



# PUBLIC RESEARCH, PRIVATE GAIN

**CORPORATE INFLUENCE OVER UNIVERSITY AGRICULTURAL RESEARCH**

## About Food & Water Watch

Food & Water Watch works to ensure the food, water and fish we consume is safe, accessible and sustainable. So we can all enjoy and trust in what we eat and drink, we help people take charge of where their food comes from, keep clean, affordable, public tap water flowing freely to our homes, protect the environmental quality of oceans, force government to do its job protecting citizens, and educate about the importance of keeping shared resources under public control.

### **Food & Water Watch**

1616 P St. NW, Suite 300  
Washington, DC 20036  
tel: (202) 683-2500  
fax: (202) 683-2501  
[info@fwwatch.org](mailto:info@fwwatch.org)

### **California Office**

25 Stillman Street, Suite 200  
San Francisco, CA 94107  
tel: (415) 293-9900  
fax: (415) 293-8394  
[info-ca@fwwatch.org](mailto:info-ca@fwwatch.org)

[www.foodandwaterwatch.org](http://www.foodandwaterwatch.org)



Copyright © April 2012 by Food & Water Watch.  
All rights reserved.

This report can be viewed or downloaded at  
[www.foodandwaterwatch.org](http://www.foodandwaterwatch.org).



## Executive Summary

Since their creation in 1862, land-grant universities have revolutionized American agriculture. These public institutions delivered better seeds, new plant varieties and advanced tools to farmers who deployed scientific breakthroughs to increase agricultural productivity. They pioneered vitally important research on environmental stewardship, such as soil conservation. Land-grant universities partnered with farmers in research efforts, advancing rural livelihoods and improving the safety and abundance of food for consumers.

These innovations were spurred almost entirely with public investments from state and federal governments. Starting in the 1980s, however, federal policies including the Bayh-Dole Act of 1982 began encouraging land-grant schools to partner with the private sector on agricultural research. A key goal was to develop agricultural products such as seeds, which were sold to farmers under an increasingly aggressive patent regime.<sup>1</sup>

By 2010, private donations provided nearly a quarter of the funding for agricultural research at land-grant universities. This funding steers land-grant research toward the goals of industry. It also discourages independent research that might be critical of the

industrial model of agriculture and diverts public research capacity away from important issues such as rural economies, environmental quality and the public health implications of agriculture.

Private-sector funding not only corrupts the public research mission of land-grant universities, but also distorts the science that is supposed to help farmers improve their practices and livelihoods. Industry-funded academic research routinely produces favorable results for industry sponsors. Because policy-makers and regulators frequently voice their need for good science in decision-making, industry-funded academic research influences the rules that govern their business operations.

Congress should restore the public agricultural research mission at land-grant schools. The Farm Bill can reinvigorate investment in agricultural research and fund research projects that promote the public interest. Reprioritizing research at land-grant universities may not remedy all of the problems in the food system, but it could play a vital role in developing the science and solutions needed to create a viable alternative to our industrialized, consolidated food system.





## Introduction

Public investment in agricultural research through land-grant universities and the U.S. Department of Agriculture (USDA) has provided significant benefits to U.S. farmers, consumers and food companies. This research has produced new seeds, plant varieties, farming practices, conservation methods and food processing techniques – all of which were broadly shared with the public.

The federal government created land-grant universities in 1862 by deeding tracts of land to every state to pursue agricultural research to improve American agriculture, “elevating it to that higher level where it may fearlessly invoke comparison with the most advanced standards of the world.”<sup>2</sup> Public investments in agricultural research propelled decades of agricultural improvements. Yields and production increased dramatically, and every public dollar invested in agricultural research returned an average of \$10 in benefits.<sup>3</sup> Public research brought about the domestication of the blueberry, early varieties of high-yield hybrid corn and widely used tools to combat soil erosion.<sup>4</sup> Well into the 20<sup>th</sup> century, seed-breeding programs at land-grant universities were responsible for developing almost all new seed and plant varieties.<sup>5</sup>

The land-grant university system includes some of the largest state universities – including the University of California system, Pennsylvania State University and Texas Agricultural & Mechanical University. With 109 locations and a presence in every state and territory, the land-grant university system has both the capacity and the mission to respond to the research needs of all sectors of agriculture.<sup>6</sup> The USDA distributes the scientific breakthroughs from these land-grant universities through its extension

system, in which county extension agents share research with farmers and communicate farmers’ research needs with the universities.

But over recent decades, the public mission of land-grant universities has been compromised. As public funding has stalled, land-grant universities have turned to agribusiness to fill the void, dramatically shifting the direction of public agricultural research. Land-grant universities today depend on industry to underwrite research grants, endow faculty chairs, sponsor departments and finance the construction

### **Agricultural Extension: Shrinking Support for Sharing Knowledge with Farmers**

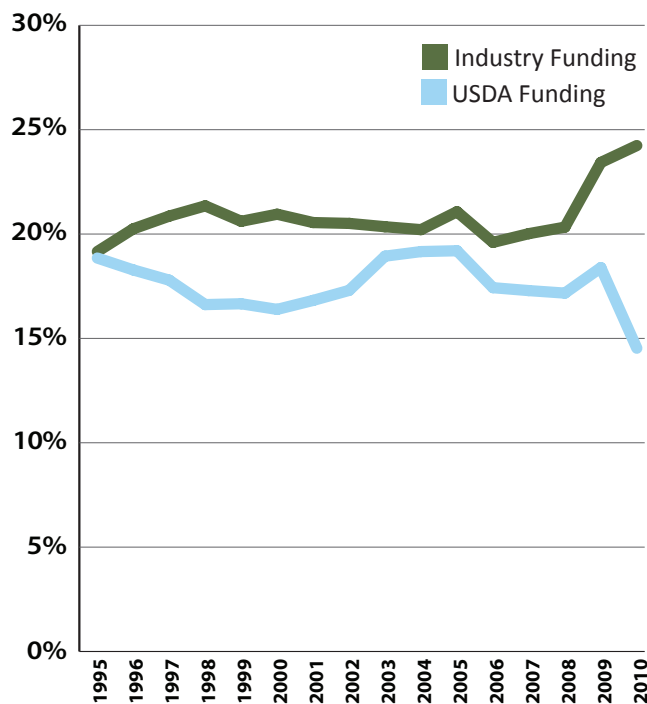
Diminishing USDA support has also undercut agricultural extension services affiliated with land-grant universities that deliver research findings to farmers through outreach, trainings and educational materials.<sup>7</sup> Real USDA funding of extension services decreased by around 12 percent between 2001 and 2010 (in inflation-adjusted 2010 dollars), diminishing the ability of extension to provide farmers with independent, research-based advice about best agricultural practices.<sup>8</sup> An extension officer at a 2011 agricultural forum described the impartial role of extension to tell farmers “that this corn is better than this corn” without “any interest other than putting the right product in front of the hands of the American farmer.”<sup>9</sup> Lacking this independent voice, farmers are now turning to agribusiness for advice on the best products and practices.<sup>10</sup>

of new buildings. By the early 1990s, industry funding surpassed USDA funding of agricultural research at land-grant universities.<sup>11</sup> In 2009, corporations, trade associations and foundations invested \$822 million in agricultural research at land-grant schools, compared to only \$645 million from the USDA (in inflation-adjusted 2010 dollars).<sup>12</sup>

Although corporate donations provide needed funding for land-grant schools, they can also create potential, perceived or actual conflicts of interest for land-grant research programs.

Some research programs nakedly advance the aims of donors, like the University of California department of nutrition's research into the benefits of eating chocolate, funded by the candy manufacturer Mars.<sup>13</sup> Similarly, industry-funded research is more likely to deliver favorable research results for donors than independent research. Despite this demonstrated bias, the financial relationships between researchers and their industry sponsors are not always revealed in published scientific papers.

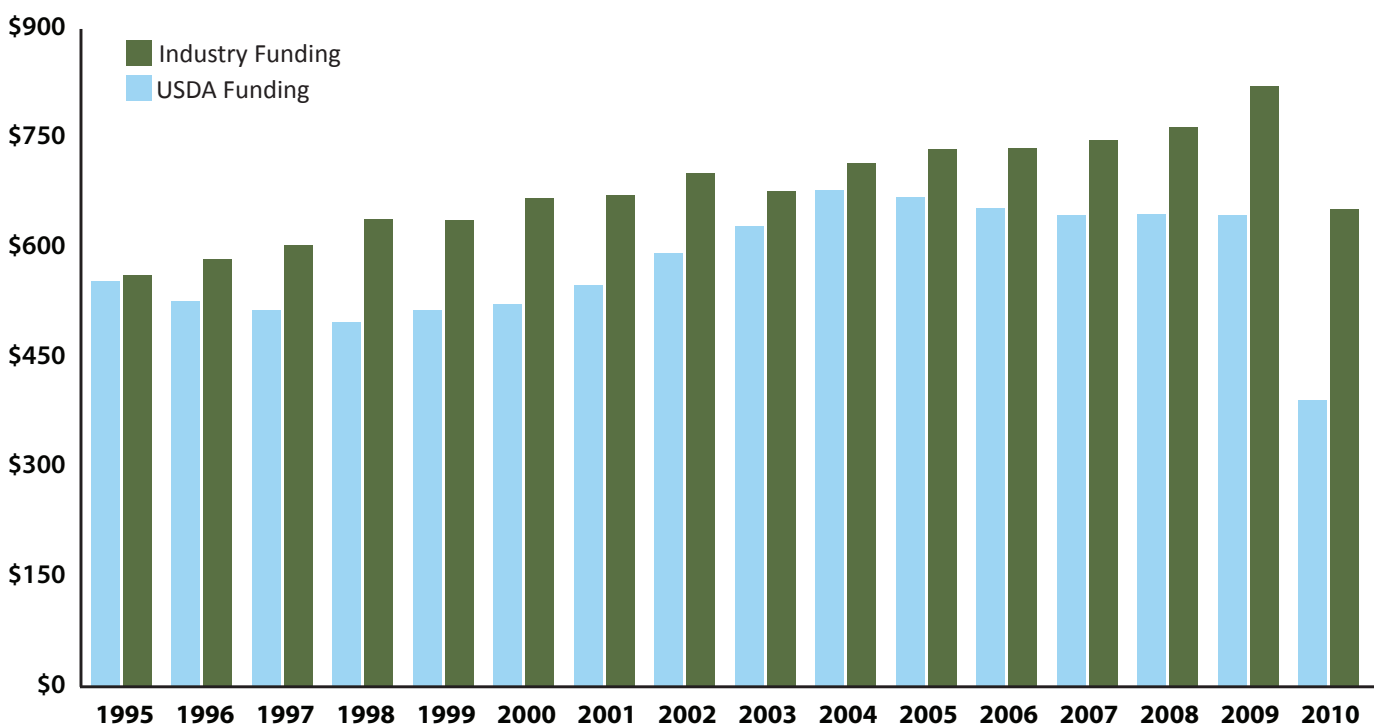
## Share of Total Land Grant Agricultural Research Funding



SOURCE: USDA CRIS

*Other government money — from states and non-USDA federal sources like the National Institutes of Health — comprises the remaining research funding. (See Endnote 29.)*

## Funding of Land Grant Agricultural Research (IN MILLIONS OF 2010 DOLLARS)



SOURCE: USDA CRIS

## Examples of Corporate Representatives on University Boards

Corporate Representatives	Department and School	Academic Role
Monsanto, Chiquita, Dole, United Fresh	Center for Produce Safety, University of California at Davis	Advisory Board <sup>14</sup>
Dole, Sysco, Earthbound Farms	Center for Produce Safety, University of California at Davis	Technical Committee <sup>15</sup>
Taylor Farms, Produce Marketing Association	Center for Produce Safety, University of California at Davis	Executive Committee <sup>16</sup>
Tyson, Walmart	Sam W. Walton Business College, University of Arkansas	Advisory Board <sup>17</sup>
Novartis (now Syngenta)	University of California	Research Board (1998–2003) <sup>18</sup>
Cargill, ConAgra, General Mills, Unilever, McDonald's, Coca-Cola	Center for Food Safety, University of Georgia	Board of Advisors <sup>19</sup>
Monsanto, Pioneer Hi-Bred	Plant Sciences Institute, Iowa State University	Board of Advisors <sup>20</sup>
Iowa Farm Bureau, Summit Group	Iowa State University	University Board of Regents <sup>21</sup>
Dole Food	University of California	University of California Regents <sup>22</sup>
Kraft Foods	Cornell University	Cornell University Board of Trustees <sup>23</sup>

Industry-sponsored research effectively converts land-grant universities into corporate contractors, diverting their research capacity away from projects that serve the public good. Agribusinesses use sponsored land-grant research – with its imprimatur of academic objectivity – to convince regulators of the safety or efficacy of new crops or food products.

Growing dependence on corporate funding discourages academics from pursuing research that might challenge the business practices of their funders or that irks money-hungry administrators who grant tenure to professors. A 2005 University of Wisconsin survey of land-grant agricultural scientists found that the amount of grant and contract money that professors generate has a significant influence over their tenure and salaries.<sup>24</sup> This chilling effect discourages academic research on environmental, public health and food safety risks related to industrial agriculture – and explains the sparse research on alternatives to the dominant agriculture model. Conflict-of-interest policies at public universities and academic journals have failed to address the biasing effect of industry money on science.

Agricultural research priorities can be refocused through the Farm Bill, which reauthorizes farm policy every five years, including providing much of USDA's research funding to land-grant universities. The next Farm Bill's Research Title should replenish USDA's research coffers and direct funding toward research that promotes the public good, not private interests.

This report details the trends in agricultural research and the corrosive impact of industry funding on public research. Food & Water Watch analyzed USDA databases and reports, grant records from land-grant universities, academic journal articles, court filings, corporate press releases, media coverage and other public documents. (For a more detailed methodology, see page 16.)

### From Public to Private: Funding Agricultural Research at Land-grant Universities

U.S. agricultural research is performed mainly by three entities: the federal government, largely through the USDA; academia, almost entirely through land-grant universities; and the private sector.

Since the 1970s, private-sector spending on agricultural research has skyrocketed, outstripping total public-sector spending. Between 1970 and 2006, the latest years for which data are available, total private agricultural research expenditures (both in-house research and donations to land-grants) nearly tripled from \$2.6 billion to \$7.4 billion, in inflation-adjusted 2010 dollars.<sup>25</sup> Over the same period, total public funding – going to land-grant universities and the USDA – grew less quickly, rising from \$2.9 billion to \$5.7 billion.<sup>26</sup>

Land-grant university funding has mirrored the total expenditures on agricultural research. Federal funding of land-grant schools has stagnated, while industry

donations have grown steadily. Over the past 15 years, industry funding of land-grant schools significantly outpaced federal funding. In 1995, private sector and USDA research funding of land-grant universities stood at about \$560 million each (in inflation-adjusted 2010 dollars).<sup>27</sup> But by 2009, private sector funding had soared to \$822 million, compared to \$645 million from USDA.<sup>28</sup> The economic recession curbed research funding significantly, but USDA funding for land-grant schools fell twice as fast as private funding between 2009 and 2010 – dropping 39.3 percent and 20.5 percent, respectively.

State funding for land-grant schools declined as well, leaving the institutions more dependent on corporate money to fund university research.<sup>29</sup>

## Branding the Campus

Agribusiness and food companies exert influence at the highest echelons of the university hierarchy. In addition to directly funding research at land-grant universities, many companies make other generous donations that curry favor with administrators, including laboratory sponsorship, building construction, student fellowships and faculty endowments.

### *Building a Legacy of Corporate Influence*

Corporate donations for buildings give businesses a literal presence on campus. Monsanto's million-

dollar pledge to Iowa State University ensured naming rights to the Monsanto Student Services Wing in the main agriculture building.<sup>40</sup> The University of Missouri houses a Monsanto Auditorium.<sup>41</sup> Monsanto gave \$200,000 to the University of Illinois's college of agriculture to fund the Monsanto Multi-Media Executive Studio, where industry seminars are held.<sup>42</sup> Kroger and ConAgra each have research laboratories named after them at Purdue University's school of food sciences, which advertises other naming opportunities on its Web site.<sup>43</sup> Campus buildings reinforce the company's brand identity, promote goodwill among faculty and students and are a powerful recruiting tool.

### *The Corporate Meddling Department*

Many land-grant university agricultural research programs and departments rely on corporate donations for a sizable portion of their budgets. In addition, agribusiness sponsors fill seats on academic research boards and direct agendas. The University of Georgia's Center for Food Safety offers seats on its board of advisors for \$20,000 to industry sponsors, where they can help direct the center's research efforts.<sup>44</sup> Current advisory board members include Cargill, ConAgra, General Mills, Unilever, McDonald's and Coca-Cola.<sup>45</sup> Purdue University's Food Science Department openly courts industry by allowing donors to influence curricula and direct research

## Examples of Schools, Buildings and Departments Funded by Corporations

Corporate Donor	Land-grant University	Amount	Name of Building/School
Cargill	University of Minnesota	\$10 million	Cargill Plant Genomics Building <sup>30</sup>
Five Rivers Ranch	Colorado State University	\$2.5 million	Feed facility for research on environmental benefits of feedlots <sup>31</sup>
Walmart	University of Arkansas	\$50 million	Sam Walton Business School <sup>32</sup>
Monsanto	Iowa State University	\$1 million	Monsanto Student Services Wing <sup>33</sup>
Monsanto	University of Missouri	Unknown	Monsanto Auditorium and Monsanto Place <sup>34</sup>
Monsanto	University of Illinois	\$200,000	Monsanto Multi-Media Executive Studio <sup>35</sup>
Kroger and ConAgra	Purdue University	Unknown	Kroger Sensory Evaluation Laboratory and ConAgra Foods, Inc. Laboratory <sup>36</sup>
Tyson (includes foundation, corporation and family member donations)	University of Arkansas	Unknown	John W. Tyson Building <sup>37</sup>
Tyson (includes foundation, corporation and family member donations)	University of Arkansas	\$2.5 million	Jean Tyson Child Development Center <sup>38</sup>
Walmart (and Walton Family)	University of Arkansas	Unknown	Bud Walton Basketball Arena <sup>39</sup>



programs.<sup>46</sup> Iowa State University's \$30 million plant sciences institute board includes representatives of Monsanto and Pioneer Hi-Bred.<sup>47</sup> Some departments are especially reliant on corporate donations:

- Purdue University's food science department received 37.9 percent of its research grants, \$1.5 million, from private-sector donors between 2010 and 2011, including Nestlé, BASF and PepsiCo.<sup>48</sup>
- Texas A&M's soil and crop science department received 55.5 percent of its research grant dollars from private-sector donors between 2006 and 2010, a total of \$12.5 million from groups like Cotton Incorporated, Monsanto and Chevron Technology Ventures.<sup>49</sup>
- University of Illinois's crop science department took 44 percent of its grant funding from the private sector, including Monsanto, Syngenta and SmithBucklin & Associates, between 2006 and 2010, amounting to \$18.7 million.<sup>50</sup>
- Iowa State University's agronomy department took \$19.5 million in research grants from private-sector donors between 2006 and 2010,

## Examples of Academic Departments Funded by Private Sector (in surveyed states)<sup>52</sup>

Land-grant University	Academic Years	Private Grants	Share of Dept. Grants	Agribusiness Donors Include...
University of Illinois Crop Sciences	2006–10	\$18.7 million	44 percent	Monsanto, Syngenta, SmithBucklin & Associates
University of Illinois Food Sciences and Human Nutrition	2006–10	\$7.7 million	46 percent	Pfizer, PepsiCo, Nestlé Nutrition
University of Illinois Animal Sciences	2006–10	\$6.2 million	33 percent	Elanco, Pfizer, National Pork Board
University of Missouri Plant Sciences	2007–10	\$16.4 million	42 percent	Phillip Morris, Monsanto, Dow Agrosience, SmithBucklin & Associates
University of Missouri Veterinary Medicine	2004–10	\$6.1 million	63 percent	Iams, Pfizer, American Veterinary Medical Association
Purdue Agronomy	2010–11	\$2.5 million	31 percent	Dow, Deere & Company
Purdue University Food Science	2010–11	\$1.5 million	38 percent	Hinsdale Farms, Nestlé, BASF
University of Florida Large Animal Sciences Clinic	2006–10	\$2.7 million	56 percent	Pfizer, Intervet
University of Florida Small Animal Sciences Clinic	2006–10	\$5.5 million	70 percent	Alcon Research, Mars, Vistakon
University of California Viticulture and Oenology	2006–10	\$5.0 million	49 percent	Nomacorc, American Vineyard Foundation
University of California Plant Sciences	2006–10	\$33.6 million	28 percent	Chevron Technology Ventures, Arcadia Bioscience
University of California Nutrition	2006–10	\$5.0 million	49 percent	Mars, Novo Nordisk
Iowa State University Agronomy	2006–10	\$19.5 million	48 percent	Dow, Monsanto, Iowa Soybean Association
Iowa State University Agricultural & Biosystems Engineering	2006–10	\$9.5 million	44 percent	Deere & Company, Iowa Cattlemen's Association, National Pork Board
Iowa State University Entomology	2006–10	\$3.7 million	52 percent	Syngenta, Bayer
Iowa State University Plant Pathology	2006–10	\$10.7 million	38 percent	United Soybean Board, Dow, Iowa Soybean Association
Texas A&M Institute of Plant Genomics	2006–10	\$1.8 million	46 percent	Cotton Inc., Chevron Technology
Texas A&M Animal Science	2006–10	5.1 million	32 percent	National Cattlemen's Beef Association, National Pork Board, Donald Danforth Plant Science Center
Texas A&M Soil and Crop Sciences	2006–10	\$13.0 million	56 percent	Monsanto, Cotton Inc., Pioneer Hi-Bred



representing close to half of its grant funding. Donors included the Iowa Soybean Association, Dow and Monsanto.<sup>51</sup>

## Chairs & Professors

Many companies will pay handsomely to endow faculty chairs. Monsanto's name is attached to a professorship at the University of Florida<sup>53</sup>; the university requires a \$600,000 donation to endow a professorship.<sup>54</sup> In 2011, Monsanto gave \$500,000 to Iowa State University to fund a soybean breeding faculty chair.<sup>55</sup> Pioneer Hi-Bred funds five endowed Iowa State positions, including the distinguished Chair in Maize Breeding.<sup>56</sup> Monsanto gave \$2.5 million to Texas A&M to endow a chair for plant breeding.<sup>57</sup> Kraft Foods gave \$1 million to the University of Illinois's school of nutrition for a Kraft-named endowed professor, graduate fellowships and undergraduate scholarships.<sup>58</sup>

Many professors are highly dependent on industry for research funding. Nearly half of land-grant agricultural scientists surveyed in 2005 acknowledged to have received research funding from a private company.<sup>59</sup> Texas A&M Animal Science Professor Jeffrey Savell took 100 percent of his research grants from industry groups between 2006 and 2010, more than \$1 million from groups like National Cattlemen's

Beef Association and Swift and Company.<sup>60</sup> Texas A&M Soil and Crop Sciences Professor David Baltensperger took more than \$3 million in research grants – almost all of his grant funding – from Monsanto and Chevron between 2006 and 2010.<sup>61</sup>

University of California Plant Pathology Professor Robert Gilbertson took 89 percent of his nearly \$2 million in research grants from private sector sources between 2006 and 2010, including the Chippewa Valley Bean Company and Seminis Vegetable Seeds.<sup>62</sup> University of California nutrition professor Carl Keen took \$3.9 in private grants between 2006 and 2010, almost all of it from Mars.<sup>63</sup>

In addition to taking industry research grants, some professors supplement their academic salaries with corporate consulting fees. A 2005 survey found that nearly a third of land-grant agricultural scientists reported consulting for private industry.<sup>65</sup> More than 20 University of California, Davis professors have acted as paid consultants for biotech companies, some earning up to \$2,000 per month.<sup>66</sup>

## And Now a Word from Our Sponsors

Farmers, consumers, policymakers and federal regulators depend on land-grant universities as a source of credible, independent research. But land-

## Snapshot of Selected Professors at Iowa State University<sup>64</sup>

Years	Professor	Department	Private Grants	Percentage of Total Funding	Examples of Corporate Donors
2006–10	Kan Wang	Agronomy	\$1.8 million	90.7 percent	Pioneer Hi-Bred, Dow
2006–10	Silvia Cianzio	Agronomy	\$2.6 million	83.9 percent	Iowa Soybean Association, United Soybean Board
2006–10	Stuart Birrell	Agricultural & Biosystems Engineering	\$2.1 million	93.0 percent	Deere & Company, Archer Daniels Midland
2006–10	Gregory Tylka	Plant Pathology	\$1.5 million	97.6 percent	Iowa Soybean Association, Monsanto
2006–10	Antonio Mallarino	Agronomy	\$1.4 million	92.2 percent	Monsanto, Fluid Fertilizer Foundation, Iowa Soybean Association
2006–10	Alison Robertson	Plant Pathology	\$1.2 million	85.3 percent	Syngenta, BASF, Iowa Soybean Association
2006–10	Max Rothschild	Animal Sciences	\$1.3 million	76.5 percent	National Pork Board, Pfizer, Monsanto Fund
2006–10	Leonor Leandro	Plant Pathology	\$1.2 million	99.6 percent	Monsanto, DuPont, Iowa Soybean Association
2006–10	Palle Pedersen	Agronomy	\$1.0 million	94.5 percent	Valent, Monsanto, BASF, Bayer



grant universities' dependence on industry money has corrupted the independence of public science, as academics align their research projects with the ambitions of the private sector. Industry funding also diverts academic resources and attention away from projects that benefit the public, including research that challenges corporate control of food systems.

### ***The “Funder Effect”***

Donors can and do influence the outcomes of research to meet their business needs. More than 15 percent of university scientists acknowledge having “changed the design, methodology or results of a study in response to pressure from a funding source.”<sup>67</sup>

Individual examples of pro-industry research abound. A study supported by the National Soft Drink Association found that soda consumption by school children was not linked to obesity; an Egg Nutrition Center-sponsored study found that frequent egg consumption did not increase blood cholesterol levels.<sup>68</sup> Candy manufacturer Mars donated more than \$15 million to the University of California's Nutrition Department to study things like the nutritional benefits of cocoa.<sup>69</sup> Mars used this research to tout the benefits of eating chocolate.<sup>70</sup>

Industry-funded studies are much more likely to arrive at pro-industry conclusions. A peer-reviewed analysis of dozens of nutrition articles on commonly consumed beverages found that industry-funded

studies were four to eight times more likely to reach favorable conclusions to the sponsors' interests.<sup>71</sup> Another study found that around half of authors of peer-reviewed journal articles about the safety of genetically engineered (GE) foods had an identifiable affiliation with industry.<sup>72</sup> All of these produced favorable results to industry sponsors, while very few acknowledged having received industry funding.<sup>73</sup>

Many scientific journals do not require authors to disclose their source of research funding, despite the well-documented bias that industry funding can introduce.<sup>74</sup> The conflict-of-interest disclosures that do exist vary and can be either weak, unenforced or both.<sup>75</sup>

### ***Corporate Funding Curtails Public Interest Research***

Corporations have successfully discouraged many academics from critically examining their products and practices. In a 2005 survey, land-grant agricultural scientists reported that private-sector funding arrangements restrict open communication among university scientists and create publication delays.<sup>76</sup>

Seed companies have been particularly effective at quashing unfavorable research by exercising their patent rights. Seed licensing agreements can specifically bar research on seeds without the approval of the corporate patent holder.<sup>77</sup> Scientists cannot independently evaluate patented seeds, leaving crucial aspects of GE crops, like yields and food safety, largely unstudied.<sup>78</sup>

When an Ohio State University professor produced research that questioned the biological safety of biotech sunflowers, Dow AgroSciences and Pioneer Hi-Bred blocked her research privileges to their seeds, barring her from conducting additional research.<sup>79</sup> Similarly, when other Pioneer Hi-Bred-funded professors found a new GE corn variety to be deadly to beneficial beetles, the company barred the scientists from publishing their findings.<sup>80</sup> Pioneer Hi-Bred subsequently hired new scientists who produced the necessary results to secure regulatory approval.<sup>81</sup>

Scientists that persist in pursuing critical inquiries into biotech seeds can face reprisals. One university

investigator anonymously told the prestigious journal *Nature* that a Dow AgroScience employee threatened that the company could sue him if he published certain data that cast the company in a bad light.<sup>82</sup> A University of California professor, after reporting that transgenic material from GE crops cross-pollinated native corn varieties in Mexico, faced threats and attacks from scientists, government officials and a public relations firm with ties to industry.<sup>83</sup>

The rising importance of patents and licenses in research can stifle academic freedom and open scientific discourse. University of California, Berkeley scientists funded by Novartis were reluctant to discuss their research and collaborate with others because of Novartis's licensing rights under the grant.<sup>84</sup> One Berkeley scientist noted "the little research that has been undertaken to explore unexpected and possibly harmful aspects of biotech deployment has been construed as intended to undermine Novartis-funded activities."<sup>85</sup>

### **Public Research for Corporate Commercialization**

Corporate donors benefit from land-grant universities by poaching scientific discoveries used to develop new products. Land-grant researchers also act as contractors for food and agribusiness companies to perform product and market testing. The landmark 1980 Bayh-Dole Act pushed universities to take a more entrepreneurial role, generating revenue

through producing patents that the private sector could commercialize.<sup>86</sup> This legislation paved the way for growing industry influence over land-grant research agendas, as schools shifted their research agendas to meet the needs of private-sector partners.

Public universities provided breakthrough research in agricultural biotechnology that fueled the development of Monsanto's signature products, recombinant Bovine Growth Hormone (rBGH) and RoundUp Ready crops.<sup>87</sup> Cornell University scientists invented the first genetic engineering process, but sold it to DuPont in 1990 – essentially privatizing a very valuable asset.<sup>88</sup> The biotech industry's use of university research to develop highly profitable products – often of dubious benefits to farmers and consumers – is at odds with the mission of land-grant universities.

These university-industry partnerships were expected to generate income for cash-strapped schools through licensing and patent earnings. In practice, corporate sponsors have captured most of the gains. Although most land-grant universities have "technology transfer" offices aimed at capitalizing on university inventions, few of these offices generate much money that can be funneled back into research programs.<sup>89</sup>

The University of California, Berkeley-Novartis collaboration exemplifies the conflicts and disappointments of university-industry partnerships. In 1998, the department of plant and microbial biology entered a \$25 million funding agreement with Novartis, then the world's largest agribusiness company (the company's agricultural division is now owned by biotech giant Syngenta).<sup>90</sup>

Novartis received two of the five seats on the department's research committee, allowing it to influence the department's research agenda.<sup>91</sup> The company maintained the right to delay publication of research results and was also awarded licensing options to 30 percent of any innovations the department developed, even those that it didn't fund.<sup>92</sup> The \$25 million yielded little. An external review found that the highly controversial partnership produced "few or no benefits" for either Novartis or the University of California in terms of generating patents, commercial products or income.<sup>93</sup>





Land-grant universities also contract themselves out as *de facto* corporate laboratories, conducting pre-commercial tests and biotech crop field trials.<sup>94</sup> Industry hires land-grant scientists to conduct taste tests to predict consumer response to new foods.<sup>95</sup> In 2010, more than half of the 206 grants at Purdue University's Food Science Department went toward "sensory evaluation research," including multiple contracts with Hinsdale Farms, one of the world's largest corn dog producers.<sup>96</sup>

### **Public Research for Regulatory Approvals**

While policymakers and regulators demand a scientific basis for policy changes and regulatory decisions over agriculture, agribusiness is financing the experiments and funding the scientists. The regulatory approval process requires companies to submit field and laboratory testing data for new food and agricultural products, such as biotech seeds.<sup>97</sup> Land-grant research, paid for by industry, lends credibility to corporate regulatory applications, greasing the wheels for approval of safety of controversial, new products.

The seed industry funds universities to conduct pre-commercial evaluations, such as field-testing

for biotech crops, banned in other countries out of concern about their safety.<sup>98</sup> Almost all the Monsanto grants to the University of Illinois crop science department funded projects like field-testing Monsanto products.<sup>99</sup>

One Cornell professor was a paid Monsanto consultant while also publishing journal articles promoting the benefits of rBGH for dairy farms.<sup>100</sup> His research was used in Monsanto's regulatory submissions to the U.S. Food and Drug Administration.<sup>101</sup> Despite FDA approval, rBGH has not been approved for commercial use in the European Union, Canada, Australia, Japan and New Zealand due to concerns about the drug's impact on animal health.<sup>102</sup>

Conversely, biotech companies prohibit independent research of their patented products, effectively limiting the public's ability to understand risks and preventing scientists from submitting critical comments to federal regulators, a crucial role that public researchers should play in regulatory and policy development.<sup>103</sup> One land-grant professor noted that these restrictions on independent research give companies "the potential to launder the data, the information that is submitted to EPA."<sup>104</sup>

The professor was one of 26 university scientists, most from land-grant universities, who submitted an anonymous letter to the U.S. Environmental Protection Agency in 2009 explaining how restrictive patent and licensing agreements prevent scientists from pursuing objective research necessary to provide impartial guidance to regulators.<sup>105</sup> Their letter read:

*These agreements inhibit public scientists from pursuing their mandated role on behalf of the public good unless the research is approved by industry. As a result of restricted access, no truly independent research can be legally conducted on many critical questions regarding the technology, its performance, its management implications, [insecticide resistance management], and its interactions with insect biology.*<sup>106</sup>

The 26 scientists who wrote to the EPA in 2009 withheld their names for fear of being blacklisted and losing private-sector research funding.<sup>10</sup>



PHOTO BY DORI / COMMONS.WIKIMEDIA.ORG

*The Morrow Plots, an experimental corn field at the University of Illinois at Champaign-Urbana.*





## Regnat Populus: The People Rule in Arkansas<sup>108</sup>

Two of the biggest food companies in the world – Arkansas-based Tyson Foods and Walmart – have benefited from their generous donations to the University of Arkansas. The names Tyson and Walton are now emblazoned across the Arkansas campus following hundreds of millions of dollars in donations.

The campus's largest research facility is in the school of Poultry Science housed in the John W. Tyson Building.<sup>109</sup> The Tyson empire – through Tyson Foods, the non-profit Tyson Foundation and related foundations controlled by the Tyson family – has endowed six of the agricultural college's 15 chairs.<sup>110</sup> Between 2002 and 2010, Tyson donated more than \$15 million to the university, including poultry sciences scholarships, an endowed food safety chair and a research center bearing the Tyson name.<sup>111</sup>

This philanthropic giving effectively generates positive public relations and favorable research from the university that supports Tyson's business practices. For example, in 2005, Tyson Foods faced allegations of inhumane poultry slaughtering practices that were caught on tape.<sup>112</sup> Tyson responded by conducting an animal welfare study, concluding that its existing slaughtering practices were humane.<sup>113</sup> Tyson then

hired a professor who held one of its funded chairs at Arkansas (through a \$1.5 million endowment) to confirm its findings.<sup>114</sup> In 2011, the university launched a new Center for Food Animal Well-Being, funded with \$1 million each from Tyson Foods and the family of Walmart founder Sam Walton.<sup>115</sup> The center's director openly lauded "large-scale confinement rearing," a euphemism for factory farming, as a "good thing."<sup>116</sup>

Tyson's influence pales in comparison to Walmart and the Walton family. The Arkansas Razorbacks basketball team plays in the Bud Walton arena.<sup>117</sup> In 1998, the Walton family donated \$50 million to Arkansas's business school, which was renamed the Sam W. Walton Business College; two Tyson and three Walmart executives sit on the advisory board.<sup>118</sup> In 2002, the Walmart empire gave \$300 million to the university, then the largest donation to a public university ever.<sup>119</sup> The money was earmarked to endow research chairs, fund doctoral fellowships and finance research programs in fields including food sciences, biotechnology and the use of electronics in packaging.<sup>120</sup> By 2007, the University of Arkansas credited Walmart with donating more than \$1 billion. This amount included contributions squeezed from the company's suppliers.<sup>121</sup>

This philanthropy provides Walmart with a major return on investment. As Walmart rolled out its controversial radio-frequency identification (RFID) supply chain management technology, the Sam Walton Business School provided research in support of the technology.<sup>122</sup> Walmart's RFID program mandated that suppliers pay the high cost of installing RFID chips into products or packaging.<sup>123</sup> Meanwhile, for the retailer, the RFID chips would reduce inventory costs and allow the company to monitor consumer purchases.<sup>124</sup> One study estimated that the average Walmart suppliers would spend \$9 million the first year to comply with the RFID regime.<sup>125</sup> In contrast, Walmart would see a \$287 million annual benefit through automating inventory and price checks.<sup>126</sup>

After a 2007 *Wall Street Journal* article reported on the controversy surrounding Walmart's aggressive RFID campaign, Walmart promoted an "independent" study touting RFID's benefits.<sup>127</sup> This unnamed study

appears to come from the University of Arkansas RFID Center, founded with Walmart money and housed in a building owned by a Walmart vendor.<sup>128</sup> In 2010, the *Wall Street Journal* exposed consumer privacy concerns associated with Walmart's RFID chipping of clothing items; in the article, a Walmart-funded Arkansas professor defended the use of RFID.<sup>129</sup>

## South Dakota: Privatizing the Land-Grant University

At the South Dakota State University (SDSU), corporate influence extends all the way to the top. SDSU president David Chicoine joined Monsanto's board of directors in 2009 and received \$390,000 from Monsanto the first year, more than his academic salary.<sup>130</sup>

Simultaneously acting as a director of the world's largest seed company and the leader of South Dakota's largest public research institute raised obvious conflict-of-interest concerns.<sup>131</sup> One state senator proposed legislation barring Chicoine's corporate appointment, observing that Monsanto was "trying to buy influence at the university by buying influence with the president" and that "makes it look like we're in the hip pocket of Monsanto."<sup>132</sup>

Weeks before Chicoine joined Monsanto, the company sponsored a \$1 million plant breeding fellowship program at SDSU.<sup>133</sup> Chicoine's appointment at Monsanto also coincided with a new SDSU effort to enforce university seed patents by suing farmers for sharing and selling saved seed. A millennia-old practice, saving seed allows farmers to reproduce their strongest plants from previous years and avoid the cost of purchasing seed. Historically, land-grant schools have developed public seeds that farmers freely propagated, saved and shared.<sup>134</sup> Recently, however, SDSU joined the Monsanto subsidiary WestBred in a public-private program called the Farmers Yield Initiative, which sues farmers for seed patent infringements – using private investigators and toll-free, anonymous hotlines to uncover possible illegal use of seeds, such as selling saved seeds.<sup>135</sup> These aggressive practices come straight out of playbook of Monsanto, which has filed dozens of



PHOTO BY JAKE DEGROOT / COMMONS.WIKIMEDIA.ORG

patent infringement lawsuits against farmers.<sup>136</sup>

In 2009, SDSU filed suit against South Dakota farmers for the first time, alleging illegal use of SDSU-controlled seeds.<sup>137</sup> One accused farmer called the lawsuit a "rotten scam" in which SDSU purportedly entrapped him to violate university patents by running a fake "seed wanted" ad in a newspaper.<sup>138</sup> He and four other farmers settled the 2009 cases for more than \$100,000.<sup>139</sup> In 2011, SDSU settled another lawsuit against a farmer for \$75,000.<sup>140</sup> Farmers not only paid damages but also consented to allow SDSU inspect their farms, facilities, business records and telephone records for up to five years.<sup>141</sup> SDSU is not alone in suing farmers over seed patents. Texas A&M, Kansas State University and Colorado State University have pursued similar lawsuits against farmers.<sup>142</sup>

What makes the university lawsuits against farmers more offensive is the fact that SDSU wheat seeds were developed with farmer and taxpayer dollars.<sup>143</sup> South Dakota farmers pay 1.5 cents to the South Dakota Wheat Commission for every bushel of wheat they produce (known as a check-off program).<sup>144</sup> About 40 percent of this check-off money, totaling more than \$870,000 in 2009, funds SDSU wheat research.<sup>145</sup> These check-off dollars funded the development of many SDSU wheat varieties, including the Briggs and Traverse varieties involved in the SDSU farmer lawsuits.<sup>146</sup> The USDA, using taxpayer money, has awarded SDSU at least 50 wheat research grants, averaging \$108,000 each, some of which also



contributed to the development and registration of the Briggs and Traverse varieties.<sup>147</sup>

## Government Research Dollars

The USDA spends around \$2 billion a year on agricultural research, funding its own scientists and those at land-grant universities.<sup>148</sup> Unfortunately, the USDA's research agenda mirrors corporate-funded research, directing dollars toward industrial agriculture. The National Academy of Sciences found that USDA research prioritizes commodity crops, industrialized livestock production, technologies geared toward large-scale operations and capital-intensive practices.<sup>149</sup> For example, the Farm Bill dedicates little funding to more sustainable farming programs like the Organic Agriculture Research and Education Initiative and Specialty Crop Research Initiative (covering fruits and vegetables), which each represent just 2 percent of the USDA's research budget.<sup>150</sup>

The bias toward industrial agriculture is unfortunate given the USDA's unique position to address public research needs that the private sector will ignore, such as those related to health and the environment. As the National Resource Council notes, "no other public agency has the resources, infrastructure, or mandate to support research focusing on the

interface between agriculture and the environment. And this is where private-sector research is highly unlikely to fill the void."<sup>151</sup>

The USDA prioritizes research dollars for commodity crops like corn and soybeans, which are the building blocks of processed foods and the key ingredients in factory-farmed livestock feed. Although the agency boasts that fruits and vegetables comprise almost half of the total value of crop production, the USDA spends relatively little on fruit and vegetable research.<sup>152</sup> In 2010, the USDA funded \$204 million in research into all varieties of fruits and vegetables, less than the \$212 million that was spent researching just four commodity crops: corn, soybeans, wheat and cotton.<sup>153</sup>

The USDA also generously funds research into crops that produce oils and sugars that are used to manufacture processed foods. In 2010, the department spent \$18.1 million researching sugar crops (including sugar cane and sugar beets) and \$79.4 million on oilseed crops (including soybeans, canola and palm oil).<sup>154</sup> The USDA's prioritization of sugar and fat research is disconcerting given the current diet-related epidemics of diabetes and obesity. The USDA dedicates more research to sugars than to nutrition education and healthy lifestyles combined (\$15.5 million and \$1.3 million, respectively).<sup>155</sup>

Much of the research funding for commodity crops implicitly or explicitly goes toward genetically engineered (GE) crops because the vast majority of the corn, cotton and soybeans grown in the United States is GE.<sup>156</sup> This funding can act as corporate welfare because, for example, Monsanto and DuPont alone control 70 percent of the corn and 59 percent of the soybean seed market.<sup>157</sup>

At the same time, the USDA has largely failed to investigate potential environmental and food safety risks of GE crops. Between 1994 and 2002, the USDA funded more than 3,000 plant biotechnology studies: none investigated possible unintended toxins and only two examined potential allergens in GE food.<sup>158</sup> USDA's pro-biotech research bias was highlighted with the 2009 appointment of Roger Beachy, a major biotech advocate with strong ties to Monsanto, to



lead USDA's main agricultural research program (a position he vacated in 2011).<sup>159</sup> Other federal research agencies, like the National Academy of Sciences, have conducted very little food safety research on GE foods – and actually demonstrate a bias toward reporting the benefits of biotechnology, according to one peer-reviewed study.<sup>160</sup> This leaves the public in the dark about the potential threats of GE crops, even as other countries limit or prohibit GE cultivation and marketing.

## Conclusion and Recommendations

Like almost every other aspect of the modern food system, the private sector now wields enormous influence over agricultural research. Over the past several decades, industry funding at land-grant universities has eclipsed USDA funding, challenging the public-interest mission of these institutions. And USDA funding appears to do more to further agribusiness interests than those of the public.



Sound agricultural policy requires impartial and unbiased scientific inquiry. Corporate funding taints the independence and objectivity of agricultural research, distorting scientific inquiry to deliver favorable results for corporate sponsors.

Industry funding unduly influences research agendas, prioritizing the dominant industrial food and agricultural production model. USDA-funded research reinforces this model by emphasizing research on commodity crops – including biotech crops – over fruits, vegetables and sustainable production techniques. This effectively subsidizes agribusiness by spending public money to advance the industrial agriculture model. Unfortunately, the conflicts of interest between public good and private profits or between independent research and for-hire science remain largely unchallenged by both academia and policymakers.

There is a critical role for government to play in supporting research that can spur a financially viable alternative to the industrialized model that dominates American agriculture. To reorient public agricultural research, Food & Water Watch recommends:

- **Congress should use the Farm Bill to prioritize and fund research to further the public interest.** The Farm Bill Research Title should direct funding to provide practical solutions to the day-to-day problems facing farmers and develop alternatives to industrialized production. Congress should emphasize lower-input and sustainable methods, diversified crop and livestock farming, and alternative production like pasture-fed livestock and organic farming. The federal government should shift public research away from projects that culminate in private patents, instead giving money toward developing non-GE seeds that are distributed to farmers without patents and licensing fees.
- **Congress should fund independent research into the health and environmental impacts of genetically engineered crops.** Congress should mandate that public institutions are permitted to research patented biotech seeds to analyze yields, assess food safety and investigate potential





environmental impacts by prohibiting companies from restricting research in their licensing agreements.

- **Land-grant universities must be more transparent about their funding sources, making grant records open to public scrutiny on university Web sites.** All sponsored research must specifically disclose the source of financial support for the authors, departments, chairs or universities. The public should not have to formally file records requests – or pay exorbitant sums – to view research grant records at public universities.
- **Agricultural research at land-grant universities should not be driven by the intellectual property regime created by the Bayh-Dole Act.** Congress should reconsider the Bayh-Dole Act's application to agricultural research at public
- universities and instead encourage schools to pursue public-interest research that can be shared freely with farmers.
- **Congress should restore funding for extension offices,** giving county-level agents the resources they need to communicate research results and research needs between farmers and university researchers.
- **Agricultural research journals should establish rigorous conflict-of-interest standards.** Scientific journals should prominently disclose the funding source for the academic work behind every published article, including any author and editor affiliations with the private sector – such as consulting fees, stock holdings, patent holdings, prior or potential future employment, and departmental or academic grants.

## Methodology

To analyze trends in public research funding, Food & Water Watch used the United States Department of Agriculture (USDA) Current Research Information Service (CRIS) annual reports; despite the limitations in this dataset, it is the most comprehensive and widely used source of information on agricultural research funding.<sup>161</sup> Food and Water Watch's analysis of public funding focused on federal research dollars provided by the USDA. Although the CRIS reports detail the funding that other federal agencies contribute to agricultural research, there are major limitations in these funding data. These "other federal" agencies, like the National Institutes of Health and Department of Defense, comprised 19 percent of research money at land-grant universities in 2010. Food & Water Watch did not include this funding in this analysis because of significant limitations in this "other federal" funding, including hundreds of millions of dollars in erroneous reporting, confirmed by the University of Minnesota through personal correspondence.

The "other federal" funding sources for agricultural research is self-reported by the land-grant universities themselves, and the data appear inconsistent between institutions and between years. In addition, an unknown but likely significant portion of this "other federal" money goes toward non-agricultural research conducted by agricultural schools, such as companion animal (dogs and cats) research, medical research on primates, or human health and disease research that is not clearly agricultural research (such as autism or addiction research). Food & Water Watch focused on USDA's role in funding agricultural research at land-grant universities and did not examine the state funding for these state-based universities.

To analyze individual land-grant universities, Food & Water Watch used publicly available records as well as filing state-records requests, which yielded data of varying quality and quantity. Food & Water Watch examined grant records from the University of California, University of Illinois, Iowa State University, University of Missouri, Texas A&M, University of Florida and Purdue University.

Food & Water Watch adopted USDA's broad categorization of all non-public funding – from companies, trade groups, marketing orders, foundations and charities – as private-sector funding. A large majority of non-public funding comes from agribusiness interests. Food & Water Watch categorized non-public, private sector as industry funding based on a close examination of available data. To examine the extent to which non-public money going to universities comes from agribusiness interests and agricultural trade association – and not unaffiliated charities, like the American Heart Association – Food & Water Watch conducted an in-depth analysis of the non-public funding of the most comprehensive university grant records available (the University of California, University of Illinois and Iowa State University) over the most recent five-year period. This analysis found that the majority of private sector, non-public funding of agricultural research came from agribusinesses, agricultural trade associations, agricultural marketing orders and agribusiness-affiliated foundations between 2006 and 2010. These industry groups supplied nearly three-quarters (72 percent) of the non-public research funding to the University of California, University of Illinois and Iowa State University's five largest agricultural research departments (57 percent, 91 percent and 81 percent, respectively).

The industry funding at the University of California does not include a \$16 million grant from the Bill & Melinda Gates Foundation, although this grant includes a private-sector partner, Nutriset, whose nutritional products are a major part of the grant. The company's patented nutritionally fortified foods, designed for the developing world, have been widely criticized by aid groups like Doctors Without Borders because the company's aggressive intellectual property protection has restricted the availability of similar nutritional supplements to malnourished people.<sup>162</sup> If this grant were categorized as an industry grant, the percentage of non-public funding from industry to the University of California would rise to 76 percent and the total to all three schools would rise to 81 percent.



## Endnotes

- 1 Slaughter, Shelia and Larry Leslie. "Academic Capitalism." The Johns Hopkins University Press. 1997 at 44 to 48, 71; Heisey, Paul et al. United States Department of Agriculture (USDA) Economic Research Service (ERS). "Government Patenting and Technology Transfer." February 2006 at 14; The Bayh-Dole Act of 1980, 35 USC §200-212 (2000); Fernandez-Cornejo, Jorge. USDA ERS. "The Seed Industry in U.S. Agriculture: An exploration of data and information on crop seed markets, regulation, industry structure, and research and development." February 2004 at 25 to 26.
- 2 Morrill, Justin. Speech in House of Representatives. June 6, 1862. Reprinted in Missouri General Assembly. *Journal of the Senate of the State of Missouri*. Twenty-third general assembly. 1865–1866 at 253; Morrill Act of 1862. 7 U.S.C. 301.
- 3 Fuglie, Keith and Paul Heisey. USDA ERS. "Economic returns to public agricultural research." USDA ERS. Brief Number 10. September 2007 at 3.
- 4 Ehlenfeldt, Mark. USDA Agricultural Research Service (ARS). "The delightful domesticated American Blueberry." *Agricultural Research*. May/June 2011; Fernandez-Cornejo, Jorge (2004) at 25; Connecticut Agricultural Experiment Station. "Report of the Director." Bulletin 243. November 1922 at 177 to 179; Wieschmeier, Walter and Dwight Smith. USDA ARS and Purdue Agricultural Experiment Station. "Predicting rainfall-erosion losses from cropland east of the rocky mountains." *Agriculture Handbook* No. 282. May 1965; Flanagan, D.C. et al. "Water Erosion Prediction Project (WEPP): Development History, Model Capabilities, and Future Enhancements." American Society of Agricultural and Biological Engineers 100th Anniversary Soil and Water Invited Review Series. 2007 at 1603; Lafen, J.M. and W.C. Moldenhauer. World Association of Soil & Water Conservation. "Pioneering Soil Erosion Prediction." Special Publication No. 1. 2003 at Introduction.
- 5 Fernandez-Cornejo, Jorge (2004) at 25.
- 6 USDA National Institute of Food and Agriculture (NIFA). "Land-Grant Universities and Universities." Available at [http://www.csrees.usda.gov/qlinks/partners/partners\\_list.pdf](http://www.csrees.usda.gov/qlinks/partners/partners_list.pdf) and on file. Accessed August 31, 2011.
- 7 USDA NIFA. Extension, About Us. Available at <http://www.csrees.usda.gov/qlinks/extension.html> and on file. Accessed August 31, 2011.
- 8 Aheran, Mary et al. USDA ERS. "Regional Trends in Extension System Resources." *Agriculture Information Bulletin* Number 781. April 2003 at 5; USDA annual budgets. Comparison between 2012 budget authority and 2003 budget authority, using total funding to Smith-Lever Grant Money, adjusted to 2003 dollars using the CPI Inflation Calculator from the U.S. Bureau of Labor Statistics.
- 9 CropLife America. 2011 National Policy Conference. May 12, 2011 at Transcript, Question from Sudeep Mathew, at 9 to 10.
- 10 Aheran, Mary et al. (2003) at 5.
- 11 Schimmelpfennig, David and Paul Heisey. USDA ERS. "U.S. Public Agricultural Research." March 2009 at 9; USDA NIFA Current Research Information System (CRIS). National Summary. 1993 at Table A.
- 12 USDA CRIS, National Summary. 2010, at Table A. Food & Water Watch excluded forestry schools and other cooperating institutions from agricultural research. Like USDA, Food & Water Watch uses the terms "private" and "industry" funding to describe the "non-federal" money in the CRIS dataset, which includes corporate, foundation and trade association grants to land-grant universities. See Woteki, Catherine. President's Council of Advisors on Science and Technology, "Why Science Matters to Agriculture." January 7, 2011. Industry-affiliated money is defined as industry agreements, sales of research product to industry and other unspecified non-federal funding; See also Fuglie, Keith et al. "Agricultural Research and Development Public and Private Investments Under Alternative Markets and Institutions." May 1996 at 9. All funding levels are reported in real, inflation-adjusted 2010 dollars, using the U.S. Bureau of Labor Statistics CPI deflator.
- 13 Mars, Inc. [Press Release]. "Cocoa Flavanols Could More Than Double Cells Associated With Repair & Maintenance Of Blood Vessels, According To Mars, Incorporated Research." July 5, 2010; Food & Water Watch analysis of University of California grants obtained through Freedom of Information Act requests.
- 14 University of California at Davis. Center for Produce Safety. Advisory Board. Available [https://cps.ucdavis.edu/staff/1/Advisory\\_Board.html](https://cps.ucdavis.edu/staff/1/Advisory_Board.html) and on file. Accessed November 3, 2011.
- 15 University of California at Davis. Center for Produce Safety. Technical Committee. Available at [https://cps.ucdavis.edu/staff/2/Technical\\_Committee.html](https://cps.ucdavis.edu/staff/2/Technical_Committee.html) and on file. Accessed November 3, 2011.
- 16 University of California at Davis. Center for Produce Safety. Executive Board. Available at [https://cps.ucdavis.edu/staff/3/Executive\\_Committee.html](https://cps.ucdavis.edu/staff/3/Executive_Committee.html) and on file. Accessed November 3, 2011.
- 17 University of Arkansas. Walton College, Office of External Relations. Dean's Executive Advisory Board, 2010–2011. Available at <http://waltoncollege.uark.edu/externalrelations/deab.asp> and on file. Accessed August 22, 2011.
- 18 Press, Eyal and Jennifer Washburn. "The Kept University." *The Atlantic*. March 2000.
- 19 University of Georgia. Center for Food Safety. Industry Membership, Current Industry Members. Available at <http://www.ugacfs.org/members/industry-members.htm>.
- 20 Iowa State University. Plant Sciences Institute. Annual Report. 2009 at 10, 11; 2008 at 30; Iowa State University. Plant Sciences Institute. Governance. Available at <http://www.plantsciences.iastate.edu/governance/> and on file. Accessed August 22, 2011; Iowa State University. Plant Sciences Institute. Board Members. Available at <http://www.plantsciences.iastate.edu/governance/board.html> and on file. Accessed August 22, 2011.
- 21 Iowa State University Board of Regents. Board Members, Bruce Rastetter and Craig Lang. Available at <http://www.regents.iowa.gov/BoardMembers/rastetterbio.html> and <http://www.regents.iowa.gov/BoardMembers/langbio.html>. On file. Accessed August 22, 2011; "Hog, ethanol baron Bruce Rastetter now a Republican kingmaker." *WCF Courier*. August 4, 2011; Lloyd, Jon. "Residents rally against proposed hog factory farm." *Boone News Republican*. June 7, 2011.
- 22 Dole. Board of Directors: Sherry Lansing. Available at [http://investors.dole.com/phoenix.zhtml?c=231558&p=irol-govBoard\\_pf](http://investors.dole.com/phoenix.zhtml?c=231558&p=irol-govBoard_pf) and on file. Accessed November 4, 2011; University of California Board of Regents. About the Regents: Sherry Lansing. Available at <http://www.universityofcalifornia.edu/regents/regbios/lansing.htm> and on file. Accessed November 3, 2011.
- 23 Lang, Susan. "Cornell Hillel awards 2010 Tanner Prize to mother-daughter alumnae Irene and Allison Rosenfeld." *Cornell Chronicle*. June 1, 2010.
- 24 Goldberger, Jessica et al. Program on Agricultural Technology Studies, University of Wisconsin-Madison. "Modern Agricultural Science in Transition: A Survey of U.S. Land-Grant Agricultural and Life Scientists." PATS Research Report No. 14. October 14, 2005 at Table 9.
- 25 USDA ARS. Agricultural Research Funding in the Public and Private Sectors, 1970–2008. Dataset updated February 19, 2010; Woteki, Catherine. President's Council of Advisors on Science and Technology. "Why Science Matters to Agriculture." January 7, 2011.
- 26 *Ibid*.
- 27 USDA CRIS. National Summary. 1995–2010 at Table A. (NOTE: Excludes funding to forestry schools; includes funding to agricultural experiment stations, 1890 land-grant institutions and veterinary colleges, almost all of these entities are part of the land-grant university system.) (NOTE: State Agricultural Experiment Stations are staffed by academic faculty at land-grant universities, where the stations are located. This report considers Agricultural Experiment Stations as part of the Land-Grant University System. SEE: Fuglie, Keith et al. USDA ERS. "Agricultural Research and Development." May 1996 at 2, 9; Schimmelpfennig, David and Paul Heisey (2009) at 7.
- 28 Much of the USDA growth occurred as a result of increased research funding post 9/11. See Ho, Melissa. Congressional Research Service. "Agricultural Research, Education, and Extension: Issues and Background." January 3, 2011 at 5. USDA funding of land-grant schools rose between 2000 and 2004 but declined from 2005 to 2009. SEE USDA CRIS. National Summary. 2000–2010 at Table A.
- 29 Food & Water Watch's funding analysis is based on USDA CRIS data, which also includes agricultural research funding from "other federal" agencies, like the National Institutes of Health and the Department of Defense, which comprised 19 percent of research money at land-grant universities in 2010. Food & Water Watch did not include this funding in this analysis because of significant limitations in this "other federal" funding, including hundreds of millions of dollars in erroneous reporting, confirmed by the University of Minnesota. The "other federal" funding sources for agricultural research at land-grant

- schools is self-reported by the universities themselves, and the data appear inconsistent between institutions and between years. In addition, an unknown but likely significant portion of this "other federal" money goes toward non-agricultural research conducted by agricultural schools, such as companion animal (dogs and cats) research, medical research on primates, or human health and disease research that is not clearly agricultural research (such as autism or addiction research). For these reasons, Food & Water Watch did not include other federal funding in its analysis. SOURCE: interview with USDA and University of Minnesota, on file, and analysis of NIH grant database. Available at <http://report.nih.gov/award/organizations.cfm>. Accessed October 2011.
- 30 University of Minnesota. [Press Release]. "U of M Receives \$10 Million Gift from Cargill for Microbial and Plant Genomics Building." September 1999; Cargill. "Cargill Timeline, 1865–Present." 2011 at 12.
  - 31 Colorado State University. "Five Rivers Ranch cattle feeding donates southeastern Colorado research facility to Colorado State University." August 3, 2005.
  - 32 Honan, William. "Business school at Arkansas U. is getting gift of \$50 million." *New York Times*. October 7, 1998.
  - 33 Miner, Kaitlin. "Renovations underway on Curtiss Hall." *Iowa State Daily*. June 17, 2011.
  - 34 National Center for Soybean Biotechnology. Announcements for Second and Sixth Annual Soybean Biotechnology Symposiums. Available at [www.soybiotechcenter.org](http://www.soybiotechcenter.org); University of Missouri. Life Science Business Incubator at Monsanto Place. Brochure available at <http://muincubator.com/facility.html> and on file. Accessed August 22, 2011.
  - 35 Rogers, Louise. "Monsanto Gift Benefits ACES." *ACES News* (University of Illinois). June 3, 2002.
  - 36 Purdue Agriculture Food Science. Naming Opportunities. Available at [http://www.ag.purdue.edu/foodsci/Pages/naming\\_opportunities.aspx](http://www.ag.purdue.edu/foodsci/Pages/naming_opportunities.aspx) and on file. Accessed August 22, 2011.
  - 37 University of Arkansas, Dale Bumpers College of Agricultural, Food & Life Sciences, Poultry Science. "The John W. Tyson Building." Available at <http://poultryscience.uark.edu/4534.htm> and on file. Accessed August 22, 2011.
  - 38 "Tyson \$2.5 million gift supports child development center." *The University of Arkansas Benefactor*. Winter 2010.
  - 39 "Men's Basketball at Bud Walton Arena." University of Arkansas Athletic Media Relations. July 14, 2008.
  - 40 Miner, Kaitlin (2011).
  - 41 National Center for Soybean Biotechnology. Announcements for Second and Sixth Annual Soybean Biotechnology Symposiums.
  - 42 Rogers, Louise (2002).
  - 43 Purdue University. Department of Food Science. Naming Opportunities. Available at [http://www.ag.purdue.edu/foodsci/Pages/naming\\_opportunities.aspx](http://www.ag.purdue.edu/foodsci/Pages/naming_opportunities.aspx) and on file. Accessed August 22, 2011.
  - 44 University of Georgia. Center for Food Safety. Industry Membership, Invitation from the Center Director. Available at <http://www.ugacfs.org/industry.html> and on file. Accessed August 4, 2011.
  - 45 University of Georgia. Center for Food Safety. Industry Membership, Current Industry Members.
  - 46 Purdue University. College of Agriculture, Food Science. "Involvement with Industry." Available at <http://www.ag.purdue.edu/foodsci/Pages/industry.aspx> and on file. Accessed August 4, 2011.
  - 47 Iowa State University. Plant Sciences Institute. Annual Report. 2009 at 10, 11; 2008 at 30; Iowa State University. Plant Sciences Institute. Governance. Available at <http://www.plantsciences.iastate.edu/governance/> and on file. Accessed August 22, 2011; Iowa State University. Plant Sciences Institute. Board Members. Available at <http://www.plantsciences.iastate.edu/governance/board.html> and on file. Accessed August 22, 2011.
  - 48 Food & Water Watch analysis of Purdue University grants obtained through online databases, 2010–2011.
  - 49 Texas A&M. Office of Sponsored Research Services, AgriLIFE. Analysis of Activity Reports.
  - 50 Food & Water Watch analysis of University of Illinois grants obtained through Freedom of Information Act request.
  - 51 Food & Water Watch analysis of Iowa State University grant records obtained through Freedom of Information Act request.
  - 52 Food & Water Watch analysis of university grant records obtained through Freedom of Information Act requests of online databases.
  - 53 Woods, Chuck. "Mark Settles appointed to UF's New Vasil-Monsanto Professorship." December 7, 2001. University of Florida. December 7, 2001; University of Florida. Faculty Profile of Dr. A. Mark Settles. Available at <http://hos.ufl.edu/faculty/amsettles> and on file. Accessed September 23, 2011.
  - 54 University of Florida, IFAS Development Office. "Share Annual Gift Report." 2009–2010 at 14.
  - 55 "Iowa State University receives \$500k gift from Monsanto." *Associated Press*. May 27, 2011.
  - 56 Iowa State University, College of Agriculture and Life Sciences. College of Endowed Chairs. Available at <http://www.ag.iastate.edu/about/endowed.php> and on file. Accessed September 22, 2011; Iowa State University. [Press release]. "Pioneer teams with Iowa State for corn breeding endowment." September 21, 2011.
  - 57 Laws, Forrest. "At Texas A&M Borlaug honored with endowed chair." *Delta Farm Press*. February 2, 2007.
  - 58 Donovan, Sharon. "Fahey Named U of I's First Kraft Foods Human Nutrition Professor." *ACES News* (University of Illinois). September 21, 2006.
  - 59 Goldberger, Jessica et al. (2005) at Table 5.
  - 60 Texas A&M. Office of Sponsored Research Services, AgriLIFE. Analysis of Activity Reports.
  - 61 *Ibid*.
  - 62 Food & Water Watch analysis of university grant records obtained through Freedom of Information Act requests.
  - 63 *Ibid*.
  - 64 *Ibid*.
  - 65 Goldberger, Jessica et al. (2005) at 10.
  - 66 Knudson, Tom and Mike Lee. "Biotech industry funds bumper crop of UC Davis research." *Sacramento Bee*. June 8, 2004.
  - 67 Martinson, Brian et al. "Scientists behaving badly." *Nature*. June 2005 at 737.
  - 68 Nestle, Marion. "Food company sponsorship of nutrition research & professional activities: A conflict of interest?" *Public Health Nutrition*. 2001 at 1021 to 1022.
  - 69 Food & Water Watch analysis of University of California grants obtained through Freedom of Information Act requests.
  - 70 Mars, Inc. (2010).
  - 71 Lesser, Lenard et al. "Relationship between Funding Source and Conclusion among Nutrition-Related Scientific Articles." *PLOS MEDICINE*. January 2007 at Discussion.
  - 72 Diels, Johan. "Association of financial or professional conflict of interest to research outcomes on health risks or nutritional assessment studies of genetically modified products." *Food Policy*. November 22, 2010 at 200 to 201.
  - 73 *Ibid*.
  - 74 Lesser, Lenard et al. (2007) at Results.
  - 75 Krimskey, Sheldon. "Combating the funding effect in science: What's beyond transparency?" *Stanford Law & Policy Review*. Vol. 21. 2010 at 107; Gozner, Merrill. Integrity in Science Project, Center for Science in the Public Interest. "Unrevealed: Non-Disclosure of Conflict of Interest in Four Leading Medical and Scientific Journals." July 12, 2004 at 3 and 8.
  - 76 Goldberger, Jessica et al. (2005) at Table 10.
  - 77 Pollock, Andrew. "Crop Scientists Say Biotechnology Seed Companies Are Thwarting Research." *New York Times*. February 20, 2009.
  - 78 "Do Seed Companies Control GM Crop Research." *Scientific American*. August 13, 2009.
  - 79 Dalton, Rex. "Superweed study falters as seed firms deny access to transgene." *Nature*. October 17, 2002.
  - 80 Waltz, Emily. "Under Wraps." *Nature Biotechnology*. October 2009 at 882.
  - 81 *Ibid*.
  - 82 *Ibid*.
  - 83 Kuehn, Robert. "Suppression of Environmental Science." *American Journal of Law & Medicine*. 2004 at 339 to 340; Press, Eyal and Jennifer Washburn (2000).
  - 84 Press, Eyal and Jennifer Washburn (2000); Buchanan, Bob and Ignacio Chapela. "Novartis Revisited." *California Monthly*. February 2002.
  - 85 Buchanan, Bob and Ignacio Chapela (2002).



- 86 Heisey, Paul et al. (2006) at 13.
- 87 Davis, Trey. "UC, Monsanto reach \$100 million settlement in growth hormone patent case." University of California. [Press release]. February 27, 2006; "What happened to the Flavr Savr." *Chemical & Engineering News*. April 19, 1999; Fell, Andy. University of California at Davis. News and Information. "Nothing ventured, nothing gained-biotech startup illustrates campus's shift in attitude about venture research." April 30, 2004.
- 88 "The Gene Shotgun." Cornell University. Made at CALS. Available at <http://www.cals.cornell.edu/cals/public/businesspartnerships/made/gene-shotgun.cfm> and on file. Accessed August 18, 2011.
- 89 USDA NIFA. List of Technology Transfer Offices located at land-grant universities. Available at [http://www.csrees.usda.gov/funding/sbir/sbir\\_tech\\_transfer\\_offices.html](http://www.csrees.usda.gov/funding/sbir/sbir_tech_transfer_offices.html) and on file. Accessed August 23, 2011; Pew Initiative on Food and Biotechnology. "University-Industry Relationships: Framing the Issues for Academic Research in Agricultural Biotechnology." November 2003 at 31.
- 90 Busch, Lawrence et al. "External Review of the Collaborative Research Agreement between Novartis Agricultural Discovery Institute, Inc. and The Regents of the University of California." Institute for Food and Agricultural Standards (IFAS) Michigan State University. July 13, 2004 at 25, 44, 56; Press, Eyal and Jennifer Washburn (2000).
- 91 Press, Eyal and Jennifer Washburn (2000).
- 92 Business-Higher Education Forum. "Working Together, Creating Knowledge; the University-Industry Research Collaboration Initiative." 2001 at 45.
- 93 Busch, Lawrence et al. (2004) at 111.
- 94 Waltz, Emily (2009) at 882.
- 95 *Ibid.* and Food & Water Watch analysis of Purdue University grants obtained through online databases.
- 96 Food & Water Watch analysis of Purdue University grants in the Food Science Department obtained through online databases; Hinsdale Farms. Home Web Page. Available at <http://www.hinsdalefarms.com/index.html> and on file. Accessed August 4, 2011.
- 97 SEE: USDA Animal and Plant Health Inspection Service (APHIS). Biotechnology Regulatory Services. Coordinated Framework for the Regulation of Biotechnology. Program Aid No. 1862. April 2006.
- 98 European Community. Regulation (EC) No. 1829/2003 of the European Parliament and of the Council on Genetically Modified Food and Feed. September 22, 2003; Dr. Sato, Suguro. USDA Foreign Agricultural Service, Global Agriculture Information Network. "Japan Biotechnology Annual Report 2008." July 15, 2008 at 3.
- 99 Food & Water Watch analysis of University of Illinois grants obtained through Freedom of Information Act request.
- 100 Capper, Judith et al. "The environmental impact of recombinant bovine somatotropin (rbST) use in dairy production." *PNAS*. July 15, 2008 at Abstract.
- 101 United States Food and Drug Administration. Freedom of Information Summary: Posilac, NADA Number: 140-872.
- 102 Dohoo, Ian et al. Health Canada, Drug and Health Products. "Report of the Canadian Veterinary Medical Association expert panel on rBST." November 1998 at Section 7; Groves, Martha. "Canada Rejects Hormone that Boosts Cows' Milk Output." *Los Angeles Times*. January 15, 1999; European Commission, Directorate General for Health and Consumer Protection. "Report on Public Health Aspects of the Use of Bovine Somatotrophin." March 1999. Available at [http://ec.europa.eu/food/fs/sc/scv/out19\\_en.html](http://ec.europa.eu/food/fs/sc/scv/out19_en.html); Gray, Thomas. "Dairy Dilemma." *USDA Rural Cooperatives*. November/December 2006.
- 103 Public comment to *Federal Insecticide, Fungicide, and Rodenticide Act* (FIFRA) Scientific Advisory Panel. Document ID: EPA-HQ-OPP-2008-0836-0043. Available at <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OPP-2008-0836-0043;oldLink=false> and on file. Accessed August 26, 2011.
- 104 Pollock, Andrew (2009).
- 105 *Ibid.*
- 106 Public comment to FIFRA Scientific Advisory Panel. Document ID: EPA-HQ-OPP-2008-0836-0043. Available at <http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OPP-2008-0836-0043;oldLink=false> and on file. Accessed August 26, 2011.
- 107 Pollock, Andrew (2009).
- 108 State of Arkansas Department of Finance and Administration. "Moving to Arkansas, a Tax Guide for New Residents." April 2008. (Arkansas state motto: The People Rule.)
- 109 University of Arkansas, Dale Bumpers College of Agricultural, Food & Life Sciences, Poultry Science. "The John W. Tyson Building." Available at <http://poultryscience.uark.edu/4534.htm> and on file. Accessed August 22, 2011.
- 110 University of Arkansas, Dale Bumpers College of Agricultural, Food & Life Sciences. Faculty Chairs and Professorships. Available at <http://bumperscollege.uark.edu/5392.htm> and on file. Accessed August 22, 2011; "Tyson Foods Establishes University of Arkansas Chair in Food Safety." Tyson Foods. April 15, 2004. Available at <http://www.tysonfoods.com/Media-Room/News-Releases/2004/04/Tyson-Foods-Establishes-University-of-Arkansas-Chair-in-Food-Safety.aspx> and on file. Accessed August 22, 2011.
- 111 "John Tyson donates \$500k to poultry scholarship fund." Partners. Center for Excellence for Poultry Science. April 2002 at 1 to 2; Tyson Foods (2004); "Tyson Foods Honored." The Poultry Federation. Available at <http://hesc.uark.edu/5686.htm> and on file. Accessed August 22, 2011; University of Arkansas (Winter 2010).
- 112 "Tyson to probe chicken-slaughter methods." *Associated Press*. May 25, 2005.
- 113 Tyson Foods. "Tyson Asks University to Conduct Animal Welfare Research." October 5, 2006.
- 114 *Ibid.*
- 115 "Center for Food Animal Well being established, plans research and outreach." Agricultural Communication Services, University of Arkansas. June 8, 2011.
- 116 *Ibid.*
- 117 "Men's Basketball at Bud Walton Arena." University of Arkansas Athletic Media Relations. July 14, 2008.
- 118 "Walton Family Gift." University of Arkansas. Available at <http://campusmaps.uark.edu/363.php> and on file. Accessed August 22, 2011; University of Arkansas. Walton College, Office of External Relations. Dean's Executive Advisory Board, 2010-2011. Available at <http://waltoncollege.uark.edu/externalrelations/deab.asp> and on file. Accessed August 22, 2011; Wal-Mart Stores, Inc. SEC filings. 10-K. 2010 at 4.
- 119 "University of Arkansas receives \$300 million gift, largest in history of U.S. public higher education." *University of Arkansas Newswire*. Thursday 11, 2002. Available at <http://newswire.uark.edu/article.aspx?id=12814> and on file. Accessed August 22, 2011.
- 120 *Ibid.*
- 121 Mui, Ylan. "Walmart Backs Eco-Friendly Center." *Washington Post*. August 30, 2007.
- 122 University of Arkansas. Walton College. RFID Research Center. Available at <http://itri.uark.edu/118.asp> and on file. Accessed August 4, 2011; Hardgrave, Bill et al. "Does RFID Reduce Out of Stocks? A Preliminary Analysis." University of Arkansas, Walton College, RFID Research Center. November 2005.
- 123 McWilliams, Gary. "Walmart's Radio-Tracked Inventory Hits Static." *Wall Street Journal*. February 15, 2006.
- 124 Nystedt, Dan. "Walmart eyes \$287 million benefit from RFID." *Washington Post*. October 12, 2007; McWilliams, Gary (2006); Bustillo, Miguel. "Walmart Radio Tags to Track Clothing." *Wall Street Journal*. July 23, 2010.
- 125 Bowden, Bill. "RFID Could cost Average Walmart Vendor \$9M." *Arkansas Business*. April 12, 2004.
- 126 Nystedt, Dan (2007).
- 127 McWilliams, Gary (2006); Ford, Rollin. "Walmart: No Static on Radio Tracking." Letter to the Editor. *Wall Street Journal*. March 7, 2007.
- 128 *Ibid.* and Wal-Mart Stores, Inc. "Walmart improves on-shelf availability through the use of electronic product codes." October 14, 2005; Hardgrave, Bill et al. "RFID's Impact on Out of Stocks: A Sales Velocity Analysis." University of Arkansas, Walton College, RFID Research Center. June 2006 at 9, 10, 13; Hardgrave, Bill et al. (2005) at 9,10; Bowden, Bill. "UA Opens RFID Research Center." *Northwest Arkansas Business Journal*. June 20, 2005; Roberti, Mark. "University Opens RFID Research Center." *RFID Journal*. June 13, 2005; University of Arkansas; University of Arkansas. "Coverage Opportunity: UA RFID Research Center." *Arkansas Newswire*. May 24, 2005.
- 129 Bustillo, Miguel (2010); Wal-Mart Stores, Inc. (2009).
- 130 Brandert, Melanie. "Relationship between Monsanto, SDSU president questioned." *Argus Leader*. May 7, 2009.
- 131 Woodward, Ryan. "Chicoine discusses Monsanto appointment." *The Brookings Register*. April 30, 2009.
- 132 Kaus, Austin. "Senator to regents: Fix SDSU conflict." *The Daily Republic*. June 19, 2009.

- 133 Monsanto. "Monsanto Commits \$1 Million to Sponsor Plant Breeding Fellowships at South Dakota State University." March 19, 2009.
- 134 Fernandez-Cornejo, Jorge (2004) at 25.
- 135 "South Dakota State University enforces PVP rights." South Dakota State University. Available at <http://www.sdstate.edu/news/articles/pvp-rights.cfm> and on file. Accessed August 25, 2011; Tonneson, Lon. "Farmer says SDSU lawsuit is 'rotten scam.'" *Dakota Farmer*. July 16, 2009; Hult, John. "Seed cases break ground in S. Dakota: farmers sued." *Argus Leader*. December 12, 2010; Farmers' Yield Initiative. Partners. Available at <http://www.farmersyieldinitiative.com/fyi-partners/> and on file. Accessed August 31, 2011; Farmers' Yield Initiative. Submit a Tip. Available at <http://www.farmersyieldinitiative.com/submit-a-tip/> and on file. Accessed August 31, 2011; "Monsanto buys West-Bred assets for \$45M." *St. Louis Business Journal*. July 14, 2009.
- 136 Barlett, Donald L. and James B. Steele. "Monsanto's harvest of fear." *Vanity Fair*. May 2008; Center for Food Safety. "Monsanto vs. U.S. Farmers." November 2007 at 1 to 2.
- 137 Tonneson, Lon (2009).
- 138 *Ibid*.
- 139 United States District Court for the District of South Dakota Sioux Falls Division. South Dakota Board of Regents v Jim Hauge, 4:09-cv-04099-LLP, (Doc. #13); South Dakota Board of Regents v Dale Zemlicka, 4:09-cv-04097-LLP (Doc. #12); South Dakota Board of Regents v Bannwarth Farms, LLC, 4:09-cv-04098-LLP (Doc. #15); South Dakota Board of Regents v Brad Bechen, 4:09-cv-04096-LLP (Doc. #19); South Dakota Board of Regents v John Coughlin, 4:09-cv-04100-LLP (Doc. #16).
- 140 Hult, John (2010); South Dakota Board of Regents v Gary Nachtigal, Lowell Den Besten, d/b/a Dakota Best Seed; Maple Leaf Seed Division, dba., Maple Leaf Seeds; Freemont Trading Company, LLC; Gayland Ward Seed Co., Inc.; and John Does 1-50. 4:10-cv-04168-LLP.
- 141 United States District Court for the District of South Dakota Sioux Falls Division. South Dakota Board of Regents v Jim Hauge at Doc. #13; South Dakota Board of Regents v Dale Zemlicka at Doc. #12; South Dakota Board of Regents v Bannwarth Farms at Doc. #15; South Dakota Board of Regents v Brad Bechen at Doc. #19; South Dakota Board of Regents v John Coughlin at Doc. #16.
- 142 Adame, Jaime. "Stamford-area wheat farmers sued in seed protection case." *Reporter News*. June 16, 2011; Welch, Kevin. "Spearman company wins seed case." *Amarillo Globe-News*. September 19, 2010. Schrag, Duane. "K-State: Farmers' seed use is illegal." SWRF wins lawsuit in plant variety protection violation. Siftings. May 2007; South Dakota State University. University Relations. "SDSU goes to court to protect its wheat." Printed in *the Brookings Register*. July 15, 2009.
- 143 It is unknown how much money public and private sources have contributed to wheat breeding at SDSU. SDSU refused to honor an open-records request from Food & Water Watch without agreeing to an estimated payment of \$629. Food & Water Watch refused this payment on the grounds that research grant information is public information and should be freely disseminated.
- 144 South Dakota Wheat Commission. Government Operations and Audit Committee Review. April 21, 2009 at Document C.
- 145 *Ibid*. at Document D.
- 146 *Ibid*. at 3; Devkota, Ravindra et al. "Registration of 'Briggs' Wheat." *Journal of Crop Science*. January-February 2007 at 433; South Dakota Wheat Commission. Research: Breeding/Genetics. Available at <http://www.sdwheat2.org/html/info.cfm?ID=1609> and on file. Accessed August 29, 2011; United States District Court for the District of South Dakota Sioux Falls Division. South Dakota Board of Regents v Jim Hauge at Doc. #1; South Dakota Board of Regents v Dale Zemlicka at Doc. #1; South Dakota Board of Regents v Bannwarth Farms, LLC at Doc. #1; South Dakota Board of Regents v Brad Bechen at Doc. #1; South Dakota Board of Regents v John Coughlin at Doc. #1.
- 147 South Dakota Wheat Commission (2009) at Document D; USDA CRIS. Analysis of Subject of Investigations 1540-1545 and 1549 at South Dakota State University. Query conducted September 29, 2011 (NOTE: Only four of the 50 grant awards included dollar amounts); See specifically: USDA NIFA. Project Number 0197666. "Spring Wheat Breeding and Genetics." Award Start Date October 1, 2003; Devkota, Ravindra (2006).
- 148 USDA CRIS. Annual summary report 2009. August 2010 at Table A.
- 149 National Academy of Sciences. "Publicly funded agricultural research and the changing structure of U.S. Agriculture." National Academies Press. 2002 at 1 to 2, 5, 8, 31 and 42 to 44.
- 150 See U.S. House of Representatives Committee on Agriculture. "2008 Farm Bill Research Title." Fact Sheet. 2008 at 2; USDA. "USDA FY 2011 Budget Summary and Annual Performance Plan." 2011 at 116.
- 151 National Research Council. "Frontiers in Agricultural Science: Food, Health, Environment and Communities." 2003 at 27 to 28.
- 152 Woteki, Cathie. Undersecretary for Research, Education and Economics, USDA. Testimony on Opportunities for Specialty Crops and Organics in the Farm Bill. Agriculture Committee. Senate. July 28, 2011 at 1.
- 153 USDA CRIS. Table C: National Summary USDA, SAES, and Other Institutions Fiscal Year 2010 Funds (Thousands) and Scientist Years. June 20, 2011.
- 154 *Ibid*.
- 155 *Ibid*. at Table D.
- 156 USDA ERS. Adoption of Genetically Engineered Crops in the U.S. Data table available at <http://www.ers.usda.gov/Data/BiotechCrops/> and on file. Accessed August 24, 2011.
- 157 Pollack, Andrew. "After Growth, Fortunes Turn for Monsanto." *New York Times*. October 4, 2010.
- 158 Pelletier, David. "Science, Law, and Politics in FDA's Genetically Engineered Foods Policy: Scientific Concerns and Uncertainties." *Nutrition Science and Policy*. June 2005 at 216.
- 159 Stokstad, Erik. "Biotech advocate picked to oversee USDA research grants." *Science Magazine*. September 23, 2009; Ledford, Heidi. "US farm-science head quits." *Nature News*. May 3, 2011; Buchen, Lizzie. "US agriculture research gets priority plan." *Nature News*. September 29, 2009.
- 160 Pelletier, David (2005) at 212 to 214.
- 161 The USDA keeps a detailed database of research projects it funds, but it is not comprehensive. (See USDA CRIS online database at <http://cris.nifa.usda.gov/search.html>.) Nor is it organized or classified to enable analysis of research funding based on different production practices. For example, it is impossible to compare funding of transgenic plant breeding versus non-transgenic plant breeding or confined animal feeding operations (factory farms) versus non-confined animal agriculture operations. (Caswell, Margriet and Kelly Day-Rubenstein. USDA ERS. "Agricultural Resources and Environmental Indicators; Agricultural Research and Development." EIB-16. 2006 at 61.) One USDA CRIS employee informed Food & Water Watch that the database "isn't the best resource to get an accurate account of NIFA funding." Because method of production is key to analyzing different models of agriculture, the database could be greatly strengthened through a production method classification.
- 162 Zirulnick, Ariel. "Somalia famine revives debate: is it acceptable to patent aid." *Christian Science Monitor*. October 3, 2011; Rice, Andrew. "The Peanut Solution." *New York Times*. September 10, 2010; Adu-Afruwah, Seth et al. "Acceptability of lipid-based nutrient supplements (LNS) among Ghanaian infants and pregnant or lactating women." *Maternal and Child Nutrition*. 2010 at 1 and 12; Hess, Sonja. "Acceptability of zinc-fortified, lipid-based nutrient supplements (LNS) prepared for young children in Burkina Faso." *Maternal and Child Nutrition*. 2010 at 1 and 10; "UC Davis Receives \$16 Million Gates Foundation Grant to Support Research to Prevent Childhood Malnutrition." UC DAVIS News and Information. November 18, 2008.

## Food & Water Watch

### **National Office**

1616 P St. NW, Suite 300

Washington, DC 20036

tel: (202) 683-2500

fax: (202) 683-2501

*info@fwwatch.org*

**[www.foodandwaterwatch.org](http://www.foodandwaterwatch.org)**

