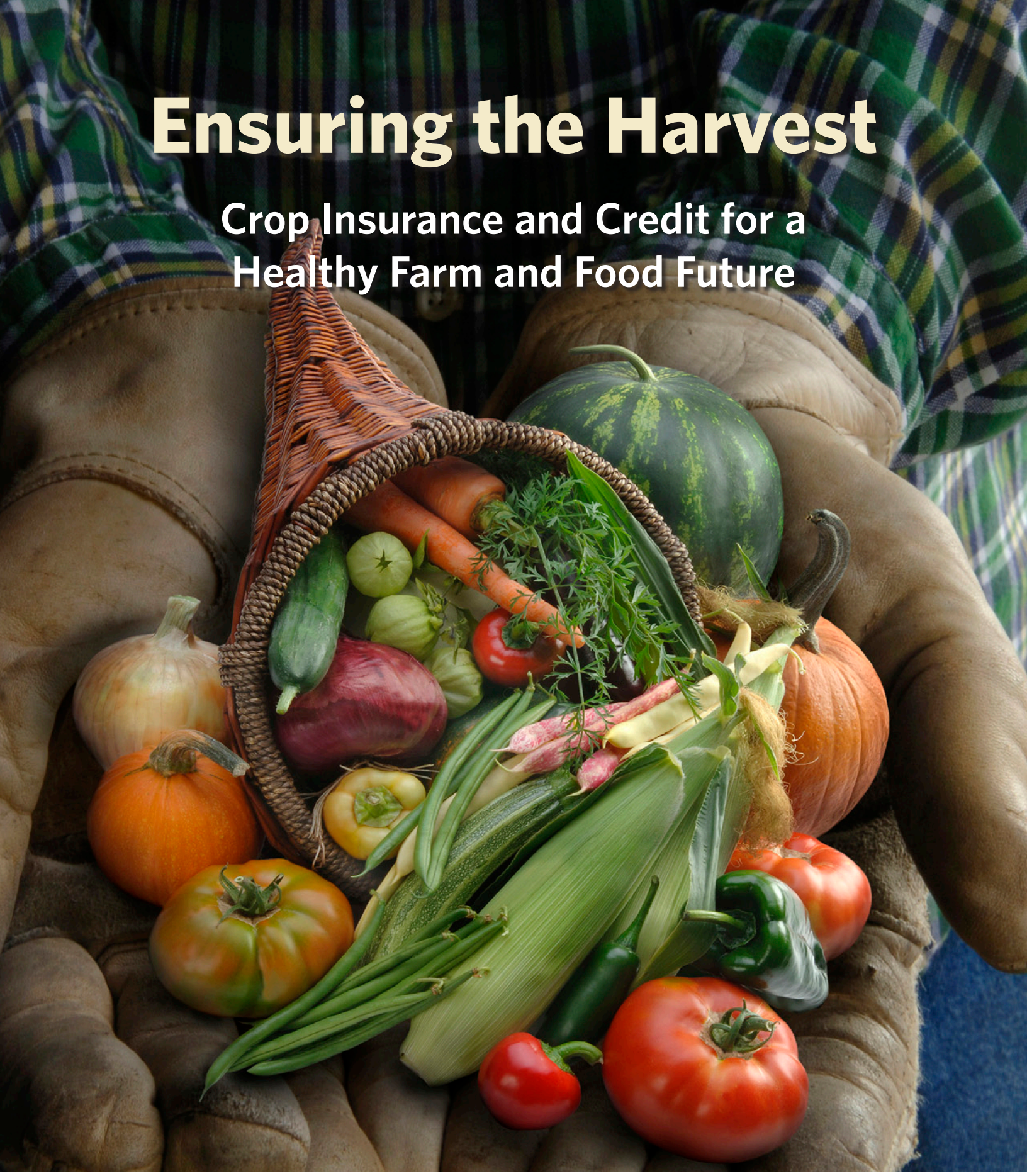
Ensuring the Harvest

Crop Insurance and Credit for a Healthy Farm and Food Future



Union of Concerned Scientists
Citizens and Scientists for Environmental Solutions

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Crop Insurance and Credit for a Healthy Farm and Food Future

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The Union of Concerned Scientists (UCS) is the leading science-based nonprofit working for a healthy environment and a safer world. UCS combines independent scientific research and citizen action to develop innovative practical solutions and to secure responsible changes in government policy, corporate practices, and consumer choices.

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EXECUTIVE SUMMARY

Healthy eating is key to a healthy lifestyle. For decades, nutritionists and government agencies have urged Americans to eat more fruits and vegetables, yet we are still not eating enough of them. One largely untried way in which government policy could encourage Americans to eat more healthy foods is by making it easier for farmers to grow more of them, which would increase their availability to consumers. Instead, federal farm subsidies are disproportionately directed to the production of ingredients for unhealthy processed foods, using methods that degrade our environment and squander scarce resources. Even worse, farmers who want to grow a variety of fruits, vegetables, and other healthy foods, or who want to farm with organic methods, often encounter hurdles that other farmers do not.

The most important and overlooked impediments to fruit and vegetable production on sustainable "healthy-food" farms are planting restrictions and lack of access to effective crop insurance and credit. But there are a number of practical ways in which a forward-looking food and farm policy could help farmers overcome these obstacles.

WHAT ARE "HEALTHY-FOOD" FARMS?

The Union of Concerned Scientists (UCS) defines healthy-food farms as farms that grow fruits, vegetables, and other healthy crops rather than crops such as corn and soybeans that are primary ingredients in processed foods. We will focus on a critical subset of healthy-food farms: those that also use environmentally friendly farming practices that are sustainable over the long term. This includes diversified farms that produce an array of healthy crops and/or livestock, and farms that undertake organic and similar practices. Such farms supply a significant amount of food sold locally through farmers markets and other avenues, yet their sales nationally are small compared with conventional food product sales.

In its 2011 MyPlate dietary guidelines, the U.S. Department of Agriculture (USDA) recommends that fruits and vegetables constitute 50 percent of each American's daily food intake, but these foods are currently grown on only 2 percent of U.S. farm acres. Greater consumption of fruits and vegetables can help reduce the health costs associated with weight gain and obesity, while also decreasing our food system's energy footprint and other environmental impacts. Moreover, increased production of healthy foods on U.S. farms would have a sizable impact on regional economies. For example, local-food sales could increase by up to $9.5 billion, creating as many as 189,000 new associated jobs, if Americans ate enough fruits and vegetables to meet the USDA's dietary recommendations.

Healthy-food farm sales have increased rapidly in recent years. Sales of locally grown food, of which fruits and vegetables are a significant percentage, now total $5 billion per year. But more growth is needed, and federal farm policy has not kept pace with farmers' and consumers' interest in healthy and sustainable food production. In order to meet the growing demand, it is important to identify and remove the policy barriers that confront these farmers.

POLICIES THAT HELP (OR HINDER) HEALTHY-FOOD FARMERS

Under current federal farm policy, farmers participating in commodity-production subsidy programs are prohibited from planting fruits and vegetables except under certain conditions. To expand the production of healthy food, the federal government should eliminate restrictions that provide disincentives for farmers to plant fruits and vegetables, and it should require that healthy-food farmers be able to access effective crop insurance and credit.

Because farming entails considerable economic risk, an effective crop insurance policy protects farmers from the loss of income that can result from a weather-related disaster or revenue decline. In

addition, having crop insurance helps farmers obtain credit, which is essential to the success of most farm operations. Farmers need to purchase "inputs" such as seeds and fertilizer before the growing season begins, but it is usually many months before they earn revenue from the sale of their products. Lenders are more willing to extend credit to farmers who have crop insurance, which protects lenders' investments. Farmers without access to farm loans may need to finance expenses using consumer credit cards that charge much higher interest rates, presenting a challenge to the successful operation of their business.

Among this report's major findings are:

1. Healthy-food farms using sustainable practices are not well served by federal crop insurance policies. Because food production is important to society and crop insurance is only offered through private markets to a limited extent, the federal government fills this gap through a USDA-administered and -subsidized insurance program. The program is oriented toward farmers who grow a handful of subsidized, non-perishable commodity crops including corn, soybeans, and cotton. The USDA has developed effective crop-specific insurance policies for some fruit and vegetable producers, but there are still many sustainable healthy-food farms without an accessible policy. Developing insurance policies for farms that produce a more diverse array of crops, and sometimes livestock, on the same farm presents challenges. These farming practices are not as widespread, in part because they are not as extensively subsidized, and as a consequence, data on yields and market prices needed to design insurance policies are less available.

The lack of access to crop insurance for diversified healthy-food farms is ironic, because diversification helps farmers self-insure against annual variability in crop yields or prices. For example, a price decline or pest outbreak for a single crop could devastate a farm's revenue for the year if that was its only crop. The same event on a diversified farm may reduce the revenue from some crops but spare others. An insurance policy based on revenue from the entire farm would incentivize farmers to plant crops even when there are no policies specific to those crops. A comprehensive revenue insurance policy would also be cheaper for diversified farms to purchase (and would reduce taxpayer subsidies) relative to multiple crop-specific policies, since the premium would reflect the fact that the farms were undertaking diversified practices.

In 1999, the USDA developed a pilot "whole-farm-revenue" insurance policy that enables farmers growing an array of healthy foods to obtain insurance. In practice, few farmers purchase the policy due to its limited availability and burdensome structural design.

Certified organic farms also face obstacles to acquiring adequate crop insurance. Historically, such farms were not eligible to purchase government insurance policies; the USDA removed this restriction in 2004 but required all organic farms to pay a 5 percent premium surcharge because the department did not have data to assess the actuarial risk of organic farming. This surcharge remains in effect for most policies, but several years' worth of data suggest such an across-the-board surcharge is unwarranted because the extent to which organic or conventional practices pose relatively greater actuarial risk can vary considerably by crop or region. Also problematic is the fact that, while organic foods typically command higher prices in the marketplace, most organic growers cannot insure their crops above conventional market prices.

The USDA has recently developed a handful of policies allowing growers of some organic crops to insure those crops at prices that more accurately reflect their market value. However, such a provision remains unavailable to organic farmers who grow fresh fruits and vegetables.

2. Existing crop insurance and other subsidy programs hinder healthy-food farms' access to credit. Like other growers, many healthy-food farmers require financing to purchase inputs for their farms. However, farmers without access to crop insurance have a harder time accessing credit. When considering business loans for farmers, lenders want to know that the farms have crop insurance to help pay back loans if something goes wrong. Further, some sustainable healthy-food

farms operate smaller farms using less-conventional practices. Farm size affects access to credit because large farms can obtain loans on better terms than small farms. Diversification can also increase borrowing costs because lenders may be less familiar with business plans involving sustainable and diversified practices (relative to subsidized conventional practices), and with the challenges these farmers may face in developing business plans a lender can evaluate.

Some economic development institutions have done a better job than others of providing credit on favorable terms to healthy-food farms. However, U.S. farm policy could do more to encourage lenders to service these farmers appropriately.

RECOMMENDATIONS

Expanding the growth of healthy-food farms can have multiple positive impacts: it can reduce the societal costs associated with obesity, reduce the energy-use footprint of our food system, and provide employment in rural areas. Based on our review of the literature and existing federal policies governing crop insurance and farm credit programs, we recommend that policy makers 1) eliminate obstacles in federal commodity and crop insurance programs that restrict fruit and vegetable production, 2) create a more effective whole-farm-revenue insurance policy, and 3) undertake steps to facilitate credit access for organic and sustainable healthy-food farms.

Congress should promote planting flexibility.

To increase the sale of fresh fruits and vegetables in local markets, we recommend that Congress remove barriers in commodity subsidy programs that prohibit farmers from planting fruits and vegetables. While we are not recommending that fruit and vegetable acreage receive the same production subsidies directed to non-perishable commodity crop producers, farmers should be provided with the flexibility to plant the crops they desire.

Congress should require, and the USDA should improve, federal crop insurance policies for healthy-food farms that use sustainable practices.

Interest in the USDA's whole-farm-revenue insurance policy has been modest not because of problems with the concept, but because of problems with the design. We recommend that the USDA augment the existing policy so farmers can have a suite of options available to help value their crops and livestock. This could entail using contract prices and pricing indices derived from USDA market survey data as well as submitting tax records (the current method).

The USDA only establishes insurance policies for crops in regions where there are extensive data on prices and yields. The lack of available insurance represents a disincentive for farmers to grow different crops in different regions, which needs to occur for farmers to grow healthier crops and adapt to climate change. Thus, in order to develop whole-farm-revenue insurance in regions where there may be insufficient data, we recommend that the USDA initially implement the policy with administratively determined premiums and collect data over time that can subsequently be used to calculate premiums more accurately.

These enhancements will not only make the whole-farm-revenue insurance policy easier for farmers to buy and agents to sell, but will also make the policy available to farmers engaged in community-supported agriculture (CSA) arrangements who currently cannot purchase the existing policy. Allowing diversified fruit and vegetable farmers to use market prices as an index in their insurance policies would make the standards for disclosing revenue more equitable and consistent across crop producers.

For certified organic crops, we recommend that the USDA change existing policies to enable organic farmers to insure their crops at prices that reflect their market value, and that the department

develop distinct insurance policies for organic practices—rendering the arbitrary 5 percent premium surcharge assigned to organic farmers obsolete. While the USDA is already undertaking or contemplating these initiatives on a limited scale, further advancements are needed to support the expansion of the healthy-food and organic markets.

Congress should require, and the USDA should support, the expansion of smaller-scale lending programs.

As consumers are paying greater attention to the farmers from whom they buy their food, lenders should do the same. Expansion of micro-lending facilities can help foster growth in local-food sales, as some smaller programs that have been successfully established could be replicated or supported at a greater scale. This can be facilitated if the USDA works more closely with community lenders looking to provide loans in a more efficient and effective manner.

Lending conditions can be improved if the USDA and farming organizations collect better industry-level market data. The USDA can use these data to disseminate and establish insurance policies, and lenders can use this information to assess market conditions. We also recommend that the USDA, lenders, and farming organizations improve their outreach to farmers and assist farmers with their own data collection efforts. Farmers require information on yields, prices, and input costs for crops and livestock to understand how they can maximize profitability. This risk management activity is synergistic with facilitating credit access, since the data can be used to develop a business plan for a lender, and lenders will be more inclined to provide loans to farmers engaged in risk management. Evaluating the USDA's existing outreach programs will inform the effectiveness of different types of outreach strategies currently being employed.

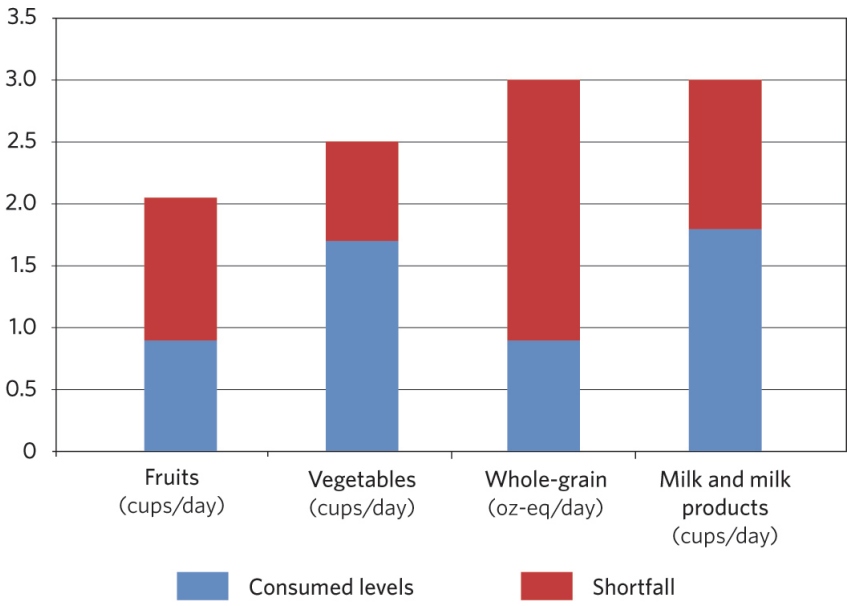
Due to the lack of transparency and disclosure on financing for sustainable and diversified farms, we further recommend that an independent auditing or regulatory agency conduct a comprehensive evaluation of credit constraints confronting healthy-food farms that use sustainable practices. The findings of such a report can be used to assess how a greater public role in providing credit to these farms should be structured.

With demand for fresh, healthy foods from healthy farms on the rise, it is time for U.S. farm policy to catch up. By implementing these straightforward recommendations, policy makers can help farmers overcome barriers to producing more of the healthy foods consumers want and need, improving the nation's nutrition, protecting our environment, and growing local economies.

CHAPTER 1. PLANTING RESTRICTIONS LIMIT THE PRODUCTION OF HEALTHIER FOOD

Americans are not eating enough healthy food. Figure 1 shows that the average American consumes 0.9 cup of fruit and 1.7 cups of vegetables on a daily basis, whereas recommended levels for a 2,000-calorie-per-day diet are to eat two cups of fruit and 2.5 cups of vegetables (Wells and Buzby 2008). Milk and whole grains are also underconsumed. Our poor eating habits have profound consequences: obesity contributes to soaring medical costs and decreased worker productivity, and the current food system accounts for 16 percent of the country's energy use (Canning et al. 2010)—which could be reduced if Americans ate more foods that require less processing.

Figure 1. Underconsumed Food Groups Relative to USDA Dietary Recommendations, 2005 (per capita)



Source: Wells and Buzby 2008.

Fruits and vegetables should comprise half the food on each American's plate, according to the U.S. Department of Agriculture's (USDA's) MyPlate dietary recommendations, yet they account for only 2 percent of U.S. farm acreage (USDA 2009). This underproduction of fruits and vegetables is occurring, in part, because U.S. food and farm policy provides the wrong incentives. Specifically, the government promotes the production of non-perishable commodity crops—the most significant of which are corn, soybeans, wheat, cotton, rice, and oats—through excessive production subsidies. A significant percentage of this crop production is not directly consumed by humans, but is instead used to produce animal feed, biofuels, fiber, or ingredients for unhealthy processed foods such as high-fructose corn syrup.

Even worse, farmers participating in federal non-perishable commodity subsidy programs have the flexibility to plant alternate crops or pasture on their farms, but are explicitly prohibited from planting

fruits and vegetables. While there are qualifications to this prohibition,[1] in general the farmer will be ineligible for program payments if any fruits and vegetables are planted on non-perishable commodity program acres. These planting restrictions have had support from large-scale fruit and vegetable producers because restricting supply is a way to raise prices and deter competition, although anticipating the market impacts of removing these restrictions depends on the specific market and region (Johnson et al. 2006).

These restrictions are disadvantageous to consumers, since they must pay higher prices for fruits and vegetables than would be determined through competitive market conditions, and the availability of fresh fruits and vegetables in local markets is inhibited, particularly in the Midwest. Further, if demand for locally grown and sustainably produced healthy food continues to increase, the impact of a potential price decline resulting from the removal of these restrictions will be lessened.

Many consumers are indeed demanding healthier food. Sales of locally produced food reached $4.8 billion in 2008, with vegetable, fruit, and nut farms accounting for 65 percent of those sales (Low and Vogel 2011). The Union of Concerned Scientists report *Market Forces* (O'Hara 2011) showed that the expansion of these markets has been remarkable in that it has occurred with only modest government support. In addition, many of the farms that sell food in these markets undertake sustainable production practices such as organic farming. The market value of organic food sales reached almost $27 billion in 2010, with organic fruits and vegetables constituting the fastest-growing segment (OTA 2011).

Thus, expanding domestic fruit and vegetable production can have multiple positive impacts: it can reduce the societal costs associated with obesity, reduce the energy-use footprint of our food system, and provide a boon to local economies (O'Hara 2011). For example, we show in the appendix that if Americans ate the USDA-recommended amount of fruits and vegetables, local-food sales could increase between $2.6 billion and $9.5 billion, with a corresponding increase between 52,566 and 189,453 new jobs on farms growing healthy food. However, because farmers face institutional challenges that inhibit these markets from expanding, we need to structure policies in a way that will allow new farms to enter these markets profitably.

[1] Planting flexibility is relevant to "base acreage," which is the historical use of the land for non-perishable commodity crops. Farmers have planting flexibility on base acreage except for wild rice, fruits and nuts, and vegetables other than lentils, dry peas, and mung beans. Farmers are not prohibited from planting fruits and vegetables if the farm or producer has a history of planting fruits and vegetables. Also, on a limited number of acres in the Midwest, farmers are allowed to grow certain vegetables that are contracted for processing (e.g., vegetables that are canned or frozen). In both cases, subsidy payments are reduced for each acre the farmer devotes to fruits and vegetables. Double-cropping, which occurs when two or more crops are produced on the same acreage in the same year, is permitted for prohibited fruits and vegetables if this practice occurred historically in the region.

CHAPTER 2. DEVELOPING CROP INSURANCE FOR HEALTHY-FOOD FARMS THAT USE SUSTAINABLE PRACTICES

The risks associated with farming are unique and considerable. Prices can be persistently low for lengthy periods when the supply of food and feed is price-inelastic (i.e., changes in supply are relatively less responsive to changes in price). Supply shocks arise because farms are susceptible to damage from weather, disease, or pests that can destroy a farm's crops and livestock—and any potential income—for that year. Declines in profitability can also result from farm management decisions, financial risks, fluctuations in rental prices, increases in input costs, work-related injuries, or changes in a farmer's health. While this report focuses on the need for crop insurance, a lack of other types of insurance, such as affordable health insurance, workers compensation insurance, or business interruption insurance, can also impede farmers (Davis 2009).

OVERVIEW OF FEDERAL CROP INSURANCE

The federal crop insurance program is intended to help an individual farm cope with a single-year production or revenue decline of a significant magnitude. The USDA administers and subsidizes this program because of the importance of food production, because such insurance is not offered by private markets at scale, and in order to reduce ad hoc federal disaster payments made to farms. The USDA establishes the insurance premiums, reinsures and subsidizes private insurers that sell the policies, and subsidizes part of the premium paid by farmers to these private insurers. Traditional crop insurance policies compensate farmers with a predetermined per-unit price when production falls below the insured yield level. The USDA also offers crop insurance policies based on revenue fluctuations, and these policies now account for more insured acres than traditional yield-based policies.

In 2011, there were 265 million acres insured at $114 billion, with the USDA subsidizing 62 percent of the value of the premiums ($7.4 billion out of $11.9 billion). While the USDA has developed policies for many crops, the program is primarily oriented toward non-perishable commodity crops: corn ($51 billion), soybeans ($26 billion), wheat ($10 billion), and cotton ($7 billion) constituted 83 percent of the program's 2011 liabilities. Federal insurance does exist in select regions for specific nonsubsidized crops including vegetables, fruits, trees, nuts, and nursery products, along with whole-farm-revenue insurance, but these policies represented only 11 percent of 2011 crop insurance liabilities. Livestock insurance is not as widespread as crop insurance and constituted just over $1 billion in 2011 liabilities (USDA 2012a).

Farmers can purchase crop insurance policies on a crop-by-crop basis at the county level. The USDA is required to develop county-specific premiums that are "actuarially sound" and representative of any farm that satisfies a policy's eligibility criteria. This implies that over a multi-year period, total premiums collected (including premium subsidies) should be expected to be at least as large as total indemnities. For yield-based policies, calculating the premium requires historical data in order to create probability distributions of county yields. For revenue-based policies, the USDA determines premiums by calculating the correlation between price and yield in order to derive an underlying probability distribution for a crop's revenue.

Establishing actuarially sound premiums requires careful modeling that incorporates enough data to establish a large sample size and accounts for fundamental changes in farming productivity that occur over time, such as yield increases or changes in climate. The USDA establishes a specific rate for a farmer by making adjustments based on individual farming practices and relative yields (e.g., Coble et al. 2010).

Challenges in Developing Insurance for Sustainable Healthy-Food Farms

The USDA seeks to develop insurance policies for crops in regions where it anticipates demand for such policies already exists. This demand is more likely to exist for crops whose production is supported through extensive subsidies.[2] This conundrum represents a challenge to the diversification of existing crop and livestock production, which is needed if domestic food production is to be more closely aligned with dietary recommendations and if farmers are to adapt to climate change by planting different crops. With all other factors being equal, farmers are less likely to undertake farming practices that cannot be insured, and insurance is less likely to be offered in regions where certain farming practices are not widespread and data are unavailable.

When developing a crop insurance policy, the USDA desires to have geographic-specific yield data; pricing data—verified by a third party—that include per-unit price, time of year the transaction occurred, and quantity of the product sold; an understanding of good farming and management practices for that crop; documented loss-adjustment procedures; and a developed market. Collecting this information is more straightforward for crops that are extensively subsidized. First, insurance policies for large grain and oilseed markets can use prices from an exchange-traded futures contract as an index to represent market prices. Exchanges only develop futures contracts for crops that have a large and established market. (We will show later in this chapter that using an index to represent market prices greatly reduces the transaction costs for farmers to buy, and insurance agents to sell, a crop insurance policy.) Second, a large number of farmers planting the same crop results in more crop-specific yield data that can be used to calculate premiums more accurately. Third, in developing an insurance policy for a crop that many farmers plant, the fixed transaction costs of developing, administering, and marketing insurance policies are allocated across a larger number of farmers who may buy such policies.

WHOLE-FARM-REVENUE INSURANCE

Insurance and Diversification

While not all forms of resilient management practices are visible to an insurance agent, a polyculture system (multiple crops and/or livestock produced on a single farm) is. For example, a farmer may grow an array of fruits, vegetables, and grains integrated with livestock production. We refer to this as a "diverse" farm in this report.

Farmers have two basic incentives to diversify in this way. First, diversification promotes on-farm resilience because it decreases disease transmission and increases productivity. Second, diversification reduces income variability. If one commodity fails or experiences a price decline, revenue from other commodities mitigates revenue loss for the entire farm.

While the existing federal crop insurance program promotes specialization by limiting the impacts of revenue risk (O'Donoghue, Roberts, and Key 2009), it should also provide incentives for farmers to undertake risk-mitigating practices on their own. Diversified farms still need insurance because diversification cannot protect farmers from all risks, such as catastrophic weather (e.g., Marlow 2007b); the 2011 flood damage to mid-Atlantic and New England farms from Hurricane Irene is a prime example.

Historical precedent suggests an insurance policy based on a farm's entire revenue is the most effective way to provide a comprehensive whole-farm safety net for diversified farms (Dismukes and Durst 2006). A strength of whole-farm-revenue insurance is that it provides coverage for any type of crop

[2] Although we do not examine the design of, and problems associated with, non-perishable commodity crop production subsidies in this report, these subsidies share considerable redundancy with crop insurance (e.g., Babcock 2011a, 2011b; O'Donoghue et al. 2011; Ray and Schaffer 2011; Zulauf, Schnitkey, and Langemeier 2010).

or livestock. Since crop-specific policies do not exist in most regions for healthy crops, this provides incentives for farmers to grow healthy crops that are otherwise uninsurable. A second appealing feature is that it is cheaper for famers to buy one comprehensive policy instead of multiple crop-specific policies; the premium reflects that they are already undertaking diversified practices. This also implies that taxpayer insurance subsidies will be lower when compared with subsidizing multiple crop-specific policies (e.g., Bertini, Schumacher, Jr., and Thompson 2011; Hart, Hayes, and Babcock 2006; Hennessey, Babcock, and Hayes 1997).

The current federal crop insurance program does allow non-perishable commodity crop producers to insure multiple commodities simultaneously. The premium becomes cheaper as the revenue correlation between crops is lower and the relative proportion of farm revenue from different crops is more evenly distributed. However, the program provides ineffective incentives for healthy-food farms to undertake diversified practices.

Adjusted Gross Revenue Insurance

The USDA offers two conceptually identical pilot whole-farm-revenue insurance policies targeted at diversified fruit and vegetable farms: Adjusted Gross Revenue and Adjusted Gross Revenue-Lite. We refer to these policies collectively as AGR in this report because their distinctions are immaterial for the issues we evaluate.[3] AGR provides coverage to farmers if their aggregate revenue from all commodities produced on the farm falls beneath their five-year historical average. AGR allows farmers to buy crop-specific insurance policies if they are available and to simultaneously purchase AGR for crops or livestock that are otherwise uninsurable.

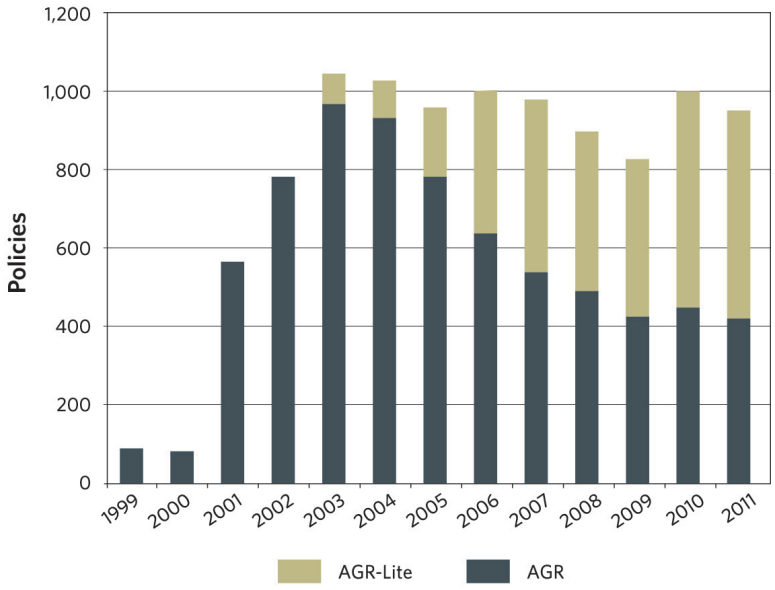
AGR is critical for the following reasons:

- It was the first policy to insure livestock production, and remains the only policy that simultaneously covers both crop and livestock production on an integrated farm.
- It is the only policy, where it is available, that allows fruit and vegetable producers to obtain insurance in regions lacking crop-specific policies.
- Unlike most crop-specific insurance policies, it allows organic production to be insured at market value and does not assess the 5 percent organic premium surcharge.

Unfortunately, farmers and insurance agents have had only modest interest in AGR to date. Figure 2 shows the number of AGR policies sold each year (964 on average since 2003). AGR constituted only 0.05 percent of all crop insurance policies sold in 2011. Drawing conclusions on the actuarial performance of AGR is hampered by limited observations, although Figure 3 shows that in four of the last six years AGR had a loss ratio (the ratio of indemnities to premiums) of less than one.

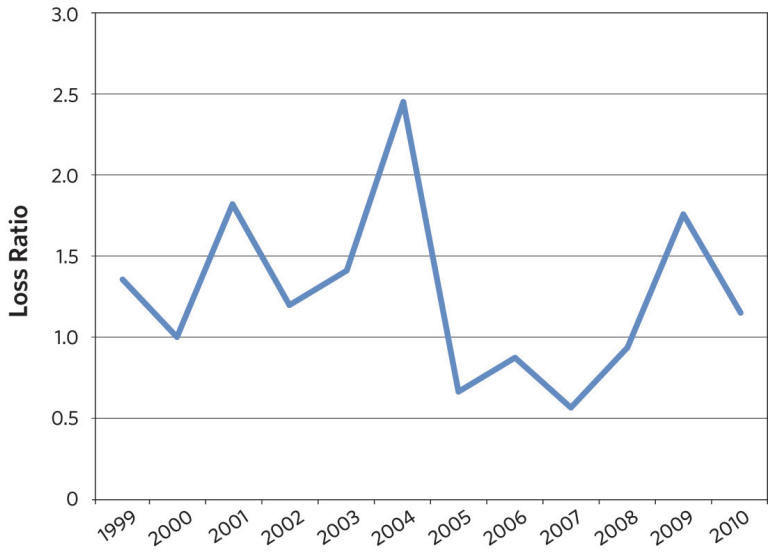
[3] The USDA established Adjusted Gross Revenue in 1999 and Adjusted Gross Revenue-Lite in 2003. Adjusted Gross Revenue allows a maximum liability of $6.5 million, has no income restrictions, and does not allow more than 35 percent of the farmer's expected income to be derived from livestock. In contrast, Adjusted Gross Revenue-Lite restricts maximum liability to $1 million, has an income restriction of $2.05 million, has no restriction on livestock income, and has less onerous paperwork requirements.

Figure 2. Number of Adjusted Gross Revenue Policies Sold per Year



Source: USDA 2012a.

Figure 3. Actuarial Performance of AGR and AGR-Lite Policies



Source: USDA 2012a.

There are three general reasons why few farmers are buying AGR insurance: it is only offered in select geographies, it does not provide the same level of coverage as other insurance policies, and its administration generates high transaction costs. While remedies to the first two challenges are

straightforward, reducing administrative transaction costs requires fundamental revisions that we address in the recommendations chapter.

Challenges with Adjusted Gross Revenue Insurance

The most obvious reason why few farmers are buying AGR is that its availability, as a pilot program, is limited geographically.[4] Even in regions where it exists, it may not be available in a practical sense if local insurance agents, tax attorneys, and accountants do not market the policy. Table 1 shows that in 2010 and 2011, more than 50 percent of the AGR policies[5] were sold to farmers in Washington State, and almost 80 percent were sold in three Pacific states. In other parts of the country, purchases of AGR are only occurring at a *de minimis* level.

Table 1. AGR Policies Purchased by State

	2010	2011
Policies in Washington	501	489
% of U.S. Total	52%	56%
Policies in Oregon	152	128
% of U.S. Total	16%	15%
Policies in California	88	72
% of U.S. Total	9%	8%
Policies in New York	48	41
% of U.S. Total	5%	5%
U.S. Total	964	873

Source: USDA 2011a.

A second challenge with AGR is that some farmers perceive the premiums as being too high relative to the level of coverage. The premium calculation in an insurance policy depends on how much financial responsibility the farmer assumes when a loss occurs and the method by which the policy rewards diversification.

With regard to the former issue, two discounts are often incorporated into insurance policies to deter "moral hazard," which occurs when farmers with insurance take riskier actions than when they are uninsured. These discounts are a deductible, which is the loss the farmer must incur before an insurance

[4] As of November 2010, AGR was offered statewide in eight states and in selected counties in 10 other states; AGR-Lite was offered statewide in 32 states and in selected counties in three other states.

[5] Table 1 represents AGR "policies earning premium." There is a minor discrepancy between the USDA-reported numbers of "policies sold" and "policies earning premium" because the latter category includes farmers who purchased a policy but subsequently canceled the policy before it expired.

policy provides coverage, and the copayment, which is the percentage of the insured loss for which the farmer is responsible after coverage is initiated.

Higher deductibles and copayments reduce both the premium and the incentive for moral hazard, but they also make the insurance policy less effective since it pays out less money when a loss occurs. Thus, a careful balance must be maintained when determining the appropriate level at which to establish coverage. For AGR the lowest available deductible is 20 percent of the insured revenue level and the lowest available copayment is 10 percent of the insured loss. For other crop insurance policies, however, farmers can insure up to 85 percent of their yield with no copayment (USDA 2011b).

With regard to the latter issue, AGR's premium discount becomes greater as the farm grows more commodities and the revenue from each commodity is more evenly distributed;[6] if a farmer has seven commodities and they all contribute equally to the farm's revenue, the premium will only be 41 percent of the cost (i.e., a 59 percent discount) compared with policies purchased separately (USDA 2012b). While there is no limit on the number of commodities a farmer can insure with an AGR policy, diversification discounts are not applied for having more than seven commodities. In Chapter 4, we propose methods that could calculate the premium discount more accurately.

The final challenge arises from the burdensome way in which the program is administered. Producers of non-perishable commodity crops can use an index to represent market prices in their crop insurance policies, which allows them to avoid having to disclose their revenue, the price at which they sold their crop, or when a sale occurred (e.g., Babcock 2011b). The burden placed on diversified healthy-food farms to document their revenue is much greater, as AGR is premised on a farm's reported taxable revenue. Using taxable income as the basis for a policy raises a variety of administrative challenges, including:

- Inventory adjustments to revenue may be required because farmers typically prepare tax returns using cash accounting (i.e., when money is received or paid) rather than accrual accounting (i.e., when revenue and costs are incurred) (Dismukes and Coble 2006).

- There are strict requirements for expenses that farmers must deduct for uninsurable "value-added" activities. For example, a farmer selling unprocessed fruits and vegetables in local markets would be required to undertake some basic level of packaging, sorting, and cooling prior to selling the food. However, AGR policies require farmers to deduct these expenses from their insurable revenue even though these activities do not fundamentally change the nature of the food they are selling.

- Indemnity payments are delayed for the year of low revenue until after that year's taxes have been filed (USDA 2010). This time lag extends the period of financial stress on the farmer and makes verifying claims challenging. In contrast to grain and oilseed farmers who sell their crops into large markets, healthy-food farmers may have a harder time documenting crop losses and the price at which they may have sold their crops (Dismukes and Coble 2006).

- Farmers are annually required to submit predicted prices and yields on a commodity-by-commodity basis. While this is also a requirement for other insurance policies, it is a more difficult task for healthy-food farmers who use sustainable practices because:

[6] The pairwise revenue correlation among commodities in AGR is stipulated as 0.3 for simplicity (Black 2000). In general, correlation values can range between -1 and 1. A value of 0 constitutes no correlation, a value of 1 implies perfect positive correlation, and a value of -1 implies perfect negative correlation. A correlation of 0.3 implies a relatively low degree of revenue correlation among two commodities, though there are factors that will impact revenue for both commodities in the same way (in either a positive or negative direction) simultaneously.

  - As stated previously, predicting prices is relatively harder for this class of farmer, especially when a greater variety of commodities is produced. This is evidenced by the fact that these farmers typically insure only a handful of commodities when they purchase an AGR policy: an average of 3.2 in 2010 and 3.0 in 2011 (USDA 2011a).

  - Disaggregating revenue in this manner is inconsistent with how some diversified farms, such as community-supported agriculture (CSA) farms, operate. In the traditional CSA business model, a consumer buys a "share" of the farm's harvest at a price that is established—and paid for—in the beginning of the year (UCS 2009). The composition of the produce to be delivered is typically unspecified, which implies that the per-unit price for each crop or type of livestock the farm subsequently produces cannot be determined. This makes AGR insurance inaccessible to CSA farmers, who are a constituent that AGR insurance should be structured to serve.

- Farmers need to adjust their projected income data if the size of the farm or the composition of crops or livestock being produced on the farm changes from year to year. Introducing new crops or livestock is also problematic for calculating insurance premiums, because the insurer will not know how to assess the revenue risk of a new commodity if there is no historical record of its performance. This can be a disincentive for long-term crop rotation.

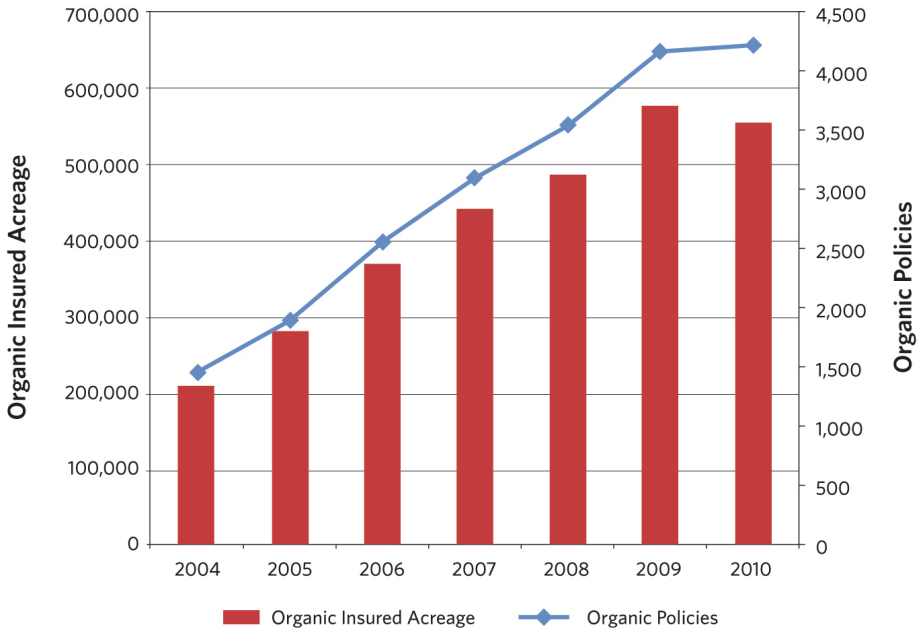
ORGANIC CROP INSURANCE

Organic Production and Actuarial Risk

Organic farmers use modern methods based in ecological science, such as promoting biological diversity, crop rotation, non-chemical insect control, composting, and cover crops. Unlike conventional farmers, organic farmers do not apply synthetic pesticides or fertilizers on their crops, and do not inject growth hormones or antibiotics into their livestock. Historically, the federal crop insurance program discriminated against organic farms, which were only allowed to purchase insurance on a case-by-case basis through customized agreements, but starting in 2004 organic farms became eligible to purchase insurance under standard contract terms.

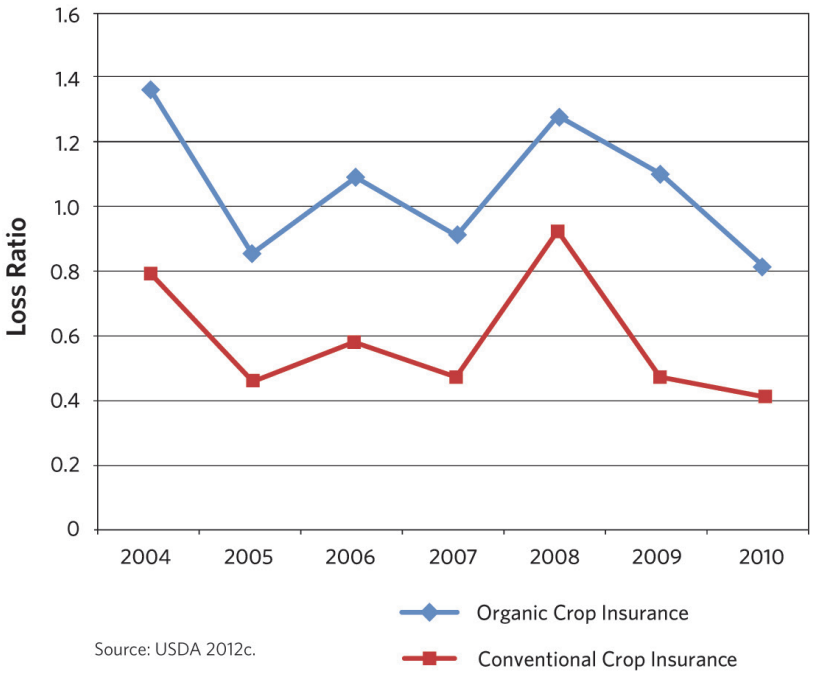
Figure 4 shows that the number of insured organic acres increased from 210,393 in 2004 to 554,501 in 2010, and the corresponding number of organic policies sold increased from 1,459 to 4,212. This increase was proportional to an overall increased participation in the federal crop insurance program during the same period. However, standard contract terms remain inadequate for organic farms, as they reflect neither organic prices nor yields. Even worse, one nonstandard contract term is an arbitrary 5 percent premium surcharge uniquely applied to organic farmers in most policies. The USDA maintains this surcharge because, as Figure 5 demonstrates, the loss ratio for organic farmers has been higher in every year compared with conventional producers who purchased the same policies in the same counties (e.g., Murphy 2010).

Figure 4. Crop Insurance Purchases by Organic Farmers



Source: USDA 2012c.

Figure 5. Actuarial Performance of Organic and Conventional Crop Insurance for Same Crops in Same Regions



Source: USDA 2012c.

One reason for higher loss ratios is that the 5 percent surcharge can promote "adverse selection" among organic farmers, which occurs when lower-risk organic farmers choose not to purchase a policy because it is more expensive. A second reason is that yield differences can exist between organic and conventional farmers by crop, county, and a farmer's level of experience. Organic farmers who want to buy insurance but have incomplete historical production data are assigned the average county yield for the missing years, even though this average is predominantly based on conventional farming practices. If conventional yields for that county and crop are higher than organic yields, the insured yield for an organic farmer with incomplete data will likely be too high, making the farmer more likely to claim a loss.

Maintaining the 5 percent surcharge is problematic because, while some organic farms may pose a greater actuarial risk in select regions for certain crops under the existing program design, there is currently no evidence that all organic crops in all regions pose a greater actuarial risk compared with conventional production (Watts and Associates, Inc. 2010a). The USDA has acknowledged this fact by eliminating the 5 percent surcharge for a select number of crop-specific policies: figs, Florida citrus fruit, Florida fruit trees, macadamia trees, nursery products, pears, peppers, prunes, Texas citrus trees, and Texas citrus fruit. The department further intends to develop organic-specific insurance policies that would render the 5 percent surcharge obsolete once it has obtained 10 years of organic yield data after 2013 (USDA 2011c). An interim approach could eliminate the premium surcharge for all organic farmers but apply a discount on average county yield data for organic farmers with incomplete data. If that occurred, organic and non-organic farmers with the same yields would be charged the same premium (Watts and Associates, Inc. 2010a).

Organic Production and Revenue

Market prices of many organic food products are higher than conventional food products. These higher prices can be critical for organic farmers, some of whom incur greater costs compared with conventional farming. Unfortunately, most crop insurance policies only allow organic farmers to insure their crops at conventional prices. This means that organic farmers have to accept less compensation in the event of a loss than the value for which the crop could have been sold.

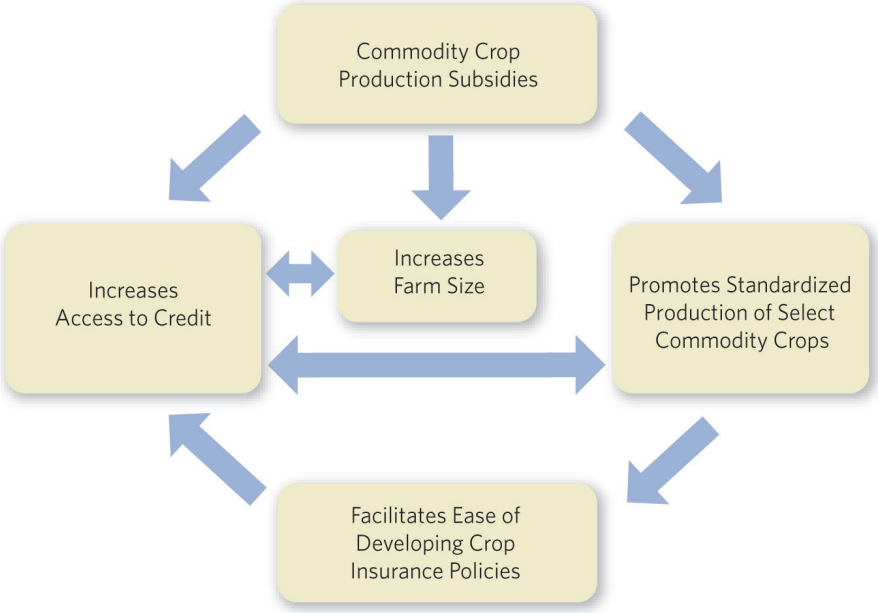
In 2011, the USDA for the first time offered producers of organic corn, soybeans, cotton, and processing tomatoes the option of insuring their crops at prices that reflect the higher prices organic crops receive in the marketplace. Because there is no exchange-traded futures contract for organic corn and soybeans, the USDA established insured organic prices for these crops at fixed ratios of 1.788 and 1.794, respectively, relative to their conventional counterparts' market prices (Singerman, Hart, and Lence 2011). As organic pricing data collection improves, the prices in the insurance policy can be transitioned to contract prices (Singerman, Hart, and Lence 2011; Watts and Associates, Inc. 2010b). Pricing options for organic fresh fruits and vegetables have not yet been developed, although the USDA intends to offer an organic pricing option for organic avocados in 2013 and is evaluating the feasibility of doing this for organic apples and grapes (USDA 2011c).

CHAPTER 3. FACILITATING CREDIT ACCESS FOR HEALTHY-FOOD FARMS THAT USE SUSTAINABLE PRACTICES

In the previous chapter, we showed that certain conventional farming practices have access to a plethora of subsidized risk management payment programs, while the options available to healthy-food farms that use sustainable practices are limited and ineffective. In this chapter, a similar theme will emerge. On a national basis, credit is available, farm debt is at record levels, and banks lending to farms are making large profits. However, healthy-food farms that do not have access to the same risk management programs can face challenges accessing credit.

Credit accessibility and effective crop insurance are intertwined for several reasons. First, both credit and insurance are critical for initiating any type of business. Second, production subsidies, available crop insurance, and accessible credit share a relationship in which each reinforces the other (Figure 6).[7]

Figure 6. How Production Subsidies Facilitate Access to Credit



Crop insurance complements credit access because it provides reassurances to lenders. Production subsidies facilitate credit access in a similar manner to the way they facilitate the development of insurance policies: by encouraging larger farms to undertake more standardized practices. Thus, the

[7] The distinctions between production subsidies, crop insurance, and credit are not as clear-cut as the diagram suggests. There is overlap between the structure of production subsidies and crop insurance, crop insurance is directly subsidized, and lenders that provide credit to these farmers are also conferred government benefits. Nonetheless, the rationale behind the general relationships depicted in the diagram remains valid.

transaction costs that lenders face in supplying credit to smaller farms that use diversified practices are relatively greater, and this may deter lenders from supplying credit to these farms altogether.

THE ROLE OF CREDIT IN FARMING

Farming incurs both fixed costs, which do not vary in the short run regardless of the level of output produced, and variable costs, which depend on output. Fixed costs can include taxes, interest payments, real estate fees, and equipment maintenance, whereas variable costs include seeds, labor, fuel, fertilizer, and other inputs. Because of the lag time between when expenses are incurred and when revenues are received, farmers need to borrow money to pay for their expenses unless they have available cash or savings. Some farms finance operating purchases during the year using a credit card or line of credit, and aim to pay off this debt by the end of the year. In 2007, 31 percent of farm operators had debt they carried over into the subsequent year, and this debt is concentrated among large farms (Harris et al. 2009).

Farm debt comprises 10 percent of the farm sector's $2.5 trillion in assets (USDA 2012d), and 55 percent of that debt is associated with real estate loans; the rest is operating or intermediate debt. The 2008 financial crisis presented challenges to agricultural lenders, but in aggregate, lending conditions are favorable and credit is available (Henderson and Akers 2011).

CREDIT CHALLENGES FACING SUSTAINABLE HEALTHY-FOOD FARMS

Healthy-food farms that use sustainable practices face greater challenges in obtaining operating loans and lines of credit than conventional farms, and these obstacles are exacerbated by existing government subsidies. These issues can be particularly significant for young and beginning farmers, who may not have the necessary collateral, credit history, or experience (Farm Credit East Knowledge Exchange 2011; Matteson and Heuer 2008).

A number of surveys conducted in different regions using different methodologies have found that:

- Some sustainable and diversified farms seeking credit are unable to obtain it.
- Lenders are less familiar with sustainable practices than conventional practices.
- A lack of credit is inhibiting the growth of the sector.
- Some farmers may fail to obtain credit due to inadequate record keeping or an aversion to seek financing.[8]

While the business structure of some sustainable farms, such as CSA operations, is designed to help mitigate the need for credit, a lack of access to credit can result in farmers using a consumer credit card at high interest rates to finance operating expenses (e.g., Farm Credit East Knowledge Exchange 2011; Cocciarelli, Suput, and Boshara 2010; The Carrot Project 2008). This practice can make it expensive for a farmer to buy inputs, which can lead to poor business decisions and decreased profitability. And because government subsidies not only help facilitate credit access but also substitute for credit in its absence, unsubsidized farms experience a greater loss of production value due to credit constraints than subsidized farms (Briggeman, Towe, and Morehart 2009).

[8] These studies were undertaken in Iowa (Bruckner and Preston 2011), Michigan (Cocciarelli 2009), New England and New York (The Carrot Project 2008), North Carolina (Marlow 2007a; Funding the New Harvest 2004), Minnesota and Wisconsin (Land Stewardship Project 2003), and nationally (Shute 2011; Cocciarelli, Suput, and Boshara 2010).

The Importance of Crop Insurance to Lenders

The widespread availability of crop insurance provides non-perishable commodity crop producers with advantages in obtaining credit because these policies—required by many lenders as a prerequisite for an operating loan—allow farmers to use the market value of their crops as collateral (e.g., Murphy 2011). Lenders are more likely to expand credit access if they know an insurance payment can help a farmer repay borrowed funds under various contingencies (Pfleuger and Barry 1986). Lenders may even have more incentive for requiring their farmer customers to purchase crop insurance than farmers have for purchasing it themselves, and could induce farmers to buy insurance by charging higher interest rates to farmers who do not purchase it (Leatham, McCarl, and Richardson 1987).

In addition, insurance that does not accurately insure the value of crops produced with sustainable management practices can impact credit accessibility. This is because lenders may increase collateral requirements for organic farmers who can only insure their crops at conventional market prices due to higher production costs (Marlow 2007a). Just like production subsidies, insurance also serves as a substitute for credit because credit-constrained farmers facing adverse circumstances can rely on this income to pay for expenses when credit is unavailable.

The Risks of Dependence on Off-Farm Income

Many small farms have become increasingly dependent on off-farm income over the last several decades to supplement their revenue (e.g., Fernandez-Cornejo 2007), which decreases the time available for farm management. Farmers with greater off-farm income are more likely to plant genetically modified crops and less likely to undertake precision farming and integrated pest management.[9] It follows that while farmers who sell into local food markets have small farms, they are less likely to be dependent on off-farm income and more likely to be dependent on farming as their primary occupation (Low and Vogel 2011). Examples of local-food farming activities that require extra time include direct marketing or undertaking sustainable farming practices.

Off-farm income decreases the need for credit because it can be used by farmers to substitute for debt financing arrangements (Harris et al. 2009). When debt is incurred, off-farm income increases a farmer's repayment capacity (e.g., Briggeman 2011) and can be used as collateral for lenders, which can be enhanced with rising property values and diversity in income sources (Matteson and Heuer 2008). Under difficult economic conditions, however, farmers who rely on off-farm income simultaneously have an increased need for credit and greater obstacles to accessing it. Credit counselors report that worsening off-farm income has resulted in more farmers being rejected for credit, and more farmers seeking Farm Service Agency direct loans and credit counseling services (Farm Aid et al. 2011). Declining off-farm income can have disproportionately negative impacts on young farmers, livestock producers, smaller farms, and farms located in manufacturing-dependent counties (Briggeman 2011).

Thus, increased credit accessibility can help reduce sustainable healthy-food farms' dependence on off-farm income. This could also provide more time for healthy-food farmers to undertake the sustainable practices that consumers increasingly demand.

[9] Fernandez-Cornejo 2007 and Smith 2002 contain a more detailed discussion of research that has examined the issue.

The Relationship between Government Subsidies and Credit

The production subsidies provided disproportionately to non-perishable commodity crop farms have contributed to increases in average farm size (Key and Roberts 2007) and share of production from larger farms (Roberts and Key 2008) by providing subsidized farms with the funds or access to better financing terms needed to purchase additional farmland. As the number of large farms has risen, production subsidies and crop insurance indemnities have increasingly been targeted toward larger farms and higher-income households (White and Hoppe 2012). In contrast, many sustainable healthy-food farms, such as farms that sell food in local markets, are small in size (e.g., Low and Vogel 2011). Also, parts of the country that have high levels of local-food sales actually experienced a decline in farmland values in 2011 (USDA 2011d), which impacts credit accessibility since farmland is an important source of collateral.

This size disparity presents a challenge to smaller farms seeking credit. Some of the costs associated with lending are variable (for example, a larger loan may require greater evaluation and scrutiny), but many are fixed. Agricultural lenders have higher per-dollar servicing costs on smaller loans, and thus charge higher net interest for them (Gloy, Gunderson, and LaDue 2005). In addition, lenders are more likely to devote only a minimal amount of attention to borrowers with smaller loans (e.g., Barry and Robison 2001), and will not provide a loan that is too small relative to its transaction costs. Lenders can reduce transaction costs by lowering their credit standards, but this increases the risk of default.

Challenges in Evaluating Nonstandard Loan Applications

Lenders confront some of the same challenges in evaluating information as insurance agents. Specifically, farmers may know more than lenders about their own levels of ability and effort, the farming practices they want to employ, and the food markets they want to access. To determine their qualifications and monitor their performance, lenders will vary interest rates, review business plans, require collateral, and specify reporting and performance thresholds that must be attained. Credit decisions are based on both quantitative factors, such as standard financial ratios, and qualitative factors, such as the lender's relationship with the farmer (e.g., Barry and Robison 2001).

In many cases, the lender will review a farmer's business plan before approving a loan. The plan must contain information about required inputs and their associated costs, how those input purchases will facilitate food sales, the markets in which the farm plans to sell its food, the prices of that food, and the time when the loan can be repaid. Just as an insurer must understand good farming practices and have a procedure for verifying losses, a lender must have sufficient business acumen to assess the way in which a farmer's inputs will contribute to the farm's output, the potential marketing opportunities that exist for its food, and the farmer's ability and character.

Standardized agricultural production practices make lending more straightforward. The existence of monoculture farming for certain non-perishable commodity crops implies that many farmers are seeking loans for similar practices, and the existence of futures contracts for large grain and oilseed markets provides visible pricing information that lenders can use to assess market conditions. In contrast, healthy-food farms are typified by nonstandard supply chains, capital purchases, and farming practices, and some farmers who sell directly to consumers in local food markets may face challenges in documenting the prices at which they sell their food.

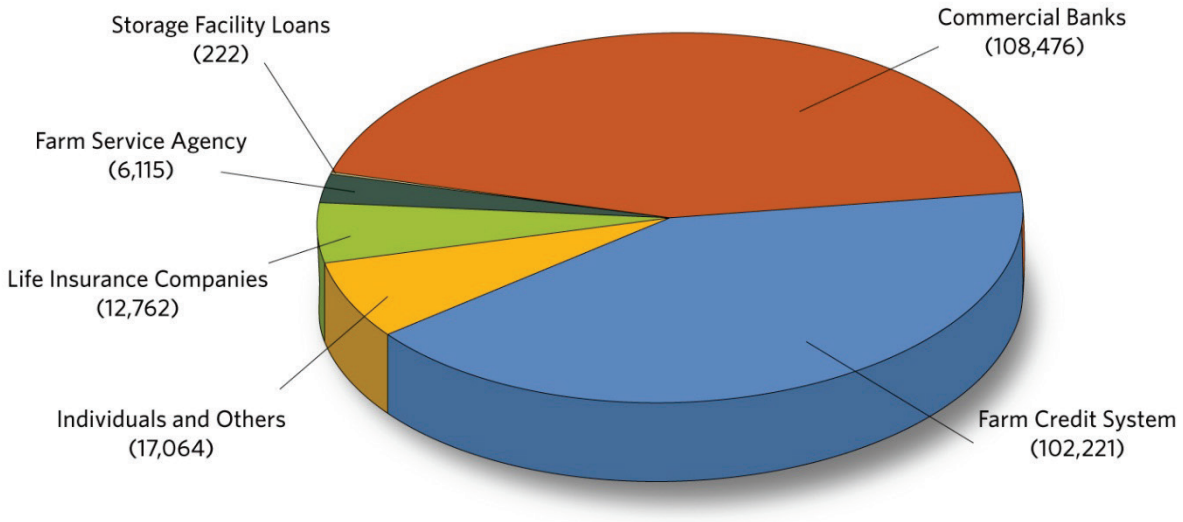
Evaluating the idiosyncratic loan applications that result from these practices places a greater burden on lenders compared with conventional practices (e.g., Moukad 2010; Cocciarelli 2009); lenders may need institutional and local knowledge to perform their due diligence on such applications. Further, beginning farmers may not have access to the assistance they need in developing a business plan and applying for a loan. Lenders have greater confidence in their ability to assess credit risks when business

plans and collateral take a form with which they are familiar, and factor this risk assessment into the interest rates they charge farmers (Gloy, Gunderson, and LaDue 2005).

INSTITUTIONS THAT CAN FACILITATE LENDING TO SUSTAINABLE HEALTHY-FOOD FARMS

Figure 7 shows that 85 percent of overall farm debt comes from commercial banks and the Farm Credit System (FCS). Smaller amounts of debt come from individuals, life insurance companies, and the Farm Service Agency (FSA). Government involvement in agricultural lending exists due to the fact that rural farms have experienced restrictions on lending due to their geographic isolation; today this type of policy can play a critical role in facilitating credit access for sustainable healthy-food farms.

Figure 7. Sources of Farm Debt in 2010 ($ millions)



Farm Credit System (FCS)

The FCS is a government-sponsored enterprise (GSE) comprising a system of cooperatively owned wholesale funding banks and associations that provide financing for farms and other rural development projects. As a GSE, the FCS receives tax exemptions and can issue notes and bonds at reduced interest rates due to an implicit government guarantee of its debt. In exchange for this government backing, the FCS is regulated by the Farm Credit Administration and has restrictions imposed on its lending activities. It has been highly profitable in recent years and had a net income of $3.5 billion in 2010 (FCA 2011).

FCS lending has historically been targeted at farmers who were older, wealthier, and ran large operations (Koenig and Dodson 1995); it has followed national banking trends by consolidating from 37 banks and more than 1,000 associations in 1981 (Freshwater 1997) to five banks and 84 associations in 2011 (FCA 2011). This consolidation has generally been accompanied by increasing loan size and standardization in all sectors, and has complemented the simultaneous consolidation driven by production subsidies for select agricultural practices.

The FCS has an explicit mandate to provide loans to young, beginning, and small (YBS) farmers and ranchers. YBS loans are sometimes offered with concessions (e.g., lower interest rates, relaxed underwriting standards, reduced fees, loan covenants) and/or with a loan guarantee from the FSA or another lending program. Some of these small farms receiving loans produce higher-value food to sell in local markets (FCA 2011), but the extent to which the FCS lends to healthy-food farms cannot be determined because it does not disclose the number or types of borrowers receiving credit, and FCS associations do not quantify the number of farmers selling in local markets (Farm Credit Council 2011). Commercial banks do not have a mandate to make YBS loans, and the extent to which they lend to healthy-food farms is also unclear (FRBKC 2012).

Some FCS associations have developed affiliated institutions to connect with healthy-food farms. For example, a large northeastern association called Farm Credit East developed FarmStart to provide beginning farmers with small equity investments of up to $50,000. Farmers who gain experience and successfully repay the initial investment may then be eligible to obtain a conventional loan from Farm Credit East. While FarmStart is not designed for local- and regional-food farmers per se, diversified local-food farmers growing healthy food have received financing (Farm Credit East Knowledge Exchange 2011).

Farm Service Agency (FSA)

The USDA's FSA is a lender of last resort to farmers (e.g., Dodson and Koenig 2006). It guarantees loans from commercial lenders to farmers that would otherwise not be made, and provides loans directly to farmers who cannot obtain commercial credit even if it is guaranteed. Because FSA programs are administered through state and local field offices, the extent to which direct loans are provided to healthy-food farms varies geographically.

The FSA made a total of $1.2 billion in direct operating loans in 2010 and $1 billion in 2011. Many of these loans may be larger than what most healthy-food farms are seeking: while the full distribution of loan sizes is not available, the average size of an FSA direct operating loan in 2010 and 2011 was $61,000, and FSA direct farm-ownership loans were even larger, with an average size of $165,000 (USDA 2011i). Furthermore, guaranteed loans are significantly larger than direct loans because they are typically administered through the FCS or a commercial bank and thus generally applicable for conventional agricultural practices only. The FSA is currently reviewing a plan that would allow it to offer small operating loans (e.g., less than $20,000), at reduced transaction costs, to farmers using less conventional practices (USDA 2011e).

Economic Development Organizations

A variety of agencies that promote economic development are providing financing to healthy-food farms. The Small Business Administration and similar state and local authorities, for example, finance sustainable farming activities either through direct lending or loan guarantees. In addition, community development financial institutions (CDFIs) receive funding from the U.S. Treasury Department to finance projects in low-income and disadvantaged communities.

Some CDFIs, such as The Reinvestment Fund in Pennsylvania and NCB Capital Impact in California, have financed independent supermarkets and grocery stores that will sell healthy food in low-income neighborhoods. Other CDFIs, such as Coastal Enterprises, Inc. (CEI) in Maine and the California Coastal Rural Development Corporation, have been active in providing small loans directly to sustainable farmers. CDFIs can also finance other supply chain investments including food hubs (which help transport source-identified local food from farmers to larger institutional purchasers) and infrastructure that helps farmers process their food (such as dairy bottling facilities). The Opportunity Finance Network,

a network of CDFIs, has been conducting training workshops over the past year to help CDFIs become more educated on healthy-food production, food supply chains, and food retail outlets.

Brokers with specialized knowledge of sustainable agricultural practices facilitate loans to sustainable healthy-food farms by serving as an intermediary between farmer and lender. The Carrot Project, for example, works with CEI, other CDFIs, regional banks, and economic development agencies to help arrange microloans to farmers in New England and New York. In 2009 and 2010 The Carrot Project made 15 loans for a total of $185,000 to smaller farms using sustainable production practices, including biodynamic and certified organic farms and farms that use integrated pest management (The Carrot Project 2011). Similar brokers include California FarmLink, Maine Organic Farmers and Gardeners Association, and the Northeast Organic Farming Association of Vermont (Davis 2009).

CHAPTER 4. CONCLUSIONS AND RECOMMENDATIONS

The rapid expansion of healthy-food farms that use sustainable practices has been remarkable in that it has generally occurred in the absence of policy support, and has instead been driven by changing consumer preferences. Further growth will require the removal of barriers and obstacles that confront these farms. We recommend the following steps be taken to support the expansion of this sector.

PROMOTE PLANTING FLEXIBILITY

To increase the sale of fresh fruits and vegetables in local markets, we recommend that Congress remove barriers in commodity subsidy programs that prohibit farmers from planting these crops. While we are not recommending that fruit and vegetable acreage receive the same production subsidies as non-perishable commodity crops, farmers should be given the planting flexibility to choose the crops they desire. Fruit and vegetable planting restrictions deter competition, hurt consumers through higher prices, and hinder consumers' access to healthy and fresh local produce.

REFORM CROP INSURANCE

We support the USDA's efforts to collect better data for organic prices and yields, which the department can use to make crop insurance policies more accurate in terms of the economic risk facing organic farmers. Efforts aimed at eliminating the 5 percent premium surcharge, either by developing organic-specific crop insurance policies or other methods identified in this report, are also needed.

A more fundamental issue confronting the federal crop insurance program is that AGR insurance currently stands at a crossroads. We demonstrated in this report that the utilization of AGR could be improved with design enhancements; this should be a priority because an effective and accessible whole-farm-revenue insurance policy will be a key component of a food system that produces a greater quantity of healthier food using more resilient practices. Under the current design, however, AGR is considered a "niche product" (USDA 2010).

We therefore recommend that the USDA augment AGR in the following manner:

- Expand AGR's geographic scope so it is accessible to farmers nationally.
- Increase AGR's coverage levels so farmers feel they are being adequately compensated in the event of a loss (Schahczenski 2011; USDA 2010; Marlow 2007a), and the standards for moral hazard are consistent across policies for various types of crops.
- Provide a suite of options for farmers to assess the value of their crops and livestock: by submitting tax records (as currently allowed), by using contract prices (which the USDA allows for other insurance policies) (Murphy 2010), or by using pricing indices.
- For regions where there are insufficient data to calculate an actuarially sound premium for AGR insurance, develop a policy using administratively determined premiums at the outset. After several years, the USDA can use collected data to develop actuarially sound premiums.
- Consider the feasibility of a whole-farm-revenue group policy.

Developing Pricing Indices

Because an index can be used as a surrogate for market prices in AGR insurance, farmers would only need to report yields instead of revenue. These indices and yields, when combined, could be used to establish a baseline by calculating a retrospective average of historical revenue (as is currently done with AGR); for perishable crops this historical average is a reasonable proxy for expected future revenue (USDA 2010).

One advantage of using pricing indices is that it would be simpler for farmers to determine their revenue relative to the current procedure. A second advantage is that an index could be used by CSA farmers—who currently do not have access to AGR—to approximate the value of their crops and livestock. A third advantage is that the USDA could use indices to calculate premium discounts for diversification more accurately, since the indices would capture real variations in prices (unlike an administratively determined formula). A drawback of using pricing indices in insurance contracts is that they introduce the potential for "basis risk," which occurs when the price at which farmers sell their crops or livestock may differ from the index value. If the basis risk is significant, some farmers who suffer a loss will not get indemnified and some farmers who do not suffer a loss will get indemnified. This limits the effectiveness of the policy.

Pricing indices developed for sustainable healthy-food farms would create more equity across different classes of farmers, since pricing indices are already used in insurance policies for non-perishable commodity crop producers. While there are problems with non-perishable commodity crop insurance policies that we do not address in this report, including the size of subsidies (Babcock 2011b) and the lack of environmental performance standards, a strength of these policies is the relative ease with which farmers can value their crops. For the same reasons as those discussed in relation to AGR, establishing a pricing index based on a futures contract for non-perishable commodity crop policies also creates basis risk (Babcock 2011b).

Though pricing indices, when available, can be used for any crop or livestock in a whole-farm-revenue insurance policy, we focus on fruits and vegetables in this section because the absence of commodity exchange futures contracts for fruits, vegetables, and nuts has been a significant impediment in developing insurance policies for the sector (USDA 2010). The USDA has two internal sources of market pricing data that could be used to establish indices: the National Agriculture Statistics Service (NASS) and Agricultural Marketing Service (AMS). NASS already collects national data on prices farmers receive for 98 fruits and vegetables on an annual basis and 22 on a monthly basis. In addition, NASS collects pricing data for 31 fruits and vegetables regionally, including some monthly prices. The AMS collects regional data on market prices for fruits and vegetables grown using both conventional and organic practices throughout the year.

Thus, an insurance policy could use NASS and/or AMS data at national or regional levels (when available) for fruit and vegetable pricing indices. Organic practices could be captured by AMS data, if available, or by organic pricing options developed for crop-specific policies. Committees of local experts could be further utilized to approve or augment the use of these pricing indices on a state-by-state basis.

To use NASS or AMS data in an index, there must be a sufficient number of respondents supplying pricing information so an individual respondent cannot manipulate the index value. Thus, the USDA may only be capable of developing pricing indices for some fruits and vegetables but not others. When there is inadequate data to establish a pricing index for a specific crop, we recommend that the USDA ascertain what steps could be taken to develop such an index. Lastly, the USDA should evaluate the timing and availability of annual NASS data for use in a given policy so that farmers will be able to purchase insurance in the spring.

Establishing Premiums for New Policies

As discussed, the requirement that the USDA develop insurance policies with actuarially sound premiums is an obstacle to planting new crops in new regions. Because farmers will need to plant new crops in new areas to increase fruit and vegetable production and adapt to climate change, this requirement clearly needs modification. For regions where there are insufficient data to calculate an actuarially sound premium, the USDA could provide AGR insurance with an administratively determined premium at the outset. The data collected by the USDA after the first several years of these policies could be used subsequently to calculate an actuarially sound premium. This type of approach would also allow farmers to purchase AGR insurance in instances when data are otherwise unavailable to develop a policy.

Such a system would be similar to that used in Canada, which offers whole-farm-income insurance that—in contrast to the United States—is the country's main crop insurance program (Turvey 2011). The premiums in Canada's program, as determined by legislative mandate, are proportional to a farmer's desired level of insured income and are not actuarially sound. This eliminates the extensive data requirements needed to calculate premiums.

In another example, other USDA risk mitigation programs including the Noninsured Crop Disaster Assistance Program (NAP) are administered with premiums that are not actuarially sound. Yield history in NAP is established in the same way as crop insurance policies, and a crop's market price is determined through a committee of state experts.

Developing a Group Policy

The feasibility of amending AGR insurance by developing a whole-farm-revenue group policy requires further evaluation. Other USDA group policies pay an indemnity to policyholders if the estimated county or regional revenue index falls below a value chosen by the farmer; these plans currently account for $5.3 billion in liabilities, or 5 percent of the total insured crop acres (USDA 2012a).[10]

Compared with farmer-specific policies, group policies have the advantages of being administratively easier (as farmers are only required to report acreage instead of yield) and eliminating the incentive for moral hazard (as there is little farmers can do to influence their payments). This provides justification for reducing deductibles and copayments. Like pricing index policies, however, group plans introduce the possibility of basis risk. This can be mitigated by using weights to control for differences in crop or livestock mix on the policyholder's farm compared with that county's overall mix of crops or livestock (Chalise, Coble, and Barnett 2011).

IMPROVE ACCESS TO CREDIT

Rural economic development organizations need a greater understanding of how capital can be more effectively targeted. Discrete steps that would facilitate credit access for healthy-food farms include improving outreach to lenders and farmers, and collecting comprehensive data on the extent to which lending to healthy-food farms is occurring and systematic barriers that are inhibiting financing.

Assisting Farmers with Data Collection and Outreach

Farms can mitigate revenue risk by collecting detailed data about costs, yields, and prices for each commodity they produce, since these data can suggest ways to increase profits. This information also

[10] These policies refer to Group Risk Plan and Group Risk Income Protection.

improves credit accessibility because it is essential to developing a business plan, and farmers who can show they have risk-mitigating practices in place will be viewed more favorably by lending institutions.

Outreach can also help farmers develop business and financing plans. The USDA, FCS, and advocacy organizations such as the Land Stewardship Project and California FarmLink are already undertaking outreach efforts to varying degrees, though existing USDA outreach programs have not been evaluated for their effectiveness. Organizations that can help healthy-food farmers find other possible sources of financing include the Northeast Organic Farming Association of Vermont, The Carrot Project, and Brightseed Strategies.

Evaluating Credit Constraints

While there have been informative regional studies of the credit constraints confronting small and diversified farms, a more comprehensive evaluation by an independent regulatory or auditing agency is needed. Such a study, or studies, should evaluate the effectiveness of FCS associations, FSA field offices, commercial banks, and economic development agencies. The findings would improve the transparency of lending activities in this sector and could be used to increase healthy-food farms' credit accessibility.

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APPENDIX. CALCULATING THE ECONOMIC IMPACTS IF DOMESTIC FRUIT AND VEGETABLE CONSUMPTION MET DIETARY RECOMMENDATIONS

The assumptions we made in calculating the gross economic impacts of domestic fruit and vegetable consumption expanding to meet the USDA's dietary recommendations do not consider the impacts on food industries that may experience a decline in sales. For the sake of simplicity, we assumed that demand for, and supplies of, fruits and vegetables increase with constant returns to scale (i.e., increasing fruit and vegetable production requires the same proportion of farms and workers as current production levels), that market prices remain at their current levels, and that there are no improvements in food waste efficiency.

STEP 1: DETERMINING OUR DIETARY SHORTFALL

In 2005, Americans ate 0.9 cup of fresh and processed fruit and 1.7 cups of fresh and processed vegetables each day on a per capita basis, whereas USDA guidelines for a 2,000-calorie-per-day diet recommend two cups of fruit and 2.5 cups of vegetables (Wells and Buzby 2008). This implies that per capita fruit consumption must increase 122 percent and vegetable consumption must increase 47 percent in order to satisfy dietary recommendations.

In 2005, the United States imported 19 percent of the vegetables (USDA 2011f)[11] and 31.3 percent of the fruit (USDA 2011g)[12] its citizens consumed. This implies that 0.6 cup of fruit and 1.4 cups of vegetables were produced in this country for domestic consumption on a daily per capita basis. Thus, if the increase in fruit and vegetable consumption to meet dietary recommendations were to be entirely satisfied by U.S. production, domestic fruit production would need to increase 224 percent per capita and domestic vegetable production would need to increase 82 percent per capita.

STEP 2: DETERMINING THE VALUE OF DOMESTIC FRUIT AND VEGETABLE CONSUMPTION

In 2007, 75,460 U.S. fruit and berry farms produced $14.7 billion in sales and 40,589 U.S. vegetable, melon, and potato farms produced $15.0 billion in sales (USDA 2009). U.S. farmers exported 11.5 percent of their fruit (USDA 2011h)[13] and 6.6 percent of their vegetables (USDA 2011f)[14] that year.

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[11] See Table 16 in the cited reference. We assumed 19 percent represents the market share of all vegetable imports because market shares were not tabulated for other types of vegetable imports (e.g., canned, frozen), and consumption of fresh and processed vegetables were not disaggregated (Wells and Buzby 2008).

[12] In 2005, the United States imported 54.4 percent of its fresh fruit, 29 percent of its canned fruit, 28.3 percent of its frozen fruit, 23.1 percent of its fruit juice, and 22 percent of its dried fruit (dried fruit was calculated as the average of 2004–2005 and 2005–2006). See Tables G-12 through G-16 in the cited reference. We calculated 31.3 percent as the weighted average of these percentages by determining the relative percentage of fruit consumed in each category (Wells and Buzby 2008).

[13] This was calculated as the average of 11 and 12 percent. The Fruit and Tree Nuts Yearbook does not report annual market shares of fruit exports.

Thus, assuming the composition of the farms and the value of domestic production and exports are proportional, 66,782 farms produced fruit for domestic consumption valued at $13.0 billion and 37,910 farms produced vegetables for domestic consumption valued at $14.0 billion.

A significant percentage of these fruits and vegetables were sold through local markets. In 2008, 46,096 vegetable, fruit, and nut farms with a total of 61,000 employees sold $3 billion of fresh produce locally[15] (Low and Vogel 2011). Fruit and vegetable farms that sell in local food markets are relatively more labor-intensive than other fruit and vegetable farms, requiring 4.3 times as many employees on a full-time equivalent basis (Low and Vogel 2011).

STEP 3: CALCULATING THE ECONOMIC IMPACTS

We developed three scenarios for the domestic economic impacts if Americans ate enough fruits and vegetables to meet dietary recommendations. Our calculations account for population growth that has occurred through 2011.

Case A: Increased Consumption Is Satisfied through Domestic Production and Imports; Proportion of Local-Food Sales Is the Same as Today

If per capita U.S. production of fruits and vegetables for domestic consumption increased 122 percent for fruit and 47 percent for vegetables, this would result in an additional 103,271 fruit and vegetable farms and $23.3 billion in sales. If the sale from local-food producers increased in the same proportion as today, this would result in 39,723 new farms, $2.6 billion in sales, and 52,566 new jobs on farms that sell in local food markets.

Case B: Production to Satisfy Increased Consumption Is Exclusively Domestic; Proportion of Local-Food Sales Is the Same as Today

If per capita U.S. production of fruits and vegetables for domestic consumption increased 224 percent for fruit and 82 percent for vegetables, this would result in an additional 187,179 fruit and vegetable farms and $42 billion in sales. If the sale from local-food producers increased in the same proportion as today, this would result in 71,582 new farms, $4.7 billion in sales, and 94,727 new jobs on those farms.

Case C: Production to Satisfy Increased Consumption Is Exclusively Domestic; Proportion of Local-Food Sales Is Double Today's Levels

If the sales from local-food producers in Case B were doubled, this would result in 143,165 new farms, $9.5 billion in sales, and 189,453 new jobs on those farms.

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[14] See Table 20 in the cited reference. We assumed 6.6 percent represents the market share of all vegetable exports because market shares were not tabulated for other types of vegetable exports (e.g., canned, frozen), and consumption of fresh and processed vegetables were not disaggregated (Wells and Buzby 2008).

[15] Since Low and Vogel did not disaggregate vegetable, fruit, and nut sales, we assumed the contribution of nut farms to local food markets is modest compared with fruits and vegetables (Ragland and Tropp 2009).

Ensuring the Harvest

Crop Insurance and Credit for a Healthy Farm and Food Future

Demand for healthy food from healthy farms is on the rise in the United States, as evidenced by the remarkable increase in sales from local farmers markets and community-supported agriculture (CSA). Yet most Americans are still not consuming enough fruits and vegetables according to the U.S. Department of Agriculture.

In *Ensuring the Harvest*, the Union of Concerned Scientists examines the ways in which ill-designed public policies—in particular, rules governing farmers' access to crop insurance and credit—hold back the production and local sale of fruits and vegetables and unfairly penalize organic farmers. The report recommends changes to these rules that would help solve pressing nutrition and environmental problems while also generating as many as 189,000 new farming jobs and $9.5 billion in additional sales of healthy food in local markets.

The federal Farm Bill and other policy mechanisms offer opportunities to expand consumer choices, level the playing field for fruit and vegetable growers, and jump-start economic development in rural communities. Effective action today will ensure a healthy harvest tomorrow.

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