

Domestic Food Policy in the United States

Table of Contents

Introduction.....	2
History of the domestic food system.....	3
The Farm Bill.....	6
Farmers and Production.....	9
Interest Groups: Big Ag and Workers.....	12
Food Policy Councils.....	16
Food Safety.....	24
Nutrition and Public Health.....	25
Program: Nutrition Assistance.....	27
Program School Lunch/Nutritional Standards.....	29
Food Waste, Recycling and Composting.....	31
Conclusion.....	33
Caveats.....	34
References.....	34
Useful Terms.....	37

Introduction

From before seeds are ever planted in the ground, to point at which food is consumed, composted, thrown out or otherwise arrives its final use, there are policies in place that govern how it moves through our food system. For the purposes of this paper, interactions within the food system will be broken down based on time in history, scale, stage of the food's lifecycle, types of actors, and particular policies or programs of interest. To be more specific the following labels will be used in the order listed:

1. History of the domestic food system
2. The Farm Bill
3. Farmers and Production
4. Interest Group: Big Ag
5. Interest Group: Workers
6. Food Policy Councils
7. Food Safety
8. Nutrition and Public Health
9. Program: Nutrition Assistance
10. Program School Lunch/Nutritional Standards
11. Food Waste, Recycling and Composting

Despite these divisions, it is important to remember that the policies that drive our food system often cross these boundaries (this fluidity will become apparent throughout the paper). The role of a food policy council may have an impact on worker's rights or food

safety. School lunch programs may have variable amounts of waste depending on how much and from where they source their food. These lines were drawn in order to have a guiding principle within this document, but should be considered as permeable to the issues discussed. Before going into the review of the documents pertinent to each category, a brief description will be given of each in the hopes this makes it clearer why these boundaries were drawn.

The purpose of this paper is to create a synopsis of readings in food policy that could assist in the understanding of these varied topics, and to point out the interconnectedness of these topics. Although other policy issues are only mentioned briefly, it also seeks to illustrate the breadth of ways that food policy affects other realms within domestic policy, such as immigration, trade, social policy, etc.

Although it will not be entirely comprehensive, this paper will illustrate this complexity within the frames provided in order to illuminate the greater complexity of the system that undergirds all of them. As much as possible it will seek to demonstrate that all of these policies are in fact a part of a larger food system that sometimes reinforces one another to an extent that change is often slow and that addressing one aspect of any given problem may improve the situation, but would likely require a change within other parts of the system as well.

The style of different sections fluctuates due to the differing purposes of each. For example, the section on food safety is largely just a review of recent changes to legislation, whereas the portion on interest groups is more narrative in nature because of the types of literature analyzed. In spite of these changes a consistent tone is sought throughout in order to maintain a sense of flow within these disjointed methods. As a final note, a glossary of useful terms is listed at the very end, after the references, should it be necessary.

Reading Analysis

History of the domestic food system

Introduction

Much of policy today, especially at the national level, is based on historical precedents. Whether it be trade restrictions put in place shortly after the revolution, or more recent responses to global crisis such as the Great Depression or the Cold War, the current state of food policy is in part an artifact from those earlier times. As a result, it makes sense to keep a historical perspective when considering why things are the way they are today. This section will mostly review the time period of the late 19th century into the 20th century though it will dip farther back briefly to address soil resource issues.

Analysis

From the beginning of the 20th century to its end, the U.S. saw a transformation from a multitude of poor farmers to a small group of wealthy ones. Technological innovation, such as advances in breeding, tractor implement width, GPS, etc. has been at the heart of this transformation. These innovations came largely out of the drive to modernize agriculture in response to the Great Depression of the 1930's. At that time, a farmer would earn 39% of the average income of a non-farm worker, whereas by the end of the century income was competitive with other means of employment. However, these figures came in part as a result of misdirected policy decisions.

“During the decade of the 1920s, the farm sector suffered unique hardships but at the time little federal policy help was forthcoming. Then, during the 1930s, when an economy wide financial crisis struck, policies were set in place which focused inappropriately on sector-specific and commodity-specific supply management.”

These ‘inappropriately placed’ subsidies continued throughout the rest of the century, well past the financial crisis that triggered them. Today, the largest share of benefits from these programs ends up in the hands of a very small percentage of the already scarce farmers. 1% of farms collect around 40% of agricultural subsidies. In the 1920's, while the rest of the economy boomed, farms were in a bust left by the after-effects of the first World War. During the war, many loans had been given to farms to subsidize production, but when the war was over and demand dropped sharply while production remained high, prices dropped, leaving farmers unable to repay their loans. At the same time, spending power in foreign markets was largely reduced due to reparation payments imposed by the allied powers. The federal response to this mass of indebted farmers was very weak. This is because their was concern that an increase in food prices would increase wages in urban centers, something large industrial interests had no desire for. This favoritism of industry would prevent improvement in farmer's conditions despite their prominent place in the economy and the fact that at the time they comprised 25% of the population.

In the 1930's the monetary crunch that existed for farmers was not directly addressed in U.S. policy. Instead, policies focused on suppressing production to increase price. The Commodity Credit Corporation (CCC) gave loans for farmers to store rather than sell crops until more favorable prices emerged. If prices remained low, the farmers could simply not pay the loans and the government would gain ownership of the crop. Additionally, supply controls meant that 35 million acres were taken out of production through the Agricultural Adjustment Act. The level of price parity in the CCC was gradually increased and due to the onset of the second World War, these prices were affordable, however, once it was over, these high levels of loan payment (90% of value) became untenable. During this artificial boom period, farmers were able to invest in new technology for their farms allowed by spending on agricultural research. As time went on this investment made those who remained in farming to spend less in the field and work in other sectors to achieve competitive incomes. In spite of this, the specter of rural poverty remained for the following reason:

“Rural workers do suffer from low wages, but this is not because farming pays poorly, since less than 10 percent of today's rural labor force is employed in farming. Rural America has diversified away from farming so much since the 1970s that only about 10 percent of all rural (nonmetro) counties in the United States have been classified as "farm dependent" (deriving at least 20 percent of income from farming).”

As a result it is not surprising that farm supports have not adequately addressed rural poverty. Even among farmers, more income usually comes more from off-farm activities. In 1995 the average farm household income was \$44,392, of which, less than \$5,000 came from farming. These price supports mostly benefit the rural rich who already do well in farming rather than small family farms that are conjured up in lobbying efforts to keep subsidies in place. Given the unbalanced nature of farm payments, it is logical that there have been efforts to reform. The following quote demonstrates the strategies that have been pursued the most vigorously.

*"In the abstract, there were four different ways to proceed:
The intrusive commodity support guarantees could be "cut out" quickly and cleanly, without offering any cash compensation to farmers.
Intrusive support guarantees could be "squeezed out" more gradually, and again without cash compensation.
The support guarantees could be "bought out," through an offer of a generous one-time cash compensation package to producers.
The support guarantees could be "cashed out," by offering producers a continuing stream of cash payments in lieu of high loan rates"*

Of these, the last is the only one that has met with much success. Both Nixon and Reagan attempted to reduce spending on farm programs to no avail. These direct methods were not successful because they galvanized the base of those who benefitted and allowed for a strong lobbying front against such policies. Similarly, by having supports as part of a way they budget, it makes a quick transition away from receiving payments very difficult for those who are supplemented by those programs. The figure for the number of farmers in the following quote is even lower now than when the article was written in 2000, down to less than 1%, but the prominence of agriculture PACS remains undiminished.

"Farmers may be only 2 percent of the population, but agricultural political action committees (PACs) are the nation's third largest source of PAC campaign contributions overall"

There are many reasons why this political power is deeply entrenched. One is, by having entitlement programs such as food stamps, SNAP, etc. in the same bill, it is easy for rural lawmakers to logroll legislation with urban lawmakers. In addition, conservation efforts contained within the farm bill makes support from conservationists, who might otherwise oppose the monoculture practices of today's industrial farms much simpler. Additionally, Acreage Reduction Programs following the Korean War made it difficult to lower price supports since sufficient incentive needed to exist in order to allow these conservation areas to exist.

Buy-out programs have been unsuccessful because the short-term cost is very high and is therefore a difficult policy to argue for even though it would reduce long-term costs. Ironically, the reason why the cost is so high is due to the existing price supports. Also, most buy-outs are done gradually, and the Congress that passes them is unable to ensure that future Congresses actually continue the phase-out. Cash-out, or continuing direct payments to farmers have been the most successful in passage if not in addressing the underlying policy problem. This is because they have often been tied to inflation driven prices and inevitable economic downturns have made the payments higher than would be desired. Additionally these programs were only directed to the largest commodity crops (wheat, rice,

corn, cotton). For all of these reasons, there remain a number of archaic portions of U.S. farm policy, but with the exception of the most recent farm bill, there have been gradual improvements made over time.

To take a step a bit farther back, this paper will begin with a quote from the Keeny and Kemp piece addressing conservation

“Farm policies consistently rewarded production over conservation. Continued expansion of row crop agriculture resulted in less land in resource conserving crops, loss of biodiversity, increased water pollution, soil erosion and other environmental damages including major pollution flows to the Gulf of Mexico. While an agriculture that harms its own resource base would appear to be unsustainable, it continued to be promoted by policies that provided major returns to input suppliers and land values but not to the farmer.”

Glacial history has made the U.S. Corn Belt one of the most productive areas in the world for growing crops. Family farms from early U.S. history have been replaced by more industrial agriculture, especially since WW II. Although the Midwest had incredibly productive soils, they were mostly inaccessible until the steel moldboard plow and rail helped make farming in the Midwest a viable enterprise (1830’s). Plantation agriculture was another obstacle to mechanization, since it relied heavily on human labor, but the end of slavery in the U.S. made mechanization even more important in order for agriculture to be profitable. In order to deal with the emerging technical style of agriculture the Morrill Land Grant Acts were passed, establishing agricultural colleges (like the University of Minnesota) (1860’s). At the same time Westward expansion met with a definite end at the oceans, meaning there was further need for technological advancements to increase yield through intensification rather than extensification. While all of this was happening, less people were farming as the price to entry increased due to all of the technological costs. As a result, by the end of the 1800’s farm labor organizations lost control of market prices.

As can be seen here, this section heavily aligns with technology in farming, which was considered as one of the sections this paper would cover, but was removed because it was seen as too narrow a category. Similarly, the history of slavery harkens to issues of workers rights and labor issues generally. A full analysis of these changes is beyond merely history but also necessitates scientific knowledge, economic knowledge and anthropological knowledge to name a few.

In the 20th century the production of artificial fertilizers, hybrid crops and gasoline powered tractors continued the intensification of production. High levels of grain production made feeding animals cheaper and thus having more cattle became possible. As more cattle began being placed on less land it became incentivized to have vertical integration of the animal market, meaning farmers would both raise and process their own animals rather than sending them to urban centers (this theme will be revisited in the worker’s rights section). Prices for agricultural goods continued to decrease, so the pressure on farmers was to produce more in order to make sufficient money, but this only further reduced prices. All of

this Intensification of land for the purpose of making a living limited farmer's ability to be good stewards of their land. Although conservation programs were created in the 1930's in response to the Dust Bowl, funding for them lagged significantly behind crop subsidies.

Furthermore, the incentives for subsidies (especially in their early days) favored continuous monoculture systems, which have more detrimental environmental effects than polycropping or rotational cropping. Although the ill effects of previous policy had already been seen, the response in the 1980's to agricultural woes was again to increase subsidies rather than addressing the underlying issues of the agricultural system. Before that time, the advent of the green revolution addressed immediate issues of food insecurity for many developing countries, but the transfer of high-technology solutions across the globe merely reinforced the systemic issues within the U.S.'s own farm policy. There is one crucial difference however, which is that many governments can not provide subsidy funding in quantities such as in the U.S. or Europe, making it extremely difficult to compete with the combination of subsidies and advanced technology.

Farm Bill

Introduction

The farm bill is the single most important piece of legislation at the federal level in terms of determining what is grown and how. This section will describe in more detail how payments within it are meted out. One thing that is important to remember is that iterations of the farm bill are edits on an existing document, rather than a novel creation each time, as a result incrementalism is often how changes are made rather than major overhauls.

Analysis

Since 1996 about half of federal farm program payments have been direct payments, which is to say, payments given out regardless of income level, annual production or crop prices. (Paarlberg and Paarlberg) It was mentioned in the previous section that oftentimes the amount paid out was tied to price, but as can be seen, there have been incremental improvements in moving away from that methodology. Since 2002, the cost of all payments has averaged around 15 billion dollars per year (Paarlberg and Paarlberg). This cost is simply a program cost and does not include the cost to consumers of import quotas or other indirect ways of raising the price of food, as a result it significantly underestimates the actual costs of such a policy. Effectively consumers pay more for their food twice, once to subsidize it's production, and the second time because we pay more than world price for goods with import restrictions.

Corn, wheat, cotton soybeans and rice (in that order) receive the most federal dollars, with corn garnering more than double the subsidy amount of wheat (Paarlberg and Paarlberg). In recent years, the main debate around the farm bill has centered around the non-agricultural portions of it. As an example, the 2008 bill was passed over a presidential veto due to

disagreement between the legislature and the executive. However, this was due to the introduction of SNAP rather than any in-fighting over payments to farmers.

Some time will now be taken to look at how the crop insurance program within the bill works. 16 approved private insurance companies provide insurance to farmers through the crop insurance program. In 2010, 255 million acres of land were covered by crop insurance programs (Shields). The government subsidizes enrollment at an average of 60% of the premium and at 100% for disaster insurance. Corn, cotton, soybeans and wheat account for 75% of acreage under insurance with high rates of overall acreage covered for each individually (minimum 83%). Insurance programs are the only form of support available to specialty crops (defined as any non-commodity crop and including all fruits and vegetables and some nuts) since they do not qualify for commodity price support programs. Insurance for livestock is a new development in the 2008 farm bill (Shields).

The two forms of insurance are yield and revenue based. A small majority of enrollment (56%) is in revenue based insurance (Shields). Yield averages are determined based on average yields on that farm over the last 4-10 growing years. The most basic version of yield based insurance is that the grower can be compensated for half of their expected yield at 55% of the expected market price and thus receive approximately one quarter of what they would have received at market. More comprehensive plans that cover up to 85% yield at 100% of market price are available, but are not subsidized completely like the basic plan.

Revenue based insurance is based on revenue history over the last 4-10 years for the given farm (Shields). In this instance a producer receives an indemnity if their actual revenue is lower than the target price by a certain percentage regardless of the cause of this shortfall. Coverage area is fairly representative, but indemnity payments tend to be concentrated in areas where growing is more difficult, such as arid climates.

The cost of the crop insurance program can vary greatly year to year, but tends to float around an amount just above \$3 billion dollars. The fluctuations are largely based on whether or not indemnities need to be paid out on a large scale. Most costs of the program have been steadily rising, but fewer indemnities being paid have made the total cost roughly equivalent most years (Shields).

Critics of how farm policy is handled on the right often point to the fact that about two thirds of payments go to food assistance programs (Stiglitz). However, when one considers the number of people receiving assistance from these programs and the amount received per person or farm, this criticism seems to lose some weight. If we take the 15 billion paid out and remember that 1 percent of farmers receive 40% of subsidies and also recall farmers make up less than one percent of the U.S. population, we get 6 billion dollars being sent to less than 30,000 farms annually or about \$547.95 per day. Comparing this with the \$4.39 per day that is given to SNAP recipients for food, we see quite a disparity (Stiglitz). One might reasonably argue that the cost of running a business is higher than that of keeping one person alive, but the other 99% of farmers only receive \$8.22 per day, which could suggest a number of things, including that we are underpaying most of our farmers, or that we are overpaying a few of them, or that the difference between what a farm needs to receive and

what a person needs to live isn't as great as it might initially seem, especially since the majority of farmers make most of their income off of the farm.

The effects of food policy are understood predominately through economic theory, but work in social theory is also important to understanding how and why people react to different policies within the farm bill in the ways they do. Initially there was some idea that the interest groups section would be a broader stakeholders section, but with the incredible number of people affected in a great variety of ways by food policy, it was determined that a focus on lobbying and disenfranchised populations would be more manageable.

One other concern about the idea of cutting SNAP benefits is that it reduces spending power of low-income families. In addition, food stamps enrollment has been on the rise (80% increase from 2007-2013, Stiglitz). While the most recent farm bill did end up cutting funding to the SNAP program, it didn't do much to reduce agricultural subsidies. Furthermore, crop subsidies encourage overproduction of crops that reduce world prices and make the lives of farmers in other countries more difficult. It seems that the farm bill, rather than helping to prop up the rural poor in the United States, mostly ends up hurting people in poverty all over the world instead.

This quote from Keeney and Kemp nicely captures at least part of the reason for why agricultural programs are not the targets of spending cuts while SNAP is.

"If agriculture subsidies are not stopping the attrition of the family farm, then why subsidize commodities for large farms? Why not change priorities and put the money into environmental and rural development projects? Why not pass policies that challenge agricultural market concentration and protect fair and open food markets? The answer lies not in common sense approaches but in the lobbying power of corporate agriculture."

One of the trends that supports this is the concentration of ownership in animal husbandry where the top four firms in any given sector (beef, chickens, turkeys, etc.) hold a minimum of 45% (turkeys) of value, up to 81% (beef) (Keeney and Kemp). Similarly, seed production has begun to become increasingly monopolized, resulting in higher prices for seeds that farmers have to pay. All of these factors and the small amount of funding for conservation in the farm bill makes environmental concerns a major problem in U.S. agriculture as well.

Water quality in particular is a major concern (70% of rivers are predominantly polluted by agriculture) (Schneider). This is largely driven by over-use of nitrogen fertilizer. This is because the amount that is necessary is both variable and hard to determine since it is affected by weather patterns and the quick run-off of certain forms of nitrogen. As a result, it is often overapplied for insurance against the inevitable drainage. This issue is exacerbated by the lack of complex root systems in row agriculture and tile drainage which makes the water run-off more quickly. The use of fertilizer itself is not inherently problematic, but it's overuse and the inability of the present crops to absorb the runoff leads to hypoxia in the

Gulf of Mexico (Schneider). EPA enforcement policies do not have the power to impact these actions, and even if they did, the structure of subsidies would still drive farmers towards this undesirable end, meaning true change must come from within farm policy itself.

Surveys of consumers show that the majority would be willing to pay more for food if it were produced in more environmentally sound ways and that corporate farms should not receive subsidies (Schneider). While this provides some hope that public opinion is on the side of reform, this has not yet manifested itself through widespread public protest of current policies, so it is unclear if consumer demand will be able to change federal policy.

Another positive development is that In the 2002 the Conservation Security Program (CSP) was developed and it substantially increased funding for conservation efforts (although large increases in subsidies also occurred) (Schneider). The CSP is an open enrollment plan available to any type of producer and is intended to be used on land that is productive. However, a spending cap was placed on the program, limiting the number of farmers who could benefit. In spite of this, it is still the biggest step forward for conservation based agriculture and promises to develop a shift in practice.

If policies change, it is not clear what will be grown instead of corn and soybeans (if anything different), it will likely vary from farm to farm based on needs and market opportunities. More cover crops would almost certainly become common however. Similarly, a move towards perennial crops is highly probable. In addition, a wider variety of feed crops would emerge as the abundance of corn diminishes.

Farmers and Production

Introduction

Farmers are of course an important part of the food system, and while this section is comparably brief, this is largely because their presence emerges in many of the other areas examined. The practices within farming have the largest impact on the environment and can have major ramifications on human well being. This section focuses in particular on animal systems since the bias throughout most the rest of the paper lies on plant production.

Analysis

Industrial Food Animal Production (IFAP) has impacts on a number of areas of concern for U.S. citizens. Within public health, IFAP has led to antimicrobial resistance, water and air pollution and endangers the lives of workers and encourages the spread of disease (Pew Commission). It is hard to track a direct link between use of antimicrobials in animals and disease resistant strains in humans, but indirect impacts are readily apparent. As more antimicrobials are used, the number of incidences of resistant strains increases, even when controlling for other disease development factors.

One of the main health concerns is that agricultural workers are often the bridges between animal diseases and other humans outside the facilities (Pew Commission). IFAP is exempt from much of the public health monitoring that would normally take place in other parts of the food system because exemptions exist for some agricultural processes, and as such, data can be hard to collect on practices that could reduce occupational risk (Pew Commission). Additionally, the air in and around facilities can cause respiratory illnesses and strain on at-risk populations such as the elderly or those with asthma.

For the environment, the main concern is with the large quantities of waste concentrated in a small area. To make this worse, many sites are located near floodplains and in communities that rely on well water (Pew Commission). IFAP systems compete with humans for limited groundwater and the heavy metals and pesticides used in the facilities can make the water dangerous for human consumption.

“In the IFAP system, each individual animal requires less feed, produces less manure, and reaches market weight far faster than farm animals produced on the small family farm of 50 years ago, which might suggest a lesser impact on the environment. Yet IFAP stands in sharp contrast to the more pastoral animal farming methods it has replaced by virtue of the emphasis placed on producing large numbers of animals in close confinement, as rapidly and as cheaply as possible.”

The issue is not with any individual animal, but the fact that they are so closely concentrated, thus requiring much more energy and water on local systems that cannot meet the demand (Pew Commission). A central feature of new policy should be finding ways to mitigate the impacts caused by this concentration, or reducing it to the degree that is possible.

Animal welfare is of concern to those who would be good stewards of their animals and to conscientious consumers of animal products, as well as those who choose not to consume animal products. The ethical concerns are often over how much space animals have to move (which is tied to the environmental concern around concentration of waste), and stresses caused by confinement also reduce health outcomes for the animals, in turn affecting the health of human populations.

Life in the rural United States, like in many other developing countries, often features high rates of poverty, as was mentioned in previous sections of the paper. Part of this is due to a lack of economic diversity present in these communities (Pew Commission). IFAP was originally seen as a way of addressing this issue, yet after its implementation, poverty levels remain similar to those that existed before. Despite the initial goal, the development of capital investment agriculture has actually reduced the amount of investment accruing in the communities where it is present. Additionally, though some literature suggests that IFAP systems are more economically efficient than alternatives, this is only when the costs of

waste management are externalized, and if they are accounted for, IFAP systems are often worse (Pew Commission).

This section was initially going to be rolled up with food safety, but since food safety has a much narrower definition it was determined it would be left on its own. In order to have a firm grasp of all the factors at play in this section requires disciplines including ecology, medicine, economics and natural resource sciences. Without a strong connection made among people who work in these fields with producers and each other, there will be little impetus for change.

It is recommended by experts in the IFAP field that non-therapeutic use of antimicrobials be phased out and ultimately discontinued. Additionally better disease monitoring and tracking on farm through APHIS and NAIS has addressed issues around the knowledge gaps that currently exist for those in the field of public health, but confidentiality remains a key necessity for producers to disclose information.

Another recommendation given is that IFAP facilities should have zoning restrictions similar to other industrial processes, and only sites with sufficient resources and resilience to high waste loads should be approved for new facilities (Pew Commission). Similarly intensive confinement should be phased out over time to address these and concerns over animal welfare.

The commission also suggests increasing competition in animal protein markets through the use of anti-trust enforcement on large agricultural conglomerates and more transparency in price reporting. Lastly, more and higher quality research on animal agriculture is of great importance to ensuring that better management systems can be put in place in the future.

Interest Groups: Big Ag and Workers

Introduction

Within the food system, there are a variety of stakeholders, but the power of agricultural lobbies makes them of especial interest since they have the disproportionate impact discussed earlier in the paper. On a slightly different tack, workers within the food system sometimes (but not always) lack the voice to have their demands met. Despite this, their roles is of critical importance because the ways in which they are treated speaks to the ethic of our food system and the level of justice that is present in not only our food system, but in our politics generally. While Hubert Humphrey was speaking of the role of government in people's lives, I think the following quote is useful to consider within any institution or system.

“It was once said that the moral test of government is how that government treats those who are in the dawn of life, the children; those who are in the twilight of life, the elderly; and

those who are in the shadows of life, the sick, the needy and the handicapped.”

Though he did not mention immigrants or low-wage workers directly in this particular quote, I think this category is incredibly important and within the spirit of the idea that our ethic should be to treat those in “the shadows of life” with compassion and respect for their service.

Analysis

In 1789, the first sugar-based policy was passed by the first U.S. Congress in the form of a tariff (Alvarez). Since then, taxes, import quotas, fees, support prices and acreage allotments have been used to control the amount of sugar produced. Since then, only four years have not had sugar price supports (Alvarez). All of this speaks to the incredible power of the sugar lobby in the United States from the very beginning of U.S. history.

The three major sweetener crops (cane sugar, sugar beets and corn) are all processed similarly, but the length of their history in this sector is varied. Sugar cane was the original form of sugar production in the U.S., beginning in the mid 18th century, while sugar beets would emerge during the Napoleonic wars of the early 19th century. In the late 20th century corn based sweeteners and artificial sweeteners emerged as a result of technological advancements and high levels of corn production (Alvarez).

The most recent sugar based legislation, the Food and Agriculture Act, was passed in 1977 and has remained largely unchanged since, with the exception of the loan rate (Alvarez). The main goal of the program is the protection of the domestic sugar industry through loans and a price support measure achieved by controlling supply. These loans become non-recourse loans when tariff rate quota on sugar imports exceeds 1.5 million tons.

In 2002, sugar was the only commodity not “negatively effected” by new Farm Bill legislation, which is to say that the price supports and loan programs were not impacted in any way (Alvarez). The benefit in the United States of the existing legislation is that it ensures a highly stable, if overpriced cost for sugar, even as world price fluctuates from year to year. Among the reasons why this legislation is difficult to remove is that sugar provides a large amount of income to the U.S. economy. When considering the jobs created directly and indirectly it counts for over 1 in 1000 jobs. Although this may seem small, considering the size of the industry, it is rather impressive. Of course, world price, while slightly more volatile than the controlled price that currently exists, would be lower because of the supply increase that would emerge in the U.S. market.

Due to its small size, but highly wealthy members, the sugar lobby is host to numerous affiliated groups who support existing legislation (Alvarez). Unlike other commodity lobby groups, the sugar groups work well in conjunction with each other and represent three distinct commodity crops instead of just one (Alvarez). Money spent to elect legislators that the lobby supports has been shown to have a strong correlation, but votes post-election are not statistically significant. This might lead one to question the power of the lobby post-election, but perhaps it merely suggests the ingrained mindset that cutting agricultural protections is dangerous, since sugar has yet to lose in any major legislation. Indeed, for every dollar spent on campaign contributions, agricultural lobbies receive 2,132 dollars in

return in the form of price supports and subsidies (Alvarez). In spite of this, it is uncertain if reducing PAC money would have a strong influence on this political outcome since wild success existed before such contributions were possible.

42 of 50 states have some stake in sweetener production. 92.3% of members in relevant committees come from sweetener producing states (Alvarez). As such, it is not surprising that sweeteners have been able to weather the move towards reductions better than any other lobby. The most hope for reform comes from international trade agreements. Should the WTO make a decision determining the price supports unfair to global trade, there would be required action, but no such decision has yet been reached.

This section harkens back to the beginning of the paper by highlighting the historical nature of the many problems facing us today. It also shows in miniature the vast difference in types of stakeholders present (or often missing) in the policy process. Though it isn't mentioned explicitly in the analysis of Wald that is to come, there are strong historical forces for why there are so many Mexican immigrants in particular working in the Southwest.

Shifting tracks from sugar lobbies to workers, immigrant labor has been and continues to be a key component of the food system, from field work to processing to restaurant workers, immigrants make up a large percentage of those who help grow, handle and prepare our food. For example, 27 percent of all butchers and other food processing employees are composed of undocumented workers, and the figure for food preparation is 12%. This does not count those who legally immigrated (Wald). Additionally 75% of migrant farm workers in the U.S. were born in Mexico.

In spite of this actual prominence, they are not commonly discussed in popular narratives about the food system. In Michael Pollan's article *The Food Movement, Rising* he provides a long list of issues within the food system, but worker/immigrant rights does not appear in it (Wald). This absence is especially notable because there is no such dearth of mention in academic writings. The reason for this is because the solution to our food system's woes is often presented as consumer driven. People are encouraged to vote with their dollars rather than advocate for production reform.

Writers such as Wendell Berry and Wes Jackson tend to harken back to a Jeffersonian ideal of a strong relationship between consumers and producers, but these narratives do not always include, or at least do not explicitly mention immigrant workers. This is further complicated by the fact that many other writings tend to view immigrant workers as an unfortunate by-product of our current system, and it seems that interest in local food production sometimes discounts the value they bring and does not advocate for them to be a part of, or to drive this transformation (Wald).

Wald sets side by side a novel by Helena María Viramontes *Under the Feet of Jesus* to Michael Pollan's *The Omnivore's Dilemma* in order to examine their portrayal of workers and how the two differ in this respect. Pollan's book includes the names of cows, chickens and farm owners, but does not include the names of any workers in the system (farmers or processors).

In fact, to the contrary, migrant laborers are considered in a negative light throughout the book. Using a quote from an interview in the book, Wald shows how small producers look with disdain at the use of immigrant labor. The smaller scale producers view themselves as free from having to hire migrant labor, and therefore superior to their big ag. counterparts. They instead have volunteers help grow the food, but one must wonder is this an economically sound proposition? It builds community within the town, but is highly exclusionary and relies on free labor, which is even less than the pittance that migrant workers are often paid.

Another example Pollan uses of Earthbound Farms is an industrial organic production operation. In the book Pollan uses it to suggest that it represents some of the corruption of the organic movement by industrial interests. One way he does this is to mention the existence of migrant laborers who work in the fields pulling weeds and in the sanitation portion of a processing plant. This race based indictment is troubling on many levels as it suggests a lack of agency on the part of the laborers and also because it seems to suggest that their presence would not be necessary in a more just food system, which does not allow for the idea of these immigrants being those who drive the change within the food system (Wald).

Similarly, when he visits a slaughterhouse in the book, Pollan mentions the invisibility of the kill floor and elaborates on its absence. This very pointed invisibility overwhelms what is actually invisible in his slaughterhouse narrative, which is the workers themselves. Pollan suggests that if we were more connected to the food system, if we could see the conditions of the slaughterhouses and other food processing sites, we would be appalled enough to change, but focuses exclusively on the rights of the animals which are being inhumanely treated while his concern for the people who work at those sites does not seem to manifest itself into a call for action.

In contrast to Pollan's depiction Viramonte names and details the lives of the workers in her novel. This is unsurprising since it is the main topic, and the larger critique of the food system is subsidiary to that of the conditions of workers. As a result of this, the book takes on a producer-centered politic, as compared with the more common consumer driven ones. Wald goes on to criticize the portrayal of worker's in advertising, such as the Sun Maid character, who does not show any physical effects of the labor necessary to produce the raisins in the package. In contrast Viramonte's novel details the strains placed on worker's bodies that prematurely ages youths and immobilizes elders.

The novel goes on to demonstrate the lack of economic mobility within the agricultural sector. It is in the attempt to gain more education that the secondary protagonist is killed by trying to work enough to earn the money necessary to go to school and being subsequently sprayed by caustic pesticides. It also introduces the dual role producers have as both consumer and producer. The main lead is perturbed by the aforementioned portrayal of workers while shopping at the grocery store. It suggests that consumers removed from the food system as they are in industrial agriculture are not capable of understanding the difficulty of the tasks necessary to produce their food, and thus are more difficult to recruit as allies in a production based movement.

The novel then goes on to compare the exploitation of workers to the exploitation of the lives of creatures from which fossil fuel was made. It contrasts the difficulties of the protagonist's life with the ease of life for a middle-higher class consumer. The consumer benefits from the sacrifices made by the protagonist as much as they benefit from the deaths of the former inhabitants of the earth, and need not give anything back to either to earn the reward of a simpler lifestyle. As a result of this imbalance the novel continues to suggest that a farm labor movement is the necessary key to having an appropriate shift in agricultural policy.

The next step in the argument is an analysis of the notion of citizenship and belonging that is of course central to immigrant workers. The novel suggests that workers have a dual-identity, both as citizens of a nation-state, but also as global citizens, who through their labor deserve the rights accorded to any other human. It uses the idea of denizenship as a place of belonging rather than a legal definition of belonging in order to address the inequities visited upon workers which are unjust and would presumably not be tolerated for citizens. It then expands on this in a scene with a baseball game, where the protagonist sits on the outside of the fence watching the game. She would not be welcome on the other side of the fence, and so the acceptance of her presence only exists when she is invisible, similar to the statement in the Pollan book, where he suggests that if people could see the injustice it would not be tolerated, but instead of focusing on animal welfare, Viramonte is describing the conditions of the workers. However, this comparison is further complicated because the spectators of the game are complicit in her invisibility, and should she become visible, they would lash out at her, rather than the exclusionary system, thus making it difficult for workers to have a legitimate political voice since their "security" is tied in with their invisibility.

Part of what has driven the lack of a united food-workers movement is the decentralization of processing. Rather than being located in urban centers as it was in the early 20th century, processing plants were moved into rural areas which lack the worker density necessary to form strong unions and as a result wages dropped for workers. The practice of workplace raids serves to criminalize the workers regardless of their immigration status. By not having safe spaces in which to live, immigrants are unable to develop a political voice, due to the lax procedures necessary to detain someone if they do not have a way of immediately proving status, or even if they do.

In spite of this, there exist political organizations formed by workers that have met with success. Yet there is little connection between these groups and the slow-food, local food, or other environmentally based food movements. In order to have a comprehensive change in food policy, the consumer and producer movements need to find common ground, and perhaps recognize the more powerful force that a producer based politics is capable of summoning before having such a strict focus on a consumer-driven one.

Food Policy Councils

Introduction

Food policy councils are an emerging trend at the state and local level of government that are intended to govern the local and regional food systems they represent. The scope and power of each is different, with some being able to create new policy and others merely able to suggest ideas or inform policy-makers on how to proceed. Regardless of the level of power held by a council, the most important responsibility they have is to ensure that food systems are organized in a thoughtful and productive way. It could be argued that the emergence of food policy councils is due to the vacuum of responsibility or capability on the part of the federal government to work on these issues.

Analysis

Federal, state, and local units of government have their own sets of responsibilities when it comes to food policies and the interactions between them is what ultimately shapes our food policy as a whole. Some particular instantiations of the states role are below as detailed by Leib et. al:

“State governments implement laws and regulations affecting restaurants and retail stores, based on federal guidance. Most states adopt a modified version of the FDA Food Code. States can create their own meat and poultry processing inspection regime, but it must be at least as stringent as the federal regime.”

“While it is within the state’s power to regulate zoning, most states delegate this power to local governments. Nonetheless, statewide planning can mandate or encourage certain local zoning and land use practices.”

“State agencies or institutions using state funds must follow state procurement guidelines. An increasing number of states have tailored their procurement regulations to encourage local purchasing by state agencies/institutions. When using federal money, federal rules still apply.”

“States are preempted from enacting labeling laws for packaged foods or certain chain restaurants/vending machines, as these are regulated by federal law. However, states may: require labeling for non packaged foods, require labeling for non-chain restaurants, pass labeling rules for foods that do not cross state lines, and require other label information (e.g. Alaska requires the labeling of farm-raised salmon products).”

“State governments are responsible for administering food assistance programs in terms of authorizing participants and, in some cases, vendors. States sometimes contribute additional funds to the programs.”

When working with tribal councils, since a state can only preempt tribal law with the authority of the federal government, it is recommended that states work in conjunction with tribal councils to develop food policies that will be mutually beneficial.

A Food System Assessment is a document that contains information about agencies, producers, suppliers, distributors, retailers, consumers and waste managers of food in a state and the relationship between them. It can be a useful tool for determining what changes would be most useful for the state. It is recommended that before new legislation is

considered that this assessment be done in order to ensure that the work being done is relevant and context sensitive to the state in question.

States administer the Specialty Crop Block Grant Program, a pool of federal money set aside for the production of specialty crops. For example, in 2011 and 2012 55 million was awarded to the states in amounts from \$95,000 to \$18,000,000 with most states between \$200,000 and \$300,000 (Leib et. al). Specialty crops are defined as *“fruits and vegetables, tree nuts, dried fruits and horticulture and nursery crops, including floriculture”* (Leib et. al). States apply for funding through the federal government and then receive funds if approved. In addition to this, states may use their own grant programs to administer funds to specialty crop growers and can further increase levels for production through tax incentives, loans and training programs.

Food processing is a critical step in developing an economy around food production. To quote from the Leib et al. report:

“Examples of food processing infrastructure include cold storage facilities; shared-use food processing centers and agricultural facilities (for grading, storing, and packaging foods); grain milling facilities; dairy processing facilities (for milk bottling and cheese making); and meat and poultry slaughter and processing facilities (including mobile processing facilities).”

Food processing and food safety are strongly linked because it is in the step of processing where many concerns over health emerge. States largely have free reign on how they choose to work within this system of food safety (Leib et. al). The food modernization act has further strengthened states control over this step. One example is promoting and having regulations around shared processing facilities. One of the main challenges for federal level inspection is the cost and decentralization of facilities. However, while some states have robust health systems in place, others do not and this deferred responsibility is an issue of concern for health advocates.

Food hubs for aggregation and distribution are another crucial step in food systems. It is recommended that states actively promote well built and designed hubs that improve access and economic viability for local growers. If these hubs already exist, the state should work to improve their access and scope to the degree that is possible. Another good setting for states to have an impact is in retail markets since they have a broad jurisdiction in this area (Leib et. al). Similarly waste management can be addressed in part through composting programs run by state agencies.

A purchase of development rights or PDR, is a way for farmers to receive many benefits to their production in exchange for not being able to develop their land towards other purposes in the future (Leib et. al). This agreement is permanent, such that future owners of the land will also be bound by the agreement. It is one way states can ensure that they have sufficient land to grow the crops they desire. It is also a way to encourage young farmers to enter the market, though many barriers around different levels of tax rates on agricultural land may pose a problem.

Another set of tools tool in a state’s inventory are Right to Farm bills, which are useful in protecting farmers from the encroachment of development around their land. It is important

to consider how these particular laws are enacted however, as they may unintentionally shield producers from accountability for environmental damages they cause (Leib et. al). In order to address this issue a state should define the types of farms it wants to protect and ensure the delineation is clear and identifiable.

Another way making sure sufficient farmland is accessible to growers is through agricultural preserves. These are a zoning designation specifically focused on protecting and empowering growing areas. Another option is to have a mitigation programs similar to those that already exist for wetlands (Leib et. al). Which is to say, if farmland is developed for another purpose, that acreage needs to be replaced somewhere else in the state, just like how wetland remediation is often practiced in transportation projects.

On the issue of getting more youth into farming, a mentorship program connecting young farmers to experienced ones is one way that potential land transfers could occur that would make it easier for young farmers who may have limited land to improve their ability to acquire it. The existing age gap is especially important as the average age of farmers continues to rise. For an example of the scope of this issue, only 10% of food production is done by farmers who have had their operations for 10 years or less (Leib et. al). Encouraging interaction between future farmers and existing ones can hopefully address this issue by giving young farmers the experience they need to become better stewards of the land.

Although the federal government sets the broad guidelines for the Supplementary Assistance Program Program (SNAP) , there are many ways states can influence how the money they receive through it is distributed. One major way is to improve enrollment through changing the portions of the legislation that they can influence, such as the maximum asset requirement. Another way is to bundle it with Temporary Assistance for Needy Families (TANF) enrollment (Leib et. al).

Special Supplemental Nutrition Program for Women, Infants and Children (WIC) is another common food assistance program. Unlike SNAP, it's funding is more limited in terms of the amount received but less so in terms of administration of the program. It struggles more than SNAP in terms of enrollment and many participants leave early due to bureaucratic inefficiencies in the program (Leib et. al). One way to address this challenge is to provide additional state funding for the program and ensuring that those who implement the program are more sensitive to the needs of the participants. Similarly, being able to use Electronic Benefits Transfer (EBT) for WIC increases ease of use and reduces stigma, especially if it can be couple with other benefits programs like SNAP (Leib et. al). In order for low-income families to have access to fresh food it is also helpful to have farmer's markets capable of accepting EBT.

Having more fresh food available is seen as a way to improve health outcomes, especially for low-income populations. One way to address this is through Fresh Food Financing Initiatives, which are programs that provide grants or loans for retail food locations to open in underserved communities or expand food carried to include more fresh food, usually fruits and vegetables (Leib et. al). Community gardens are another way that access to food can be expanded in low-income areas. Allowing people to grow their own food provides both the food itself and also a sense of self-determination and control that aids the mental

health of those who participate. Mobile vendors can also assist in getting food to places where it is otherwise scarce.

Food gleaning and donation programs can substantially increase the amount of food available at local food pantries, shelves or non-profits. These programs take extra food from grocery stores or restaurants and give them to the aforementioned institutions. Providing liability protection for these donations is critical to ensuring that people will participate (Leib et. al). In addition, changing regulations around expiration dates, either by eliminating them altogether or having designated places to sell expired food can significantly reduce food waste. Public education campaigns around what expiration dates actually mean could also be helpful. The waste section of this paper will detail more strategies on this topic.

Farm to institution programs are one way farmers can find new direct markets for their products. Examples of entities that have pursued this are state agencies, schools, universities, prisons and hospitals (Leib et. al). State agencies are particularly useful ones because they have complete discretion over their procurement methods. This is helpful because it allows farmers to get full market value for their products, while making the price lower for the institution since they do not have to buy it from an intermediary. Additionally, the institutions can buy at high volumes and thus provide a substantial share of total sales for smaller farmers. Education for students, patients or prisoners involved could also be included.

One barrier to this sort of sourcing is The Dormant Commerce clause, which is part of federal regulation that prevents states from discriminating against out of state producers of goods (Leib et. al). This could potentially be used to make a lawsuit against states for preferring their own agriculture, though it has yet to be used as such (Leib et. al). Also it's exemptions surrounding intrastate commerce and inability to regulate state government spending means legislation can be crafted in a way to avoid this legal issue. As a part of the Constitution, other recourses to make changes seem rather difficult, and building regional food systems with nearby states buying from each other where it makes sense is a more direct legal option.

Based on existing practices, state agencies can have varying levels of intensity to their commitment to buying from local producers ranging from voluntary compliance with a goal to a mandate. When trying to promote other institutions procuring local food, the state can create task forces, set procurement goals and have educational campaigns. They may also provide financial support through grants, reimbursement programs or tax breaks.

States can also push for more regulation of food in schools than already exists at the federal level. This might include bans on certain types of food for reimbursable school meals. It might also place limitations on the amount and type of competitive foods (including preparation style) available in schools. These measures stifle competition of the food market within schools, and it is perhaps politically difficult for this option to be pursued. Another changes that might be helpful or more feasible is reform of the school breakfast and lunch programs. The breakfast program could be especially helpful as demonstrated by the following quote from the Leib report on states.

“Of every 100 students who receive free or reduced-price lunch nationwide, only 48.2 receive free or reduced-price breakfast.”

Enrollment in the National School Lunch Program (NSLP) is much higher than it's breakfast counterpart (NSBP), but is still lower than desirable. States can have families enroll simultaneously with SNAP or other assistance programs, or provide universal free meals to reduce the stigma of free lunch programs to address the issue of hunger for children in low-income families (Leib et. al).

Having farms or gardens on school grounds can also improve the access students have to healthy food as well as provide an educational opportunity about where food comes from and how to grow and manage it most efficiently. Similarly nutrition classes can be added to the core curriculum that all students must take and more cooking classes could be offered. Special events to learn about farming with guest farmer visits could be held.

The Food Safety Modernization Act was the first major overhaul to food safety since 1938 (Leib et. al). It will be addressed again in detail in the food safety section of this paper. The following quote illustrates the areas under which this federal policy has less control.

“States share regulatory authority with the federal government in many areas, but states enjoy complete jurisdiction over farmers markets and other types of direct farm sales, retail sales, restaurants, and many types of small-scale agricultural production and processing entities. In any given state, a variety of government agencies may have collective responsibility for the safety of the retail and restaurant food supply.”

Every four years the FDA renews the Food Code for states, and while compliance with it is not mandatory, doing so ensures a safer food supply for the state (Leib et. al). That said, some of its provisions can place undue burdens on small scale producers so states should consider if they wish to adopt more lenient, but still safety minded, regulations for smaller farms. Similarly, cottage food producers may face challenges since food safety laws were built with large commercial farms in mind. Having state level certification and labeling can help these products maintain credibility as safe foods despite not being ruled by federal law (Leib et. al).

State run slaughter inspection can reduce costs faced by the USDA and thus make it less expensive for farmers to be inspected (Leib et. al). Having small local slaughterhouses can also reduce costs to farmers since they do not need to ship their cattle as far. Mobile slaughterhouses are another way to reduce costs. However, the start-up costs of these programs are high and may require financial assistance from the state, such as loans similar to the Fresh Food Financing Initiatives mentioned earlier.

Food policy councils are perhaps the most comprehensive governing bodies in terms of the types of people who could occupy them. This brings some optimism to the table in terms of the future of food policy. By being able to integrate people from a number of backgrounds and disciplines, food policy councils are able to tackle these question in much more comprehensive ways than more rigidly defined organizations. Also, by being active in the communities they represent, they can provide a more transparent lens into the policy process so that people outside of the council can more easily give comments to improve policy at their respective level.

Turning from state level policy now to local policy, Dillon's Rule and Home Rule are the two major competing practices of local government authority. The following set of statements highlight the roles of local government that food policy councils could influence (Leib et. al).

"Local public health departments are often tasked with enforcing state food safety requirements. Some local governments also have their own set of food safety ordinances applicable to local restaurants or grocery stores."

"Most states delegate zoning and land use powers to local governments. As these are predominantly local issues, zoning and land use powers are important tools for local food policy councils to understand and utilize."

"Local agencies, schools, and institutions may prefer local food when spending federal funds, as authorized under federal law. When using state funds or local funds, they may give preference to local food if authorized under the relevant state or local authority."

"If allowed under state law, local governments can pass some food labeling rules for foods not covered under federal law. For example, local governments can require labeling for non-chain restaurants."

"Local governments generally do not play a role in administering food assistance programs, but they can encourage their residents to participate in the programs, which are often underutilized, or provide incentives to those who purchase healthy options with their benefits."

Community Food Assessments are useful tools for determining the needs of the local food system. They function in the same way as a Food System Assessment at the state level. Local food systems deal primarily in concerns around urban agriculture and land use planning. (Leib et. al)

"Urban agriculture can help to further entrepreneurial food production, foster community building; increase food access, improve air quality, and reduce energy costs associated with the transportation of food over long distances."

Urban agriculture can be a difficult thing to justify since there are so many competing land uses in a densely populated area and some municipalities have laws in place that make it difficult to grow in the city. As a result, suburban and rural food policy councils may face less challenges than dense urban regions. Processing is the step that is most often missing in local areas, but it is necessary to reap the full economic benefits of urban agriculture. Small scale food hubs are another feature that makes it much easier to have viable urban agriculture. Regional hubs could be located in the city, where the most demand for the food is.

CSA's are a market tool that reduces the risks for small scale farmers. Letting them contract with small grocery or gas stations allows for local growers to get food to market where there may not be large chain grocery stores (Leib et. al). Local governments can also buy local food themselves at larger volumes than some other markets, much as farm to institution programs would work at a state level. Also like at the state level, having policies that protect

growers and retailers from liability as a result of expired food can make food donation much more common.

Public land regulation is viewed through the four goals of: type of use, density of use, aesthetic impact of use and effect on communities' cultural and social values (Leib et. al). Zoning is the practice of dividing a city up into zone with particular areas designated for different purposes, such as residential, commercial, industrial, etc. Having a comprehensive plan for a city or region can make the implementation of agricultural much more simple. If it is prioritized, city-planning efforts will acknowledge its importance and make decisions accordingly. Planning commissions are an important entity in the planning process. Although they do not have the ability to enact plans, they advise city planners and are a common channel to go through to get the ear of planners.

In order to have a better idea of how zoning impacts urban agriculture, it is important to understand how it works. The following are the basic functions of zoning. The rules for different zones determine what can be done in them. For example, if residential zones are not allowed to have income generating businesses in them, a farm that uses vacant lots to grow would not be able to sell their produce and therefore could not grow there (Leib et. al). Non-conforming use emerges when zones change. Instead of removing all landholders who do not fit the description, they are allowed to stay, but will no longer be able to expand. A variance is a permit that allows a land-user to use the land in a way that does not comply with that zone. It is often difficult to get such a permit and it usually requires a lengthy application and hearing process. Open space set asides are a common zoning requirement that can allow for community gardens on some land (Leib et. al).

Some indirect ways to benefit urban growers is through having cities be more walkable and having mixed use zoning that allows for agricultural and food retail uses (Leib et. al). Corner stores, food trucks, mobile food vendors and farmer's markets are good uses under mixed use zoning that could improve access to food. Incentivizing farmers to develop either through zoning practice or financial incentives will make it much more likely for people to grow in the city. Controlling what grocery stores can or have to stock, such as a certain percentage or weight of fresh food is another way to guarantee places without much food access have whatever the city desires.

Similarly, it is possible that an overabundance of unhealthy food is an issue in some areas (Leib et. al). Zoning could also be used to limit this type of development. Land trusts can partner with people who would like agricultural land to remain that way after it is sold can do so through a conservation easement. This would mean that its use would be determined by the land trust and it would conserve whatever the previous use had been, in this case, agriculture.

Residential animal husbandry may be illegal since most residential areas have prohibitions due to health and safety concerns (Leib et. al). But there are other benefits, such as ecological health which can boost the value of agricultural development and animal husbandry in the eyes of a city. Stormwater capture, habitat creation and pollination assistance are other services urban farms can provide.

Some zoning changes that are very helpful are having farming legal in most zones, having zones dedicated to agriculture, and having agricultural overlays on existing zones (Leib et. al). Having size restrictions on farm operations in residential areas is a popular way to encourage agriculture without having it dominate the landscape in zones where it is not the primary use. Food policy councils can do well to inform and educate around potential animal uses that either exist or are being advocated for. Bees and chickens are the most common animals allowed, but ducks, goats, pigs and sheep are all legal in at least one city.

Having a land inventory of what land is suitable for urban agriculture can make it much clearer how a city should go about planning for urban agriculture. Additionally, it is important that this land be financially accessible to would-be growers (Leib et. al). Vacant land is a good place for agricultural development. Long term leases are also a good way to get land into production, because short leases do not allow growers to invest in the infrastructure needed for economically viable production. Land swaps that require new space to be used for agriculture if some is taken away is another good strategy to ensure that sufficient land is in production to meet community needs, just like at the state level.

Providing basic programs such as soil testing and amendments, seed and tool sales and other foundational services also make the start-up process easier on growers (Leib et. al). Training and loans or grants can mitigate the large barriers to beginning a new farm. Water and labor are two major implements needed for agriculture and it is important to consider how they will be integrated a city's plan. Having volunteer programs assist in community gardens and ensuring legal access to clean water for growers could be be a priority.

Other ways to reduce barriers to entry into food production are using food councils to publicize apprenticeships, mentorship programs, internships, volunteer opportunities and workshops done by local growers (Leib et. al). Further, partnering with the city and growers for information sessions and site visits is a good way to enhance public knowledge about urban farming. Brownfields that are potentially useful for agriculture may be remediated through industrial process or occasionally growing non-edible plants the first few years to take up harmful chemicals (phytoremediation) and then beginning with edibles once a soil test determines it safe.

In terms of places for local growers to sell, farmers markets are a good alternative to traditional grocery stores, especially if they can accept food assistance program dollars. Having more flexible payment systems for CSAs (such as sliding scale, revolving loan, weekly payments or donated shares), can make them more available consumers who may not be able to make on lump-sum payment at the beginning of the growing season (Leib et. al). Mobile food is another option to get food in areas where it is otherwise scarce. Community gardens both provide food and community development opportunities. Improving transit for non-vehicular travelers also makes urban food more viable on the neighborhood level.

Local governments can get involved themselves by promoting local food purchases within government, which will make the market more favorable and build on the environmental benefits of local food. Having awards for sustainable growers is a good way to highlight best practices to other growers and incentivizes work towards a more sustainable food system (Leib et. al). Composting is a good way to deal with food that becomes inedible or would otherwise be lost and city programs for collection could help make this simpler for

consumers. Finally, the most important consideration for any municipality is to have a long-term plan for agriculture in the city in the future so that each city can determine how each of these pieces fits together.

Food Safety

Introduction

Food safety is, unlike food security, is not about access to food, but rather whether or not the food that is available is safe for human consumption. The CDC is the United States' organization that is responsible for monitoring and tracking food-borne illnesses among other duties. Disease outbreaks are the most visible form of when food safety measures fail. As was mentioned earlier, some barriers exist to collecting information from farms due to liability issues, APHIS and NAIS address this better than had been previously. This section is a quick review of the changes to federal policy as a result of the Food Safety Modernization Act, the most recent update to food safety legislation.

Analysis

The effects of the new policy can be summarized into the categories Prevention, Inspection/Compliance, Response, Imports and Enhanced Partnerships. The changes under prevention contain (USDHHS):

- Food processing facilities need to have a written plan on how they will handle food in their facility in order to sell their products legally.
- Regulations will be put into place around safety in growing and harvesting of fruits and vegetables. This is mostly a response to the growing amount of locally grown fruits and vegetables in regional markets
- Protection of portions of the food supply vulnerable to intentional contamination. This portion focuses on non-disease driven pathogen expansion.

Inspection/Compliance has the following regulations (USDHHS):

- A specific inspection frequency based on the risk a food facility carries. The greater the risk, the more frequently inspection will be carried out.
- FDA access to all records kept at the facilities, though this information will remain confidential to protect their business interests
- Accreditation process for food laboratories which will allow for lower rates of inspection for accredited labs.

Response will be changed in these ways (USDHHS):

- Mandatory recall power through FDA for quicker response to emerging crisis.
- More flexible detainment standards for food to address new pathogen growth.

- Suspension of registration if a facility seems unsafe, which had previously not been possible.
- Direction to create better food tracking system, an ongoing process.
- Creation of more regulation on high risk foods with more incidences of disease outbreaks

New Import regulations are (USDHHS):

- Accountability on importers for safety of food, which had previously not existed.
- Certification for people importing that they have safe facilities, much like the national accreditation process.
- High-risk foods will have additional certification required
- Voluntary quick review process for certified importers for good faith in case of a future outbreak
- FDA may deny import if access to facilities is denied to ensure food safety

Enhanced Partnerships contains these alterations (USDHHS):

- Multi-layer grant system to improve local and state inspection processes
- Improve foreign government inspection processes, in part through training foreign agencies that hold similar roles to the USDA and FDA.

The FDA may cooperate with other agencies for inspections as necessary, though the changes made largely reflect a more hands-off approach in favor of giving more authority to state-level government.

Nutrition and Public Health

Introduction

The idea of public health is one where the social, environmental and economic factors in a person's life are considered in thinking about how poor health outcomes emerge. In an interview with an anonymous young public health professional, the interviewee stated the reason for their interest in public health was based on their experience as a practitioner.

"I used to think that the people who came through my door just made bad decisions, but as I saw more and more of them, I began to realize that these people weren't unhealthy because they made bad decisions, they were unhealthy because they were poor"

This realization recreates one that was made some time ago by the people who would found public health as a profession and field of study. Since that beginning there has been a plethora of research into societal, environmental and economic reasons for health outcomes. The most recent concern has been with obesity and as a result, many of the readings highlight this U.S. phenomenon.

Analysis

One of the major influences on food consumption is the setting and what is available in that setting (Story, Kaphingst, Robinson-O'Brien, Glanz,). For example, being in a restaurant, versus a grocery store impacts what will be consumed, and then within those subdivisions, the potential offerings differ based on size, location and style. Improving the condition of food options and availability at a site will improve food consumption behavior at the site. For example, when workplaces promote healthier eating and have better options available, employees have fewer poor health indicators (Hood, Deinen, Monate). Having positive support within an organization for these changes itself also has an impact. Voluntary programs meet with more success than those imposed on workers. Low-income neighborhoods are sites of especial importance within this framework and serve as the primary sites necessary for change in access (Hood, Deinen, Monate).

Labeling is a common recourse to address behavioral changes in food choices by individuals, but results from this policy technique are mixed, with most studies conducted outside of experimental settings suggesting that there is little impact. (Hood, Deinen, Monate) Therefore in order to address this issue the idea of nudging based on environmental cues has become more widely adopted. Present-biased decisions suggest that whatever food is most convenient is that which will be selected more frequently. As a result, store layout could be modified to encourage ease of access to healthy foods. Placement on menu items can also have an impact on consumer choice. Additionally, because healthy food has a negative bias in the present, but fares better in the future, doing more planning around what food will be ordered or consumed in the future may improve the healthiness of items purchased.

Status quo bias is another way in which unhealthy options are repeated after they emerge (Ubel, Liu, Roberto, Wisdom). One common trend on this has been increasing portion sizes. Although humans do not use any more energy on a daily basis than they did in the past century, the amount of food on plates in the U.S. has been steadily increasing. The exact reasons for this aren't entirely clear (though it probably has something to do with overproduction of food), but the implication is dire. People eat more than they should and as a result become susceptible to cardiovascular disease, obesity and other poor health indicators. Instituting policy that aims at changing how these defaults are chosen and moving towards smaller portion sizes could have some effect on overconsumption.

The stage of processing is a crucial place for policy to take place (Golan Unnevehr). Although companies like to extoll that consumer driven demand is the key to changing a product, many changes are often made internally without consumer knowledge (Powell, Chaloupka). As a result, this is a good arena for regulation since experimentation in food for the sake of flavor occurs frequently already (Golan, Unnevehr). By having other types of requirements be looked at, the healthiness of food can be changed on the processing end without drastically increasing costs for processors.

Public Health and Nutrition is a place where many scientific disciplines meet. It is necessary to both understand people's biology, but also that of the chemicals and plants that we consume and how the interplay of these things makes us more or less healthy as a society. There also emerges a need for behavioral science, economics, psychology etc. There have

been studies that show the effects of music and acoustics in different spaces on behavior patterns, suggesting there is a wealth of knowledge that needs to be tapped into in order to more adequately address the wicked problems within public health and nutrition.

Although information is slightly less useful in some instances, rigorous labels with clear definitions can set a standard that allows for companies to differentiate from one another and demonopolize foods (Golan Unnevehr). It also increases consumer awareness and allows for better decision-making. The issue of clarity cannot be overstated, even the term “whole grain” while very specific on the production side is surprisingly flexible in processing and therefore less useful than it could be.

Three tools were used in the particular case of trans fats in food (Unnevehr, Jagmanaitė). The first was mandatory disclosure, the second was liability measures for it being present in a food product and third was the threat or actualization of a ban. Industry response to these three tactics was rather dramatic. Not only has the number of trans-fats used been reduced drastically, but companies use their compliance with federal law as a marketing tool and advertise when their products have no trans-fats (Unnevehr, Jagmanaitė). Major changes in the type of cooking oils used have led to an elimination in most fried goods. A question unexamined by the Jagmanaitė and Unnevehr article is whether this improved health outcomes. In the article this is more assumed than examined and is worthy of study. Were the replacements (mostly partially hydrogenated fats) actually better than the original? This sort of evaluation is key not only in this particular instance, but in all changes to food policy.

Nutrition Assistance

Introduction

In the 1960's hunger became a central issue in the United States, along with the call for civil rights and other social issues. Although its origins were a response to a combination of the overproduction of food mentioned earlier in this paper and urban poverty, it became more about social justice later on (Devaut, Pitts). The initial passage of a food stamp-like system was in 1959, but it wouldn't be until 1964 that it became a permanent federal program. There have been many changes to the program in terms of implementation, but the basic idea remains the same, albeit production of food in the U.S. no longer feeds the program (Devaut, Pitts). WIC began somewhat later in 1972 as a pilot and 1975 as a permanent program. In more recent times, these program has come under fire along with other social benefit legislation, but perhaps the least deservedly both based on a absolute number of dollars spent and because they have shown that they are well worth the investment.

Analysis

WIC has been shown to save the government more money than it costs, due to a reduction in costs from Medicaid. \$2.89 is saved in Medicaid costs in an infant's first year and a total of \$3.50 saved in Medicaid costs from birth to 18 years (Schanzenbach, Hoynes, Almond). Targeting and cost structures as well as food quality and role of complementary activities are important factors in determining the structure of a good program. Although enrollment in

WIC is often low, it is clear that those who participate tend to benefit and save the government money in the long-run (Schanzenbach, Hoynes, Almond).

SNAP is the largest food-based entitlement program in the nation and its relative ease of access allows it to reach a number of households that do not qualify under more specific programs (Gregory, Coleman-Jensen). It is difficult to study in some senses because it has remained constant in all states throughout the last decades. As a result, there is no suitable control to measure it against ((Gregory, Coleman-Jensen)). One study follows children born in eligible households between 1956 and 1981 and studies the long term impacts on their health and welfare.

Although program evaluation already justifies SNAP, this study suggests that it may be even more cost effective when considering the long term-impacts on health outcomes (Lentz, Barrett). Poor nutrition in early childhood is linked to poor performance in schools and hence on income later in life, which both increases health costs and decreases the tax base. When food is scarce in pre-natal periods, the body reacts in a way that predicts future shortages, but when these expectations are not met later in life due to the availability of low quality food, diabetes, obesity and heart disease become more likely to occur in their later life.

After birth, in the early periods of feeding, if a child gets less food, even if they later receive normal amounts, they are also much more likely to develop diabetes and heart disease and obesity, which suggests there are critical periods where assistance is most necessary. Children born periods of forced famine or fasting also have greater incidence of disability in their adult life. This quote from Almond and Schazenbach sums up the results nicely.

“We find that access to food stamps in utero and in early childhood leads to significant reductions in metabolic syndrome conditions (obesity, high blood pressure, heart disease, diabetes) in adulthood and, for women, increases in economic self-sufficiency (increases in educational attainment, earnings, income, and decreases in welfare participation). Further, we provide new evidence on when exposure to additional resources matters—the gains are large and increasing with exposure to age. Beyond that point the additional resources do not translate into improved adult health outcomes”

Nutrition Assistance is a field much like public health that requires a number of disciplines to understand. In fact, public health is probably one of them. The success of existing programs in terms of cost-effectiveness suggests that perhaps this meeting of the minds is more present in this particular policy issue, though as will be explored next, there is likely still room for improvement given some recent trends.

Despite the overwhelming body of evidence to show the effectiveness and cost savings of food programs, there is a great deal of opposition to their existence. The recent demand for cuts in spending over the next decade has driven legislators to propose a plan to accomplish this entirely through reduction in SNAP benefits (Rosenbaum, Dean). This comes on top of another bill to reduce benefits to the program by \$133 billion and convert it into a block grant, which would reduce the flexibility that is often essential for the lowest income members of the program. It is estimated this would cut 2 million participants of the program entirely, and reduce benefits for 44 million others (Rosenbaum, Dean). It has been shown

that SNAP is an effective program for removing people from poverty, as evidenced by the 4 million who did so in 2010 (Rosenbaum, Dean). The cut to a job-training component a time where unemployment on average exceeded 8 percent also seems to make little sense. In spite of this, the most recent legislation impacting the SNAP program, cut benefits to participants down to \$1.30 per meal (\$3.90 per day) (Rosenbaum, Dean). All told, 5 billion dollars was cut from the program.

One compromise for future legislation would be to index SNAP benefits to local food prices. This sort of policy change could improve the ability of the social program to reduce food insecurity and economic hardship by taking into account local price differences. While SNAP is often coupled with other assistance programs if a person qualifies for them, it is often the only aid a family receives. The Lentz and Barrett article does a good job of summarizing the financial conditions of recipients.

“Eighty-five percent of SNAP households have gross incomes below the poverty line (\$22,000 a year for a family of four in 2011), and 98.5 percent have disposable income (or “net income”) below the poverty line. Two of every five SNAP households have gross incomes below half of the poverty line.”

It would behoove legislators to consider both the economic benefits and financial position of recipients in future policy-making decisions regarding nutrition assistance programs.

School Lunch Program

Introduction

The School Lunch Program is the second largest meal assistance program in the country. The current program has been a permanent fixture of schools since 1946 (Buzby). Though other school food programs existed before this point, they were temporary and usually poorly funded. A great deal has changed since this beginning and the most recent changes directed at increasing the health and well-being of youth are just another step in this process, but is an important shift towards thinking about the health of the food consumed rather than the amount, which had previously dominated conversations about the food served.

Analysis

In 2012, major reforms were carried out on the school lunch program to improve health outcomes for students. This quote from the Guthrie and Newman brief exhibits some of these changes.

“New meals feature more servings of fruits and vegetables; offer a healthy variety of vegetables, including dark green and red/orange vegetables (like tomatoes, carrots, and sweet potatoes); contain more whole grains; and limit milk to low-fat milk and fat-free options”

The proposed changes to these standards would increase the cost of meals by 9.1 cents per meal. Since this study was conducted before the end of the policy process there are some minor differences in cost that may make this number inaccurate. School food authorities

often gain a share of revenue from competitive foods, making removal of them more challenging; however there have been moves to regulate what can be carried within them. For more detail on these proposed changes refer to the end of the Guthrie and Newman policy brief.

On the consumption side the recent changes to the standards for school lunch program have shown positive movement towards increased fruit and vegetable consumption, but waste remains a large issue (Cohen, Richardson, Parker, Catalano, Rimm). Larger vegetables have still allowed to an increase in vegetable consumption, though selection of vegetables is at the same level as it had been previously. Availability of fruit has increased selection percentage of fruits but not consumption level percentage, which is to say, more is being taken and as a result, more is eaten, but the same percentage of students who take fruit consume it as in the past. Overall 60-75% of vegetables and 40% of fruits were discarded based on a recent study of the effects of the changes in low-income urban schools (Cohen, Richardson, Parker, Catalano, Rimm). This amount of waste is consistent with previous levels and as such addresses concerns about it being increased under the new standards, but still does not bode well for the level of waste overall.

Among those who already consumed leafy greens or other healthy options, the amount by which they did increased significantly (Ishdorj, Crepinsek, Jensen). Further, the availability of a la carte options decreased healthy food consumption. Convenience of reach for options also seems to have a large impact, offerings that are closer or easier to get to are selected more often than those that are farther away or hard to reach (Ishdorj, Crepinsek, Jensen). One last concern is about behavior outside of school. Student consumption at school is at best a neutral at worst a bad proxy for consumption outside of school. In schools where restrictions on desserts or other types high-calorie low nutrition foods is present, students appear to continue eating such foods in the home.

However, participation in the program, when holding other factors constant, shows a larger consumption of fruits and vegetables than non-participating students and in schools where french fries are not served vegetable consumption increases both at home and at school. Overall, large school districts and districts with a large number of students eligible for free or reduced-price lunch tend to have the strongest wellness policies.

Waste, Recycling, and Composting

Introduction

The United States is one of the only countries in the world where the majority of food waste comes from consumer level waste rather than food loss at the pre-harvest and processing stages of the system (Reich, Foley). As a result, we have a unique opportunity to turn this on its head and become much more efficient in how we deal with our food. The argument of cleaning one's plate in order to pay respect to those who go hungry may be flawed, but what if our plates didn't have so much food on them to begin with? Agriculture uses a large amount of our land, water, and energy, and growing all that food just to throw it away is a poor use of resources that has negative human and environmental health outcomes. This section will begin broad and get more specific as it goes along.

Analysis

40% of food is wasted between farm to fork, equaling about 165 billion dollars worth of value (Gunder). This results in large methane emissions and “wasted” water/land. Some broad suggestions on how to fix this are:

- Having standardized expiration labeling
- Reviews of food waste in businesses and government units
- Education around what “imperfect” but edible food looks like

Food waste can be divided into the following seven categories: Farming, Post-Harvest and in Packing, Processing, Distribution, Retail, Food Service, and Households. Most of the suggestions throughout the readings come in the retail and household sections, suggesting their relative importance due to their larger contributions.

In contrast to the wasted abundance, roughly 14% of households in the U.S. are food insecure (Kantor, Lipton, Manchester, and Oliveira). Food waste needs to be addressed as a means of dealing with increases in population that are expected over the coming decades. Rather than the call to feed the world by producing more, perhaps the better strategy is to use better what exists (and maybe produce a little more). One way to conceptualize the amount of food wasted is that food waste accounts for more solid waste than plastic.

Meat, fish and poultry account for 41% of food loss in the U.S. Vegetables and dairy account for 17 and 14 percent respectively. This suggests that in addition to being the most resource intensive, meat is also the least efficiently consumed. As countries such as Brazil and China become more affluent, it is observed and expected that food loss in those systems will increase. Therefore it is worth investigating ways to reduce loss so that global food systems do not fall short by 2050. Some suggestions for doing so are:

- (1) Requiring food waste reporting,
- (2) Clarifying and standardizing food date labeling
- (3) Setting targets for food waste prevention, and
- (4) Aiming targeted awareness campaigns at households and the general public.

In spite of all this it is important to remember that there will always be some food loss on account of economics, weather and disease, but that there is much that can be done to improve the current standard. If food cannot be sold the main existing alternative is food recovery. Recovered food loss is associated with food assistance as the following quote from the Buzby article demonstrates:

“Even a modest increase in the recovery of such wholesome foods could reduce hunger by supplementing existing food-assistance efforts; provide tax savings to farmers, supermarkets, and foodservice establishments that donate food; and lessen the environmental impacts of waste disposal.”

Barriers to food recovery include logistical and network issues (this has improved but is still important). One way this has been addressed is the investigation of animal feed and compost as food byproduct uses by the USDA. It has been demonstrated that keeping electronic food inventories is effective in reducing loss and this strategy should also be included to the degree to which it is possible.

Waste is perhaps one of the most important issues within policy from an efficiency standpoint. The gains we have from technology have made production this way and while there is room for improvement in that area and in distribution, at least in the U.S., post harvest losses are an embarrassing eyesore on an otherwise impressive system. It is also important because the gains in efficiency earlier along mean little if at the end of the day the food produced efficiently goes unused, it would be more efficient to not make that which goes unused from that perspective. The varied disciplines necessary to understand waste are thus very extensive and include all those listed in previous sections and more.

Apples, Grapes, Peaches and Strawberries are the four largest sources of food loss (in absolute terms) in fruits and canned/fresh tomatoes and fresh/frozen potatoes represent the greatest losses in vegetables (Buzby et. al.). Targeting these products with extra effort would be a worthwhile goal for retail agencies and consumers. Addressing knowledge about ways to reduce food loss for larger organizations will increase consumer awareness as well. Some of the things that have driven larger waster include a move towards larger portion sizes and a demand for higher quality appearance. Monetary incentives to reduce waste are found to be weak because food is abundant and cheap.

The following quote from the Morgan and Robertson study examines loss in a set of broader categories:

“There are three main types of loss assumptions used in the LAFFA data series that extend the core series: (1) loss from primary (e.g., farm) to retail weight, such as damage during harvesting and processing, (2) loss at the retail level (e.g. supermarkets, megastores such as Walmart and other retail outlets) and (3) loss at the consumer level”

Finding from this study include that those who buy more fruit and vegetables tend to waste more of them. Average U.S. citizens consume 2,674 calories per day. This number suggests an underestimation of food waste measured by the study based on the amount of calories purchased as compared to those consumed. Consumer level waste is considered to be slightly more important to address than retail waste, but they are both considered major issue areas.

Prioritization of use for food waste by the EPA is as follows: Source Reduction, Feed Hungry People, Feed Animals, Industrial uses, Composting, Landfill/Incineration.

“For recycling, three types of legislation have helped create the stable supply of materials needed for recycling to work:

- (1) container recycling collections (e.g., bottle deposit refund),*
- (2) refuse bans (e.g., against the disposal of old car batteries) and*
- (3) mandatory legislative options, such as preset dates for cities to reach recycling targets”*

It is uncertain, but possible that these would work better for food since there is a greater monetary incentive than for other recycling, but as was mentioned before, it is not a major part of the thinking behind food decisions. Incineration is lowest on the priority list because 97% of U.S. food loss already ends up in landfills. The energy losses based on this is equivalent to 350 million barrels of oil a year, the amount required to power the country for a week. And the emission of methane from food waste account for 34% of anthropogenic methane production and can cause water pollution if not properly maintained.

Conclusion

The connections between each of the sections become obvious as one reads through, even though not all of these connections are mentioned explicitly. This serves to reinforce the earlier point that change in any part of the food system is incomplete without action in all the steps included within it. This isn't to suggest that all food policy changes be done in a completely comprehensive way, but rather suggests that policy makers be cognizant of the fact that the changes made in one part will have lesser or greater effects depending on whether they continue or push against current trends. It also speaks to the need, even if done in piecemeal fashion of reform within the food system.

In some parts of this paper, the changes that could be made are very explicit, such as within waste and recycling section or the food policy councils section. In others it is less clear, especially more descriptive or evaluative sections such as within food safety or the School Lunch and Breakfast programs. This difference is largely accounted for through the length of time these problems have existed and been studied. As an example, although food in schools is not a novel policy, the new emphasis on healthy eating is a new priority and the effects of recent change seem to suggest that these changes have had mixed, but overall positive results.

Most of this paper's recommendations come directly from within the literature cited. In instances where writings did not offer recommendations, suggestions were made at the discretion of the author based on the information given in the readings and the understanding of the interplay between the different sections. Although the purpose of this paper is not necessarily to serve as a guide for policymakers, much of the literature reviewed had that as a goal and all of the suggestions made within are based on expert opinion and should be considered as such.

Finally, the threads that connect this paper throughout should serve as a reminder that while the sections here are segmented, and that there are different lines that could be drawn to distinguish different parts of food policy, all such decisions are arbitrary and useful insofar as they help organize ideas, but should not be considered uncrossable barriers. The need for transdisciplinary approaches to food policy issues is evident in the number of issues covered and the strong amount of interplay within them. The goal of a better food system is a lofty one, but with cooperation from people throughout it, such change is certainly possible.

Caveats

While the focus of this paper is broad, it is not meant to be a comprehensive review of food policy. Issues in intellectual property law and international trade law, among others are not contained within this paper. Instances where opinions are expressed in the paper are solely those of the author and do not necessarily reflect those of other students, faculty, or administration at the Humphrey School of Public Affairs or of the authors of the papers examined.

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Useful Terms

Plant-Incorporated Protectant: Plant-incorporated protectants are pesticidal substances produced by plants and the genetic material necessary for the plant to produce the substance. For example, scientists can take the gene for a specific Bt pesticidal protein, and introduce the gene into the plant's genetic material. Then the plant manufactures the pesticidal protein that controls the pest when it feeds on the plant. Both the protein and its genetic material are regulated by EPA; the plant itself is not regulated.

Transgenics: The process of incorporating genes from non-related species into the DNA of another. (GE or GMO)

Hybrid: Hybrid seed is seed produced by cross-pollinated plants. (Traditional Breeding)

Germplasm: Genetic resources for a given species. It is the collection of breedable plant material, like seeds or pollen. There are three levels, with each increase being more difficult to effectively breed as the closeness to the source seed is increased. At the third level, this cannot be achieved without human intervention.

Cultivar: A particular subspecies distinction for plants. A simple example of cultivar distinction is between yellow and red potatoes.

Fallow Land: Land that is in part of a cycle of growing without the intention of producing a crop. This is done to reduce stress and prevent creating a good living situation for pests, however, it makes the land susceptible to erosion.

CDC: Center for Disease Control. Federal agency tasked with tracking health risks, focuses on processing step to prevent disease.

Vector: A biotic or abiotic agent which is part of a pathogen's life cycle.

Norovirus: The most common pathogen which causes of foodborne illness.

Extensive expansion (extensification): Increasing crop yield by increasing the amount of land used.

Intensive expansion (intensification): Increasing crop yield by increasing amount of food produced per unit area of land.

Non-recourse loan: If the volume or price of a commodity is higher than the target price or amount, the government accepts in-kind payment rather than cash.

Enterprise Unit: County level production unit used for crop insurance programs. Ignores land ownership and is more heavily subsidized.

SNAP: Supplemental Nutrition Assistance Program, a federal program for food assistance

WIC: Special Supplemental Nutrition Program for Women, Infants and Children, a more targeted food assistance program

Specialty Crops: Fruits and vegetables, tree nuts, dried fruits and horticulture and nursery crops, including floriculture.

PDR: Purchase of Development Rights, an agreement between a landowner and the government that indefinitely precludes non-agricultural development on their land in exchange for cash benefits.

EBT: Electronic Benefits Transfer, A debit card for government benefits programs such as SNAP, TANF and WIC.

Reimbursable school meals: Meals provided free or at reduced price to low-income families for which schools receive federal reimbursement via the National School Lunch and School Breakfast Programs.

Competitive foods: Any foods sold at school that are not part of the National School Lunch or School Breakfast programs.

NSLP: National School Lunch Program, a federal program that schools and individuals enroll in to gain free or reduced priced lunches in schools.

NSBP: National School Breakfast Program, a federal program that schools and individuals enroll in to gain free or reduced priced breakfasts in schools.

Cottage food: Small-scale, non-potentially hazardous foods, which are foods that do not support pathogenic microorganism growth or toxin formation. Examples include fruit jams, certain baked goods, dried herbs, fruit pies, granola, and teas.

CSA: Community Supported Agriculture, a business model that has consumers pay at the beginning of a season for food that will come (usually weekly) throughout the growing season.

Food Loss: Food that is lost in any stage of the production process

Food Waste: A subset of food loss that focuses on consumer loss.

Food Recovery: Food “recovery” refers to the collection, or recovery, of wholesome food from farmers’ fields, retail stores, or foodservice establishments for distribution to the poor and hungry. *Is this association necessary or can food loss be recovered for other purposes? (Yes)*

Post-Harvest Losses: the measurable quantitative and qualitative losses of a specific food product after harvest.