American Farmer: Industrialization, Myth, and Autonomy in Iowa's Corn Belt

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Abstract

Farmers hold a special place in American society. They are seen as the ultimate independent agent, experiencing the freedom of complete control over their lives and succeeding based on hard work alone. However, the level of control that farmers actually have over their environment does not reflect this ideal. The industrialization of agriculture has caused conventional farmers to be highly dependent upon external organizations, whose influence has led to environmental degradation and social changes. These changes were adopted in order to gain more control over their land, but have led to conventional farmers ceding much of their feelings of freedom and autonomy.

Introduction

A central tenant of the American belief system is that farmers are the ideal incarnation of the American spirit. Politicians and publications praise them for their connection to the earth, their lifestyle of hard work, and their resulting moral integrity. We as a society want to believe in barnyard chickens, pigs, milk cows and horses, with strong farmers out in the fields scything sepia-colored hay. We start to teach this vision early in school, as children are taught the outdated pastoral picture of highly diversified farms. Once out of elementary school the myth is continued and refined. An online textbook aimed at high school and college students says, "The yeomen farmer who owned his own modest farm and worked it primarily with family labor remains the embodiment of the ideal American: honest, virtuous, hardworking, and independent . . . farmers [were] central to the republican vision of the new nation" (US History 2013). Movies like Food Inc. and books such as The Omnivore's Dilemma show the depth of America's belief in the pastoral ideal by the overwhelming response when this ideal is challenged. This belief can

also be seen in the recent increase in the number of American farms in general, especially small "hobby farms," and rising numbers of post-grads getting involved in farming (Kitroeff 2012: 2).

However, this Jeffersonian ideal ingrained in the American consciousness has today developed into a very different system. This has occurred due to technological adaptions that have dramatically changed the physical and social landscape of agriculture in America. The EPA, calling Jefferson "the most illustrious farmer that this nation has produced," states that during his lifetime farmers made up about 90% of the work force. This number is now less than 1%. In the modern day, therefore, the vast majority of people have no practical knowledge of or experience farming. The ideological foundation of American society is therefore no longer known by the general public, yet the mythology that surrounds the farmer is still very much in play.

This paper looks at an Iowan community in the midst of the cornbelt and how the profound changes in agriculture have decreased the level of autonomy experienced by farmers in this community. These changes are found in shifts to new crop varieties and chemicals that must be purchased and applied to the land and whose higher yields support a high level of mechanization for farmers. This mechanization gives farmers control over their property, but has led to changing land usage that has eroded the ecological viability of farming practices in America and taken away the autonomy of conventional farmers.

Literature Review

Freedom and Farming

Jefferson's belief in the benefits of the yeoman farmer and farm life were the most famous origin of America's conviction that farming is a superior and independent pursuit. Since

Jefferson's time this sentiment has remained a central belief of American society. In her paper on the mythology of the American Farmer, Peterson (1990) convincingly argues that American farmers hold a lofty and mythical place in society where they are seen as superior members of American culture. Farmers can only be seen as living on their own land, gloriously independent of society for life's necessities (Peterson 1990:3). By doing so farmers "represent both the virtues of human mastery over nature and cultural stability." In 1841 the Union Agriculturalist and Western Prairie Farmer (Peterson 1990:3) claimed that "the farmer is the most noble and independent man in society . . . . He looks upon the earth and the indulgent smiles of Heaven to crown his efforts, resting with the fullest assurance that 'seed time and harvest' shall ever continue through all coming time" (Peterson 1990:3). This picture of the farmer is all powerful; they need nothing but land to bring under the plow and they can feed themselves, their families, and society. Farms can then been seen as a form of "frontier that promises the satisfaction of all demands" when a farmer takes control (Peterson1990:2).

However, this power that farmers are supposed to have does not exist. They spend large amounts of time working as the myth says, attempting to control the world around them through the physical labor of farming. However, this labor has always been subject to the whims of nature and chance, which can destroy crops easily and do so frequently. Farmers therefore are in a position of great pressure where they are expected to control something they cannot. This experience can be seen in country music. In the song "The Only Way I Know" by Jason Aldean he sings, "That old red dirt – the first thing you learn/ Is you don't get nothing that you don't earn"(Aldean 2010). Which leads only to situations in which "The diesels worth the price of gold/It's the cheapest grain he's ever sold,/But he's still holdin' on"(Aldean 2005). The inability to escape this situation is also frequently sung about, such as in the song "Fly Away" by Sugarland,

which expresses a need to escape “Or get buried alive in this legacy”(2008). The fact that these songs are so popular in the community reflects a shared experience of high stress and lack of power.

Stress in farming is high. In a recent study by Rosman (2013) it was found that farming regularly has one of the highest rates of occupation related injuries, illnesses, and fatalities. Crop farmers often work without adequate sleep and rush their work as yields depend on getting their work done quickly. Working with animals is also a major source of stress as they can behave unpredictably and are subject to a variety of diseases and uncontrolled living conditions. In some cases these farmers are also producing their feed so are experiencing the stress of both forms of production. Producers also have little control over weather, consumer demand, and domestic and international competitors leading to uncertainty about getting a sufficient price on their products. In addition, weather concerns such as the recent flooding and drought threaten crops and livelihoods (Rosman 2013). This is especially true because many farmers are deeply in debt, and the markets high level of variability make slipping into financial stress a likely situation for many farmers (Briggeman 2010). This financial stress is generally focused on keeping the land the farmers possess. In 2007, only 45% of farmers claimed farming as their principal occupation and a similar number of farmers claimed some other principal occupation. Farm production expenses average $109,359 per year per farm, yet less than 1 in 4 of the farms in this country produce gross revenues in excess of $50,000 (EPA 2013 Demographics). This means that farmers feel so strongly about continuing to put work into farming that though they cannot sustain themselves or make profits on farming they continue to do so anyway. Perhaps they hope that the myth will sustain them.

Changing Practice of Farming

The mythology of the independent farmer has come from the past when it was much closer to the truth. Until the introduction of machinery and hybrids in the 1930s, farm families practiced subsistence based agriculture. It was expected that a farm would have milk cows, chickens, hogs, vegetable gardens, cured meat, canned fruits and vegetables, firewood, and honey (Conkin 2009: 37). With increased access to markets, farmers began to increase specialization, growing one or two money crops such as corn, hogs, wheat, cattle, and dairy for export by rail (Hart 1986: 8). These cash crops slowly pushed out family's production of their own food on their land, as the efficiencies developed during World War II in processing and marketing of foods made it easier and cheaper to buy most foods than to produce your own (Conkin 2009: 49). The development of nitrate fertilizers after WWII lead also changed farming, permitting farmers to grow more profitable cash crops on the same fields year after year instead of the more diversified systems that existed before (Conkin 2009: 112). These new practices no longer created a system where the farmer could depend on the products of the land- now inputs had to be purchased and the products left the farm for good.

Machines also had a profound effect on rural life and practice of farming. As late as 1930 more than 90% of corn was shucked by hand, an arduous process, though they had machines able to do so (Conkin 2009: 15). These new tools made farming highly capital intensive, requiring more specialized skills from farm operators, exponentially increasing the amount of land needed for efficient farms, and widening the gap between high efficient and specialized farmers and those who could not compete (Conkin 2009: 100). Combines became the harvesting machine of choice for small grains, due to increased product quality and because they decreased the labor needs on farms (Anderson 2009:165). This mechanization resulted in the workforce in agriculture declining by about half between 1950 to 1970, while the value or total product

increased by roughly 40%. Agricultural productivity at least doubled in this period and remained high. Based on labor input, the hours to produce 100 bushels of corn went from 147 hours in 1900 to 16 in 1950 to 3 in 1990 (Conkin 2009: 98). If U.S. farmers in 1931 wanted to yield the same amount of corn as farmers in 2008, the 1931 farmers would need an additional 490 million acres (EPA Demographics 2013). This contributed to the slow exodus from the farming community, which was helped along by the fact that the cost of purchasing or hiring all the new equipment, learning to apply it, and problems such as management of livestock waste were daunting and complicated (Anderson 2009: 6). This industrialization also lead to financial crisis- the specialization, standardization and increasing size of farming operations lead to higher profits, but the high level of production causes prices fall again eliminating profits and eventually driving farmers slow to adopt new technology off the land (Holthaus 4).

Development of New Crops

Nowhere can the changes in agriculture be seen more clearly than in the changes in crops produced. Iowa is famous for its corn. The environment is perfect with favorable soil types, hot and humid summers, an annual average of around 30 inches of rainfall, and a five month frost free growing season (Anderson 2009:6). In pre-industrialized agriculture almost everyone had to grow corn for human food as well as for livestock, but with increasing access to markets corn became a commodity crop (Conkin 2009: 4). The development of hybrid corn revolutionized crop production, with scientists in state experiment stations and private Midwest seed companies developing breeding programs starting after World War I (Hurt 2002: 50). In World War II the agricultural research stations developed fertilizers that were nitrogen heavy and hybrid varieties of corn, increasing production from 25 to more than 40 bushels an acre (Conkin 2009: 80). By 2010 the average corn produced per acre had reached 153, with yields well over 200 bushels

standard (Guanmin 2013: 111). These increases were based on the phenomenon of Hybrid Vigor (heterosis) that describes the survival and performance superiority of a hybrid offspring over its genetically distinct parents. Why this, the crux of our agricultural development, happens is still unknown (Baranwal et al 2012: 1). Hybrids make more efficient use of applied fertilizers and due to their greater uniformity in maturity and resistance to lodging hybrids have helped make large-scale mechanization possible (Hybrid Corn 1962: 1-3). This mechanization has lead to impressive production levels that have made the United States the largest producer of corn in the world. We produce 32 percent of the world's corn crop in the early 2010s on almost a quarter of the harvested crop acres in this country. This adds up to 84 million acres, which yields 63.9 billion in cash receipts from sales (US EPA 2013).

The development of hybrids was followed by genetic modification, most famously the development of Roundup Ready Crops. Upon introduction into the market these crops had instant popularity, increasing from 1 million acres in 1996 to 25 million in 1998. They allow farmers to practice no till, saving soil, and hypothetically allow fewer herbicides to be sprayed through the season (Robin 2008: 194). This allows for more control of the land, as it no longer washes down the river, and of high levels of ecological control through the elimination of everything that does not carry the round up resistant gene. Reducing yield risk is an important source of benefits of transgenic technology, especially for stacked traits. These benefits are estimated to be equivalent to a yield increase of 0.8-4.2 bushels per acre. A study found that gene interaction in the corn causes reduced yield, even as it advertises increased yield (Guanmin 2013:111). Since the decisions made by the seed industry in any given year determine the traits offered by the industry to farmers in next crop season, the seed industry must act first in order for

farmers to turn the corner toward more sustainable weed and insect pest management systems. (Benbrook 2012: 7)

These crops have been shown to be more vulnerable to certain diseases (Robin 2008: 22). GE technologies have increased pesticide use by an estimated 183 million kgs (404 million pounds), or about 7%, and this will increase further as these practices continue to be used (Benbrook 2012: 7). Companies like Syngenta or AMVAC Chemical that sell soil insecticides for use in corn fields are reporting huge increases in sales: 50 or even 100 percent over the past two years (Charles 2013:1). A variety of pesticides including Round up has been declared safe by the EPA even with little to no testing (Robin 2008: 72). Two-thirds to 100% of air and rainfall samples tested in Mississippi and Iowa in 2007–2008 contained glyphosate. Glyphosate has been shown to impair soil microbial communities in ways that can increase plant vulnerability to pathogens and reduces availability of certain soil minerals and micronutrients. Landscapes dominated by herbicide-resistant crops support fewer insect and bird species. Heavy use of glyphosate can reduce earthworm viability, and water use efficiency. Several studies have documented reductions in nitrogen fixation in herbicide-resistant soybean fields sprayed with glyphosate (Benbrook 2012: 5). Use of this chemical is effectively destroying the ecological viability, and so the sustainability, of the countryside. It also poses a potential threat to human and animal health. Glyphosate started out as being advertised as less toxic to rats than table salt, when in fact multiple epidemiological studies have demonstrated a correlation between exposure to glyphosate and cancer. In addition, the continuous cropping these technologies allow has been found to deplete the organic content of soil, increase plant disease, and lower soil productivity (Conkin 2009: 112). This creates a slow destruction of the health of humans and their ecosystem.

Costs of these seeds put an additional burden on farmers. The cost of GE soybean seed in 2010 was 47% higher per bushel than non-GE seed. In the case of corn, conventional seed prices rose from $26.65 per acre planted in 1996 to $58.13 in 2010. The average cost of GE corn seed per acre was $108.50 in 2010 with many process reaching closer to $120 per planted acre, making the GE corn twice the price of conventional seed (Benbrook 2012: 4). Despite the added expense, in 2011 an estimated 94% of the soybean area planted, 72% of corn, and 96% of cotton were planted to herbicide resistant varieties. Bt varieties made up about 65% of corn and 75% of cotton hectares (Benbrook 2012: 2).

External Pressures: Government and Corporations

The power that massive corporations have over farmers has been a cause for protests and widespread concern in urban and rural populations. A variety of publications, movies, and websites have investigated the practices of huge monopolistic corporations (Kenner 2008, Robin 2010). In addition to other questionable business practices these corporations engage in, recent publications have centered on multiple cases of Monsanto suing farmers for having unlicensed genes in their fields. Farmers' livelihoods are being destroyed over these cases despite the fact that the genes were not purchased or planted illegally but blew in as pollen in the wind from neighboring fields (Kenner 2008). This spread of patented genetic information is effectively giving Monsanto legal rights over much of the landscape, as they cannot control the spread of this genetic information. This has been proved the recent discovery of GMO Wheat in Oregon where there should be none (Mufson 2013). The spread of these patented genes is happening to a variety of crops; for example it has been estimated that all canola in Canada contains some trace of genetic modification (Kenner 2008). In addition transgene flow from herbicide-resistant crops to weedy relatives has been found to occur via multiple biological mechanisms, meaning

this genetic material can spread across species and landscapes even more effectively (Benbrook 2012: 5). A further point for concern is thefact that Monsanto holds a monopoly over soybean genetics as its gene is in over 90% of the soybeans grown (Monstanto 2013: 1). More than 275,000 farmers a year buy seed under contract agreements in the United States alone, under the belief that these seeds will give them better yields. Monsanto has been accused of attempting to seize control of the world's food supply via seeds, and of extensive farmer and environmental exploitation (Robin 2008, Kenner 2008). There is a belief that farmers are being used to launder money for agribusiness corporations which have controlled both their supplies and their markets; treating people with the same humanity as the commodities they produce (Berry 1986: 353).

The idea of feeding the world that is used as justification for massive overproduction in American agriculture has become a paradox, as cheap imports from the United States discourage third world farmers from producing food for domestic consumption. This forces them to grow nonfood cash crops, increasing dependency on food imports and hunger while impoverishing their governments. Farmers there are pushed by government and corporate policy to erode their own economic success and that of others through overproduction. Possession of land is being threatened as foreclosures, contract hog feeding, and other mechanisms of corporate, industrialized, agriculture are pushing families off their land and topsoil into gullies (Hodne 1987: 55). With the help of chemicals and cheap oil, cheap food was brought to many in the industrialized world and has brought unimaginable profits to the chemical and oil companies. The impressive productivity of well managed household gardens and traditional multi-cropping systems that on a per area basis in total over a year often yield more than a single crop monoculture of a modern high yielding variety have been ignored or dismissed (Hilbeck 1).

Recently this form of production has come back into a more mainstream light, with the recent rise of non-conventional styles of agriculture to which conventional styles can be compared.

Method

To investigate the experiences of the industrialization in agriculture interviews were conducted. These were done to discover how the shift in agriculture occurred in the community, how it was experienced, and why farmers decided to make the transition to a new style of agriculture. In addition, we hoped to discover the level of freedom and control that farmers felt they had. Participants were from families that had been farming in and around the city of Grinnell, Iowa for at least three generations. Participants all either owned land or had passed their land on to younger generations, and were all currently or formerly involved in farming their own land. The style of agriculture practiced varied between conventional row cropping (8), organic vegetable production (1), and alternative livestock production (2). Participants ages ranged between their early 30s to early 90s years, and were recommended by Grinnell Professor John Andelson or by each other. Interviews were conducted with those who responded positively to requests and generally lasted 2 hours, during which participants were asked questions based on prompts (Appendix 1). These questions were designed to learn about changes in land usage and the control farmers feel that they have over their land, as seen in the process of decision making and levels of stress. In some cases participants were also shown aerial photographs of their land from the years ranging between 1930 and 2013 and asked to comment on changes. Interviews were recorded, though not transcribed, and notes taken. In addition, researchers attended a hearing regarding Confined Animal Feeding Operation (CAFO) expansion, visited two historical museums, and watched a local parade.

Discussion

Relationship to Land

In the myth of the yeoman farmer, everything depended upon ownership of land. The connection of farmers to land was extremely evident for the duration of the study. Participants universally expressed an emotional connection to the land, a commitment to stay upon it, and a belief in the inalienability of farmers' rights over their own property. For example, during a hearing for a CAFO expansion, everyone expressed a belief that the farmer could do what he wanted on his land though they were very opposed to his choices. Farmer who rented out their land did not seem to have or perceive having as much social capital as those who farmed it themselves, and they universally regretted not being able to do so themselves.

Ownership of land was a central part of many people's explanation of their families farming histories. In many families the land that the family was currently farming was only the most recent land they owned in the Grinnell area. Many families moved around on the land, generally for financial reasons, but always stayed in the same close area. For example, during the 30s one family moved every year for 10 years except one. However some families have remained in the same place since their arrival, sparking comments such as "This is Pederson territory!" These families have all watched their neighbors leave and houses be rented out or knocked down for conversion into more land for row crops, only a very few remain on the land.

Loss of the land was a fear found in most conventional farmers. The financial crisis of the 1980's for farming was viewed as a turning point for many participants, who saw it driving many people off the land. Three of the farmers interviewed reported that after the 80s they were more cautious and pressured to follow the claims of seed companies that promised control. This also

led to the widespread feeling among participants that people jealously guard their land and have to work to hold on to it. Land is highly sought after. Upon the death of a farmer there is a rush to buy their land, with people "barely waiting until [the deceased is] in their grave." The alternative to buying land is renting it. Frequently there are families that rent land to farmers for long periods of time and build relationships with the renters. However, the recent emphasis on making a profit has destroyed many of these relationships. Multiple participants expressed disgust at large farmers that outbid current renters for land due to their size.

The influence of the American myth is also supported by the way farmers frequently mentioned attempting to control or influence nature. In traditional farms this was exerted through cultivation, ordered planting of rows, confinement of hogs during birthing, and fencing livestock in. Industrialization has allowed for a much more controlled method of production. Ron Iverson, a conventional farmer, described farming as "Try to control weeds, to control production. Unfortunately mother nature has more to say." It was mentioned by all farmers that weeds and pests are getting resistant to RoundUp, and the control farmers once had is being lost. Crops were also cited as being more controlled, with farmers being able to select exact traits tailored to their preferences. Confinement operations are an even more extreme example of control, with hogs and chickens in these facilities having no physical freedom or influence on food consumed or lifespan. The farmer, however, is not the one making the decisions for how these operations are run- corporations tell the farmer exactly what to do. Multiple farmers expressed that they would rather quit farming completely then shift to this form of production, as it affords them no freedom.

Changes in Land Use

All participants interviewed reported that in the beginning of the 20th century their family farms raised chickens, a small herd of milk coves, 15-20 hogs, and about half reported raising beef cattle. They grew corn, hay, and oats in addition to keeping an extensive vegetable garden from which most of the family diet came and fruit trees. This was reported by five farmers over 90 years of age as standard in their youth. Younger participants said this style was what they remembered being told about or experiencing, as it was still standard into the fifties. The latest a family held on to livestock and these more traditional farming practices was the 1970s when the farm still kept dairy cows.

This style of agriculture kept families very much tied to the land. Milking cows required that farmers never go very far from the farm. A participant reported that his uncle never missed a milking for 20 years- which means he never was more than three hours from the farm. While this is an extreme case, farmers in general did not leave the farm except for a few hours, generally on Saturday, when most families reported coming into town. While there many reported selling or trading cream and eggs for staples like flour and sugar. One of our youngest participants reported that even when they were growing up in the 1970s people did not leave the farm- they remained there and worked there constantly.

This self-sustaining system was lost with time (Anderson 2009, Conkin 2009, Wolf 2003). National statistics report that in 1900 95% of farms kept chickens to 78% in 1950, today it is less than 1% (Conkin 2009: 85). This is consistent with our data, of all the families interviewed only three raised chickens, and in only one case had chickens remained on the farm through time. Milk cows were less prevalent than chickens to begin with, but followed the same pattern. In 1900 80% of families had cows, down to 68 in 1950 and now less than 8% (Conkin 2009: 85). The majority of families are still growing some form of vegetable garden, but this

does not provide the bulk of the family food nor do traditional canning and preservation techniques seem to be very much in practice, as none were mentioned to us. Farmers are no longer creating the food that they are eating.

Raising cattle has remained relatively unchanged, with about half the families raising cattle still doing so though this practice is not inherently motivated by wanting to make a profit. Multiple farmers retired from row cropping keep a small herd of cattle, and a family who had to give theirs up had said it was associated with a more prestigious place in community structure. This is related to the fact that they are a large financial investment, "As much as I like cattle. . .pure simple economics. . .it's a lot of risk, a lot of financial exposure." In all circumstances when the confinement of animals was discussed farmers expressed a deep belief that cattle could not be confined. This would make sense in a society that values freedom for an animal associated with prestige to be believed to be impossible to cage.

Crops grown by conventional farmers are now reduced to soybeans and corn, both of which only GMO versions (generally RoundUp Ready crops) are grown. A farmer estimated that there is only enough hybrid non GMO corn to plant 5% of the country's crop, though there is a stockpile of Monsanto's GMO seed outside town that ensures that version will be available for purchase. These developing seeds are also tied to local farms- a participant had the first test site for Dekalb Hybrid corn on his land, another grows seed corn for Monsanto and his son works for them directly in a lab developing new corn strains. These strains are all hybrid corn, which cannot be replanted, and are sold emphasizing their reliability.

If a farmer wants to grow corn, or many other crops as the companies have diversified, they can only find it from four companies. This creates a very monopolistic situation leading a

farmer to say “There is a huge political side. There is only one Monsanto one DuPont one Syngenta and they are control freaks. Corn is very tied up”. For this reason even with consumer demand shifting farmers are trapped into purchasing certain kinds of seeds. These seeds are also of inconsistent quality, for example Monsanto is known in this area for selling seed that doesn’t perform as promised or for delivering seeds different than those contracted by the famer.

The difference these more expensive seeds make is also unclear. A conventional farmer bought seed corn for $395.00 from Monsanto, but found it not doing any better than the $293.00 bag he received from Pioneer. In addition the RoundUp Ready 2 “vanilla corn” planted as government regulation to attempt to slow pest resistance frequently outperformed that smart stacks and Bt corn, yet cannot be bought alone. In addition to these questionable benefits, contracts must be signed to grow the GMO corn. These specify that farmers cannot save the seed or attempt to study it. This makes the farmer entirely dependent upon what the corporation tells them, which due to their position as having control of seeds farmers are trapped in a place of ignorance where they “like to believe what they tell me.”

Many farmers we interviewed questioned this seed. A conventional farmer with a large acreage said, “I don’t like paying for it, some carry GMO too far.” However, the ability to use fewer chemicals was cited as a benefit that far made up for any problems in the opinion of all conventional farmers. “I remember using furan. I just hated those weeks, thank god it’s gone. . .I don’t miss corn borers. I miss the bees and butterflies. Old farmers had to use 2,4-D all summer long that’s all they had.” The corn grown also caused a farmer to express concern about what has been produced. The stalks of the corn have been bred to be so strong that they no do not decompose quickly, staying strong as sticks for years after harvest in the fields.

Impact of Machines

World War II was widely reported as the turning point after which tractors replaced horses. Tractors were faster and more powerful and did not have to be taken care of and fed like horses did. They also could be more easily controlled- horses were difficult to deal with, a participant recalled his father referring to them as "kicking machines." While early tractors were dangerous and multiple participants recalled family or community members who were injured by them, they remained a fixture on farms have become larger and more advanced with time. The machines that go in to the fields nowadays are equipped with systems that track soil quality and suggest products to add to increase productivity, report yield for the particular area, can drive themselves up and down the rows. Farmer attitudes towards this technological development were varied. A belief that technology has gone "overboard" was shared among non-conventional farmers, most retired farmers, and a few conventional farmers. This is certainly helped by the incredible financial investment required to purchase machinery. The machines also require constant upkeep- farmers universally said that they work on their equipment all winter. Fueling is also extremely expensive- horses could consume up to a fourth of a farm's product but tractors nowadays cost thousands of dollars to refuel each time.

Machines altered the social dynamics that used to operate on farms. The correlation between self-reliance through machines and community isolation is frequently seen (see Easterbrook 1985: 15). Farmers with combines didn't need to wait for harvesting crews, and many made their own storage facilities getting away from dependence on town silos and co-ops. Instead of gathering for threshing in huge social gatherings using massive machines, people can harvest their own crops. This plays in to the independent ideal for the farmer, but also decreases community in the countryside which was universally disapproved of. Multiple farmers remember

their families going over and helping each other out to get tasks accomplished on either of their farms. “Needing help tied the community together” was a narrative that we heard multiple times. No longer needing to rely on the help of neighbors contributes to attaining a life like that of the myth of the independent farmer. However, this perceived independence is really just a shift to a new form of dependence only on machine instead of man. Participants expressed belief that many people buy tractors that they cannot afford, some out of machismo, and that this was a large part of what lead to and influenced the farming crisis of the early 80s. For a fourth of July parade in the community, a vast majority of the parade was made up of farmers riding their tractors or semis with farm names emblazoned on them. This attitude towards machinery is also highly related to increasing levels of competition within farming communities. These are perpetuated by the fact that in land and crop prices “Your success is directly tied to someone else’s bad luck.” This leads to unsustainable land management practices. For example, a conventional farmer said that he deliberately plants corn near major roadways every year on his land, so his neighbors have a harder time seeing weeds and he will then look better.

Stress

There is constant pressure to upgrade to the next best thing to increase production and stay in business. This adds to the huge financial burden on the farmer, as new technologies are always extremely expensive. A belief that it was impossible or next to impossible to get into farming due to cost alone was present for all our participants except one. The price of land was often cited, with the most expensive being a plot sold for 16,000 an acre nearby. Borrowing to purchase seeds, chemicals, buying the machines, storage facilities, and other pieces of equipment add to this equation, creating a system called by all farmers as “amazingly” expensive. Multiple farmers said it would take at least a half a million dollar investment to get into farming. This

being the case the loss of rural population and of the farming community as a whole makes the future of farming look like it will be only a very small subset of the population doing it in the future.

This problem is compounded by many farming families getting out of farming. While most farmers were positive about their children going in to farming, most children did not and in all cases parents were also supportive of that. Farmers universally said that farming required so much work that for someone to do it they had to love it. No farmers said that they considered farming to be a business only. One participant went so far as to say that people become addicted to their farms and cannot let go even when they should. This need that they feel to keep working is part of the American myth that hard work always leads to success farming.

Wanting to retain the farm is a huge concern for farmers, especially those practicing conventional techniques. Participants most often citied the market as the top source of stress, after which came the weather, with stress on the loss of topsoil caused by the massive rains this spring generally being third. A conventional farmer said, "It only takes one combination of errors and you can lose everything." In addition, the prices of crops are highly variable, and so being able to project an estimation of what you might make in profit is impossible. This is especially true as farmers report the markets to be highly influenced by things unrelated to farming or government policies that are enacted. "The costs of inputs is so high- it's a huge risk every year."

Traditional Agricultural Styles in Modern Times

The changes in farming can be seen to some extent in the experiential differences between conventional and alternative farmers. In general, the conventional farmers expressed experiencing more stress than those practicing alternative farming methods. As stress is worry

about uncontrollable events, this can be seen as differences in their feelings of autonomy. The stress experienced was centered on weather, markets, and financial situations the farmers were experiencing that puts their equipment and land at risk. Lucille van Dyke, a 90 year old who had lived on the farm her entire life an reported that life on conventional farms is much more stressful now than farming used to be, even as recently as 20 years ago. This is likely partially due to the production of more food and the lower level of inputs needed on these kinds of farms. For example, at one non-conventional farm the farmer said that he was eating all his own produce and that was a source of wellbeing for him. This situation is also much closer to the idealized farmer mythology. All the alternative farmers independently started that practice on their farms. One of these farmers is attempting to move towards a self-sustaining model of farming based it off the farm her grandparents kept. This push to a return to a more sustainable kind of farming can be seen as a response to the unsustainable system of conventional agriculture, farmers attempting to return to a more stable and controlled method of agricultural production.

Conclusion

The self-sufficient style of agriculture idealized in American culture and history has been widely replaced with highly mechanized farms that produce massive quantities of commodity crops. This new style of agriculture is highly dependent upon external inputs, does not directly support the family subsisting upon it, is highly influenced by external influences such as corporations and the government. The practices themselves that are undertaken are creating an unsustainable landscape far different from a patchwork landscape of self-sustaining families, effectively putting the landscape upon which farmers are dependent in jeopardy. These problems

have caused high levels of stress for farmers who cannot exert control over their land as American culture expects them to do.

Bibliography

Aldean, Jason

2012 Only Way I Know. From Night Train. Nashville TN:Broken Bow Records

2005 Amarillo Sky. From Jason Aldean. Nashville TN: Broken Bow Records.

Anderson, Joseph Leslie

2009 Industrializing the corn belt: agriculture, technology, and environment, 1945-1972 DeKalb, Ill.: Northern Illinois University Press.

Baranwal, Vinay Kumar. Venugopal Mikkilineni1, Usha Barwale Zehr1, Akhilesh K. Tyagi and Sanjay Kapoor.

2012. Heterosis: emerging ideas about hybrid vigour. Journal of Experimental Botany, Vol. 63, No. 18, pp. 6309–6314, 2012 doi:10.1093/jxb/ers291

Berry, Wendell.

1986 A Defense of the Family Farm. Comstock, Gary ed. Is there a moral obligation to save the family farm? Iowa state University Press, Ames, Iowa 50010. 1987.

Benbrook, Charles M.

2012 Impacts of genetically engineered crops on pesticide use in the U.S. -- the first sixteen years. Environmental Sciences Europe 2012, 24:24 doi:10.1186/2190-4715-24-

Briggeman, Brian C

2010 Debt, Income and Farm Financial Stress. Federal Reserve Bank of Kansas City. The Main Street Economist. Regional and Rural analysis. Issue 4.

Charles, Dan

2013 As Biotech seed falters, Insecticide use surges in corn belt. NPR. http://www.npr.org/blogs/thesalt/2013/07/09/198051447/as-biotech-seed-falters-insecticide-use-surges-in-corn-belt

Conkin, Paul K

2009 A Revolution Down on the Farm the Transformation of American Agriculture Since 1929. The University Press of Kentucky.

Easterbrook, Gregg

1985 Making Sense of Agriculture: A Revisionist Look at Farm Policy. The Atlantic. July. Comstock, Gary ed. Is there a moral obligation to save the family farm? Iowa state University Press, Ames, Iowa 50010. 1987.

Kenner, Robert dir.

2008. Food Inc. 93 minutes. Magnolia Home Entertainment.

Guanming Shi1, Jean-Paul Chavas1 & Joseph Lauer

2013. Commercialized transgenic traits,maize productivity and yield risk. volume 31 number 2 nature biotechnology. 111.

Hart, John Fraser

1986 Change in the Corn Belt. The Geographical Review. 76(1), pp. 51-72.

Hilbeck, Angelika.

The IAASTD report and some of its fallout – a personal note. Ines global. ETH Zurich, Institute of Integrative Biology, Zurich, Switzerland

Hodne, Carol

1987. We Whose Future Has Been Stolen. Comstock, Gary ed. Is there a moral obligation to save the family farm? Iowa state University Press, Ames, Iowa 50010.

Holthaus, Gary

2007 From the Farm to the Table: What All American Need to Know about Agriculture. The University Press of Kentucky. Lexington Kentucky.

Hurt, R. Douglas

2002 Problems of plenty : the American farmer in the twentieth century Chicago : Ivan R. Dee.

Hybrid Corn.

1962. Yearbook of Agriculture 1962. Update 6/06/2008. USDA. Gov. http://www.ars.usda.gov/is/timeline/corn.htm

Kitroeff, Natalie

2012 After Graduating From College, It's Time to Plow, Plant and Harvest. New York Times. Accessed June 28. http://www.nytimes.com/2012/09/25/nyregion/the-farm-life-draws-some-students-for-post-graduate-work.html?_r=0

Monsanto

2013. Monsanto, the Government, Monopoly Claims. Accessed July 15. http://www.monsanto.com/food-inc/Pages/monsanto-revolving-door.aspx

Mufson, Steven

2013 Unapproved Genetically Modified Wheat from Monsanto Found in Oregon Field. Business. The Washington Post. Accessed July 25. http://www.washingtonpost.com/business/economy/unapproved-genetically-modified-wheat-from-monsanto-found-in-oregon-field/2013/05/30/93fe7abe-c95e-11e2-8da7-d274bc611a47_story.html

Peterson, Tarla Rai.

1990. Jefferson Yeoman Farmer as Fronteir Hero A Self Defeating Mythic Structure. Agriculture and Human Values.

Robin, Marie-Monique

2010 The World According to Monsanto. Trans. The New Press, New York 2010.

Rosman, Mike.

2013 Managing Fears, Panic can be Difficult for Farm People. Farm and Ranch Life. April.

Sugarland

2004. Fly Away. From Twice the Speed of Life. Nashville TN: Mercury Nashville.

United States Environmental Protection Agency.

2013 Major Crops Grown in the United States. Ag 101. http://www.epa.gov/agriculture/ag101/cropmajor.html

United States Environmental Protection Agency.

2013 Demographics. Ag 101. http://www.epa.gov/agriculture/ag101/demographics.html

US History, Precolumbian to the New Millenium.

2008-2013. 13g. Revolutionary Achievement: Yeomen and Artisans. Independence Hall Association in Philadelphia. http://www.ushistory.org/us/13g.asp

Wolf, Robert

2003 The triumph of technique: the industrialization of agriculture and the destruction of rural America. Halls, Tenn: Ruskin Press.

Appendix I- Prompts for Questions asked During Interviews

Basic personal and family history

How long have you been farming? Did you grow up on this farm? Did your parents farm? Was this their farm as well?

Farming Techniques

What do you farm (crops/animals)? What did your parents and grandparents farm? How do you decide what to grow on the farm? Do you eat what you grow? How much control do you feel you have over what is grown? Is this what you would grow if money was not a factor? Do you grow hybrids/GMOs?

Family Background

What was the farm like when you were a child? Did you have jobs you did to help out? Were they similar to those your parents and grandparents had? What is your day to day experience running the farm? Is this the same as your parents?

Farming Community

Has the community around here changed much since you were a kid? Has family structure? Do you think religion has had any influence on this?

Use of the farm

In addition to farming, what kinds of things do you do on your land? How do you perceive your relationship to the land? And nature? Do you think that this understanding has changed over the generations? Do you have favorite places on it?

Personal Perspectives

Are you happy being a farmer? Has your family always been happy to be farmers/felt strongly about being farmers? How do you think past generations of your family would see farming today? Would you want your kids and grandkids to be farmers? Would you consider farming to be a business or a way of life? What is your experience of stress farming?

Concluding Questions

Is there anything else that you would like to talk about?