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# Alternative Growth: Forsaking the False Economies of Industrial Agriculture

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# ALTERNATIVE GROWTH: FORSAKING THE FALSE ECONOMIES OF INDUSTRIAL AGRICULTURE

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"Agricultural exceptionalism" is the pervasive notion that because food production is so central to human survival, agriculture should be entitled to special legal and regulatory advantage.[1] Beginning with the first Agricultural Adjustment Act of 1933, Congress and the courts have built a safety net of statutory exclusions and economic subsidies to support what has become known as "conventional agriculture": large-scale, highly mechanized, monocultural plant and animal production.[2] The intentional result of this safety net has been a bouquet of special entitlements enjoyed by members of almost no other industry. Farmers are insulated from crop losses due to meteorological or biological catastrophe by federally underwritten insurance programs and from economic loss due to global price fluctuations on the commodity market.[3] Farmers enjoy their own

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1. *See* Susan A. Schneider, *A Reconsideration of Agricultural Law: A Call for the Law of Food, Farming, and Sustainability*, 34 WM. & MARY ENVTL. L. & POL'Y REV. 935, 935–36 (2010).

2. *See generally* Pub. L. No. 73-10, 48 Stat. 31 (1933). Conventional agriculture currently produces about ninety-eight percent of the food consumed in the United States (though much of it is not consumed by humans). *See* Jodi Soyars Windham, *Putting Your Money Where Your Mouth Is: Perverse Food Subsidies, Social Responsibility & America's 2007 Farm Bill*, 31 U.C. DAVIS ENVTL. L. & POL'Y J. 1, 4 (2007).

3. *See* 7 U.S.C. §§ 1501–1524 (2012). The federal government has been involved in the crop insurance business since 1938, when Congress created the Federal Crop Insurance Corporation to offset the combined agricultural disasters of

bankruptcy code,[4] as well as a limited, but still powerful, exemption from anti-trust laws in the Capper-Volstead Act.[5]

Agricultural policy coalesced around the notion of agricultural exceptionalism around the same time as the birth of the modern environmental movement, which precipitated important legal and regulatory developments to protect natural resources like air, water, and wildlife.[6] Because it relies on subverting natural processes for human ends, all agricultural activity has some negative impact on the environment, however minimal. Some tension in the policies governing these competing interests was inevitable. Yet rather than reach a middle ground that balanced agriculture and environmental conservation, policymakers largely yielded to agricultural exceptionalism—nearly every major federal environmental statute passed since the 1970s has included carve-outs for farms.[7] As it pertains to conventional agriculture, the current state of environmental law is characterized more by exemption than inclusion, a systematic lack of governance that J.B. Ruhl aptly terms "anti-law."[8]

This dearth of environmental regulation in conventional agriculture, combined with the enormous monetary subsidies it receives,[9] pulls food markets away from economic efficiency.[10] One

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the Great Depression and the Dust Bowl. Agricultural Adjustment Act of 1938, Pub. L. No. 75-430, 52 Stat. 31 (1938).

4. 11 U.S.C. ch. 12 (2012) ("Adjustment of Debts of a Family Farmer or Fisherman with Regular Annual Income").

5. 7 U.S.C. §§ 291, 292 (2012).

6. The modern environmental movement is generally considered to have begun in 1962 with the publication of *Silent Spring* by Rachel Carson, which was among the first articulations of contemporary ecological theory. *Silent Spring* spurred a series of high-profile studies vindicating Carson's claims that uncontrolled pesticide use could lead to severe harm to animals and humans. Soon thereafter, in the late 1960s and early 1970s, Congress passed the country's first major federal environmental statutes, including the Clean Air Act, Clean Water Act, CERCLA, and the National Environmental Protection Act.

7. *See* J. B. Ruhl, *Farms, Their Environmental Harms, and Environmental Law*, 27 ECOLOGY L.Q. 263, 293 (2000).

8. *Id.* at 267.

9. Counting crop insurance subsidies, disaster relief programs, and direct cash payments for commodity crop subsidies, farms have received over $292 billion in government aid since 1995. *The United States Summary Information*, EWG FARM

goal of environmental law is to reallocate the external costs of pollution onto the polluters themselves. In the absence of such regulation, the costs of pollution are borne by the society, which owns the air, water, and wildlife resources. When forced to internalize the actual costs of their activities, whether by mandated use of cleaner technologies, permit costs, or penalties for noncompliance, regulated industries are given a tangible incentive to diminish their pollution output. The influence of agricultural exceptionalism has largely uncoupled this feedback cycle from conventional food production systems. Though this results in lower out-of-pocket retail prices, the efficiencies are illusory—consumers also bear the invisible, lasting costs of widespread environmental degradation.[11]

The last twenty years have seen the improbable emergence of a separate agricultural sector that voluntarily assumes the external costs of food production. Organic, sustainable, and polycultural farming operations, which this Article collectively terms "alternative agriculture,"[12] eschew conventional agriculture's resource-intensive

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SUBSIDY DATABASE, http://farm.ewg.org/region.php?fips=00000 (last visited Jan. 14, 2014).

10. *See* Brian M. Riedl, *How Farm Subsidies Harm Taxpayers, Consumers, and Farmers, Too*, HERITAGE FOUND. BACKGROUNDER, No. 2043 (June 20, 2007); *see also* Carmen G. Gonzalez, *Markets, Monocultures, and Malnutrition: Agricultural Trade Policy through an Environmental Justice Lens*, 14 MICH. STATE J. INT'L L. 345, 361 (2006). For example, subsidy payments account for as much as forty-seven percent of corn farmers' income. Timothy A. Wise, *The Paradox of Agricultural Subsidies: Measurement Issues, Agricultural Dumping, and Policy Reform* 14 (Global Dev. & Envtl. Inst., Working Paper No. 04-02, 2004), *available at* http://www.ase.tufts.edu/gdae/Pubs/wp/04-02AgSubsidies.pdf.

11. Quantifying the external costs of an industry as diverse and diffuse as agriculture is notoriously difficult. *See generally* INST. OF MED. OF THE NAT'L ACADS., EXPLORING HEALTH AND ENVIRONMENTAL COSTS OF FOOD—WORKSHOP SUMMARY (2012), *available at* http://books.nap.edu/openbook.php?record_id=13521. In 2004, Erin M. Tegtmeir and Michael D. Duffy estimated "conservatively" that external environmental and human health costs of U.S. agricultural production amounted to $5.7 billion to $16.9 billion annually. Erin M. Tegtmeir & Michael D. Duffy, *External Costs of Agricultural Production in the United States*, 2 INT'L J. AGRIC. SUSTAINABILITY 1, 14 (2004).

12. For a discussion contrasting alternative and conventional agriculture, see Steve Padgitt & Peggy Petrzelka, *Making Sustainable Agriculture the New Conventional Agriculture: Social Change and Sustainability*, *in* SUSTAINABLE

model in favor of innovative farming practices that minimize synthetic inputs and environmentally harmful effects.[13] The farming methods that comprise "alternative agriculture" span a broad spectrum, from quarter-acre urban rooftop vegetable farms to thousand-head cattle grazing operations, but they are united in their tacit rejection of the contemporary food production regime.

Alternative agriculture benefits from neither the monetary nor the legal subsidies granted to conventional agriculture, yet it thrives.[14] From 1990 to 2010, annual sales of organic food alone grew from $1 billion to $26.7 billion.[15] These dramatic economic gains have been made without the support of the comprehensive safety net created for commodity producers. For example, until recently, the United States Department of Agriculture's (USDA) Risk Management Agency (RMA) perceived organic agriculture to be riskier than conventional agriculture, and applied a five percent surcharge for organic insurance premiums. In February 2013 the RMA announced plans to remove this surcharge in response to a report from the Office of the Inspector General.[16] When organic farmers of row crops like corn or soybeans do suffer crop losses, they are compensated at the same rates as conventional farmers, despite a higher input cost and a per-bushel price that is usually well in excess of its commodity

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AGRICULTURE SYSTEMS 261 (Jerry L. Hatfield & Douglas L. Karlen, eds., 1994), which was published during the early development of the modern alternative agriculture movement.

13. *See generally* Leo Horrigan et al., *How Sustainable Agriculture Can Address the Environmental and Human Health Harms of Industrial Agriculture*, 110 ENVTL. HEALTH PERSP. 445 (2002), http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1240832/pdf/ehp0110-000445.pdf.

14. *See, e.g.*, Nevin Cohen, *How Great Cities Are Fed Revisited: Ten Municipal Policies to Support the New York City Foodshed*, 22 FORDHAM ENVTL. L. REV. 691, 695 (2011) (noting $866 in unfulfilled demand in New York City for locally-produced food, which is less reliant than conventional food supplies on pollution-generating transportation and storage).

15. *Industry Statistics and Projected Growth*, ORGANIC TRADE ASS'N, http://www.ota.com/organic/mt/business.html (last updated June 8, 2011).

16. OFFICE OF INSPECTOR GEN., U.S. DEP'T OF AGRIC., RMA: FEDERAL CROP INSURANCE—ORGANIC CROPS, FEDERAL CROPS INSURANCE: ORGANIC CROPS, AUDIT REPORT 05601-0006-KC 26 (2013), http://www.usda.gov/oig/webdocs/05601-0006-KC.pdf.

corollary.[17] Furthermore, because organic farmers do not use synthetic production inputs, they do not make use of the federal regulatory "subsidies" that heavily incentivize the use of chemical fertilizers and pesticides.[18]

Organic agriculture is certainly not an altogether "green" industry,[19] but along with other forms of alternative agriculture it represents a step in the direction of environmentally-sound food production.[20] Furthermore, its rapid growth in the absence of socialized support programs indicates an increased willingness of consumers to pay a price for their food that more accurately reflects its cost of production.[21] This would seem to run contrary to the conventional agricultural wisdom that countenances only higher yields and lower sticker prices at the grocery store. As alternative agriculture continues to expand in sophistication and market reach, it also challenges the legal and economic bases upon which the modern edifice of agricultural exceptionalism is built.

Part I of this Article illuminates conventional agriculture's most significant legal privileges through a discussion of the Clean Water Act (CWA), Clean Air Act (CAA), and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Part II offers contrasting examples of conventional and alternative agricultural practices, their use (or not) of regulatory exemptions, and the ensuing environmental effects. Part III concludes by suggesting that the growth of the alternative agricultural sector demonstrates the potential of subsidy-free food production, and argues that a more symmetrical legal regime will spur innovation to improve conditions for the environment and consumers alike.

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17. *See* Karen Klonsky, *Comparison of Production Costs and Resource Use for Organic and Conventional Production Systems*, 94 AM. J. OF AGRIC. ECON. 314 (2012).

18. See *infra* Part I, for a brief illustration of some of these regulatory "subsidies."

19. *See, e.g.*, Anthony Trewavas, *Urban Myths of Organic Farming*, 410 NATURE 409, 409–10 (2001).

20. *See* Carmen G. Gonzalez, *Climate Change, Food Security, and Agrobiodiversity: Toward a Just, Resilient, and Sustainable Food System*, 22 FORDHAM ENVTL. L. REV. 493, 513–15 (2011).

21. For an overview of non-farmers' increasing participation in the American food system, see Margaret Sova McCabe, *Foodshed Foundations: Law's Role in Shaping Our Food System's Future*, 22 FORDHAM ENVTL. L. REV. 563 (2011).

## I. LOOPHOLES AND EXEMPTIONS FOR CONVENTIONAL AGRICULTURE IN ENVIRONMENTAL LAW

### *A. Clean Water Act*

When passed in 1972, the CWA was an ambitious statute which aimed to make all American waterways fishable and swimmable by 1983.[22] The CWA established an aggressive program to monitor water quality and curtail further pollution.[23] Under the CWA most of the nation's surface waters have seen dramatic improvement, but the Act's carve-outs for conventional agriculture have hampered comprehensive progress. The CWA includes several statutory provisions that benefit farms, which the Environmental Protection Agency (EPA) augmented with additional regulatory exemptions.

The CWA set up the National Pollutant Discharge Elimination System (NPDES), which governs the rationing of permits to would-be water polluters. The NPDES is thorough, imposing high monitoring and reporting burdens on permittees.[24] The permit system regulates discharges from "point sources," such as industrial facilities or wastewater pipes, which discharge effluents from discrete pipes, channels, ditches, or ducts. Many streams of agricultural water pollution, such as pesticide-laden return flows from irrigation systems, fit squarely within the CWA's original 1972 definition of point sources, yet the EPA has steadfastly resisted requiring permits—first by administrative fiat; then, after the courts ordered EPA to regulate farms pursuant to the CWA,[25] by a 1977 Act of

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22. The CWA's "fishable/swimmable" standards are a product of its language at 33 U.S.C.A. 1251(a)(2), which declares "it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983." *See also* Natural Res. Def. Council, Inc. v. Costle, 564 F.2d 573, 575 (D.C. Cir. 1977).

23. *See* 33 U.S.C. §§ 1251–1387 (2012) (originally enacted as Federal Water Pollution Control Act Amendments of 1972, Pub. L. No. 92-500, 86 Stat. 816 (1972)).

24. *Id.* § 1301(a); *see also* Jeffrey M. Gaba, *Generally Illegal: NPDES General Permits under the Clean Water Act*, 31 HARV. ENVTL. L. REV. 409 (2007).

25. Natural Res. Def. Council, Inc. v. Costle, 568 F.2d 1369, 1382–83 (D.C. Cir. 1977).

Congress explicitly excluding agricultural waste as point-source pollution for the purposes of the NPDES wastewater requirements,

> The term "point source" means "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. *This term does not include agricultural storm water discharges and return flows from irrigated agriculture*."[26]

Congress amended the CWA again in 1987 to expand the exemption to also cover farms' storm water runoff.[27]

The point/nonpoint source distinction favors farms in other parts of the CWA, as well. Nonpoint sources such as farmlands or roads are notoriously difficult to regulate, as the pollution they generate tends to be diffuse and difficult to measure (until, of course, it collects in waterways or aquifers). The Act attempted to cope with this problem by punting the burden of regulation to the states. Chapter 208, for example, instructs states to identify "impaired" bodies of water and the Total Maximum Daily Load (TMDL), or level of further pollution each can tolerate while also meeting water quality standards, of each.[28] TMDLs are quality-based, not effluent-based, standards, so meeting them requires at least a consideration of nonpoint source water pollution. Though the EPA has approval authority over states' TMDL compliance plans, it has generally given them wide discretion in choosing how to meet their TMDL standards.[29] Rural states that are heavily dependent on agriculture have thus been free to leave farm waste unregulated, even though to

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26. 33 U.S.C. § 1362(14) (2012) (emphasis added). The Sixth Circuit found in *Nat'l Cotton Council of Am. v. Envtl. Prot. Agency*, 553 F.3d 927 (6th Cir. 2009), that despite this statutory exclusion, pesticide application qualifies as point source pollution, and in 2011 the EPA finalized a rule to require NPDES permits for many pesticides. The new rule, however, leaves *agricultural* pesticide use exempt from permitting requirements. *See* Final National Pollutant Discharge Elimination System (NPDES) Pesticide General Permit for Point Source Discharges From the Application of Pesticides, 76 Fed. Reg. 68,750 (Nov. 7, 2011).

27. Water Quality Act of 1987, Pub. L. No. 100-4, § 401, 101 Stat. 7, 65–66 (1987) (codified as amended at 33 U.S.C. § 1342(l)(1)).

28. 33 U.S.C. § 1251(g) (2012).

29. *See id.* § 1313(d).

regulate it would often represent lower marginal costs of pollution reduction.[30]

This decentralized approach to water quality regulation has created a haphazard regime that frustrates the general intent of the CWA. Though there are admittedly practical challenges to the regulation of nonpoint source farm pollution, large-scale agriculture is concentrated within relatively few states.[31] The geographically concentrated political power of the agricultural industry can chill state governments' incentives to impose tighter environmental restrictions. In essence, farmers have the ability to pollute public waterways and may do so with the oversight of local agencies predisposed to defer to their political and economic influence. In practice, the CWA's "point-source polluter" exemption is a *de jure* entitlement to pollute, whereas any other industry must pay dearly for the same privilege. And the environmental degradation caused by the nonpoint source exemption for farmers is far from incidental—the EPA admits that this source of water pollution is responsible for forty percent of the pollution in the navigable waters of the United States,[32] and agriculture is the single most responsible sector.[33]

Perversely, a host of federal programs tacitly acknowledge this right and seek to induce a modicum of environmentally-conscious behavior by offering farmers various economic incentives to mitigate some of the degradation caused by conventional agriculture. Certain provisions of the CWA seem to suggest that the Department of

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30. Ruhl, *supra* note 7, at 303–04.

31. For example, in 2004, over half the United States' agricultural yields came from only ten states. In descending order of yields, these states are: California, Iowa, Texas, Illinois, Nebraska, Minnesota, Kansas, North Carolina, Wisconsin, and Indiana. *Table 20—States Ranked by Level and Growth of Farm Output*, U.S. DEP'T OF AGRIC. ECON. RESEARCH SERV. (May 5, 2010), http://www.ers.usda.gov/datafiles/Agricultural_Productivity_in_the_US/State_Ranking_Tables_/table20.xls. By way of comparison, those same states together contain less than thirty-five percent of the country's population.

32. *Nonpoint Source Pollution: The Nation's Largest Water Quality Problem*, U.S. ENVTL. PROT. AGENCY, http://water.epa.gov/polwaste/nps/outreach/point1.cfm (last updated Aug. 22, 2012).

33. U.S. ENVTL. PROT. AGENCY, NATIONAL WATER QUALITY INVENTORY: REPORT TO CONGRESS, 2004 REPORTING CYCLE: FINDINGS 12 (2009), *available at* http://water.epa.gov/lawsregs/guidance/cwa/305b/upload/2009_05_20_305b_2004report_report2004pt3.pdf.

Agriculture may best deal with the issue of nutrient run-off by contracting with nonpoint source polluters to forsake their entitlement to pollute:

> The Secretary of Agriculture, with the concurrence of the Administrator, and acting through the Soil Conservation Service and such other agencies of the Department of Agriculture as the Secretary may designate, is authorized and directed to establish and administer a program to enter into contracts, subject to such amounts as are provided in advance by appropriation acts, of not less than five years nor more than ten years with owners and operators having control of rural land for the purpose of installing and maintaining measures incorporating best management practices to control nonpoint source pollution for improved water quality in those States or areas for which the Administrator has approved a plan under subsection (b) of this section . . . .[34]

A host of USDA programs seek to convince, cajole, or bribe conventional farmers to adopt agricultural practices that would alleviate the problem of nutrient runoff. For example, subsidies are available for farmers who plant buffer strips strategically placed to catch pesticides and nutrients before it can run off into navigable waterways.[35] The Agricultural Water Enhancement Program provides financial and technical assistance to farmers who implement water quality enhancing agricultural practices.[36] The USDA also offers grants for conventional farmers to learn nutrient timing techniques that sync soil fertilization to within periods of typically dry

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34. 33 U.S.C. § 1288(j) (2012).

35. Farmers that plant buffer strips increase their eligibility for USDA incentives through the Conservation Stewardship Program. 7 C.F.R. pt. 1470 (2011); *see also* NAT'L SUSTAINABLE AGRIC. COAL., FARMERS' GUIDE TO THE CONSERVATION STEWARDSHIP PROGRAM 11 (2011), http://sustainableagriculture.net/wp-content/uploads/2011/09/NSAC-Farmers-Guide-to-CSP-2011.pdf.

36. The Agricultural Water Enhancement Program is a subprogram within USDA's Environmental Quality Incentives Program (EQIP). *See* 7 C.F.R. § 1466.9.

weather.[37] All of these costly programs in essence treat agricultural pollution as a right that must be repurchased from the farmer, again at public expense.

Because the CWA cannot compel good farm stewardship, other organs of the federal government are left to incentivize individual instances of good behavior from agricultural producers. In this regulatory regime, the public can either swim, drink, and recreate in the polluted effluvia created by nonpoint source agricultural pollution, or pay a ransom to mitigate a fraction of this pollution through special payment programs.

### *B. Clean Air Act*

Conventional farms release high concentrations of airborne pesticides, ozone, and particulate matter into the air. Ranked by ambient air quality, four of the nation's bottom five cities are in agricultural, not urban, communities.[38] But the CAA lacks the scope to effectively regulate these emissions. The CAA is designed primarily to address large stationary sources of air pollution, such as electricity generating facilities or industrial manufacturing plants, which produce more air pollution than most individual farms. Though their aggregate discharges are significant, most farms on their own do not qualify as "major sources" of air pollutants, and thereby escape the CAA's rigid technology-based command-and-control regulatory programs.[39] Instead, many of the noxious and

37. *See id.* § 1466.

38. *See Most Polluted Cities*, STATE OF THE AIR, AM. LUNG ASS'N, http://www.stateoftheair.org/2012/city-rankings/most-polluted-cities.html (last visited Jan. 19, 2014). The American Lung Association ranks cities in three categories; ozone, year round particle pollution, and short-term particle pollution. Agricultural communities comprise four out of the five bottom cities in each category.

39. 42 U.S.C. § 7412(a)(1) (2012) defines a "major source" of air pollution as any source emitting ten tons or more of a single regulated pollutant, or twenty-five tons or more of a combination of such pollutants. Most farms do not meet this threshold, but some do, particularly animal feeding operations and dairies. The EPA attempted in late 2001 to grant a special waiver to California farms that exceeded the CAA's emissions threshold, but revoked the order in the face of litigation from environmental justice groups after just a few months. *See* Settlement Agreement, Ass'n of Irritated Residents v. Envtl. Prot. Agency, No. 02-70160 (9th Cir. 2002), *available at* http://www.epa.gov/region9/air/ca/titlevsettlement0502.pdf.

malodorous airborne pollutants farms emit are left to case-by-case adjudications under local zoning and nuisance laws.[40]

Farms (particularly livestock operations) also generate tremendous amounts of greenhouse gases, together producing from eighteen percent[41] to as much as fifty-one percent of all anthropogenic greenhouse gas emissions.[42] This high figure is particularly significant in light of record-breaking (and rising) average global temperatures and the landmark case *Massachusetts v. EPA*, in which the court officially deemed greenhouse gases a "pollutant" under the CAA and ordered the EPA to begin regulating them.[43] In its ensuing rulemakings, however, the EPA has stuck to the CAA's original focus on regulating large facilities, and in a 2010 "tailoring rule" officially exempted most agricultural operations from requiring emissions permits.[44]

### *C. Comprehensive Environmental Response, Compensation and Liability Act*

CERCLA[45] is a robust statute that shifts the costs of remediating contaminated land onto its owners. Its primary mechanism is rather harsh: it imposes strict, joint, and retroactive (and expensive) liability on all of a site's current and past owners and lessees, including those who may have been otherwise innocent of any contaminating activities.[46] CERCLA section 102 identifies a wide range of hazardous substances, including many commonly used on farms, that when present in the soil may trigger a mandatory cleanup.[47] The statute provides very few options for the owner of a contaminated

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40. *See* Warren A. Braunig, Note, *Reflexive Law Solutions for Factory Farm Pollution*, 80 N.Y.U. L. REV. 1505, 1516 (2005).

41. LIVESTOCK, ENV'T & DEV., U.N. FOOD & AGRIC. ORG., LIVESTOCK'S LONG SHADOW 112 (2006), ftp://ftp.fao.org/docrep/fao/010/a0701e/a0701e.pdf.

42. Robert Goodland & Jeff Anhang, *Livestock and Climate Change*, WORLD WATCH, Nov.–Dec. 2009, at 10, 11; *see also* Gonzalez, *supra* note 20, at 512.

43. *See* Massachusetts v. Envtl. Prot. Agency, 549 U.S. 497 (2007).

44. Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule; Final Rule, 75 Fed. Reg. 31,514 (June 3, 2010) (codified at 40 C.F.R pts. 51, 52, 70, 71).

45. 42 U.S.C. §§ 9601–9675 (2012).

46. *Id.* § 9607.

47. *Id.*

site to escape liability, exempting only contamination caused by an act of God, act of war, unrelated third party (the rogue trespassing dumper), and the "application of a pesticide product registered under the Federal Insecticide, Fungicide, and Rodenticide Act."[48]

CERCLA also exempts farms from monitoring and reporting obligations associated with "releases" of hazardous substances into the environment. The statute provides for an extremely broad definition of "release," but explicitly excludes "normal application of fertilizer."[49] Farms, then, can legally use pesticides without informing surrounding communities of the quantity or nature of the substances released.

## II. EXAMPLES OF ENVIRONMENTAL REGULATORY EXEMPTIONS IN PRACTICE—AND THEIR ALTERNATIVE COUNTERPARTS

### *A. Beef*

Conventional beef farms exemplify an industry that benefits from a wide range of environmental law exemptions at various stages along the production process, and also serves to illustrate one nascent attempt at water pollution regulation.

Beef-cattle actually do begin and then spend the majority of their lives on the bucolic range idealized in folk music and agrarian paintings.[50] Cattle typically spend eighteen to twenty-two months maturing on pasture to a weight of approximately six to seven hundred pounds.[51] During this time the average beef cattle produces

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48. *Id.* § 9607(i).

49. *Id.* § 9601(22). The statute defines a release to be any "spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance or pollutant or contaminant)" of a regulated substance. *Id.*

50. Though the development of pastureland often displaces endemic species' habitats. *See* Anthony B. Schutz, *Toward a More Multi-Functional Rural Landscape: Community Approaches to Rural Land Stewardship*, 22 FORDHAM ENVTL. L. REV. 633, 645 (2011).

51. *See* U.S. INT'L TRADE COMM'N, GLOBAL BEEF TRADE: EFFECTS OF ANIMAL HEALTH, SANITARY, FOOD SAFETY, AND OTHER MEASURES ON U.S. BEEF EXPORTS, INVESTIGATION NO. 332-488, at 3-3 (2008), http://www.usitc.gov/publications/332/pub4033.pdf.

up to thirteen tons of manure,[52] which ranchers are generally free to allow to flow into public waterways as "nonpoint source" pollution.[53] Cattle are thereafter concentrated into unnaturally dense populations in order to be "finished" on specially formulated, high calorie diets.[54]

One of the motives for this production cycle is flavor-driven. Since the widespread adoption of modern beef production methods in response to regulatory largesse, consumers have exhibited a higher probability of purchasing and consuming beef that exhibits more fat-tissue "marbling."[55] The USDA's 1997 creation of its highly-recognized three-tiered beef grading system[56] served to formalize and encourage this trend. Beef carcasses are stratified by fat content, and beef with the highest marbling of "Prime" fetch the highest value. There are several factors that may contribute to a carcass achieving a "Prime" rating, such as animal genetics, feed formulation, and age at slaughter, but the easiest way is to first pass the cattle through a feed-lot, also known as a Concentrated Animal Feeding Operation (CAFO).[57]

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52. *See* MIDWEST PLAN SERV., LIVESTOCK WASTE FACILITIES HANDBOOK, MWPS-18, at 2.1 tbl. 2-1 (3rd ed. 1993), *available at* http://animalrangeextension.montana.edu/articles/natresourc/cnmp/other/manure_tabl1.htm.

53. *See* Jullee Kim, *Applying Sustainable Land Use Development Studies to Sustainable Agriculture: Are the Conditions Ripe for a Successful Movement Toward Sustainable Agriculture?*, 78 BROOK. L. REV. 1033, 1043–44 (2013).

54. *See, e.g.*, M.L. Galyean, *Protein Levels in Beef Cattle Finishing Diets: Industry Application, University Research, and Systems Results*, 74 J. ANIM. SCI. 2860–70 (1996).

55. *See* W. J. Platter et al., *Effects of Marbling and Shear Force on Consumers' Willingness to Pay for Beef Strip Loin Steaks*, 83 J. ANIMAL SCI. 890, 895 (2005).

56. LIVESTOCK & SEED DIVISION, U.S. DEP'T OF AGRIC., UNITED STATES STANDARDS FOR GRADES OF CARCASS BEEF (1997), *available at* http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELDEV3002979.

57. *See* M. I. Fernández & B. W. Woodward, *Comparison of Conventional and Organic Beef Production Systems: I. Feedlot Performance and Production Costs*, 61 LIVESTOCK PROD. SCI. 213, 221 (1999) (finding that raising steers in conventional CAFO feeding systems is "the most efficient and fastest way" for them to reach slaughter weight and fat content).

Concentrating livestock populations has a host of legitimate economic rationales.[58] Logistically, it is much easier to co-locate livestock with granaries and feed-milling, conveyors, and the farm equipment which facilitate the distribution of feed. Acreage is conserved, as are veterinary and labor resources.

All of the economic efficiencies created by concentration, however, create new problems of waste-management. Cattle in particular produce prodigious amounts of metabolic waste.[59] Gaseous components of this waste, notably methane and carbon dioxide, go unregulated under the EPA's 2010 Clean Air Act Tailoring Rule.[60] Solid and liquid wastes are too concentrated for easy dispersal, so are instead sequestrated in manmade manure lagoons.[61] These lagoons are periodically drained so that the nutrients contained within them may be mechanically distributed on croplands[62]—which, as "application of fertilizer," need not be disclosed, despite the latent antibiotics, hormones, and synthetic chemicals that may leach from cattle waste into the soil.

Ideally, nutrient management of this sort works as a biological algebra problem—wastes created in a concentrated environment are eventually distributed by deliberate application as fertilizer for various forms of plant-based agriculture. The EPA regulates this balancing act of nutrient management through the CWA—CAFOs do in fact qualify as "point-source" polluters.[63] CAFOs must therefore apply for NPDES permits and develop and implement nutrient

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58. JAMES M. MACDONALD & WILLIAM D. MCBRIDE, U.S. DEP'T OF AGRIC., THE TRANSFORMATION OF U.S. LIVESTOCK AGRICULTURE: SCALE, EFFICIENCY, AND RISKS, EB-43, at 25–26 (2009).

59. For example, one 2004 study found that the average lactating dairy cow produced about 140 pounds of manure per day. W. P. Weiss, *Factors Affecting Manure Excretion by Dairy Cows*, 2004 PROC. CORNELL NUTRITION CONF. 11, 14, http://dairy.osu.edu/resource/feed/canc%20manure%20paper%20for%20web.pdf.

60. Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule; Final Rule, 75 Fed. Reg. 31,514 (June 3, 2010) (codified at 40 C.F.R pts. 51, 52, 70, 71).

61. NATURAL RES. CONSERVATION SERV., U.S. DEP'T OF AGRIC., WASTE TREATMENT LAGOON CONSERVATION PRACTICE STANDARD NO. 359, at 1 (2003).

62. *Id.*; NATURAL RES. CONSERVATION SERV., U.S. DEP'T OF AGRIC., NUTRIENT MANAGEMENT, CONSERVATION PRACTICE STANDARD NO. 590, at 1 (2013), http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046896.pdf

63. 40 C.F.R. pts. 9, 122, 123, 412 (2013).

management plans. Even when functioning "according to plan," sequestration and open-air storage of waste localizes a phalanx of volatile airborne pollutants, including ammonia and hydrogen sulfide. Exempt from CAA regulations, these pollutants escape into the air inhibited only to the extent to the surrounding community's ability to bring a costly, difficult nuisance lawsuit.

Furthermore, the delicate equation can change dramatically as a result of periodic flooding. Any CAFO lagoon in a region susceptible to flooding poses a potential environmental disaster to an entire geographic region. In 1995, an eight-acre manure lagoon at Oceanview Farms in North Carolina burst through its dam and poured twenty-five million gallons of livestock excrement into the New River,[64] killing virtually all aquatic life within seventeen miles of the incident. This is perhaps the most notorious instance of CAFO catastrophe, but it exemplifies the principle that when CAFOs fail, once again the cost of the failure is born by society as a result of the regulatory regime which permitted their existence in the first place.

Beef that is produced and marketed as "grass-fed" obviates the CAFO, and all of its socialized risks, from its production entirely. Grass-fed beef consumers are not motivated by the typical "Prime," "Choice," "Select" triarchy of gradation. Grass-fed beef is by the nature of its production, much leaner than commodity beef, and this has become a selling point of the product rather than a liability.

Grass-fed production has a second-order environmental benefit. Federal guidelines on grass-fed marketing claims limit the amount of grain cattle can receive. According to the Agricultural Marketing Service, a division of the USDA:

> Grass and forage shall be the feed source consumed for the lifetime of the ruminant animal, with the exception of milk consumed prior to weaning. The diet shall be derived solely from forage consisting of grass (annual and perennial), forbs (e.g., legumes, Brassica), browse, or cereal grain crops in the vegetative (pre-grain) state. Animals cannot be

64. Michael Satchell, *Hog Heaven and Hell*, U.S. NEWS & WORLD REP., Jan 22, 1996, at 55.

> fed grain or grain byproducts and must have continuous access to pasture during the growing season.[65]

This production method is therefore independent of commodity grain production, itself a form of production heavily dependent on environmental degradation at the un-accounted for expense of public resources.

### *B. Crops*

American crop farmers used 684 million pounds of pesticides in 2007.[66] Grains are the top culprit, with corn production alone comprising over half of this pesticide usage,[67] but a large percentage of conventionally-produced fruits and vegetables (including over eighty percent of all onions, watermelons, and cucumbers) also receive pesticide treatment.[68] Such heavy pesticide use draws on several regulatory exemptions: it is excluded from CERCLA liability[69] and NPDES permitting requirements,[70] and what little oversight the government exercises under hazardous chemical registration statutes is largely toothless.[71] In addition to the water contamination that results from these ongoing chemical releases, conventional crop farming also contributes to water salinization and

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65. United States Standards for Livestock and Meat Marketing Claims, Grass (Forage) Fed Claim for Ruminant Livestock and the Meat Products Derived From Such Livestock, 72 Fed. Reg. 58,631, 58,637 (Oct. 16, 2007).

66. U.S. DEP'T OF AGRIC., AGRICULTURAL RESOURCES AND ENVIRONMENTAL INDICATORS, 2012, EIB-98, at 21 (Craig Osteen et al. eds., 2012), http://www.ers.usda.gov/media/874175/eib98.pdf. Altogether, these pesticides cost farmers $7.87 billion. *Id.*

67. *Id.* at 21–22.

68. *Agricultural Chemical Use: Corn, Upland Cotton and Potatoes 2010*, NAT'L AGRIC. STATISTICS SERV. 3 (May 25, 2011), http://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Chemical_Use/FieldCropChemicalUseFactSheet06.09.11.pdf.

69. 42 U.S.C. § 9607(i) (2012).

70. 33 U.S.C. § 1362(14) (2012).

71. The Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. §§ 136–136y (2012), and the Toxic Substances Control Act, 15 U.S.C. §§ 2601–2629 (2012), require pesticides to be registered but do little to restrict the amount or method of their application. *See* Ruhl, *supra* note 7, at 309–12.

aquifer depletion, soil erosion, nitrous oxide emissions, and widespread habitat destruction and degradation.[72]

Alternative agricultural methods (such as urban farming, polycultural techniques such as rotational grazing, and hydroponic or aquaponic production) are examples of economically viable methods of production that do not pollute public water or airways and do not require subsidy by environmental exemption.

Aquaponic production creates complimentary biological relationships between plants and marine livestock, both of commercial value. High-value crops, such as Chinese cabbage, leaf basil, or even roses are provided with the metabolic waste of various aquatic, edible species such as shrimp or tilapia. Ideally, water is added to such a system only to offset losses attributable to evaporation. Any metabolic waste generated by the marine life is recycled into nutrient for plant or vegetative life. It is never pumped out or given over to sewage treatment.[73] Aquaponic production, therefore, creates an entirely closed system that achieves economy without degrading public resources such as waterways.

Urban farms are subject to unique concerns that encourage more environmentally sound food production methods. Because many urban farms' underlying soil may be contaminated—or, in the case of rooftop farms, non-existent—they have increased incentive to build raised beds or closed-loop irrigation systems that maximize nutrient retention. Such a closed-loop system retains the bad as well as the good, so it also discourages the use of synthetic chemicals that would bioaccumulate in crops.

The economics of urban agriculture favor intensive vegetable production, which further decreases demand for synthetic production inputs. Due to space constraints, it is infeasible to grow commoditized crops on urban farms, which in order to remain economically viable tend instead to produce vegetables that can be grown quickly and have high dollar values. Vegetable farming, especially the diversified production common among urban farms, is

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72. *See* Gonzalez, *supra* note 20, at 495–96; Ruhl, *supra* note 7, at 274–85.

73. *See generally* Andreas Graber & Ranka Junge, *Aquaponic Systems: Nutrient Recycling from Fish Wastewater by Vegetable Production*, 246 DESALINATION 147 (2009).

naturally less reliant on pesticides and fertilizers—its largest input is labor.[74]

## III. CONCLUSION: ALIGNING LAWS, MARKETS, AND GOOD ENVIRONMENTAL SENSE

Despite the legal and economic privileges enjoyed by conventional agriculture, alternative agriculture has grown from a boutique microindustry to a major food production subsector over the last twenty years. Wal-Mart's foray into alternatively-sourced food exemplifies the resiliency and sophistication of the market. The fact that Wal-Mart has an organic program at all is emblematic of alternative agriculture's deep penetration into mainstream public consciousness. From 2006 to 2007, Wal-Mart rolled out several programs to procure more organic and locally-sourced food, becoming one of the nation's largest retailers of food produced via ostensibly alternative means.[75] Soon thereafter a number of Wal-Mart's "organic" milk suppliers suffered a series of embarrassing regulatory sanctions and decertifications stemming from high-volume practices that closely mimicked those of conventional milk production.[76] Rather than tolerate what it increasingly perceived as "greenwash,"[77] consumers policed their expectations by abandoning Wal-Mart's alternative food offerings, and now it controls the smallest proportion of organic food sales than any other major grocery chain.[78]

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74. GARY LUCIER ET AL., U.S. DEP'T OF AGRIC. ECON. RESEARCH SERV., FRUIT AND VEGETABLE BACKGROUNDER NO. VGS-313-01, at 27 (2006), http://webarchives.cdlib.org/sw15d8pg7m/http://ers.usda.gov/publications/VGS/apr06/vgs31301/vgs31301.pdf.

75. Scarborough Research, *When It Comes to Organic Food, West Is the Best*, PR NEWSWIRE (Oct. 10, 2007), http://www.prnewswire.com/news-releases/when-it-comes-to-organic-food-the-west-is-the-best-58487687.html.

76. Stacy Mitchell, *Eaters, Beware: Walmart Is Taking Over Our Food System*, GRIST.ORG (Dec. 30, 2011, 1:55 AM), http://grist.org/food/2011-12-30-eaters-beware-walmart-is-taking-over-our-food-system.

77. Danielle Kurtzleben, *Walmart Struggles to Overcome Environmental Criticism*, U.S. NEWS & WORLD REP. (Apr. 20, 2011), http://www.usnews.com/news/articles/2012/04/20/walmart-struggles-to-overcome-environmental-criticism.

78. Mitchell, *supra* note 76.

While the alternative food sector thrives with the support of its consumer loyalty and market cache, it exists in the first place because of the creativity and values of its producers. Through companion planting, irrigation flowback recycling, rotational grazing, and a host of other techniques that blend traditional farming methods with modern technologies, alternative food farmers have shown a remarkable aptitude for innovation. These techniques often yield environmental benefits in tandem with economic advantages, strengthening the alternative agriculture "brand" and demonstrating incentives for further creativity and invention.[79]

This is not to imply that conventional agriculture has been stagnant with respect to innovation. Recent inventions in seed hybridization, genetic engineering, and development of new chemical fertilizers and pesticides have been very successful in raising crop yields among conventional monocultural crops such as corn and rice.[80] But these innovations continue to be geared toward production of tonnage at the exclusion of other objectives. Crop commodification and federal programs such as artificially inflated demand for corn ethanol make a conventional farm's earnings nearly entirely contingent upon the raw quantity it produces. So as farms' yields have increased over the last twenty years, so too has average net farm income (albeit unevenly), particularly among large monocultural farms.[81]

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79. *See, e.g.*, Mark Lubell, Vicken Hillis, & Matthew Hoffman, *Innovation, Cooperation, and the Perceived Benefits and Costs of Sustainable Agriculture Practices*, 41 SOCIOLOGIA RURALIS 40 (2001), http://www.ecologyandsociety.org/vol16/iss4/art23 (finding that innovations in sustainable viticulture tended to yield both economic and environmental benefits).

80. *See* Pramod K. Agrawal & Sherry R. Jacob, Technologies for Increased Crop Yield, Address at the International Seed Testing Association 2010 Conference (June 16, 2010), https://www.seedtest.org/upload/cms/user/ISTA-June16-1040-Sympsession1-Keynote-Agrawal.pdf (summarizing conventional technological inputs and increased crop yields).

81. *Median Farm Household Income Up in 2011 and Forecast Higher in 2012*, U.S. DEP'T OF AGRIC. ECON. RES. SERV., http://www.ers.usda.gov/data-products/chart-gallery/detail.aspx?chartId=31715#.UxUYVha_lUQ (last updated Sept. 17, 2012); *As in Previous Drought Years, Net Farm Income in 2012 Is Expected to Be Fairly Stable*, U.S. DEP'T OF AGRIC. ECON. RES. SERV., http://www.ers.usda.gov/topics/farm-economy/farm-sector-income-finances/highlights-from-the-2012-farm-income-forecast.aspx (last updated Aug. 29, 2012).

But where conventional agriculture has been successful in maintaining profitability, it has ignored other bottom lines. As evidenced by its stalwart (and remarkably successful) opposition to tighter environmental regulations, conventional agriculture has been transparent in its systematic disregard of environmental health. Public health is also left by the wayside. When over one-third of American adults are obese,[82] the purpose of squeezing ever higher yields of feed crops like corn and soy out of a single acre of farmland is certainly not to feed the hungry. While the conventional agricultural sector has tremendous potential for innovation, it lacks the incentive to innovate in service of environmental or public health.

A more symmetrical legal regime could provide these incentives. By tightening environmental restrictions on conventional agriculture, lawmakers could both realign farms' economic priorities and begin to level the field of competition between conventional and alternative food producers. Bringing conventional agriculture's scientific and financial resources (and its emphasis on profitability) to bear on environmentally sound food production methods could also help address alternative agriculture's most persistent bugbear: cost.

The CAA amendments of 1990 present an apt illustration of corporate sector innovation in response to environmental regulation. The amendments, authored in large part by Senator John McCain (R-AZ), put in place a cap-and-trade regime governing sulfur dioxide ($SO_2$) emissions from coal-fired power plants.[83] Power plants were given a finite number of allowances to emit $SO_2$, which they could trade with each other to meet a gradually decreasing statutorily imposed cap on total national $SO_2$ emissions.[84] Generators were thus given the choice of either buying allowances to cover their $SO_2$ emissions, or cutting their emissions and selling their leftover allowances to other generators.[85]

Industry objected stridently in the lead up to the amendments' passage, but once they took effect, the results were swift: recognizing that buying emissions allowances was not a sustainable long-term

82. CYNTHIA L. OGDEN ET AL., PREVALENCE OF OBESITY IN THE UNITED STATES, 2009–2010, CTR. FOR DISEASE CONTROL & PREVENTION 1 (NCHS Data Brief No. 82, Jan. 2012), http://www.cdc.gov/nchs/data/databriefs/db82.pdf.

83. Pub. L. 101-549 § 403 (1990) (codified at 42 U.S.C.A. § 7651(b)).

84. *Id.*

85. 42 U.S.C.A. §§ 7651–7651(o) (2006).

strategy, $SO_2$ generators began to explore new ways of reducing their emissions. Many of the technological and methodological advances that power plants developed cut their operating costs as well as their $SO_2$ emissions—polluting less also turned out to be economically efficient.[86] $SO_2$ emissions dropped precipitously, well exceeding the reductions mandated by the statutory cap, and at a cost to industry far below projections.[87]

Agricultural pollution does not lend itself to such an elegant solution as cap-and-trade.[88] The government's aversion to regulating farms has only been partly political: with their diverse range of localized environmental impacts that span several media, farms represent a much harder nut to crack from a policy standpoint than do coal-fired power plants.[89] But on the other hand, unlike pre-1990 electricity generators, alternative agriculture has consistently demonstrated its aptitude for environmentally beneficial innovation—and has done so largely without the aid of governmental incentives. If lawmakers and regulators cannot solve the challenges of agricultural pollution, they can at least help to further empower the sector to find its own solutions.

The wide array of legal loopholes in place to benefit conventional agriculture presents no shortage of avenues by which to push the sector toward more sustainable methods. Not all would require legislative action or even new rulemakings. For example, the EPA already has oversight and approval authority over states' biennial TMDL compliance plans.[90] EPA would thus be within its power to issue, and enforce, agency guidance requiring TMDL plans to meaningfully address "nonpoint source" water pollution from agricultural sources. A more ambitious strategy requiring additional

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86. Dallas Butraw, *Innovation Under the Tradeable Sulphur Dioxide Emissions Permits Program in the US Electricity Sector*, OECD WORKSHOP ON INNOVATION AND THE ENV'T (Resources for the Future Discussion Paper 00-38, 2000), http://www.rff.org/RFF/Documents/RFF-DP-00-38.pdf.

87. *Id.* at 12–15, 24.

88. J.B. Ruhl, however, outlines a potential framework to allow water pollution "trading" among farms. Ruhl, *supra* note 7, at 344–45.

89. *See* U.N. ENV'T PROGRAMME, MANUAL ON COMPLIANCE WITH AND ENFORCEMENT OF MULTILATERAL ENVIRONMENTAL AGREEMENTS 344 (2006) (noting that "[t]oo large a regulated community can make it impossible to implement and enforce requirements.").

90. 33 U.S.C. § 1313(d) (2012).

statutory authority would remove farms' exclusion from the definition of "point source" altogether, bringing conventional agriculture into the NPDES permitting system. Congress could also end the statutory exemptions that license farms' unmonitored application of fertilizers, or unchecked emissions of greenhouse gases. Of course, if Congress were to commit to agriculture regulation reform, it is empowered to employ less conventional means as well: in addition to revoking conventional agriculture's exemptions from traditional command-and-control regulation, for example, lawmakers could also impose emissions taxes or reporting requirements[91] to provide farms with economic incentives to cut pollution.

At least in the short term, any tightening of environmental regulations on conventional farms will almost certainly raise food prices, which have already been on the rise in recent years.[92] Lawmakers could soften this blow by pairing stricter regulations with cuts in the federal programs that prop up food prices, such as feed crop subsidies, but are still likely to pay a considerable political cost before consumers realize any tangible benefits. But this calculation becomes less one-sided as conventional agriculture's environmental harms—and the public's awareness of them—continue to build. The trends that have brought alternative agriculture from the margins to the mainstream show no sign of abating. The market has led the way—it is now the law's responsibility to catch up.

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91. The Emergency Planning and Community Right to Know Act, 42 U.S.C. §§ 11001–11050, requires most hazardous substance generators to record and report their annual releases, which are published in an annual Toxic Release Inventory. In 2008, EPA implemented a rule exempting livestock farms from EPCRA reporting requirements. 73 Fed. Reg. 76948-01 (Dec. 18, 2008).

92. *Changes in Food Price Indexes, 2010 through 2014*, U.S. DEP'T OF AGRIC. ECON. RES. SERV. (Dec. 23, 2013), http://www.ers.usda.gov/datafiles/Food_Price_Outlook/Food_Price_Outlook/PPIforecast.xls.