FEEDING THE ECO-CONSUMER

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ABSTRACT

There is a lot of talk about making our food system more "sustainable," and *eco-consumers*—those who consider environmental sustainability as an important purchasing priority—are making themselves heard. This growing consumer segment is rapidly gaining national attention for moving more

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sustainable products to the market, and for its willingness to pay more for these options. However, while economists normally predict that higher prices lead profit-minded suppliers to enter a market to meet a new and growing demand, this transition is not occurring at the pace one would expect.

This Article argues that *land tenure status*—whether a farmer rents or owns his/her land—prevents the adoption of sustainable practice. Renters adopt fewer sustainable practices on the land, not because there is anything inherent in farmland rental that results in inferior environmental stewardship, but because legal agreements between the landlord and tenant do not incentivize sustainable practices. In order to feed the eco-consumer and motivate sustainable practice adoption, renters need incentives to adopt sustainable practices. Incentives to produce sustainably are vital given that 10% of farmers are due to retire in the next 20 years, placing more land in tenancy and into the hands of landlords with little farming experience.

Academics have given little attention to asking how sustainable practices will be preserved in the next century with these land-tenure trends in mind. This Article uniquely combines classical economic theory with U.S. Census of Agriculture farming practice data to expose gaps in existing policy and incentivize renters to adopt sustainable practices. In an era of limited federal regulatory power, this Article focuses on private sector solutions found in contracting, conservation initiatives, certification systems, ecosystem markets, and conservation easements.

I. INTRODUCTION: SUPPLY AND DEMAND FOR "SUSTAINABLE" FOOD

The sustainable shopper is here. While food consumers predominantly shop with taste, safety, and price in mind,[1] more admit to reading labels,[2] and to aligning food purchases with personal values.[3] Eco-labeling is on the rise as "a recent Consumer Reports survey of 1,050 people found that pesticides are a concern for 85 percent of Americans."[4] More and more

1. *See Food Demand Survey* (*FooDS*), OKLA. ST. U. (July 16, 2017), http://agecon.okstate.edu/files/August%202017.pdf (utilizing a monthly online survey, FooDS follows consumer trends on "safety, quality, and price of food at home and away from home with particular focus on meat demand"). FooDS's sample size consists "of at least 1,000 individuals, weighted to match the US population in terms of age, gender, education and region of residence." *Id.*

2. *Nutrition 101: Consumers Actually Do Read Product Labels*, FORBES (July 20, 2016), https://www.forbes.com/sites/thehartmangroup/2016/07/20/nutrition-101-consumers-actually-do-read-product-labels#73ae122a45e6.

3. *See* DELOITTE, CAPITALIZING ON THE SHIFTING CONSUMER FOOD VALUE EQUATION 1–2 (2016) (detailing how consumers' "traditional drivers" have been evolving).

4. *Eat the Peach, Not the Pesticide*, CONSUMER REP. (Mar. 19, 2015), http://www.consumerreports.org/cro/health/natural-health/pesticides/index.htm.

consumers are discovering that agricultural practices reduce soil productivity, raise levels of water and air pollution, increase water scarcity, destroy insect species, contribute to climate change, reduce genetic diversity by using genetically modified crops,[5] alter human systems with toxic food residues, and decrease antibiotic resistance.[6] As more violations of environmental standards reach the popular press, social media, and the courtroom,[7] consumers are searching for foods grown using *sustainable* practices—"method[s] of harvesting or using a resource so that the resource

5. In November 2015, the FDA announced "the first approval for a genetically engineered animal intended for food, AquAdvantage Salmon." Press Release, U.S. Food & Drug Admin., FDA Takes Several Actions Involving Genetically Engineered Plants and Animals for Food (Nov. 19, 2015), https://wayback.archive-it.org/7993/20170721213214/https://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm473249.htm. The FDA declined petitions from Earthjustice and several other environmental groups requesting that the agency first prepare an Environmental Impact Statement before approving AquAdvantage Salmon for market. Letter from Leslie Kux, Assoc. Comm'r of Pol'y, Food & Drug Admin., to Khushi Desai, Earthjustice (Nov. 19, 2015) (on file with Vermont Law Review).

6. *See generally* SUSAN SCHNEIDER, FOOD FARMING AND SUSTAINABILITY 645 (2011) (describing briefly the history of antimicrobial resistance); *see also* Merrick v. Diageo Americas Supply, Inc., 805 F.3d 685, 686, 689–90, 695 (6th Cir. 2015) (finding that the Clean Air Act does not preempt common law claims alleging negligence, nuisance, and trespass against a whiskey distiller); Nat. Res. Def. Council v. U.S. Food & Drug Admin., 760 F.3d 151, 157–58 (2d Cir. 2014) (challenging the FDA's refusal to hold a hearing prior to allowing drug manufacturers to sell antibiotics for use in animal feed because of the dangers posed by such antibiotics in the food supply); Mendoza v. Monsanto Co., No. 1:16-cv-00406, 2016 WL 3648966, at *1, *5 (E.D. Cal. July 8, 2016) (denying a motion by Monsanto to dismiss a lawsuit brought by an individual who claims to have developed non-Hodgkin lymphoma as a result of using Monsanto's Roundup product); Sheppard v. Monsanto Co., Civ. No. 16-00043, 2016 WL 3629074, at *1, *11 (D. Haw. June 29, 2016) (denying Monsanto's motion to dismiss a claim that Roundup caused the plaintiff's non-Hodgkin lymphoma); Duarte Nursery, Inc. v. U.S. Army Corps of Eng'rs, No. 2:13-cv-02095, 2016 WL 4717986, at *20 (E.D. Cal. June 10, 2016) (concluding that farming activities resulted in a violation where those activities were either "not part of an established and ongoing farming activity," or where those activities impact the flow of water in a wetland); M. Sean High, *Legal Settlement: Syngenta Agrees to Pay $1.2 M. for Selling Misbranded Pesticides*, PA. ST. AGRIC. L. BLOG (Sept. 22, 2016), http://www.pennstateaglaw.com/2016/09/agricultural-law-weekly-reviewseptember_22.html ("[T]he agency has reached a settlement agreement with Syngenta Crop Protection . . . for allegedly violating the Federal Insecticide, Fungicide, and Rodenticide Act through the repackaging, selling and distribution of unregistered and misbranded pesticides.").

7. While historically environmental challenges to food production centered on water pollution, new litigation challenges the use of antibiotics in animals, Nat. Res. Def. Council, Inc. v. U.S. Food & Drug Admin., 760 F.3d 151 (2d Cir. 2014), the use of genetically modified crops, Briseno v. ConAgra Foods, Inc., 844 F.3d 1121 (9th Cir. 2017), *cert. denied*, ConAgra Brands, Inc. v. Briseno, 138 S. Ct. 313 (2017), and new sources of air pollution from agricultural activities, Waterkeeper All. v. EPA, 853 F.3d 527 (D.C. Cir. 2017). Many of these cases do not implicate farmers, but some do (i.e., nuisance claims). For example, in *Natural Resources Defense Council, Inc.*, the environmental organization challenged FDA's refusal to hold a hearing prior to allowing drug manufacturers to sell antibiotics for use in animal feed because of the dangers posed by such antibiotics in the food supply. 760 F.3d at 157–58; *see also* Kux, *supra* note 5 (questioning the FDA's failure to prepare an Environmental Impact Statement (EIS) for the approval of food-grade, genetically altered salmon).

is not depleted or permanently damaged."[8] While some consumers go to great lengths to search for foods and ingredients,[9] others use smartphone applications that scan bar codes and identify sustainable ingredients as they shop.[10]

Food retailers are guided by research showing that companies can expect a healthy return on investment from environmental and socially sustainable products and that consumers, especially millennials, are the "most willing to pay extra for sustainable offerings."[11] Private certifications such as "organic," "cruelty-free," "natural," "fair trade," "hormone free," "pesticide free," and "free range"[12] have made it to mainstream retail environments. Retailers exemplifying this trend include Walmart's example to offer and source more sustainable foods,[13] and Amazon's recent Whole Foods acquisition.[14] Amazon is a retailer for the masses, whereas Whole Foods is a retailer tailored to eco-shoppers.[15]

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8. *Sustainable*, MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY (11th ed. 2007).

9. *See* Lauren R. Hartman, *First-Ever Plant Based Foods Association Forms*, FOOD PROCESSING (Mar. 15, 2016), http://www.foodprocessing.com/industrynews/2016/first-ever-plant-based-foods-association-forms/ (demonstrating that consumers can eat less meat or meat alternatives, from tofu and tempeh to dairy replacements and vegan foods because, this year, a plant-based foods association formed to promote plant-based protein products).

10. *Make Smart Shopping Choices from Your Smartphone with Sustainable Shopper App*, CINCINNATI ZOO & BOTANICAL GARDEN (Apr. 18, 2012), http://cincinnatizoo.org/blog/2012/04/18/make-smart-shopping-choices-from-your-smartphone-with-sustainable-shopper-app/; *see also* John Still, *Top 10 Sustainable Food Apps*, GUARDIAN (June 9, 2014), https://www.theguardian.com/sustainable-business/sustainable-food-apps-smartphone-menu (listing sustainable food apps for consumer use).

11. *Green Generation: Millennials Say Sustainability Is a Shopping Priority*, NIELSEN (Nov. 5, 2015), http://www.nielsen.com/us/en/insights/news/2015/green-generation-millennials-say-sustainability-is-a-shopping-priority.html.

12. *See* THE TRUE COST (Untold Creative, LLC, 2015) (demonstrating mainstream awareness of fair trade by showing a company's adoption of this certification).

13. Dan Charles, *Can Anyone, Even Walmart, Stem the Heat-Trapping Flood of Nitrogen on Farms*, NAT'L PUB. RADIO (Aug. 21, 2017), https://www.npr.org/sections/thesalt/2017/08/21/544229458/can-anyone-even-walmart-stem-the-heat-trapping-flood-of-nitrogen-on-farms ("According to one study, carried out by the consulting group Deloitte, greenhouse emissions from fertilizer are the biggest single piece of the global warming price tag for almost half of the top-selling items on the shelves at Walmart.").

14. Nick Wingfield & Michael J. de la Merced, *Amazon to Buy Whole Foods for 13.4 Billion*, N.Y. TIMES (June 16, 2017), https://www.nytimes.com/2017/06/16/business/dealbook/amazon-whole-foods.html.

15. *See* Lauren Thomas, *Amazon's 100 Million Prime Members Will Help It Become the No. 1 Apparel Retailer in the US*, CNBC (Apr. 19, 2018), https://www.cnbc.com/2018/04/19/amazon-to-be-the-no-1-apparel-retailer-in-the-us-morgan-stanley.html ("Brands are plugging the department store 'leaky bucket' hole with growth on Amazon.com."); *Environmental Stewardship: Our Green Mission*, WHOLE FOODS MARKET, https://www.wholefoodsmarket.com/mission-values/environmental-stewardship/green-mission (last visited Apr. 23, 2018) (explaining how Whole Foods' passion for healthy food coincides with its passion for a healthy planet).

As consumers and retailers demand more sustainable foods, economists would normally predict that supply would follow: that farmers would be eager to produce for these value-added markets.[16] This is not necessarily the case, however. For some farmers, there are barriers to producing more sustainable food—barriers that extend beyond the usual agricultural production constraints, such as access to inputs like seeds and technology.[17] One seldom discussed barrier to producing more sustainable food is a legal constraint: the relationship the farmer has with the land, otherwise known as the "land tenure" status.[18] "The word tenure comes from the Latin *tenir*, which means 'to hold,'" and the dominant forms of land tenure in the United States are private ownership and tenancy, each with its own laws, customs, and legal arrangements.[19]

The problem is that tenants, in contrast to private owners, adopt fewer sustainable practices on the land, not because there is anything inherent in farmland rental that results in inferior environmental stewardship, but because landlord-tenant legal agreements do not typically incentivize sustainable practices. There is historical support for this incentive structure. Most of our history held the ideal tenure status to be full owner operatorship, reasoning that tenants and absentee landlords, without strong roots to the land, will not take as good care of the land as landowner operators.[20] This view was based on the Dust Bowl experience of the late 1930s, when severe dust storms and drought coupled with a lack of wind-erosion prevention, dryland-farming techniques, and severely damaged the ecology of American prairies.[21] Over time, farmers either voluntarily abandoned their land, or lost it to bank foreclosure, leading to "the largest migration in American history. By 1940, 2.5 million people had moved out of the Plains states; of those, 200,000 moved to California."[22] The

16. Jonathan C. Carlson, *Strengthening the Property-Rights Regime for Plant Genetic Resources*: The Role of the World Bank, 6 TRANSNAT'L L. & CONTEMP. PROBS. 91, 111–12 (1996).

17. *See* discussion *infra* Part III.B (discussing the challenges of adopting sustainable farming for farm tenants who rent the land they farm).

18. Carmen G. Gonzalez, *Trade Liberalization, Food Security, and the Environment: The Neoliberal Threat to Sustainable Rural Development*, 14 TRANSNAT'L L. & CONTEMP. PROBS. 419, 436–37 (2004).

19. ROBIN KOHANOWICH ET AL., FARMLASTS PROJECT: AGRICULTURAL LAND TENURE: A CURRICULUM FOR BEGINNING FARMERS AND FARM SEEKERS 3, www.uvm.edu/farmlasts/FarmLASTS AgLandTenure.pdf (last modified Feb. 24, 2010).

20. *See id.* at 4–5 (tracing the "Jeffersonian ideal" of dispersed private land ownership through American history).

21. *See Timeline: The Dust Bowl*, PBS, [hereinafter *Timeline: The Dustbowl*], http://www.pbs.org/wgbh/americanexperience/features /dust-bowl-surviving-dust-bowl/ (last visited Apr. 20, 2018) (describing the effects of the dust storms and drought on fertility and quality of soil).

22. *Mass Exodus From the Plains*, PBS, http://www.pbs.org/wgbh/americanexperience/features/surviving-the-dust-bowl-mass-exodus-plains/ (last visited Apr. 20, 2018).

prevailing thought was that drought and storms, huge migration, and resulting high rates of absentee ownership and tenancy, all exacerbated the loss in valuable topsoil, the fertile base upon which successful agriculture is grown. Subsequently, land tenancy was negatively perceived and actively discouraged.[23]

Following the Dust Bowl, "[c]hanging land tenure patterns" from absentee landlords and tenants to farm owner-operators "were considered as important as soil conservation programs in stopping the serious rates of soil erosion."[24] "Congress declare[d] soil erosion 'a national menace' in an act establishing the Soil Conservation Service in the [U.S.] Department of Agriculture" (USDA) to "develop extensive conservation programs," some of which incentivized farmers with payments.[25] The program included "strip cropping, terracing, crop rotation, contour plowing, and cover crops . . . ."[26] Congress also established the precursor to the Farm Services Agency (FSA), a program intended to help tenant farmers purchase farmland.[27] States also passed laws to incentivize land ownership including bans on long-term leases.[28] These policies entrenched land ownership and conservation practices, which made incorporating sustainable methods a land tenure issue.

While some policies were rooted in the past, "the times they are a-changin'."[29] Tenancy re-emerged in the 1940s with corporations purchasing more land and renting it to farmers.[30] Today, "[a]pproximately 39 percent of the 911 million acres of farmland in the contiguous 48 States is rented."[31] In the next twenty years, two dominant trends will bring even more land into tenancy.

First, a generational shift will drive more acres to tenancy. According to the USDA Survey on Land Ownership and Transfer (the USDA Survey), landowners "55 and older account for nearly 80 percent of all *owner-*

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23. KOHANOWICH ET AL., *supra* note 19, at 5.

24. *Id.*

25. *Timeline: The Dust Bowl*, *supra* note 21.

26. *Id.*

27. KOHANOWICH ET AL., *supra* note 19, at 5.

28. *Id.*

29. BOB DYLAN, *The Times They Are a Changin'*, *on* THE TIMES THEY ARE A-CHANGIN' (Columbia Records 1964), https://bobdylan.com/songs/times-they-are-changin/.

30. *See, e.g.*, Christopher P. Rodgers, *Rural Development Policy and Environmental Protection: Reorienting English Law for A Multifunctional Agriculture*, 14 DRAKE J. AGRIC. L. 259, 285 (2009) ("The rules of [the Agriculture Act of 1947] therefore reflect the agricultural imperative, and stress the need to maintain optimum levels of efficient production on tenanted holdings.").

31. DANIEL BIGELOW ET AL., U.S. DEP'T AGRIC., U.S. FARMLAND OWNERSHIP, TENURE, AND TRANSFER, at iii (2016), [hereinafter USDA REPORT], https://www.ers.usda.gov/webdocs/publications/74672/60298_eib161.pdf?v=42607.

operated land; almost 70 percent of all farmland owned by *non-operating landlords* is owned by people who are 65 and older."[32] Furthermore, "[t]en percent of all land in farms is expected to be transferred during 2015–19," and for the first time ever, farmers will be transferring land to non-farmers.[33] "Landowners anticipate selling 3.8 [percent] of all farmland, with 2.3 percent to be sold to non-relatives," and "[6.5 percent] is expected to be transferred through trusts, gifts, and wills."[34]

Second, despite the percentage of land held in tenancy remaining relatively stable over time at between 30–40% of acres in production,[35] the composition of landlords renting land to farmers will continue to change. Among the acres available for rent, 87% of the land is rented by "non-operator landlords" without farming experience (individuals, corporations, partnerships, and trusts), while only 13% of the land is rented by "owner-operator landlords" who already operate farms.[36]

Given these two up-and-coming trends in land tenure, surprisingly little academic attention has been given to asking how sustainable practices will be preserved into the next century. This Article uniquely combines economic theory with farmland-practices survey data to highlight tangible and successful legal mechanisms to incentivize farmers, consumers, and regulators to facilitate sustainable agricultural policies.[37] The Article proceeds as follows. Part II defines the economics of farming. Part III describes sustainable practices and the way in which land tenure impacts practice adoption. Part IV focuses on solutions found in the public and private sectors. In an era of limited federal regulatory power,[38] a range of private solutions are presented, which include: altering the lease contract and expanding private conservation initiatives, certification systems, and

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32. *Visualizing U.S. Farmland Ownership, Tenure, and Transition*, U.S. DEP'T AGRIC. (Mar. 2, 2017), https://www.ers.usda.gov/data-products/data-visualizations/other-visualizations/visualizing-us-farmland-ownership-tenure-and-transition/.

33. *Id.*

34. *Id.* (emphasis omitted).

35. USDA REPORT, *supra* note 31, at 5.

36. *Id*. at 17, 31 n.9.

37. *See id.* at i, v (analyzing the results of the 2014 Tenure, Ownership, and Transition of Agricultural Land (TOTAL) survey, which was administered by USDA's ERS and National Agricultural Statistics Service (NASS) as part of a special follow-up to the 2012 Census of Agriculture to collect data from the owners and operators of agricultural land).

38. *See* Exec. Order No. 13,771, 82 Fed. Reg. 9,339, 9,339 (Jan. 30, 2017) (aiming to reduce regulation and control regulatory costs by requiring each agency to begin taking steps to cut back on regulations); *see also* Andrew Soergel, *Trump Executive Order Embraces "One-In, Two-Out" Regulatory Scheme*, U.S. NEWS WORLD REP. (Jan. 30, 2017), https://www.usnews.com/news/articles/2017-01-30/trump-executive-order-embraces-one-in-two-out-regulatory-scheme (describing the "one-in, two-out" policy, where "any additional regulation under consideration by the government can only be approved if two existing regulations are stripped away").

ecosystem markets. Part V concludes, reiterating a need for incentives in conservation-farming practices.

II. THE ECONOMICS OF FARMING

Despite our nation's strong agrarian roots, only 2% of the U.S. population produces food.[39] Farming has become a consolidated enterprise; farms are much larger today with fewer individuals operating them. A few statistics highlight these trends. In 1900, about 40% of the total population lived on a farm compared to today, where the figures show only about 2% remain on farms.[40] Today there are approximately two million farms (compared to the six and seven million farms in 1935), among which 60,000 farms account for approximately 72% of the value of agricultural output value.[41]

While farming operations have changed significantly over this century, some things remain the same. Farmers continue to be economic actors who respond to economic forces and always operate under uncertainty. Vulnerable to weather, disease, and pests, farmers consistently face "price or market risk (e.g., fluctuations in input costs and output prices), financial risk (e.g., shifts in interest rates and credit access), institutional risk (involving government policies), and human risk (including farmer health and labor issues)."[42] Farmers adopt sustainable practices when those practices maximize the farm operation's economic viability while minimizing its legal liability.[43]

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39. *Fast Facts About Agriculture*, AM. FARM BUREAU FED'N., https://www.fb.org/newsroom/fast-facts (last visited Apr. 22, 2018).

40. *See* William Petit, *The Free Trade Area of the Americas: Is It Setting the Stage for Significant Change in U.S. Agricultural Subsidy Use?*, 37 TEX. TECH. L. REV. 127, 134 n.79 (2004) ("In the 1930's, 25 percent of the population lived on the nation's 6 million farms; today, our 2 million farms are home to 2 percent of the population."); Erin Morrow, *Agri-Environmentalism: A Farm Bill for 2007*, 38 TEX. TECH. L. REV. 345, 359 (2006) (describing the changing demographics in American agriculture over time).

41. Petit, *supra* note 40, at 134.

42. *See* David B. Oppedahl, *Taming Agricultural Risks*, FED. RES. BANK CHI. (Jan. 2014), https://ideas.repec.org/a/fip/fedhle/y2009ijann258a.html (identifying risks associated with agricultural production, including but not limited to market risk, institutional risk, and human risk).

43. Andres Trujillo-Barrera et al., *Understanding Producers' Motives to Adopt Sustainable Practices: The Role of Expected Rewards, Risk Perception, and Risk Tolerance*, 43 EUR. REV. AGRIC. ECON. 359, 363 (2016).

A. Economic Viability

In some corporate models, firms are measured by a "triple bottom line" (economic profit, environmental sustainability, and social responsibility),[44] but few farmers are ever measured along these dimensions. From a business standpoint, farmers focus on preserving their operation, which means reducing costs and raising the quality and yield of their output.[45] They maximize profits for the crops they decide to grow and the desired level of inputs (known as "factors of production," or land, capital, labor, water, pesticides, and fuel, among others).[46] These basic components of a farmer's agricultural-production-function also consider seasonality, geography, and sources of technical change, risk, and uncertainty. For instance, "[n]ew businesses are springing up that promise to tell farmers how and when to till, sow, spray, fertilize or pick crops based on algorithms [and often drones] using data from their own fields."[47] New technologies are being developed that aim to improve yields and sustainability through improving soil health using fewer chemicals.[48] While online marketing startups such as Farmingo, Full Circle, Barn2Door, and Good Eggs give farmers an online marketplace to sell their goods, many say that the e-commerce farm-to-consumer market is saturated and not worth the cost.[49] Ultimately, with or without technological sophistication, the calculus is the same: for an

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44. *Triple Bottom Line*, ECONOMIST (Nov. 17, 2009), http://www.economist.com/node/14301663.

45. *See generally* Loren W. Tauer, *Do New York Dairy Farmers Maximize Profits or Minimize Costs?*, 77 AM. J. AGRIC. ECON. 421, 421 (1995) (stating that most economists conclude that farms, as rational businesses, seek to minimize costs and maximize outputs to sell).

46. JOHN M. ANTLE, PESTICIDE POLICY, PRODUCTION RISK, AND PRODUCER WELFARE: AN ECONOMIC APPROACH TO APPLIED WELFARE ECONOMICS 36–37 (1988).

47. Ludwig Burger, *Digital Farming Could Spell Shake-up for Crop Chemicals Sector*, REUTERS (May 2, 2016), http://uk.reuters.com/article/us-farming-digital-idUKKCN0XV0KP.

48. *See* Louisa Burnwood-Taylor, *Microbe-Based Food and Agriculture Products Company BiOWiSH Raises $5m Series B*, AGFUNDER NEWS (May 4, 2016), https://agfundernews.com/microbe-based-food-ag-products-company-biowish-raises-5m-series-b5796.html?utm_source=AgFunder+Updates&utm_campaign=fc97554162-AgFunder_Weekly_Newsletter_May05&utm_medium=email&utm_term=0_7b0bb00edf-fc97554162-97956713 (describing BioWish's microbial soil treatments that reduce the amount of fertilizer needed); *see also* Sara Sjolin, *Monsanto Aims to Tackle Looming Global Food Crisis*, MARKETWATCH (May 23, 2016), http://www.marketwatch.com/story/monsanto-aims-to-tackle-looming-global-food-crisis-2016-04-06 ("[In] the world's biggest field-test program of seeds laced with microbes, [Monsanto found] that corn yields increased by four bushels per acre, or about 2.2%. Yields on soybeans increased by 1.5 bushels per acre.").

49. Steve Holt, *Does Farm Tech Help Farmers?*, CIVIL EATS (May 5, 2016), http://civileats.com/2016/05/05/does-food-tech-help-farmers/?utm_source=AgFunder+Updates&utm_campaign=fc97554162-AgFunder_Weekly_Newsletter_May05&utm_medium=email&utm_term=0_7b-bb00edf-fc97554162-97956713.

operation to be economically viable, it cannot spend more revenue than it makes.

Land is the leading input and the leading expense in a farmer's operation. Current land prices make land scarce. Land represents 80% of the cost of running a farm; a defining characteristic of current agriculture is a "fierce competition for land."[50] Land does not turn over very frequently, and because it takes more land to make a profit today, farmers are consistently under pressure to find more farmland (through renting or buying) to remain in business.[51]

According to National Agricultural Statistics, land prices are currently at an all-time high—more for cropland, and less for pastureland.[52] Factors that affect farmland values are: expected net returns, interest rates, government programs, capital investment in structures, non-farm demand, inflation, lending policies, other investments, speculation, trade, technology, site characteristics, and environmental issues.[53] Land prices also vary by geography. "In some areas of the Northeast, farmland values are ten times the national average."[54]

The urbanization of agricultural lands, or farmland conversion, also raises land costs. "[U]rban and suburban sprawl" has transferred "over 30 million acres" to development since 1970,[55] raising land prices and making it nearly impossible for potential farmers to enter into this business.[56] In addition, while land is the principal cost to the farming operation, other costs have risen recently. The largest cost increases are for fertilizer and seed, with projections of $569 per acre for corn and $324 per acre for soybeans.[57]

New farmers are at a clear disadvantage. First, as the demand for land drives up the land price, beginning farmers trying to access farmland must contend with very high land costs.[58] Next, not only are rental rates

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50. EDWARD COX, THE LANDOWNER'S GUIDE TO SUSTAINABLE FARM LEASING 20, 20 (2010), https://lib.dr.iastate.edu/leopold_pubspapers/70.

51. *Id.*

52. *See* NAT'L AGRIC. STATISTICS SERV., U.S. DEP'T AGRIC., 2007 CENSUS OF AGRICULTURE, U.S. DATA tbl.1, 8 (2009), https://www.agcensus.usda.gov/Publications/2007/Full_Report/usv1.pdf (showing the progression of the increasing market value of cropland between 1978 and 2007).

53. *See* David Oppendahl, Address at the U.S. Dep't Agric. Agric. Outlook Forum (Feb. 24, 2011) (PowerPoint available in U.S. Department of Agriculture, Agriculture Outlook Forum archives, http://ageconsearch.umn.edu/record/106149) (listing factors that affect farmland value).

54. KOHANOWICH ET AL., *supra* note 19, at 6.

55. SCHNEIDER, *supra* note 6, at 39.

56. *Id.*

57. David B. Oppedahl, *Agricultural Markets and Food Price Inflation–A Conference Summary*, FED. RES. BANK CHI. (Jan. 2009), https://ideas.repec.org/a/fip/fedhle/y2009ijann258a.html.

58. *Id.*

prohibitively high, but evidence that farmers are renewing their leases also limits their chances for acquiring land.[59] Finally, even if a beginning farmer is able to get land, he/she will need to rent land from multiple landlords to achieve the number of acres required to make the farming operation economically viable.

B. Legal Liability

While farmers have flexibility regarding the inputs they select and the crops that they grow, farmers need to comply with regulatory requirements related to food safety and environmental protection, as well as tax and tort obligations.

Food safety considerations have the highest potential to interfere with a farmer's decision to adopt sustainable practices.[60] Farmers need to ensure that sustainable practices do not come at a cost of compromising food safety standards set in the Food Safety Modernization Act of 2011 (FSMA).[61] Foodborne illnesses are a serious concern in the United States because they are responsible for ailing 47.8 million and hospitalizing 127,839 Americans each year.[62] Recent high-profile foodborne illness outbreaks have resulted in civil and criminal liability for farmers[63] while

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59. *See* USDA REPORT, *supra* note 31 (noting that there is not a lot of new land coming to market).

> Ten percent (93 million acres) of all land in farms is expected to be transferred during 2015–2019, most of which (6 percent) will change hands through gifts, trusts, or wills. Of all land expected to be transferred, only about a quarter (21 million acres) will be sold between nonrelatives. Another 14 percent (or 13 million acres) is anticipated to be sold from one relative to another. While the amount of farmland expected to be sold is relatively small, some of the land transferred through trusts, wills, and gifts may then be sold by the new owners, bolstering the supply of land available for purchase.

Id.(emphasis omitted); *see also* COX, *supra* note 50, at 21 (discussing short-term and long-term leases).

60. *See, e.g.*, Margot J. Pollans, *Regulating Farming: Balancing Food Safety and Environmental Protection in a Cooperative Governance Regime*, 50 WAKE FOREST L. REV. 399, 400–02 (2015) (describing the trade-offs between food safety and environmental regulations and detailing the difficulty of asking farmers to bear additional regulatory costs).

61. 21 U.S.C. § 350(h)(3)(E) (2012) (as added by Food Safety and Modernization Act of 2011, Pub. L. No. 111-353, 124 Stat. 3899).

62. *Burden of Foodborne Illness: Findings*, CENTERS FOR DISEASE CONTROL PREVENTION, https://www.cdc.gov/foodborneburden/2011-foodborne-estimates.html (last visited Apr. 22, 2018).

63. United States v. Quality Egg, LLC, 99 F. Supp. 3d 920, 940 n.18 (N.D. Iowa 2015) (detailing how the prosecution cited several recent cases where defendants were sentenced to prison or confinement after being convicted under the Food, Drug, and Cosmetic Act, including the Jensen Farms defendants); United States v. Parnell, No. 1:13-cr-12, 2013 WL 2387714, at *1 (M.D. Ga. May 30, 2013) (stating that Parnell faced a 76-count indictment for introducing adulterated food into interstate commerce); Helena Bottemiller Evich, *Prosecutions Scare Food Industry*, POLITICO (Oct. 9, 2013, 5:05 AM), https://www.politico.com/story/2013/10/prosecutions-scare-food-industry-098011 (discussing

historic outbreaks have illustrated the devastating effects an outbreak can have in terms of market loss and litigation.[64]

Federal and state regulations, private litigation and supply chain obligations (such as providing third-party food-safety certifications) pressure farmers to adhere to the highest food-safety practices[65]—often at the cost of sustainable practices. When farmers are not contractually obligated to supply sustainably grown food, they are, at a minimum, obligated to produce food that is contractually safe for consumption. The result is that most farmers will prioritize food-safety standards over sustainable practice adoption.

For example, from a farm-level perspective, while growers want to protect soil and water quality while supporting wildlife habitats on the farm, they need to ensure that crops are free from contamination by fecal matter (which may introduce pathogens that can cause foodborne illnesses) in order to comply with private sector audit programs that contractually require them to meet certain food-safety and management practices.[66] In the wake of a 2007 E. coli outbreak linked to spinach contaminated by fecal matter from roaming feral pigs, California leafy greens growers entered into a voluntary agreement—the Leafy Greens Marketing Act (LGMA)—to raise food-safety standards and preempt federal regulation.[67] According to most accounts, resistance from small farms and sustainable agriculture nearly killed the agreement, but the agreement passed, while establishing standards "for evaluating safety of production in fields in California and

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recent criminal prosecutions following food contamination); *Lawsuit Blames Death on Dole Plant Salad, Listeria Outbreak*, ASSOCIATED PRESS (June 2, 2016), https://apnews.com/6a854a6b82fd4bbabe224c7c86ab5d95 (discussing civil lawsuits filed against Dole in connection to a listeria outbreak).

64. *See* Alexia Brunet Marks, *Check Please: How Legal Liability Informs Food Safety Regulation*, 50 HOUSTON L. REV. 723, 728 (2013) (noting that an outbreak of microbial foodborne illness can have several adverse consequences). For example, Odwalla's 1996 fruit juice recall resulted in "a voluntary product recall (valued at $12.5 million), a 17% drop in revenue during the first six months after the [recall], a record $1.5 million federal fine for interstate shipment of an adulterated food product . . . , and twenty-one personal injury lawsuits." *Id.*

65. *See Food Demand Survey*, *supra* note 1, at 2 (demonstrating how consumers pressure farmers through consumer interest in issues such as *Salmonella* and E. coli, which become more prevalent when there are foodborne illness outbreaks); Jayson L. Lusk & Susan Murray, *New Tool (FooDS) Identifies Consumers' Views on Food Safety*, 29 CHOICES 1, 5 (2014) (referencing consumers' interest in GMOs, *Salmonella*, and E.coli makes farmers feel an increased pressure to adhere to consumer expectations in the food-safety arena).

66. K. LOWELL ET AL., PRODUCE SAFETY PROJECT, SAFE AND SUSTAINABLE: CO-MANAGING FOR FOOD SAFETY AND ECOLOGICAL HEALTH IN CALIFORNIA'S CENTRAL COAST REGION 61, 80 (2010).

67. Marks, *supra* note 64, at 729, 780.

Arizona . . . ."[68] "[G]rowers report[ed] yielding to tremendous pressure from auditors, inspectors, and other food safety professionals to change on-farm management practices in ways that not only generate[d] uncertain food safety benefits, but also create[d] serious environmental consequences."[69]

While this account illustrates an example of farmers prioritizing food-safety risks over sustainable practice adoption, this does not imply that farmers will always arrive at this solution. A supply chain obligation to supply sustainable foods or to maintain sustainable practices may prioritize sustainable practice adoption to the level of food safety. Similarly, environmental protection regulations have the potential to raise sustainable practice adoption to the level of food safety. For example, some federal programs require compliance with sustainable practices, such as the over 23.8 million acres enrolled in the USDA Conservation Reserve Program (CRP).[70] A contractual obligation to maintain acreage in this program will sway growers to adopt sustainable practices while maintaining a required FSMA baseline of food-safety practices.

III. SUSTAINABLE AGRICULTURE

Consumers often criticize conventional farmers for not farming sustainably, not holding a long-term perspective, and generally not farming in a way that ensures that croplands can be farmed and crops can be produced in perpetuity without diminishing yield, quality of crop, or health and resources of the soils.[71]

A. Examples of Sustainable Practices

Farmers who want to adopt sustainable practices often refer to the 1990 Farm Bill definition,[72] where sustainable practices imply examining the

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68. *See* Michaela Tarr Oldfield, *Enactment of the Food Safety Modernization Act: The US FDA Within the Context of Interacting Public-Private Governance Processes*, 6 EUR. J. RISK REG. 488, 493 (2015) (describing the controversy behind the LGMA's adoption).

69. LOWELL, *supra* note 66, at 5.

70. *CRP Enrollment*, U.S. DEP'T AGRIC. (Mar. 31, 2016), https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdafiles/Conservation/PDF/CRPEnrollmentMar2016DotDensity.pdf.

71. *See, e.g.*, George Wuerthner, *How 'Cheap Food' Industrial Agriculture Is Destroying America*, BURLINGTON FREE PRESS (Jan. 29, 2007), http://www.organicconsumers.org/news/how-cheap-food-industrial-agriculture-destroying-america (criticizing the agricultural industry for its environmental impacts).

72. *See* Food, Agriculture, Conservation, and Trade Act of 1990, 7 U.S.C. § 3103 (2012).

entire farm operation—all of the inputs and outputs to the farm endeavor—for practices that are environmentally friendly, socially responsible, and economically viable across time considering the needs of future generations.[73] Still, many wonder whether environmentally friendly, socially responsible, and economically viable food is possible from a day-to-day management perspective.[74]

On the farm, conservation practices take several forms, [75] and can be divided into two main categories: operational and permanent (with some overlap in the categories).[76] "Most conservation practices are intended to decrease soil erosion" and preserve topsoil because "[t]opsoil is the most fertile part of the land holding the most nutrients for growing crops, and it takes up to a thousand years to develop one inch of new topsoil."[77] Farmers want to prevent soil from washing into nearby creeks and streams (disrupting the quality and flow of water), and from blowing away in an area that is overgrazed or not secured by plants.

> "[S]ustainable agriculture" means an integrated system of plant and animal production practices having site-specific application that will, over the long-term—(A) satisfy human food and fiber needs; (B) enhance environmental quality and the natural resource base upon which the agriculture economy depends; (C) make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls; (D) sustain the economic viability of farm operations; and (E) enhance the quality of life for farmers and society as a whole.

Id.

73. *See* SCHNEIDER, *supra* note 6, at 31 (noting that stewardship of both natural and human resources includes: "working and living conditions of laborers, the needs of rural communities, and consumer health and safety both in the present and the future"). The farm produces private and public goods like food, rural amenities (hunting, tourism, landscape enjoyment), environmental and cultural services, habitat for wild animals and plants, and biodiversity. *Id.* Sustainability also means finding sources of income outside of growing crops, but farmers must consider zoning. *Id.*; s*ee also* Cent. Or. Landwatch v. Deschutes County, 367 P.3d 560, 567 (Or. Ct. App. 2016) (ruling against a zoning change because petitioners did not intend to establish a private park as a park, but instead wanted to establish a private park solely for use as "a commercial event venue").

74. *See* Bryan Weech, *Is Sustainable Beef All Talk and No Action?*, BEEF MAG. (Apr. 24, 2017), http://www.beefmagazine.com/sustainability/sustainable-beef-all-talk-and-no-action?NL=BEEF-02&Issue=BEEF-02_20170503_BEEF-02_491&sfvc4enews=42&cl=article_5_b&utm_rid=CPG02000002565167&utm_campaign=16659&utm_medium=email&elq2=836cfe04c504422a90e872d869264277 (noting from a management perspective that "it is reasonable to expect the current focus on sustainability will last for the foreseeable future").

75. *See* Patricia E. Norris & Sandra S. Batie, *Virginia Farmers' Soil Conservation Decisions: An Application of Tobit Analysis*, 19 S.J. AGRIC. ECON. 79, 80 n.2 (1987) (defining "[c]onservation practices" to include the use of "terraces, sod waterways, stripcropping, critical area planting, pasture or hayland establishment and/or management, cover crops, and tree planting").

76. Michael D. Duffy, *Conservation Practices for Landlords*, AG DECISION MAKER (Iowa St. U.), Apr. 2014, at 4, http://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=1425&context=agdm.

77. *Id.*

An operational conservation practice can be implemented on a year-by-year basis and can be used one year and not the next (e.g., contour buffer strips, contour farming, cover crops, crop rotation, managed grazing (such as rotational grazing), nutrient management, integrated pest management and residue management, like mulch and no-till).[78] Meanwhile, a permanent conservation practice will remain in place until it is removed or altered (e.g., diversion, field borders, grade stabilization structure, grassed waterways, riparian buffer strips, stream bank and shoreline stabilization, terraces, water and sediment control basin, and windbreaks). [79]

Since farming is ultimately a business, the extent to which farmers adopt conservation measures depends largely upon the profitability of these practices[80] rather than social or personal rewards.[81] In an effort to maximize their economic viability while minimizing their legal liability, farmers considering sustainable practices calculate in terms of a farmer's capital expenditures, operation and maintenance expenditures, as well as opportunity costs like foregone income from crops.[82] If a conservation practice increases profitability—such as increasing yield or decreasing production costs—while not increasing risk (liability risk, regulatory compliance risk, market risk, etc.), it has adoption potential.[83] Another consideration is that "[f]or some practices, a considerable portion of the

78. *See id.* (referring to landlords' ability to establish conservation practices).

79. *Id.*

80. Daniel Clay et al., *Sustainable Intensification in the Highland Tropics: Rwandan Farmers' Investments in Land Conservation and Soil Fertility*, 46 ECON. DEV. & CULTURAL CHANGE 351, 354 (1998); *see also* Norris & Batie, *supra* note 75, at 79 (describing previous studies where factors influencing the voluntary enrollment in conservation practices included financial assistance, risk, attitudes, and income, among others); Linda Lee, *The Impact of Landownership Factors on Soil Conservation*, 62 AM. J. AGRIC. ECON. 1070, 1071 (1980) (discussing the balance of income and conservation practices); Sean P. Neill & David R. Lee, *Explaining the Adoption and Disadoption of Sustainable Agriculture: The Case of Cover Crops in Northern Honduras* 4, 12 (Cornell U., Dep't Agric., Working Paper No. 99-31, 1999) (explaining that a Honduran farmer's abandonment of maize in favor of cattle was possibly due to the profitability of the practice). For examples of studies refuting this theory, see B. Smit & J. Smithers, *Adoption of Soil Conservation Practices: An Empirical Analysis in Ontario, Canada*, 3 LAND DEGRADATION & REHABILITATION 1, 9 (1992) (discussing that farmers are more willing to adopt "agricultural innovations" if there are "higher economic returns" for the farmer); Keith O. Fuglie, *Conservation Tillage and Pesticide Use in the Cornbelt*, 31 J. AGRIC. & APPLIED ECON. 1, 145 (1999) (describing why farmers adopt conservation tillage systems). For a study that finds no significant relationship, see Peter J. Nowak, *The Adoption of Agricultural Conservation Technologies: Economic and Diffusion Explanations*, RURAL SOC., Summer 1987, at 208, 211, 214–15 (introducing the theory that conservation measures do not result in higher returns).

81. Trujillo-Barrera et al., *supra* note 43, at 376.

82. *See generally* PA. ST. U., COVER CROPS FOR CONSERVATION TILLAGE SYSTEMS 2 (2006), https://extension.psu.edu/cover-crops-for-conservation-tillage-systems (identifying the costs—e.g., additional operating costs or lost profits from competing crops—that farmers should consider when determining the profitability of cover crops as a sustainable practice).

83. Trujillo-Barrera et al., *supra* note 43, at 363.

fixed costs can be paid with cost share funds," with the amount of funds depending upon the practice and varying by county. [84]

B. Sustainable Practices and Land Tenure Status

How do landowners and renters differ in their decision to adopt sustainable practices? In other words, in what way does land tenure affect a farmer's daily decisions on input use, seasonal planting decisions, annual farmland rental decisions, and multi-year decisions about ownership and maintenance of land, machinery, and facilities?

In the United States, land ownership is the dominant land tenure status followed by tenancy. The USDA Survey provides valuable trends on land tenure status to better examine the constraints under which land owners and tenants operate.[85] According to the USDA Survey, over 60% of agricultural land is operated by owners of that land, with the remaining 39% of land operated by renters.[86] There are two types of landowners. "Operator landlords" are landowner farmers and own 20% of rented land (70 million acres).[87] "Non-operator landlords" own 80% of rented acres[88] but are not actively involved in farming themselves, and have little to no farming experience.[89] These absentee landowners consist of older, retired, often female individuals or inheritors who live increasingly farther away from the land they rent.[90]

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84. *See* Duffy, *supra* note 76, at 5.

85. USDA REPORT, *supra* note 31, at 5, 6.

86. *Id.* at iii, 5. On farms with annual sales of over $25,000, 60% of farm operators lease some or all of their land. KOHANOWICH ET AL., *supra* note 19, at 6. If gross sales exceed $25,000, 78% of farm operators are full owners; 16% are part owners; and 7% are tenants. *Id.* If gross sales are between $25,000 and $500,000, 40% of farm operators are full owners; 49% are part-owners; and 11% tenants. *Id.* If sales exceed $500,000, 40% of farm operators are full owners; 50% are part owners; and 10% are tenants. *Id.*

87. USDA REPORT, *supra* note 31, at iii, 17.

88. *Id.* at iv, 17.

> Non-operator landlords are more likely than operator landowners to acquire land through inheritance. Operator landowners acquired over 50 percent of their owned land through a purchase from a nonrelative, while non-operating landlords acquired over 50 percent through an inheritance or gift. Of the 45 percent of non-operator landlords who have no prior experience with farming, more than two-thirds either inherited or received their land as a gift. Thus, although a considerable fraction of non-operator landlords have not farmed, some familial or personal relationship to farming may exist.

Id. at iv (emphasis omitted).

89. *Id.* at iii.

90. *See id.* at 17, 38 (explaining that female landlords and retired farmers, for example, make up 38% of non-operator landlords).

While some believe that farmers who rent are less likely to adopt sustainable practices compared to those who own the land—either because they lack historical or emotional ties to the land, or are less sensitive to the history, "the sense of accomplishment, the sacrifice, and the pride embodied in the land"[91]—the adoption of sustainable practices comes down to finances. Tenants and owners have conflicting incentives regarding conservation and production practices due to their financial interests in short-term or long-term economic returns from the agricultural land. Tenant farmers are less likely to have an incentive to adopt practices that improve the long-term sustainability of the operation because tenants are short-term contractors who operate under a shorter time horizon (the lease).[92]

Lease duration influences tenant decision-making in several ways. First, because leases are yearly,[93] this affects the time horizon under which farmers calculate investments. Normally, a rational individual calculates the income effects of a proposed conservation program over time and compares these effects to his/her expected income over the same time without conservation measures. For example, farmers sharing similar erosion problems may reach different conservation investment decisions depending on individual time preference or discount rates and the length of their planning horizon. "A lower discount rate and a longer planning horizon are thought to encourage conservation decisions by increasing the present value of expected net revenues and by allowing sufficient time to recoup conservation investments."[94]

Econometric studies confirm these anecdotal findings. Many studies highlight financial constraints to conservation adoption. First, landowners who typically have higher income rarely face these constraints. For instance, one study of owner-operators found that higher farm income levels are associated with lower rates of erosion resulting from a combination of less erosive land and more conservation practices.[95]

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91. LeeAnn E. Moss & Bernie Erven, *Extension Factsheet on Managing Landlord-Tenant Relationships: A Strategic Perspective*, OHIO ST. U. EXTENSION (Apr. 1, 2001), https://conservationconnect.files.wordpress.com/2016/06/tenant-landowner-relationship.pdf.

92. *See* COX, *supra* note 50, at 20–21 (finding that sustainable practices result in extra costs for tenants).

93. *See* USDA REPORT, *supra* note 31, at 26 tbl.3 (stating that 70% of farm leases are a yearly lease).

94. Lee, *supra* note 80, at 1070 (noting the effect of discount rates and planning horizons on the likelihood of adopting conservation decisions).

95. *Id.* at 1074.

> Nationally, only 40% of cultivated cropland owned by the most affluent landowners is classified as having an erosion hazard, while 59% of cultivated cropland owned by the lowest income group is labeled erosion prone. . . . In terms of management, 60% of cultivated cropland owned by landowners with net farm

Farmers who spend more on conservation measures typically also perceive soil erosion on their land, have larger farms, lower debt levels, higher income, and a conservation plan in place.[96] Second, tenants have lower income and spend less on conservation practices. One study showed that farmers who spend less on conservation measures are farmers who rent land, work off-farm, and have higher debt levels.[97] These studies show that programs designed to encourage the voluntary adoption of conservation practices should consider the special needs of limited-resource farmers.

Lease type has been identified as an institutional barrier to sustainable practice adoption.[98] Short-term leases and fixed-cash leases both reduce a farmer's incentive to maintain the productivity of rented land and the likelihood of investing in conservation practices.[99] Lease terms that define a cost-sharing arrangement between the tenant and the landlord may prevent practice adoption when the tenant bears most of the cost for a long-term benefit to the landlord.[100] When land is rented, the landlord and tenant often share costs. Depending on whether the land improvement costs are long-term or short-term, the landowner or the tenant may pay for them.[101] "Often the conservation practices benefit the landlord, but in certain cases the tenant also will benefit due to factors such as improved yields, easier farming conditions and less potential for water damage."[102] Soil nutrients, for example, are one cost shared by the parties because they have both a short-term and long-term effect.[103] Costs can be split in half, or the landlord pays for activities that have continuing benefits on the soil while the tenant

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> income greater than $50,000 had minimum tillage or residue practices in effect, while 47% of such land owned by those with net farm incomes of less than $3,000 had these practices at the national level.

Id.; *see also The Great Depression, the Family Farm and the New Deal*, PBS, https://vermont.pbslearningmedia.org/resource/5e632ed9-8d7c-464a-bd4c-05a62208205e/the-great-depression-the-family-farm-and-the-new-deal/#.Wnp5DKinE2w (last visited Apr. 22, 2018) (describing FSA aid under the New Deal).

96. Norris & Batie, *supra* note 75, at 84.

97. *Id.* at 84, 87.

98. *See* Lee, *supra* note 80, at 1071 (listing lease arrangements in addition to absentee ownership, small operating units, high property taxes, and lack of credit facilities).

99. *Id.* at 1075; *see also* Meredith J. Soule et al., *Land Tenure and the Adoption of Conservation Practices*, 82 AM. J. AGRIC. ECON. 993, 995–96 (2000) (noting that fixed-cash agreements are less likely to be associated with conservation practices that provide benefits over the long-term).

100. *See* Rusty Rumley, *Agricultural Contracts and the Leasing of Land*, NAT'L AGRIC. L. CTR., http://nationalaglawcenter.org/wp-content/uploads/assets/articles/rumley_contractsandleases-ppt.pdf (last visited Apr. 22, 2018) (describing crop-share leases and allocation of short-term and long-term costs).

101. *Improving Your Farm Lease Contract*, IOWA ST. U. EXTENSION & OUTREACH (Iowa St. U. Extension) May 2017, at 5, https://www.extension.iastate.edu/agdm/wholefarm/html/c2-01.html.

102. Duffy, *supra* note 76, at 5.

103. Rumley, *supra* note 100.

is responsible for chemicals that have an immediate effect, such as nitrogen (and also insect and weed control).[104] Costs for cleaning waterways and increased nutrient contamination are directly associated with soil erosion, but neither the tenant nor the landlord bear these costs.[105]

Other factors also affect conservation practice adoption. Even if tenants wanted to adopt sustainable practices, they often lack decision-making authority for long-term investments. The USDA Survey shows that "[l]andlord input to farm management decisions on rented land varies by type of decision" and by type of landlord.[106] Tenants make decisions on short-term farm management practices, such as cultivation practices, crop choice, and harvesting, with no input from landlords.[107] Meanwhile, landlords are more likely to be involved in long-term decisions, such as adopting permanent conservation practices and participating in Government programs.[108] Landlord input also varies by type of landlord: operator landlords provide more input in farm management decisions than their non-operating counterparts, perhaps because they have more farming experience.[109]

Given these different sets of constraints, some sustainable practices are more likely to be adopted by tenants for their ability to lower farming costs. Some improvements in agricultural technologies and production practices have substantially lowered the energy use, water use, and greenhouse-gas impacts of food production per unit of output over time.[110] Many farmers, including tenants, use conservation tillage (using minimum tillage or no-till practices)[111] for its potential for increased returns (a negative expenditure)

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104. *Id.*; *see also* Rusty W. Rumley & Benjamin L. Thomas, *Written Sugarcane Leases: Protecting the Interests of the Farmer and Landowner*, NAT'L AGRIC. L. CTR. 1, 3, http://nationalaglawcenter.org/wp-content/uploads/assets/articles/rrumley_leasesfactsheet.pdf (last visited Apr. 22, 2018) (describing the typical roles tenants and landlords assume in managing soil).

105. Duffy, *supra* note 76, at 5.

106. *See* USDA REPORT, *supra* note 31, at iv (describing the role of landlords in short-term and long-term decision-making).

107. *Id.* at 29.

108. *Id.* at 30–31.

109. *See id.* (contrasting non-operator and operator land-management decisions).

110. *See* J. L. Capper, *The Environmental Impact of Beef Production in the United States: 1977 compared with 2007*, 89 J. ANIMAL SCI., 4249, 4256–57 (2011) (comparing the per unit inputs, outputs, and emissions of beef production in 1977 and 2007); Michael Cavigelli et al., *US Agricultural Nitrous Oxide Emissions: Context, Status, and Trends*, 10 FRONTIERS ECOLOGY & ENV'T, 537, 545 (2012) (describing how efficiency in crop and meat production has lowered nitrogen dioxide emissions).

111. *See* Norris & Batie, *supra* note 75, at 80 n.3.

> Minimum tillage is the minimum soil manipulation necessary for crop production or meeting tillage requirements under the existing soil and climate conditions. No-tillage is a method of planting crops that involves no seedbed preparation other than opening the soil for the purpose of placing the seed at the proper depth.

Id.

over conventional tillage practices.[112] Additionally, some farmers rely on seeds and crop rotation to help save costs; for instance, biotechnology has led farmers to use cover crops and practice more no-till farming.[113] Nearly all corn, wheat, and soybean farmers avoid monocultures by practicing crop rotation.[114] Studies confirm that conservation tillage is likely to be used by renters, but only under these conditions: (1) when practices do not require large investments of time and capital;[115] (2) when they are production enhancing;[116] (3) when renters are not bound by certain types of leases;[117] or (4) when landlords require them to invest in sustainable practices. Conservation tillage is less likely to be used as farm income, age, off-farm income, and soil erosion increase.[118] This is supported by a more recent study that found that Iowa farmers who own their land are more likely to rotate crops, but less likely than full tenants and part-owners to use conservation tillage.[119]

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112. *See* Catherine L. Kling, *Can Voluntary Adoption of Agricultural Practices Achieve Hypoxic Zone Reduction Goals*, AGRIC. POL'Y REV., Spring 2014, at 5, 8, https:/lib.dr.iastate.edu/cgi/viewcontent.cgi?article=1013&context=agpolicyreview (noting that, in 2008, farmers in 12 states were asked to voluntarily align their farming practices with the Hypoxia Task Force recommendations, which aimed to reduce the level of oxygen depletion in the Gulf of Mexico through "conservation tillage, reduced nitrogen application rates, increased use of side dressing, cover crops, wetlands, buffers, controlled drainage, and bioreactors"). Of the methods recommended by the Hypoxia Task Force, "conservation tillage and alterations in nitrogen application rates and timing have the greatest potential to increase profitability at the farm level. . . . However these practices alone are likely to achieve only a modest (less than 9%) reduction in nutrients, far short of the 40% reduction goal for agriculture." *Id.*

113. *See* Jorge Fernandez-Corneio et al., *Pesticide Use in U.S. Agriculture: 21 Selected Crops, 1960–2008*, U.S. DEP'T AGRIC. RES. SERV. ECON. INFO. BULL., No. 124, May 2014, at 6, 30, http://www.ers.usda.gov/webdocs/publications/43854/46734_eib124.pdf (explaining the use of conservation practices relative to pesticide use); *see also* John Horowitz, et al., *"No-Till" Farming Is a Growing Practice*, USDA ECON. RES. SERV., ECON. INFO. BULL., No. 70, Nov. 2010, at 17 (reporting an increase in no-till operations in the U.S.); Edward D. Perry et al., *Testing for Complementarity: Glyphosate Tolerant Soybeans and Conservation Tillage*, 98 AM. J. AGRIC. ECON. 765, 767 (2016) (providing testing for conservation practices).

114. *Soil Tillage and Crop Rotation*, U.S. DEP'T AGRIC. (Apr. 4, 2017), http://www.ers.usda.gov/topics/farm-practices-management/crop-livestock-practices/soil-tillage-and-crop-rotation/.

115. Sarah Varble et al., *An Examination of Growing Trends in Land Tenure and Conservation Practice Adoption: Results from a Farmer Survey in Iowa*, 57 ENVTL. MGMT. 318, 326 (2016) (explaining how conservation tillage is used by farmers to decrease their energy and labor costs).

116. *See* Lee, *supra* note 80, at 1071 (noting the tendency of certain leases to reduce landlord income).

117. *See* Soule et al., *supra* note 99, at 994–96 (explaining that conservation tillage is profitable in the short term and is used by renters with short-term leases that have few constraints).

118. Norris & Batie, *supra* note 75, at 85.

119. Varble, *supra* note 115, at 318.

IV. A PAGE FROM THE SUSTAINABLE FARMER'S PLAYBOOK

Given the constraints under which tenants operate, there are many public and private sector mechanisms to incentivize farmers—tenants and landowners—to adopt sustainable practices on the land. Table 1 introduces the recommendations discussed in the following subsections.

Table 1: Recommendations for Incentivizing Tenants to Adopt Sustainable Practices

Public Sector Recommendations
- Expand Access to Federal Conservation Programs - Expand Funding and Enforcement for Certifications that Incentivize Sustainability - Integrate Conservation Goals into Other Federal Programs - Expand State Legislation Favoring Conservation (e.g., Minnesota Agricultural Water Control Certification Program)
Private Sector Recommendations

- Reform Lease Contracts
  - Longer Leases
  - Add Environmental Stipulations or Sustainability Provisions
- Industry Collaborations and Other Contracting Opportunities That Make Sense
- Enhance Private Conservation Initiatives

A. Public Sector Recommendations

1. Expand Tenant Access to Federal Conservation Programs

Conservation programs emerged during a time when land ownership was preferred over land tenancy, a sentiment that continues to this day. Federal programs encouraging farmers to adopt sustainable practices mobilized in the 1940s as a result of the Dust Bowl and high rates of

tenancy.[120] At that time, "[c]hanging land tenure patterns were considered as important as soil conservation programs in stopping the serious rates of soil erosion."[121] Federal programs were developed "to help tenant farmers purchase a farm of their own" and "resettle farm families who had lost their farms through foreclosure. . . . [T]he federal Farm Security Administration, under the Tenant Purchase Program, put 12,000 landless families onto a farm of their own."[122] As a result, land ownership predominated, both numerically and in terms of acres farmed, well into the 1970s and 1980s.[123]

The problem was that, over time, farmers gradually lost control over farm prices, and received a smaller share of consumer dollars spent on agricultural products. Indebted to banks and vulnerable to seasonal and other risks, economic pressures led to an enormous loss of small farms and farmers.[124] From 1987 to 1997, more than 155,000 farms were reportedly lost leading to the collapse of rural communities.[125] Federal government programs expanded once again following this crisis, supporting farmers with policies such as crop insurance, renewable fuel mandates, the conservation reserve program, and land conversion restrictions.[126]

Given the uncertainty of agricultural production decisions, farmers have come to rely on the programs created during these eras—government farm policies (price support programs which stabilize revenue streams) and conservation regulations (which provide subsidies for sustainable practices)—to sustain their operations, especially in downward cycles.[127] Just as landowners have come to rely on these streams of income, they have also come to rely on a model of farming rooted in ownership.

The problem today, given changes in land tenure and a renewed interest in sustainable practice adoption, is that most federal government programs target agricultural landowners directly, with few programs extending to tenants. For most federal conservation programs, the eligible

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120. *See* KOHANOWICH ET AL., *supra* note 19, at 5 (describing post-Dust Bowl tenancy policies).

121. *Id.*

122. *Id.* "Today's Farm Services Agency, which provides agricultural credit and credit guarantees, is the modern-day offspring of the Resettlement Administration. The Resettlement Administration was renamed the Farm Security Administration in 1937, the Farmer's Home Administration in 1946, and the Farm Services Agency in 1991." *Id.*

123. *Id.*

124. *See id.* (describing the burst of agriculture's speculative bubble).

125. SCHNEIDER, *supra* note 6, at 39.

126. *See* Morrow, *supra* note 40, at 351 (discussing the 1996 FAIR Act, which expanded farmers' rights).

127. *See* Christopher R. Kelly & John S. Harbison, *A Guide to the ASCS Administrative Appeal Process and to the Judicial Review of ASCS Decisions*, 36 S.D. L. REV. 14, 16 n.11 (1991) ("The large federal farm program expenditures in the late 1980s meant that many farmers depended heavily on farm program payments for their farm income.").

party to receive a financial payment is an "agricultural producer [who has] legal control over the land for the entire contract period"[128] of one to ten years, with one exception.[129] Through the USDA, the federal government oversees several voluntary conservation incentive programs, the main programs being the Conservation Reserve Program (CRP), the Conservation Stewardship Program (CSP), and the parallel structure Environmental Quality Incentives Program (EQIP).[130] These programs primarily consist of cost-sharing arrangements for constructing or adopting new conservation practices, payments for practices that provide environmental benefits, and rent payments for retiring highly erodible land.[131]

The CRP is designed to prevent the erosion of topsoil and reduce water runoff and sedimentation. Farmland owners who convert land used for agricultural production to resource-conserving vegetative covers (typically grasses or trees) receive rental payments for a 10- to 15-year term, or every year the land is enrolled in the CRP.[132] Farmers enrolled in the CRP do not qualify for enrollment in the CSP, a voluntary incentive-based working lands program. The CSP is the largest conservation program in the United

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128. Ed Cox, *Conservation Law*, DRAKE U. AGRIC. CTR. (Mar. 15, 2012) [hereinafter *Conservation Law*], http://sustainablefarmlease.org/conservation-law/.

> Cost-share share funding is limited to 75 percent but is usually funded at approximately 50 percent. Cost-share limitations are higher for beginning, limited-resource, and socially disadvantaged farmers and ranchers, who may receive up to 90 percent of the estimated cost for certain conservation practices. The maximum payment a participant can receive is $300,000 for all EQIP contracts entered during any six-year period. However, if the NRCS Chief determines a project to have special environmental significance this limitation may be waived to a maximum of $450,00 [sic]. Limits for assistance with organic production are established at $20,000 per year and $80,000 for any six-year period.

Id. For more information, see *Environmental Quality Incentives Program*, U.S. DEP'T AGRIC. NAT. RES. CONSERVATION SERV. [hereinafter *Environmental Quality Incentives Program*], https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip (last visited Apr. 22, 2018) (discussing the eligibility requirements for EQIP).

129. The USDA Transition Incentives Program (TIP) offers retired or retiring owners two additional rental payments beyond the term of the contract by leasing expiring CRP land to a beginning or socially disadvantaged farmer or rancher. *Transition Incentives Program*, U.S. DEP'T AGRIC., https://www.fsa.usda.gov/programs-and-services/conservation-programs/transition-incentives/index (last visited Apr. 23, 2018).

130. *See* CONG. RES. SERV., R40763, AGRICULTURAL CONSERVATION: A GUIDE TO PROGRAMS 9, 12, 16 (2017) (highlighting a list of incentive programs; however, this list does not mention other programs that may help reduce soil erosion coupled with other conservation objectives, such as the Wildlife Habitat Incentive Program and the Wetland Reserve Program).

131. *Id.*

132. *Conservation Reserve Program*, U.S. DEP'T AGRIC., https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/index (last visited Apr. 22, 2018).

States with 70 million acres of productive agricultural and forest land enrolled in the CSP.[133] The program pays producers for installing and adopting new conservation practices and compensates producers for improving, maintaining, and managing existing activities.[134] The EQIP provides financial incentives and technical assistance to help farmers and landowners establish conservation practices and structures, and mostly targets environmental concerns arising from livestock and poultry production.[135]

2. Expand Funding and Enforcement for Certifications That Incentivize Sustainability

Regulators can encourage sustainable practices by creating, funding, and enforcing certification programs. The USDA Organic certification is the best known sustainable certification.[136] Developed in the 1990s and created by the Organic Foods Production Act and the National Organic Program, the USDA created standards for the production, handling, and labeling of organic agricultural products.[137]

While sustainable agriculture is not organic agriculture by definition, most consider organic agriculture to be an environmentally sustainable system because organic agriculture requires less energy (e.g., pesticides).[138] Moreover, organic products support sustainability in that they emphasize the use of renewable sources, land management that maintains natural soil fertility, water conservation, biodiversity, and long-term sustainability.[139] Demand for these products is high: the market has almost quadrupled its market share in the last decade, with sales of organic food growing from

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133. *Conservation Stewardship Program*, U.S. DEP'T AGRIC., http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/csp/ (last visited Apr. 8, 2018).

134. *CSP - Learn More*, U.S. DEP'T AGRIC., https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/programs/financial/csp/?cid=nrcseprd1288524 (last visited Apr. 23, 2018).

135. *Environmental Quality Incentives Program*, *supra* note 128.

136. Press Release, U.S. Dep't Agric., USDA Reports Record Growth in U.S. Organic Producers (Apr. 23, 2016), https://www.usda.gov/media/press-releases/2016/04/04/usda-reports-record-growth-us-organic-producers.

137. Organic Foods Production Act of 1990, 7 U.S.C. §§ 6501, 6503 (2012).

138. *See* Christopher T. Jones, *The Manic Organic Panic: First Amendment Freedoms and Farming or the Attack of the Agriculture Appropriations Rider*, 26 J. LAND RES. & ENVTL. L. 423, 429 (2006) ("Environmental effects of conventional farming are legion, and some consumers, loath to contribute to the possible environmental threats and harms, choose organic products as a result.").

139. *See* Ann Plotto & Jan A. Narcisco, *Guidelines and Acceptable Postharvest Practices for Organically Grown Produce*, 41 HORTSCI. 237, 287 (2006) (citing 7 C.F.R. § 205.2 (2014)) (discussing soil benefits associated with organic farming).

$3.6 billion in 1997 to over $39 billion in 2014.[140] For the farmer, organic products have economic benefits as they sell for more than their conventional counterparts.[141]

Two criticisms of the USDA Organic program have emerged. First, not all farmers are able to access the program because the USDA has not kept up with the demand for this certification.[142] Organic certification is available to tenants, but only when the landowner has taken on the responsibility of organic certification.[143] However, leases can be written to incorporate cost-sharing for organic certification.[144] Farmers need to be made aware of federal and state cost-sharing programs available for organic certification. For example, "[t]he National Organic Certification Cost Share Program (NOCCSP) is administered through the USDA and state agencies and makes up to 75 percent of the costs for certification reimbursable."[145]

Second, the infrequent nature of USDA Organic inspections has allowed some agricultural producers to shirk their grazing requirements.[146] The concern here is that, for growers who pay to certify USDA Organic, the program needs to be enforced to prevent dilution of the expensive organic certification.

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140. STATE OF THE INDUSTRY, ORGANIC TRADE ASS'N (2015), https://www.ota.com/sites/default/files/indexed_files/StateOfOrganicIndustry.pdf.

141. A. Bryan Endres & Lisa Schlessinger, *Pollen Drift: Reframing the Biotechnology Liability Debate*, 118 PA. ST. L. REV. 815, 817 n.8 (2014) (discussing how processors and consumers are willing to pay a premium for organic products).

142. *See* Stephanie Strom, *Paying Farmers to Go Organic, Even Before the Crops Come In*, N.Y. TIMES (July 14, 2016), [hereinafter Strom, *Paying Farmers*] https://www.nytimes.com/2016/07/15/business/paying-farmers-to-go-organic-even-before-the-crops-come-in.html (noting that excess demand for organic products is more than certified organic producers can grow, and that cost inhibitions make organic production financially impossible for some farmers).

143. *See id.* (describing the investment required by landowners in certifying their operation as organic, such as spending significantly more in production costs to meet organic standards while selling the crops at a conventional price until the 2- to 3-year certification period has ended).

144. *See* Ed Cox, *Organic Certification on Leased Farmland*, DRAKE U. AGRIC. L. CTR. (Mar. 15, 2011) [hereinafter *Organic Certification*], http://sustainablefarmlease.org/2010/11/assisting-with-organic-certification/ (providing information for landowners interested in assisting tenants with organic certification).

145. *Id.*; *see also Organic Cost Share Programs*, U.S. DEP'T AGRIC., https://www.ams.usda.gov/services/grants/occsp (last visited Apr. 23, 2018) (highlighting the program's benefits).

146. *See* Peter Whoriskey, *Why Your "Organic" Milk May Not Be Organic*, WASH. POST (May 1, 2017), https://www.washingtonpost.com/business/economy/why-your-organic-milk-may-not-be-organic/2017/05/01/708ce5bc-ed76-11e6-9662-6eedf1627882_story.html?utm_term=.ca0fb472ff0b (reporting that large milk producers often scheduled annual inspections with third-party inspectors outside of the grazing season; meanwhile, reporters often observed very few cows ever grazing).

3. Integrate Conservation Goals into Other Federal Programs

Other federal programs, such as the FSA Beginning Farmer programs, can follow the lead of federal price-support programs, which condition payments to tenants and landowners upon adherence to sustainable practices.[147] Beginning farm-ownership loan programs, such as the FSA's, can be tied to environmental stewardship by taking "the form of preferential loan terms, debt forgiveness, debt for nature swapping, and/or advantageous terms for capital associated with transition to organic or sustainable practices."[148]

The only problem with this is that these payments are subject to congressional approval.[149] While these federal programs incentivize owners to adopt sustainable practices, members of Congress, as well as farm organizations, have called for an end to direct subsidies in the 2012 Farm Bill in favor of subsidized crop insurance, which does not have conservation compliance provisions attached.[150] "Therefore, the future effectiveness of conservation compliance is uncertain."[151]

4. Expand State-level Regulations and Incentives for Sustainable Agriculture

Governments do not grow food, farmers do; but, government programs support farmer decision-making. Various state-level initiatives incentivize renters of land to adopt sustainable practices. Going back in time, the high rate of tenancy and absentee landlords, which characterized the post-Dust Bowl era, prompted states to pass laws requiring conservation of the soil.[152] In 1937, the President's Committee on Farm Tenure recommended that states consider legislation to improve the farm tenancy situation.[153] States responded by passing laws favoring land ownership over leasing, including

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147. *See* Neil D. Hamilton, *Legal Aspects of Farm Tenancy in Iowa*, 34 DRAKE L. REV. 267, 311, 313 (1984) [hereinafter *Legal Aspects*] (discussing conditions for participating in federal price-support programs).

148. PARSONS, ET AL., THE FARMLASTS PROJECT: EXECUTIVE SUMMARY AND RECOMMENDATIONS FROM THE FARMLASTS PROJECT RESEARCH REPORT 1, 7 (2010), http://www.uvm.edu/farmlasts/projectexecutivesummary.pdf.

149. *Funding*, U.S. DEP'T AGRIC., https://www.fsa.usda.gov/programs-and-services/farm-loan-programs/funding/index (last visited Apr. 22, 2018).

150. Kathleen Masterson, *Farm Bill: Direct Payments to Farmers May Dry Up in 2012*, NAT'L PUB. RADIO (Oct. 4, 2011, 2:59 PM), https://www.npr.org/sections/thesalt/2011/10/04/141047164/farm-bill-direct-payments-to-farmers-may-dry-up-in-2012.

151. *Conservation Law*, *supra* note 128.

152. KOHANOWICH ET AL., *supra* note 19, at 5.

153. *See* Albert H. Cotton, *Regulations of Farm Landlord-Tenant Relationships*, 4 L. & CONTEMP. PROBLEMS 508, 508 (1937) (discussing the President's Committee on Farm Tenure report).

a ban on long-term leases in some states.[154] Today, many statutes are in place to preserve the soil, such as statutes on land tenancy, mandatory soil-loss limits, crop-residue laws, duty of stewardship soil-conservation statutes, duty of good husbandry statutes, as well as voluntary initiatives, including the Minnesota Agricultural Water Quality Certification Program (the Minnesota Program).[155] Most initiatives support tenants as well as landlords in adopting sustainable land practices.

Iowa statutes, as well as relevant case law on land tenancy and mandatory soil-loss limits, make Iowa a national model for giving basic rights to tenants and for recognizing the public right to require landowners to properly care for the soil. Many states adopted land-tenancy laws similar to those found in Iowa, with statutes addressing notice and termination procedures specifically for agricultural tenancies.[156] In the 1970s, Iowa developed mandatory soil-loss limits and laws aimed at property owners to establish and maintain soil and water conservation practices, which were enforced by commissioners of soil and conservation districts.[157] "[I]n order for a farm to remain eligible for USDA farm program payments," the law requires each district to establish soil-loss limits on highly erodible land "to five tons per acre in a year," which is "the maximum soil loss considered sustainable . . . ."[158] The State of Iowa also allows tenants the right to remove crop residue and use it.[159]

Implied covenants of good husbandry, typically based on common community practices, apply to agricultural leases in most states.[160] While these practices are able to provide some protection against harmful

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154. KOHANOWICH ET AL., *supra* note 19, at 5.

155. *See generally* Huong N. Tran & Liu Chuang, *State Conservation District Laws Developments and Variations* (U.S. Dep't Agric., Working Paper No. 3, 1996), https://www.nrcs.usda.gov/wps/portal/nrcs/detail/de/home/?cid=nrcs143_014208#tables (detailing how the Federal Dust Bowl soil conservation response evolved through the states to incorporate water conservation); *see also* Neil D. Hamilton, Essay, *Feeding Our Green Future: Legal Responsibilities and Sustainable Agriculture Land Tenure*, 13 DRAKE J. AGRIC. L. 377, 389–90 (2008) [hereinafter Hamilton Essay] (describing how Iowa's duty of stewardship arises out of the state conservation district law).

156. *See Legal Aspects*, *supra* note 147, at 306 (collecting cases addressing tenancy laws); *see also* McElwee v. DeVault, 120 N.W.2d 451, 453–54 (Iowa 1963) (establishing that a party can violate a covenant of good husbandry by engaging in techniques that constitute poor cultivation practices and reduce yields, and possibly even practices that produce excessive soil loss).

157. *See* Hamilton Essay, *supra* note 155, at 389–90 (noting that § 161A of the Iowa Code enables the creation of Soil and Water Conservation Districts).

158. *Conservation Law*, *supra* note 128.

159. IOWA CODE § 562.5A (2018) (bestowing ownership of any above-ground portion of a plant to farm tenants, unless the parties agrees to a different arrangement in writing, including corn-stalks, stover, or any other residue from the plant); *see also* Slach v. Heick, 864 N.W.2d 553 (Iowa Ct. App. 2015) (unpublished table decision) (citing IOWA CODE § 562.5A, and noting that it gives tenants a "right to crop residue in the absence of a writing stating otherwise").

160. COX, *supra* note 50, at 31.

exploitation of a farm's resources, they "[do] not necessarily guarantee the adoption of sustainable practices . . . ."[161] Iowa has not explicitly adopted an implied covenant of good husbandry; however, an implied covenant is said to exist because Iowa common law requires all tenants to use leased property in a "proper and tenant-like manner" and not to commit waste.[162] Also, the Iowa Supreme Court has established a duty of stewardship regarding the state's soil resources.[163]

The Minnesota Program is a voluntary opportunity for farmers (including tenants) and agricultural landowners designed to accelerate adoption of on-farm practices that protect Minnesota's lakes and rivers.[164] Launched in 2012 with $9 million in financial assistance to growers from the USDA and the State of Minnesota, the Minnesota Program operates under a memorandum of understanding.[165] The program offers producers recognition, financial and technical assistance, and regulatory certainty,[166] a branding and marketing opportunity, check-up, and validation.[167]

Importantly, the Minnesota Program certifies land in tenancy. As per the agreement, land comprising the agricultural operation is land that may be possessed by ownership, *written lease, or other legal agreement* that the producer operates.[168] And, "[u]pon leasing any additional agricultural land after the start date of this agreement, notify a certifying agent before performing any farming practices on the additional land."[169] Also, a producer need not make permanent alterations to the land.[170]

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161. *Id.*.

162. *Id.*

163. *Id.*

164. *See Minnesota Agricultural Water Quality Certification Program*, MINN. DEP'T AGRIC., http://www.mda.state.mn.us/awqcp (last visited Apr. 23, 2018) (providing information about the Minnesota Program).

165. Janet Kubat Willette, *Water Quality Certainty Program Receives $9 Million*, AGRINEWS (Jan. 19, 2015), http://www.agrinews.com/news/minnesota_news/water-quality-certainty-program-receives-million/article_87c5b066-da36-5c28-89a2-0842f07f1a80.html.

166. *See* MINN. DEP'T AGRIC., *supra* note 164 (noting that any agency rules dealing with water quality exempt those certified under the program).

167. BRAD REDLIN, MINN. DEP'T AGRIC., MINNESOTA AGRICULTURAL WATER QUALITY CERTIFICATION PROGRAM, https://www.co.olmsted.mn.us/environmentalresources/commission/Documents/MN%20Agricultural%20Water%20Quality%20Certification%20Program.pdf (last visited Apr. 23, 2018).

168. MINN. DEP'T AGRIC., MINN. AGRIC. WATER QUALITY CERTIFICATION AGREEMENT, http://www.mda.state.mn.us/~/media/Files/protecting/waterprotection/mawqcp/mawqcpagreementx.pdf (last visited Apr. 23, 2018).

169. *Id.*

170. According to the agreement, maintaining certification does not require producers "to implement practices that permanently alter" the leased land's landscape "if leased land is added after the start date of [the] agreement [and] [p]roducer[s] . . . demonstrate, to the satisfaction of MDA [Minnesota

The Program has been met with success. As of March 20, 2017, the Program boasts 364 certified farms totaling over 211,033 certified acres, implementing 628 new best management practices[171] that have saved 8.5 million pounds of soil per year, reduced sediment by 6 million pounds per year, and prevented 4 million pounds of phosphorus from entering our water.[172]

B. Private Sector Recommendations

Private sector solutions begin with reforming private leases used between landowners and tenants, and include creating more private incentives through certifications, eco-markets, and conservation easements.

1. Reform Lease Contracts: Longer Leases

The lease contract between the landowners and farm operators influences several farm operation decisions, such as production, conservation, and access to land.[173] Tenants advocate for long-term leases and lease-to-own agreements to foster land security and to provide for time to plan sustainable practices.[174]

Although the USDA Survey showed that most landlords have long relationships with their tenants, most acres in lease agreements are negotiated every year. "Seventy percent of acres rented from operator landlords have been rented to the same tenant for over 3 years and 28 percent for over 10 years."[175] Non-operator landlords frequently have even lengthier relationships with their tenants: "84 percent of acres have been rented to the same tenant for over 3 years and 41 percent for over 10 years."[176] And yet, "57 percent of rented acres, accounting for 70 percent of lease agreements, are renewed annually," exhausting "considerable time

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Department of Agriculture] or its agents, sufficient practices utilizing non-structural and non-permanently landscape-altering management and conservation practices." *Id.*

171. REDLIN, *supra* note 167.

172. *Focus on the Farm Economy: Hearing Before the H. Comm. On Agric*., 114th Cong. 384 (2016) (statement of Lee McDaniel, President, Nat'l Ass'n Conservation Districts) (providing data on the Minnesota Program's success, with statistics only through 2016); Steve Karnowski, *Land O'Lakes, Minnesota Partner on Water Quality Initiative*, ASSOCIATED PRESS (May 25, 2016), https://apnews.com/e319c347f3314918a017109fcf97a552/land-olakes-minnesota-partner-water-quality-initiative.

173. USDA REPORT, *supra* note 31, at 1.

174. *See id.* at 26, 40 (discussing different types of leases and lease programs, like rent-to-own, and the advantages and disadvantages of these leases and programs to tenants).

175. *Id.* at iv.

176. *Id.*

and effort . . . in managing and negotiating rental contracts."[177] The yearly lease also has implications for sustainable practices.

Economic studies show that some renters do not have incentives to invest in management or conservation practices that provide long-term benefits.[178] In light of the results showing that many tenants are in stable tenant-landlord relationships, tenants may have greater long-term conservation incentives than previously thought if tenant-landlord relationships have lasted many years. In these situations, lengthening leases or lease-to-own agreements may be viable options.

Other contract terms to be amended include leases that allow renters to influence decision-makers on sustainable investments. The USDA Survey found that owners make all of the decisions on short-term and long-term sustainable investments, while renters provide all of the decision-making on day-to-day activities and short-term planning.[179] Another contract term that can be established is to share conservation costs, which landlord engagement should do, by lowering the cash-rental rate or selecting a share-lease (to distribute risk) so that costs and risks associated with required conservation practices are not borne entirely by the tenant.

2. Reform Leases: Add Environmental Stipulations or Sustainability Provisions

A lease outlines the terms of the contract granting an estate in land to a tenant for a period of time, and the tenant pays for that right of possession. Yet, the action in the lease is not in the conveyance provisions—it is in the contract provisions. The contract provisions can serve as a mechanism to enact policies regarding sustainable practices.

Many terms on the lease already bind tenants to conservation measures. Since loss of soil through erosion and leaching of nutrients can have severe consequences on the value of land for either sale or rental purposes, typical leases contain clauses that address protection of soil and water quality so that there is no noticeable degradation of soil or water quality.[180] When drafting a lease, the landlord and tenant discuss questions such as what crops can be grown every year, where they can be grown, and how much fertilizer and chemicals can be used (with livestock operations,

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177. *Id.*

178. Soule, *supra* note 99, at 993.

179. *Id.*; USDA REPORT, *supra* note 31, at iv.

180. *See, e.g.*, *Legal Aspects*, *supra* note 147, at 306–07 (discussing soil preservation as a covenant in Iowa farm leases).

consideration is to be given to the stocking rate and species).[181] General farming practices include: crop rotation; conservation tillage; no-till farming; the use of buffer zones around bodies of water, terraces, and ponds; the use of timber stands; the use of organic agriculture; whether to have a dedicated wildlife habitat; and whether to qualify for a federal CSP.[182]

Modern leases also insert sustainability clauses. For example, suppose you are a farmer who rents public land in Boulder County, Colorado, and profitably grow genetically modified beets with little incentive to plant anything else. Boulder County is the largest agricultural landowner and lessor of land, with some 25,000 acres of agricultural land in leases administered by Boulder County Parks and Open Space.[183] In 2011, the Boulder County Commission, for the first time, voted to allow farmers to plant GMO beets on leased public lands.[184] In 2016, after much community activism surrounding genetically modified crops, Boulder County updated its Cropland Policy to phase-out genetically modified crops on rented land for sustainability reasons.[185] The Cropland Policy contains provisions covering pesticide use and soil health and requirements of "best management practices with respect to soil health and quality" (such as conservation tillage, soil amendments, cover crops, residue management, crop rotation, and rotational grazing).[186] In addition, Boulder County supports creating lease terms that encourage tenant investment in infrastructure to enhance productivity and financial incentives for organic agriculture.[187] While it may not be possible to replicate this example in another setting, especially on large commodity farms, some lessons can be learned.[188] The development of this model lease and cropland policy is a potential solution to leases with sustainability clauses.

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181. *See id.* at 270 (noting that an important lease component is "how the farm operation will be conducted").

182. *See* Sabine Zikeli & Sabine Gruber, *Reduced Tillage and No-till in Organic Farming Systems, Germany—Status Quo, Potentials and Challenges*, AGRICULTURE, Apr. 2017, at 2, 9 (analyzing certain organic farming practices in Germany, specifically conservation tillage and no-till farming).

183. *Agricultural Lands on Open Space*, BOULDER COUNTY, http://www.bouldercounty.org/open-space/management/agriculture/ (last visited Apr. 23, 2018).

184. Laura Snider, *Boulder County Agrees to Allow Some GMOs on Public Land*, DAILY CAMERA (Dec. 20, 2011, 11:28 AM), http://www.dailycamera.com/ci_19585517 (detailing the sugar beet debate in Boulder, CO).

185. BOULDER CTY. PARKS & OPEN SPACE DEP'T, PARKS & OPEN SPACE CROPLAND POL'Y 26, 18 (Apr. 13, 2017), https://assets.bouldercounty.org/wp-content/uploads/2017/04/boulder-county-cropland-policy.pdf.

186. *Id.* at 17.

187. *Id.* at 13, 17–18.

188. Interview with Erik Johnson, in Boulder County, Colo., (Sept. 18, 2017).

3. Industry Collaborations and Other Contracting Opportunities That Make Sense

In theory, if a farmer—tenant or landowner—can be guaranteed a higher premium for sustainably grown foods, they will be more likely to adopt these practices. Traditionally, production contracts ("reached before production begins under set compensation formulas, with the contractor providing some inputs and owning the commodity from the outset of production") were the mechanism to lock in higher prices.[189] To make farms profitable—especially for tenants—farmers are finding new opportunities to make economic use of their farmland.

In recent years, new land-related economic opportunities, such as the development of carbon credit-related contracts, wind-energy development, the sale of conservation easements for farmland protection,[190] and long-term conservation financing agreements, have proliferated.[191] Ecosystem markets allow landowners and farmers to receive payments for environmental services, similar to the federal CSP program discussed earlier.[192] Rather than receive payments from the government, businesses in these markets pay farmers for stewardship practices that mitigate environmental degradation caused by the business, such as carbon emissions or water pollution.[193] These markets assign an economic value to ecosystem services such as erosion control, flood buffers, and clean air.[194] In some circumstances developers are allowed to pollute or transform a valuable habitat as long as the affected ecological services are offset through separate habitat preservation, water conservation, or greenhouse gas reductions.[195]

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189. *See* Oppedahl, *supra* note 42, at 2 ("[T]he shares of corn, soybeans, and wheat marketed under contract had grown to above 20% of their respective values of production in 2011. USDA data also showed that in 2011, corn, soybean, and wheat farms that used marketing contracts tended to be larger.").

190. Memorandum from the Colorado Legislative Council Staff to Interested Persons (Aug. 28, 2017), https://leg.colorado.gov/sites/default/files/conservation_easement_program_ip_memo_6052017.pdf ("A conservation easement is a voluntary legal agreement that permanently preserves land for certain public benefits, such as scenic or agricultural open space, natural habitat, recreational areas, or historical sites.").

191. Hamilton Essay, *supra* note 155, at 385.

192. James Salzman, *Creating Markets for Ecosystem Services: Notes from the Field*, 80 N.Y.U. L. REV. 870, 888 (2005).

193. *Conservation Law*, *supra* note 128.

194. Salzman, *supra* note 192, at 887, 893.

195. MOLLY PETERS-STANLEY, ECOSYSTEM MARKETS AND FINANCE: A GLOBAL PRIMER 11–12 (2015), http://www.ecosystemmarketplace.com/wp-content/uploads/2016/01/Ecosystem-Marketplace-Market-Primer-2015-Final.pdf; RICARDO BAYON, ECOSYSTEM MARKETPLACE,

Other revenue-generating tools, "private conservation initiatives" (PCIs), have developed to encourage farmers to adopt conservation practices, improve soil health, and address environmental issues such as nitrate loss and climate change.[196] The key here is that, while these initiatives are for commodities only, most of these initiatives do not have to be on owned land.[197] And premiums are not guaranteed.[198] A PCI has three key aspects: (1) it involves private business; (2) it provides an economic inducement (monetary or otherwise) for the producer; and (3) it is tied to some market-driven, consumer-related sustainability claim.[199] Examples of Iowa-based PCIs include: (1) United Suppliers' Sustain initiative using Agren's SoilVantage conservation planning component;[200] (2) DuPont Pioneer's Memorandum of Understanding with USDA's Natural Resource Conservation Service Stover Harvest Collection Project;[201] (3) POET-DSM's "Responsible Stover Harvest" initiative;[202] (4) Iowa Seed Corn Cover Crops Initiative;[203] and (5) Field to Market: The Alliance for

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BIODIVERSITY BANKING: A PRIMER 4–6 (2008), http://www.ecosystemmarketplace.com/articles/biodiversity-banking-a-primer/.

196. NEIL HAMILTON, EVALUATING HOW PRIVATE CONSERVATION MAY INCREASE FARMER ADOPTION OF CONSERVATION PRACTICES 1 (2017) [hereinafter EVALUATING PRIVATE CONSERVATION], https://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=1527&context=leopold_grantreports (describing a PCI as an agreement between a farmer and a consumer that is practice-based and not outcome-based, and one that institutes conservation practices).

197. *See generally* Shannon Logan & Gerda R. Wekerle, *Neoliberalizing Environmental Governance?: Land Trusts, Private Conservation and Nature on the Oak Ridges Moraine*, 39 GEOFORUM 2097, 2099 (2008) (describing the relationship of landowners and their land under PCIs).

198. *Id.*

199. EVALUATING PRIVATE CONSERVATION, *supra* note 196, at 2–3.

200. AGREN, REVOLUTIONIZING CONSERVATION DELIVERY: UNITED SUPPLIERS IS LEADING THE WAY TOWARD PRIVATE SECTOR PLANNING (2014), https://www.agrentools.com/wp-content/uploads/2014/09/United-Suppliers-Case-Study.pdf.

201. *See generally Soil Conservation Fights Land Erosion*, DUPONT (May 16, 2017), http://www.dupont.com/corporate-functions/media-center/featured-stories/may-2017/soil-conservation-agriculture.html (describing no-till initiatives with corn producers); Press Release, U.S. Dep't Agric., USDA Announces New Conservation Collaboration with Dupont to Promote Sustainable Harvesting of Bio-based Feedstocks for Cellulosic Ethanol (Mar. 29, 2013), https://www.usda.gov/media/press-releases/2013/03/29/usda-announces-new-conservation-collaboration-dupont-promote (publicizing initiatives between DuPont and the Natural Resource Conservation Service to promote sustainability); *Dupont Wins Sustainable Biofuels Award for Feedstock Innovation*, DUPONT (Mar. 15, 2012), http://www.dupont.com/products-and-services/industrial-biotechnology/press-releases/sustainable-biofuels-award.html (recognizing DuPont for its award-winning sustainability project to reduce U.S. dependence on fossil fuel).

202. BIOTECH. INNOVATION ORG., INDUSTRIAL BIOTECHNOLOGY: A UNIQUE POTENTIAL FOR POLLUTION PREVENTION 6 (July 2017), http://www.bio.org/sites/default/files/BIO%20Industrial%20Biotech%20Pollution%20Prevention.pdf.

203. *Iowa Seed Corn Cover Crops Initiative*, IOWA SEED ASS'N (Apr. 12, 2016), http://iowaseed.org/2016/04/12/iowa-seed-corn-cover-crops-initiative/.

Sustainable Agriculture's "Fieldprint" projects (including Unilever/Archer Daniels Midland's "Iowa Sustainable Soy Fieldprint Project").[204]

The problem with these initiatives is that little evidence exists of direct financial rewards for farmers.[205] The Unilever Soybean program provides a 10¢-per-bushel premium to some growers in defined areas.[206] The benefits are not just financial, and farmers may be using the program to make claims about sustainability.[207]

Finally, another example of industry-driven practices is the "Climate Collaborative," an initiative among more than 200 manufacturers, retailers, distributors, and others who strive "to catalyze bold climate action among natural products companies."[208] Member companies such as Annie's are experimenting with "regenerative farming practices like minimized tillage and cover cropping, which help draw carbon underground."[209] In doing so, they are part of "the Climate Collaborative's Rooted Community carbon farming action group," sharing their practices with other companies industry-wide.[210] In 2018, food giant General Mills launched a program to "verify the implementation of and measure quantitative results from on-farm practices that lead to three outcomes of interest: soil health, aboveground biodiversity, and farmer economic resilience."[211] While many of these programs are new and results have yet to be calculated, the fact that farmers are adopting these alternative farming practices to satisfy their

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204. *Unilever/ADM Iowa Sustainable Soy Fieldprint Project*, FIELD TO MKT., https://fieldtomarket.org/projects/unileveradm-iowa-sustainable-soy-fieldprint-project/ (last visited Apr. 23, 2018). The data generated through a platform like the Fieldprint Calculator is the mechanism companies are using to make claims of sustainability improvements. The Calculator gives growers an analysis of the effectiveness of their cropping practices and their impact on land use, soil conservation, soil carbon, irrigation water use, water quality, energy use, and greenhouse-gas emissions. *Fieldprint Platform*, FIELD TO MKT., https://fieldtomarket.org/our-program/fieldprint-platform/ (last visited Apr. 23, 2018).

205. EVALUATING PRIVATE CONSERVATION, *supra* note 196, at 2.

206. *Sustainable Practices Make Cents for Iowa Farmers*, UNITED SOYBEAN BOARD, https://unitedsoybean.org/article/sustainable-practices-make-cents-for-iowa-farmers (last visited Apr. 23, 2018).

207. *See* David Gelles, *Unilever Finds That Shrinking Its Footprint Is a Giant Task*, N.Y. TIMES (Nov. 21, 2015), https://www.nytimes.com/2015/11/22/business/unilever-finds-that-shrinking-its-footprint-is-a-giant-task.html (documenting the beneficial press one Unilever farmer has experienced since enrolling in the soybean program).

208. Press Release, Climate Collaborative, Leading Natural Products Companies Recognized for Taking Action on Climate (Mar. 8, 2018), https://www.climatecollaborative.com/ncg_cc-awards_2018.

209. Press Release, Climate Collaborative, General Mills and Its Natural & Organic Brands Join Annie's in Forging Ahead on Climate Action (Mar. 1, 2018), https://www.climatecollaborative.com/general_mills_announcement.

210. *Id.*

211. *Id.*

upstream contracts suggests that supply chains are a leading motivator for the adoption of sustainable practices.

4. Private Certifications

While some conservation practices are fixed by local, state, and federal regulations, most conservation practices are voluntary. Farmers lock into sustainability commitments in at least two ways: through private third-party certifications and retailer supply-chain contracts.[212]

First, assisted by state-extension agents, seed companies, cooperatives, and consumers, farmers navigate among a sampling of third-party certifications: locally grown, organic, antibiotic-free, cage-free, hormone-free, GMO-free, and fair trade.[213] The latest development is a certification for regenerative agriculture—one that aims to exceed standards for organic agriculture. [214]

Many certifications address sustainability, several of which focus on reduced pesticide use. A recent study conducted by the Consumer Reports Food Safety and Sustainability Center[215] examined pesticide-related certifications.[216] Among the published results, this study identified labels the authors deemed "useful" (e.g., USA Organic,[217] Certified Naturally Grown, Demeter Biodynamic, Eco Apple, and Eco Stone Fruit) because the labels were verified to prohibit all or nearly all pesticides. Meanwhile, other standards are deemed "useless" (e.g., natural, pesticide-free, and Stemilt Responsible Choice) because the labels were not verified or tested for pesticide residues.[218] Finally, labels where it is "your call"

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212. Jason J. Czarnezki & Katherine Fieldler, *The Neoliberal Turn in Environmental Regulation*, 1 UTAH L. REV. 1, 23, 25, 32 (2016) (providing examples of labeling certifications, such as the OFPA National Organic Program, Energy Star labels, and Vermont's GMO-labeling program).

213. *See Food Labels Explained*, FARMAID, https://www.farmaid.org/food-labels-explained/ (last visited Apr. 23, 2018) (discussing the organic, certified, non-GMO project and grassfed certifications).

214. Christopher Collins, *Should 'Regenerative' Agreiculture Get Its Own Label?*, CIVIL EATS (July 10, 2017), https://civileats.com/2017/07/10/should-regenerative-agriculture-get-its-own-label/.

215. CONSUMER REP., *supra* note 4 (discussing the two types of pesticides—synthetic and natural—and the USDA Organic certification standard).

216. *See* FOOD SAFETY & SUSTAINABILITY CTR., CONSUMER REPORTS, FROM CROP TO TABLE: PESTICIDE REPORT 37–41 (2015), http://article.images.consumerreports.org/prod/content/dam/cro/news_articles/health/CR_FSASC_FromCroptoTablePesticides_Mar2015.pdf. For each label, the authors indicated if the label is verified and if it has standards that prohibit pesticides, limit pesticide use, or require non-chemical or less-toxic pest-management practices. *Id.* The study also noted which, if any, of the 18 high-risk pesticides were prohibited or restricted. *Id.*

217. Organic is verified by the USDA to prohibit nearly all synthetic pesticides, requiring that the least toxic option is used first. *Id.*

218. Julia Westbrook, *Useful (and Useless) Labels in Your Grocery Store*, RODALE WELLNESS (Mar. 26, 2015), https://www.rodalewellness.com/food/food-labels.

(e.g., Rainforest Alliance, SCS Sustainably Grown, Whole Foods Responsibly Grown, and "Food Alliance") were "verified but less stringent in their pesticide rules" than the "useful" labels.[219]

While third-party certifications can serve to incentivize sustainable practices, this is not always the case. As large farming operations transition to organic agriculture to capture the market of eco-consumers desiring more sustainable practices, challenges to the USDA Organic label's legitimacy have arisen.[220] With less than 1% of farmland in the U.S. certified organic, and with organic sales accounting for approximately 4% of the market, many object to the difference being made up with food imports.[221] The USDA Organic certification has also received criticism for not covering animal welfare practices and for the variability in adoption of soil-fertility techniques.[222]

Amidst this controversy, other certification programs are emerging to prioritize organic farming practices and soil health, while assuring farmworker and other rights.[223] This new round of certifications could be called: "Organic Plus" programs. The Regenerative Organic Certification, for example, has emerged as a holistic agriculture certification encompassing pasture-based animal welfare, fairness for farmers and workers, and robust requirements for soil health and land management—which admittedly stretch beyond U.S. standards for organic certification. [224] These certifications have the potential to help farmers (and their supply chains) to meet sustainability and climate-change commitments for increasing biodiversity, building soil, and sequestering carbon. Several companies (i.e., DanoneWave, Patagonia Provisions, Maple Hill Creamery, and Justin's Nut Butter) are currently developing a pilot program to test various systems.[225] Instead of going through a third-party certification, farmers can opt to contract directly with grocery stores that manage their

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219. *Id.*

220. *See* Whoriskey, *supra* note 146 (describing how large organic milk producers can skirt USDA certification standards).

221. Collins, *supra* note 214.

222. *Id.*

223. *See, e.g.*, *Regenerative Organic Certification*, RODALE INST., https://rodaleinstitute.org/regenerativeorganic/?gclid=EAIaIQobChMI-4ni0o-V2gIVRJ7ACh1y8Q9_EAAYASAAEgJIs_D_BwE (last visited Apr. 23, 2018) ("The goals of Regenerative Organic Certification are to increase soil organic matter over time, improve animal welfare, provide economic stability and fairness for farmers, ranchers, and workers, and create resilient regional ecosystems and communities.").

224. *See id.* (announcing the Regenerative Organic Certification, and establishing its "three pillars": soil health, animal health, and social fairness); *see also* Rose Marcario, *Join Us: The Journey to Regenerative Organic Certification*, PATAGONIA (Sept. 13, 2017), https://www.patagonia.com/blog/2017/09/join-us-the-journey-to-regenerative-organic-certification/ (describing how Regenerative Organic builds upon USDA Organic while adding additional emphasis on soil health and sequestering carbon).

225. RODALE INST., *supra* note 223.

own labels, such as the Whole Foods' "Responsibly Grown" label.[226] There is great variance in grocers—some buy everything from vendors, some import some products, some produce their own private label brands, and some pursue all three. Consumers may not know that some supermarkets engage in rigorous auditing of their vendors and that they place special, higher food-safety requirements on their private labels.[227] Most supermarkets require audits from their growers and suppliers; if suppliers do not pass an audit, the contract is dropped.[228] As an organization develops a sustainability strategy, it moves from first-party strategies (initiatives pursued), to second-party strategies (certification schemes), to third-party strategies (audits), and finally to fourth-party strategies (codes of conduct)—though an organization may use all of these strategies.[229]

Private certifications represent a mechanism by which farmers produce food to accommodate a private, third-party verified standard, or a private retail standard, in an effort to generate additional revenue. The hope is that certification programs, like the USDA Organic program, will succeed in giving farmers a premium for organic production before and after their crop is harvested. This means that other certification programs will provide farmers with incentives similar to those that major food brands like General Mills, Kellogg, and Ardent Mills provide to USDA Organic farmers. "General Mills, for instance, recently signed a deal to help convert about 3,000 [conventional agriculture] acres to organic production of alfalfa and other animal feeds," while "Ardent offers farmers a premium for crops grown on land while a farm transitions to organic."[230]

V. CONCLUSION

This Article presented many solutions for incentivizing sustainable practice adoption, while specifically addressing the pivotal role of tenant

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226. Stephanie Strom, *Whole Foods to Rate Its Produce and Flowers for Environmental Impact*, N.Y. TIMES (Oct. 15, 2014), https://www.nytimes.com/2014/10/16/business/whole-foods-to-rate-its-produce-and-flowers-for-environmental-impact.html.

227. Konstantinos V. Kotsanopoulos & Ioannis S. Arvanitoyannis, *The Role of Auditing, Food Safety, and Food Quality Standards in the Food Industry: A Review*, 16 COMPREHENSIVE REV. FOOD SCI. & FOOD SAFETY 760, 765 (2017).

228. Larry Cata Backer, *Economic Globalization and the Rise of Efficient Systems of Private Law Making: Wal-Mart as a Global Legislator*, 39 CONN. L. REV. 1739, 1752–55 (2007).

229. *See* JAMES M. WHITE & MICHAEL BOLAND, INVITED CASE STUDY AT THE 2015 AGRIC. & APPLIED ECON. ASS'N & W. AGRIC. ECON. ASS'N JOINT ANNUAL MEETING: MAKING SUSTAINABILITY TANGIBLE: LAND O' LAKES AND THE DAIRY SUPPLY CHAIN (July 26–28, 2015), https://ageconsearch.umn.edu/record/206718/files/White.pdf (describing how the Land O' Lakes sustainable strategy fits into these four stages).

230. Strom, *Paying Farmers*, *supra* note 142.

farmers in the food system. This is important given that tenancy is forecasted to rise in the next twenty years, as farmers retire and more acres move both into tenancy and into the hands of landlords with no farming experience. Recommendations were provided for both regulators seeking to promote sustainability (through federal, state, and municipal rules and programs) and for farmers exploring sustainable practices (from negotiating leases to private certifications and industry collaborations).

Outside of the solutions presented, work remains to be done in terms of disseminating information between tenants, landowners who farm the land, and landowners who own land with no background in farming per se. More farm and agricultural extension-level programs need to develop curricula to incorporate sustainable practices consistent with food safety goals or "co-management" farming practices that promote food safety and sustainability. There is also a need for more succession and farm-conservation planning for landowners and tenants to encourage consideration of on-farm conservation and productive land transfer for generations to come.

Finally, research on the price premium offered by certification programs is necessary to show farmers that sustainable practices provide a return on investment. In addition, an expansion of state legislative programs favoring conservation (e.g., Minnesota Agricultural Water Quality Certification Program) and industry collaborations that provide farmers with funding to undergo organic certification (e.g., those by General Mills and Ardent Farms) will be critical as farmers strive to adopt sustainable practices.