific geographic locations and when to plant specific seeds.

This is a very realistic model of wanting to increase crop diversity and seed diversity into the market. This will allow Indigenous communities a space to showcase what seeds are native to the area and how environmentally friendly the seeds can be to the environment. The market will act as normal, and farmers will have more access to traditional seeds as the USDA pays for Indigenous tribes to grow fields to produce seeds/nuts needed for supplying farmers with the seeds. The other portion includes Indigenous community members helping select areas where farmers can grow more nutritionally healthier crops that won't need as many resources as modern-day crops to grow. This can also be implemented with the help of the Native Seeds collection which is a foundation that was created to conserve native plants and ecosystems within the Bureau of Land Management (U.S. Forrester Service). The solution should involve more than the utilization of this foundation as

this still falls under a settler colonial dilemma where Indigenous communities are involved infrequently and not subsidized to the extent as they should.

Policy Solution	Pros	Cons
Policy Option 1	<p>Profits will be allocated to not just the top four companies</p> <p>Indigenous communities and other communities reliant on USDA funding will be more independent and less reliant on funding</p> <p>Indigenous communities will have more access to a wider range of crops and food which will help dietary needs and health disparities</p> <p>This option also allows for more cross communication and de-incentivizes Intellectual property rights and ultimately driving open communication between different groups</p> <p>More tribal sovereignty and awareness since members will be utilized and subsidized (company involvement will lead to improved relationships)</p>	<p>This option is very drastic when it comes to American consumer/producer markets so it might receive a lot of public backlash from top companies who are uncomfortable with profit sharing</p> <p>The option also relies on power dynamics to be dissolved and may lead to an imbalance in still between one group enforcing their will over another group</p> <p>This option doesn't try to tackle the challenge of crop diversity and only tries to let actors try to invite crop/seed diversity into trying to solve the situation</p>
Policy Option 2	<p>Fines and penalties will keep companies from limiting access to research and will promote cross collaboration</p>	<p>This option is very basic and will require USDA funding to ensure that fines are properly being enforced and companies aren't cheating the system</p>

	<p>Fines are profits that can be shared with Indigenous groups and local farmers to further promote local farming and environmentally friendly farming</p> <p>This will help aid in tribal sovereignty and federal recognition as more tribes will have to be recognized for agriculture companies to work with them</p> <p>This option dis-incentives intellectual property rights as withholding information and keeping to themselves will hurt companies and they would make more profit from sharing their research</p> <p>More tribal sovereignty and awareness since members will be utilized and subsidized (company involvement will lead to improved relationships)</p>	<p>Backlash from large companies like Monsanto who wouldn't want to fund Indigenous tribes to help with invoking knowledge</p> <p>Fines also might exacerbate the situation as fines will place pressure on companies who are dissatisfied with the market and might induce company holdout of products</p>
Policy Option 3	<p>Crop diversity will be supported under this policy option as traditional seeds/crops that otherwise won't be in the seed market will be added based on incentives</p> <p>More access to high processed foods for Indigenous community members/others</p>	<p>The root cause isn't fixed as the mechanism for the erasure of Indigenous tribes is still in the seed market</p> <p>Crop efficiency will decrease</p>

	<p>because of accessibility to seeds and affordability of the seeds after being introduced</p> <p>More tribal sovereignty and awareness since members will be utilized and subsidized (company involvement will lead to improved relationships)</p>	<p>Will require differences in agricultural farmland technique and experience that is different from modern agricultural practices</p> <p>Traditional seeds will need to be reintroduced in climates that might not support said seeds anymore</p>
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Policy Recommendation Option 3: The USDA backs nonprofit and other organizations to reintroduce and add traditional seeds into the market. The USDA contracts Indigenous communities with helping to pick out the seeds to specific geographic locations and when to plant specific seeds.

I think the most useful and realistic policy recommendation is the implication of subsidies for Indigenous community members to add to the market and not allow farmers to just buy strictly cash crops. Subsidies are not new to American agriculture policy and the government as it stems all the way since the Adjustment Act of 1933, where the government can write rules within the policy for there to be Indigenous participation for the foods to be grown and harvest properly. With the purchasing of traditional seeds companies will interact and build relationships with Indigenous tribes. These fostering of relationships are just add-ons to crop diversification in our food system services which can also help fight cases of drought, flood resistance, and help chronic health related conditions. I suggest utilizing the 2,000 Thus, we can incorporate an heirloom cultivar of colored corn, climbing bean, squash, root crops, and native berries, with a high human health-relevant bioactive profile (Massawe et al., 2019). A seed that can be added more in the market for example is deep-purple Hopi blue corn, which is more drought-tolerant than many other corn varieties. There are over 2,000 seed types in the Native Seeds collection online, but I suggest we

utilize not just the seed bank but those in charge of growing as well. These crops can be sent to schools along with the information about the foods and how their grown so kids can learn where their food comes from and how we impact the environment around them. Within these schools', kids can be more aware of the history around Indigenous communities in our country and that the relationship is still being built where the government and tribes are working towards sovereignty. The food also resembles that native communities are still very prevalent in society today and that we need to maintain shared lifestyles to help combat issues of food insecurity and other nutrient availability. It is very difficult to grow crops and plants that farmers are not accustomed to creating the need to rely on Traditional Ecological Knowledge to grow these new crops in our farm areas. We also need to honor the nations by respecting their ecological and spiritual traditions which means we are to use and harvest the land that is comfortable for both farmers and Indigenous community members.

IMPLEMENTATION IN MID-SOUTH

This research policy review was of the entire United States agricultural system up until this point but since agricultural practices in this country are pretty consist with one another, I wanted to narrow my scope to the mid-south region to which I reside. This region was home to the Chickasaw Nation long before Spanish conquest began. The Chickasaw's were one of the great and powerful "Five Civilized Tribes" who positioned themselves within the Mississippi Delta region. They are still prevalent today and work on awareness trips throughout the country, especially in the delta region, educating students about the rich history of the powerful tribe.

The Mississippi Delta region is known for its corn, rice, cotton, soybean production and other staples that all are very water intensive. In the Mississippi Delta region, agricultural companies are supplying heavy loadings of fertilizers and pesticides to farmers. Companies that

dominate the region include *Syngenta* and *Monsanto* where they own large plots of land in Arkansas, Tennessee, Mississippi draw large amounts of water from the Mississippi River and its tributaries. The companies that support policies that call for more policies that enforce the usage of cash crops, pesticides, and fertilizers as they are producers of all these harmful products. Within this region it is estimated that about two-thirds of all pesticides used for agriculture in the United States are applied to cropland and pastureland in the Mississippi River Basin (Goolsby and Pereira, 1995). Regions in the delta also show levels of some pesticides and their degradants persisting in the environment more than 30 years ago since their application. The agriculture landscape is dominated by monoculture food production which is not environmentally sustainable but rather economically valuable. Thus, Chickasaw tribe expertise and knowledge would need to be utilized to combat environmentally detrimental land management techniques. More specifically it is through tribal leaders where knowledge is stored and passed on so it is working with these actors where knowledge will be shared. For example, seven tribal elders from the Kootenai and Salish-Pend d' Oreille Culture Committees were present, where they shared stories of inherited traditions and knowledge, and candidly offered their perspectives (Massawe et al., 2016). So, by inviting and waiting for the Chickasaw leaders to accept the invitation, a conference could be held to discuss controlled burn implications, seed sovereignty legislation, etc. for there to be incentive for tribal leaders wanting to help and protect our planet.

Policy makers are quick to overlook the facts and maintain the status quo. This complacency ultimately favors top agriculture technology companies and those not living in areas where industrial farming is taking place and impacting their lives. Our nation and agriculture companies continue to discover only address short-term regional concerns while we fragment our established framework and rarely look beyond the problem at hand and what consequence their

solution to the problem has in store later down the road. When is the line going to be drawn, that perhaps maybe trying to fight fire with fire isn't our best option and that we can explore other alternative paths to secure the goal of a healthy ecosystem with proper nutrient cycling while feeding the nation as well?

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