

# Agricultural Subsidies and the American Obesity Epidemic

Caroline Franck, MSc, Sonia M. Grandi, MSc, Mark J. Eisenberg, MD, MPH

*This activity is available for CME credit. See page A4 for information.*

**Abstract:** Government-issued agricultural subsidies are worsening obesity trends in America. Current agricultural policy remains largely uninformed by public health discourse. Although findings suggest that eliminating all subsidies would have a mild impact on the prevalence of obesity, a revision of commodity programs could have a measurable public health impact on a population scale, over time. Policy reforms will be important determinants of the future of obesity in America, primarily through indemnity program revisions, and the allocation of increasing amounts of resources to sustainable agriculture. Public health intervention will be required at the policy level to promote healthy behavioral changes in consumers. The 2013 Farm Bill will be the key mechanism to induce such policy change in the near future.

(Am J Prev Med 2013;45(3):327–333) © 2013 American Journal of Preventive Medicine

## Introduction

Current agricultural policies in the U.S. are contributing to the poor health of Americans.<sup>1–3</sup> Government-issued payments have skewed agricultural markets toward the overproduction of commodities that are the basic ingredients of processed, energy-dense foods. This review considers how agricultural subsidies have shaped the current American nutritional environment, how they are perpetuating obesity trends, and what measures must be taken to reverse what experts agree are harmful and unsustainable agricultural practices.<sup>3</sup>

The importance of addressing agricultural policy as health policy is considered first, followed by contextualizing farm subsidies within American history. Arguments for and against subsidies' contributions to obesity are outlined, concluding with a critical appraisal of subsidy reform in America, and the political mechanisms required to induce policy change. Although subsidies exist in many forms, the paper focuses on commodity programs, or Title I of the U.S. Farm Bill, the main federal mechanism for influencing American agriculture.<sup>4</sup>

From the Divisions of Cardiology and Clinical Epidemiology (Franck, Grandi, Eisenberg), Department of Epidemiology, Biostatistics and Occupational Health (Eisenberg), Faculty of Medicine (Eisenberg), McGill University, Montreal, Quebec, Canada

Address correspondence to: Mark J. Eisenberg, MD, MPH, Divisions of Cardiology and Clinical Epidemiology, Jewish General Hospital/McGill University, 3755 Cote Ste-Catherine Road, Suite H421.1, Montreal, Québec, Canada, H3T 1E2. E-mail: mark.eisenberg@mcgill.ca.

0749-3797/\$36.00

<http://dx.doi.org/10.1016/j.amepre.2013.04.010>

This discussion is particularly important in the face of the 2013 Farm Bill, the drafting of which continues following the expiration of the 2008 Farm Bill in September 2012.<sup>5</sup> A temporary extension of the previous bill has been granted until the end of this fiscal year, by which time Congress must produce a final bill to be signed into law.<sup>6</sup> As food production (and by extension, its availability and eventual consumption) is best influenced through agricultural policy,<sup>7</sup> consumers must understand the implications of policies that will shape their nutritional environment for the next 5 years.

## Background

The U.S. food market provides ~3900 calories per capita each day, or twice the average person's caloric requirement.<sup>8</sup> Between 1970 and 2000, the average per person consumption of added fats increased by 38%, whereas that of sugars increased by 20%.<sup>3</sup> The consumption of high-fructose corn syrup (HFCS) alone increased more than 1000% between 1970 and 1990, and today accounts for more than 40% of caloric sweeteners added to food and beverages.<sup>9</sup> This excessive intake of fats and sugars is worsened by the availability of extremely cheap caloric options.<sup>10</sup> Most consumers fail to take into account the hidden costs of inexpensive food, namely, the taxes paid toward various agricultural subsidies and the health costs associated with poor dietary practice.<sup>11,12</sup> The three leading causes of death in the U.S.—heart disease, cancer, and stroke—are all associated with poor diet and overweight.<sup>3</sup>

There are multiple contributing factors to increasing obesity,<sup>13</sup> many of which are byproducts of a poor nutritional environment.<sup>14,15</sup> Unhealthy foods are more

widely available and cheaper than healthy alternatives,<sup>14</sup> and consumers place much importance on cost when purchasing food.<sup>16</sup> Excluding the poorest of the poor, obesity is associated with poverty.<sup>17</sup> The ability for retailers and restaurants to sell their products at a low cost results from cheap commodities.<sup>11</sup> Notably, these commodities are said to be artificially cheap in that their subsidized production makes them lucrative crops to grow.<sup>17,18</sup> Research has shown a clear relationship between obesity and the consumption of added fats, sugars, and refined grains.<sup>7</sup> Bearing this in mind, American farm policy is effectively driving the production and propagation of cheap sugars and oils that lead to widespread weight gain.

### Agriculture and Health Policy

Consumers and policymakers have historically overlooked the upstream determinants of their health, that is, the connection between obesity and what occurs on the farm.<sup>2,7</sup> Such practice fails to acknowledge that agricultural policies dictate which crops the government will support.<sup>1</sup> In turn, agriculture policy dictates which crops U.S. farmers will grow, and the prices of those crops, and therefore guides public and private commodity commissions.<sup>19,20</sup> For this reason, tackling the policies that translate into food production and availability could be the most widespread preventive measure to address the obesity epidemic from an upstream approach.

### How Grains and Oilseeds Contribute to Obesity

In 2004, 96% of U.S. cropland was dominated by the eight main commodity crops: corn (30%); soybeans (29%); wheat (23%); cotton (5%); sorghum (3%); barley (2%); oats (2%); and rice (1%).<sup>3</sup> According to the American Soybean Association, 70% of the fats and oils consumed by Americans are soy oil, found primarily in cooking oils, baking, and frying fats.<sup>21</sup> A large percentage of cropland is cultivated on a 2-year rotation that favors soy one year and corn the next,<sup>22</sup> another purported contributor to obesity. A conservative estimate of high-fructose corn syrup (HFCS) consumption suggests a daily average of 132 calories for all Americans aged >2 years, with the top 20% of consumers ingesting an average of 316 calories from HFCS per day.<sup>9</sup>

It is difficult to argue that the widespread consumption of foods containing HFCS, including soft drinks, fruit drinks, cereals, canned fruits, condiments, baked goods, and ice cream,<sup>17,22,23</sup> has not contributed to widespread obesity.<sup>24</sup> The question is whether excess consumption of these products is to blame, or whether the metabolism of HFCS inherently increases the risk of obesity. HFCS in its most common form consists of 45% glucose and 55%

fructose.<sup>25</sup> The metabolism of fructose differs from that of glucose in that it does not stimulate the secretion of insulin or leptin, two key signals in the regulation of food intake.<sup>9</sup> Thus, HFCS consumption may perhaps facilitate overall increased energy intake.<sup>9,17</sup>

Another important contribution of grains and oilseeds to the prevalence of obesity is their use as feed for livestock. Grain-fed animals get fatter, quicker.<sup>26</sup> The effect of low-cost feed translates into the lower cost of raising poultry, hogs, and cattle, which in turn has implications for the relative prices of meat products.<sup>27,28</sup> The average American consumes 97 pounds of beef, and 273 pounds of meat each year.<sup>12</sup> Fatty meat, unlike corn sweeteners, is correlated with the occurrence of chronic diseases, including high cholesterol, heart disease, and type 2 diabetes.<sup>12,27</sup> As grain-fed livestock contribute to the oversupply of the commodities required to feed them, the harmful effects of grain and oilseed production are as widespread as they are indirect.

### A Brief History of Agricultural Subsidies in America

The first American agricultural assistance programs were implemented in the 1920s to address the overproduction of commodities resulting from World War I support efforts.<sup>17</sup> In a failed attempt to stabilize prices resulting from overproduction, the federal government introduced American cotton and grain to open markets, which paradoxically encouraged farmers to grow even more.<sup>17</sup> This trend continued well into the post-World War II era, when industrialization and specialization gave rise to increasingly large companies, traders, manufacturers, and processors whose competitive interest was rooted in oversupply.<sup>22</sup>

Farming has always been a risky business: production decisions made in the springtime are later at the mercy of future market fluctuations, the weather, and pests.<sup>29</sup> The first term of the Nixon administration suffered the unlucky combination of a poor harvesting year and a hefty sales agreement with the Soviet Union, resulting in commodity shortages and increased prices.<sup>17</sup> The government's solution was to ensure a surplus of basic commodities, including wheat, corn, soybeans, and cotton, and to sell these commodities on the international market.<sup>17</sup> Direct government payments were issued to farmers to encourage competition and further lower the price of basic commodities through increased production.<sup>3</sup> As individual farmers had no impact on commodity prices, overproduction was a self-ensured safety net.

By 1996, a farm bill named "Freedom to Farm" promised to phase out all farm subsidies to allow farmers to respond more effectively to global market signals.<sup>17</sup>

Predictably, some argue, Freedom to Farm was a disastrous policy: Farmers sustained their rate and types of production, driving commodity prices further into the ground.<sup>17</sup> As a result, emergency payments were issued to producers to make up the difference between market prices and what they needed to stay in business.<sup>7</sup> These direct payments were later institutionalized by Congress in the 2002 Farm Bill.<sup>7</sup>

## Subsidies Today

### Forms, Facts, and Figures

Commodity price supports provide vital inputs to U.S. agriculture: U.S. Department of Agriculture (USDA) total subsidies for 2010 were estimated at > \$15 billion.<sup>30</sup> In their absence, Colorado, one of the major agricultural states, would see 75% of its farms at a deficit. Similarly, Montana would have zero net farm income.<sup>31</sup> Today, the aim of agricultural subsidies is to protect farmers against risks inherent to their trade while ensuring minimum economic prosperity and stability.<sup>32</sup> This support comes predominantly in three program forms: commodity, risk management, and disaster assistance.<sup>32</sup>

Of the commodity programs, direct payments are the least defensible, as their allocation rests on a farm's history of production, irrespective of that farm's current output.<sup>33,34</sup> Countercyclical payments are equally questionable: When national target farm prices drop below a given market threshold, qualifying producers receive a payment based on their farm's historical yield.<sup>32</sup> Farmers may sell their crops for a below-target price, but they might still earn a moderate-to-large profit derived from the sheer size of the crop. These farmers would be eligible to receive countercyclical payments in addition to their market profit if the average county crop price was below the mandated target price.<sup>34</sup> These payments thus provide strong incentives for overproduction in a climate of low market prices.

### The Subsidy Debate

American agricultural policy has traditionally failed to offer incentives or support for fruit and vegetable production.<sup>1,7,35</sup> Farmers are penalized for growing "specialty crops" (such as fruits and vegetables) if they have received federal farm payments to grow other crops.<sup>3</sup> In other words, federal farm subsidies promote unsustainable agriculture while also failing to reward good stewardship.<sup>12</sup> Further, although farmers may generate higher marketplace revenue from fresh produce, substantially lower economic security makes growing fruits and vegetables a risky proposition in an already risky industry.<sup>23</sup>

Subsidies also have resulted in fewer farms and diminished agricultural diversity.<sup>13</sup> Large farms often devote their entire capital and experience to producing one or two commodities, leaving smaller players to be regularly winnowed out at the profit of corporate farms and contractors.<sup>7,11</sup> In 2001, large farms, which constitute 7% of the total, received 45% of federal subsidies, whereas small farms, constituting 76% of the total, received 14% of total payments.<sup>36</sup> Between 2003 and 2007, the top 10% of subsidized farmers received an annual average of \$68,030, whereas the bottom 80% averaged \$2312.<sup>37</sup> Disproportionately allocated subsidies (Table 1) have contributed to forcing hundreds of small, biodiverse farms out of business at the profit of industrialized food processing.<sup>13</sup>

### Arguments Against Subsidies' Contribution to Obesity

The importance of the deleterious effects of commodity subsidies on health remains a topic of contention. Some industry professionals maintain that federal farm subsidies have not substantially contributed to the increasing prevalence of obesity in America.<sup>17</sup> A few major points are raised to this effect: First, the imposition of acreage set-asides is believed to have minimized the price-depressing effect of subsidies by means of reduced production.<sup>38</sup> Second, the share of the cost of commodities in the retail price of food products is relatively small; therefore, cheap commodities could not meaningfully contribute to reducing retail prices.<sup>18,20,38,39</sup>

In addition, food consumption patterns do not usually change significantly in response to small price changes.<sup>38,39</sup> The prevalence of obesity is also much lower in some countries that also provide relatively large subsidies to farmers, such as Japan, South Korea, and France.<sup>38</sup> Consequently, if farm subsidies have had an impact on consumption and obesity in America, many experts consider it to be extremely mild.<sup>38,39</sup>

Those who believe subsidies do not contribute to obesity point to agricultural research and development (R&D) as being responsible for the downward trend of commodity prices.<sup>27,38</sup> Production-promoting inputs such as fertilizers and pesticides have provided additional crop insurance, whereas varietal improvements and new crop breeds have extended production seasons.<sup>20,27</sup> Between 1980 and 2000, the proportion of each food dollar allocated to farmers dropped from 31% to 19%, leaving 81 cents of every dollar spent on food to go toward non-farm-related expenditures including processing, packaging, transport, and marketing.<sup>40</sup> Industrial farming is essential to the food industry, particularly in the context of a growing world population<sup>41</sup>; by industry standards, the abundant provision of cheap food is likely to remain a viable business venture.<sup>27,38,41</sup>

**Table 1.** Agricultural subsidy program recipients by order of importance, 2010

Rank	Program	Number of recipients (2010)	Subsidy total (2010 \$)
1	Corn subsidies <sup>a</sup>	884 <sup>a</sup>	3,495,343,298
2	Disaster payments	178,481	2,532,598,972
3	Conservation reserve program	442,768	1,818,014,025
4	Wheat subsidies <sup>a</sup>	5,364 <sup>a</sup>	1,731,633,184
5	Soybean subsidies <sup>a</sup>	636 <sup>a</sup>	1,554,841,229
6	Cotton subsidies <sup>a</sup>	1,007 <sup>a</sup>	828,339,995
7	Rice subsidies <sup>a</sup>	85 <sup>a</sup>	401,628,223
8	Sorghum subsidies <sup>a</sup>	351 <sup>a</sup>	246,343,050
9	Livestock subsidies	30,248 <sup>a</sup>	226,737,271
10	Tobacco subsidies	58,316 <sup>a</sup>	194,434,094
11	Environmental Quality Incentive Program	9,261	184,999,402
12	Wetlands Reserve Program	1,468	137,574,485
13	Peanut subsidies	49 <sup>a</sup>	86,976,571
14	Barley subsidies <sup>a</sup>	325 <sup>a</sup>	86,667,218
15	Dairy program subsidies	51,487 <sup>a</sup>	73,932,412
16	Sunflower subsidies <sup>a</sup>	33 <sup>a</sup>	61,919,160
17	Canola subsidies <sup>a</sup>	3 <sup>a</sup>	31,245,909
18	Oat subsidies <sup>a</sup>	129 <sup>a</sup>	6,582,385
19	Wool subsidies	9,157 <sup>a</sup>	6,223,385
20	Flax subsidies	0 <sup>a</sup>	4,912,372

<sup>a</sup>“Crop totals are an estimate. In the data received by EWG for 2009 and 2010, USDA does not differentiate Direct Payments or Counter-Cyclical Payments by crop as in previous years. EWG allocated the region’s Direct Payments by crop for the 2009 and 2010 calendar year using the proportion of that crop’s Direct Payments in 2008. Number of recipients receiving Direct Payments for that crop were not estimated. Due to the way the Counter-Cyclical payments are made – EWG was not able to allocate Counter-Cyclical Payments to crops. Also included in the crop totals are the crop insurance premiums as reported by the USDA Risk Management Agency for that crop. The crop insurance premium is the amount of money that is calculated by USDA to make the program actuarially sound. Crop insurance premium subsidies are available at the county, state, and national level.” Quote is from EWG<sup>30</sup>; table is adapted from EWG.<sup>30</sup>

EWG, Environmental Working Group; USDA, U.S. Department of Agriculture

## Arguments for Subsidies’ Contribution to Obesity

Additional points must be considered in the subsidy debate. In absolute terms, the claim that acreage set-asides have slowed production and have minimized the price-depressing effect of subsidies<sup>38</sup> undermines the reality that productivity is steadily increasing. According to the USDA’s Economic Research Service, production between 1948 and 2009 increased at an average rate of 1.64%.<sup>42</sup> In 2009, the USDA reported record-setting corn yields, at 165.2 bushels per acre.<sup>43</sup>

In addition, although the share of commodities in the retail price of food may be small, it is problematic to focus solely on consumer behavior in response to price change.<sup>28</sup> Large-scale food processors benefit from savings

subsequently passed on to consumers,<sup>3</sup> and thus have a role to play in shaping the American diet. Low-cost commodities and inputs enable restaurants and retailers to increase calorie density at a negligible cost<sup>3,44</sup>; consequently, although R&D is primarily responsible for increased farm output, subsidiary payments sustain the impetus to overproduce.<sup>28,45</sup>

Finally, international comparisons based on ecologic data are subject to confounding and should not be relied on to draw causal conclusions in the American context. Irrespective of the magnitude of subsidies’ effects on obesity, current agricultural policies are at odds with health policy. To argue that changing the subsidy system would have little impact on obesity is unhelpful in considering the broader public health impact of a healthy nutritional environment.

## Do Subsidies Need the Axe or Reform?

Projected estimates of the effect of elimination of all subsidies are a slight reduction of cereal and bakery product consumption, for an average annual decrease of 1451 calories per capita, compared with a decrease of 218 calories for the elimination of grain subsidies alone.<sup>39</sup> According to Alston and colleagues,<sup>27</sup> all commodities other than wheat and corn would actually see a decrease in price, effectively encouraging meat and dairy consumption.<sup>27</sup> Sugar would experience a price decrease of 15%, which would be reflected in the lower prices of all sweetened foods resulting from cheaper caloric sweeteners.<sup>27</sup> Fruit and vegetable production would increase by 4.4%, whereas prices would decrease by 5.2%.<sup>27</sup>

Based on modeling estimates of the effects of price increases on consumption, Alston and colleagues<sup>39</sup> reason that the impact of phasing out agricultural subsidies on obesity would be modest, if at all substantial.<sup>39</sup> In addition, under existing farm policy, eliminating subsidies would put farmers at high risk of market failure and could discourage new farmers from entering the industry. Finally, eliminating subsidies may not address the underlying issue of overproduction, as the latter preceded price supports, and in fact catalyzed their implementation.<sup>7</sup>

A redesign of the subsidy system, rather than its elimination, is likely to yield more sustainable changes in the agricultural industry. Such revision could take the form of decoupling income supports from program-specific crops, and rewards for agricultural diversification.<sup>45</sup> The trickle-down effect of providing increased government support to farms growing sustainable, bio-diverse crops would not only help farmers reap greater economic benefits (as fruits and vegetables are among the products with the highest farm-retail value)<sup>46</sup> but would contribute to large-scale efforts to address obesity by increasing the availability of fresh produce. Overall, government and public health activists should support policies that help disincentivize monocultural overproduction, not policies that fuel it.

## Agricultural Policy and the 2013 Farm Bill

Changing the American food system will require real votes in agricultural policy.<sup>47</sup> Every 5–7 years, there is an opportunity to make changes to U.S. agriculture through the drafting of a new farm bill that institutionalizes policies for production, food assistance and availability, rural development, renewable energy, conservation policies, and research.<sup>1,3,22,27,47</sup> Both houses of Congress must produce a version of the bill that reflects their respective spending priorities, and a compromise must subsequently be reached between the two versions before the president signs the final bill into law.

Congress failed to pass a 2012 Farm Bill by September 30, 2012; as a result, the 2008 Farm Bill was extended on January 2, 2013, as part of widespread measures to avoid the so-called fiscal cliff that would result in nationwide tax increases and spending cuts.<sup>6</sup> The extension granted until September 30, 2013, should allow Congress sufficient time for further deliberation. Negotiations will be particularly important within the U.S. House of Representatives, where disagreements on spending cuts to the Supplementary Nutrition Assistance Program (formerly known as food stamps)<sup>48</sup> led to an inability to produce a draft to meet that of the U.S. Senate, passed in June 2012.<sup>49</sup>

In January 2013, Senate Majority Leader Harry Reid reintroduced last session's Senate Farm Bill for the 113th Congress.<sup>50</sup> With the aim of reducing government deficit, both the 2012 Senate bill and the House draft proposed spending cuts to commodity and nutrition assistance programs.<sup>5,51,52</sup> In both the 2012 Senate and House bills, large cuts (estimated at \$6 billion) are expected to important conservation programs, thus reducing support to sustainable farming practices.<sup>51,52</sup>

Although there appears to be a movement toward agricultural reform, economic motives overshadow real reform that is driven by concern about Americans' health. Savings resulting from large spending cuts are unlikely to be invested in health-oriented programs, given the intention of Congress to reduce the national deficit and restrict federal spending. Ultimately, it is unclear whether policymakers will prioritize sustainable food systems in the 2013 Farm Bill.

## Recommendations: Potential Points of Policy Reform

Agricultural policy must strengthen programs that indemnify farmers for their losses while ensuring that producers do not profit from faulty safety nets, such as with payments that are decoupled from yield or acreage (i.e., direct payments and countercyclical payments). Additionally, policies that focus on investing capital in quality over quantity would be likely to produce long-term public health and farming benefits.<sup>47</sup> The 2013 Farm Bill's first priority must be to invest greater capital in sustainable agriculture.<sup>3</sup> More specifically, sustainable practices should yield bio-diverse, quality foods, optimize nonrenewable resources, and sustain the economic viability of farmers. Important policy reforms could direct increasing subsidies to family farms and/or fruit and vegetable growers in the aim of making their prices more competitive.<sup>17,18</sup>

Supporting local food systems also would increase the farm value of the food dollar, providing farmers with greater marketing opportunities and communities with the potential for economic development.<sup>12</sup> R&D should

increasingly support public health goals, rather than those driven by economic profit.<sup>41</sup> For instance, expanding R&D initiatives to promote perennial crops would lead to greater diversity in all commodities, entailing the reduced production of sweeteners and hydrogenated oils,<sup>23</sup> and the increased production of specialty crops.<sup>7,45</sup>

Finally, the implementation of such policy reforms would benefit from interdisciplinary binding strategies to engage multiple sectors beyond public health.<sup>53,54</sup> Current federal agencies and authorities on food production and safety provide fragmented support to what should be a single comprehensive objective.<sup>7</sup> As obesity is a multidimensional problem,<sup>7</sup> the synergy between factors is more important than any one contributor alone.<sup>22</sup> A successful reorganization of the American food environment will require commitment to mutually supportive interventions affecting food availability, price, marketing, and health education at the local, state, and federal levels of government.<sup>55</sup>

## Conclusion

Although subsidies provide a necessary safety net to farmers operating in a volatile trade, existing price support programs continue to create strong economic incentives to overproduce a select number of crops at the expense of agricultural diversity and American health. The business of food is the most ubiquitous and powerful industry in the world, dominated by influential stakeholders and interest groups. Public health officials have had little say in shaping the American food system. Thus, the current nutritional environment remains uninformed by healthy eating practices, making it difficult for consumers to enact and sustain healthy behaviors.

Because of the scale and complexity of the obesity epidemic, any one intervention cannot reasonably be expected to reverse obesity trends in the immediate future. Rather, the goal should be small changes to result in cumulative, population-wide effects over time.<sup>13</sup> Although policy reform is only one of the many fronts from which the fight against obesity must be fought, a revision of agricultural priorities is in order: public health interventions will remain limited in their impact until they can inform decisions that are made at every level of the American food chain, from growers to consumers.

---

No financial disclosures were reported by the authors of this paper.

---

## References

1. Story M, Kaphingst KM, Robinson-O'Brien R, Glanz K. Creating healthy food and eating environments: policy and environmental approaches. *Annu Rev Public Health* 2008;29:253–72.
2. Story M, Hamm MW, Wallinga D. Food systems and public health: linkages to achieve healthier diets and healthier communities. *J Hunger Environ Nutr* 2009;4:219–24.
3. Jackson RJ MR, Naumoff KS, Shrimali BP, Martin LK. Agriculture policy is health policy. *J Hunger Environ Nutr* 2009;4:393–408.
4. Weber JA, Becker N. Framing the farm bill. *J Am Diet Assoc* 2006;106:1354–7.
5. Stalled farm bill is pushed for its savings. [www.nytimes.com/2012/12/06/us/politics/stalled-farm-bill-could-help-with-deficit-reduction.html](http://www.nytimes.com/2012/12/06/us/politics/stalled-farm-bill-could-help-with-deficit-reduction.html).
6. U.S. Congress issues short-term farm bill extension. International Centre for Trade and Sustainable Development. *Bridges Weekly Trade News Digest*, 17(1). [ictsd.org/i/news/bridgesweekly/152578](http://ictsd.org/i/news/bridgesweekly/152578).
7. Wallinga D. Agricultural policy and childhood obesity: a food systems and public health commentary. *Health Aff (Millwood)* 2010;29:405–10.
8. Ludwig DS, Nestle M. Can the food industry play a constructive role in the obesity epidemic? *JAMA* 2008;300:1808–11.
9. Bray GA, Nielsen SJ, Popkin BM. Consumption of high-fructose corn syrup in beverages may play a role in the epidemic of obesity. *Am J Clin Nutr* 2004;79:537–43.
10. Ruhm CJ. Understanding overeating and obesity. *J Health Econ* 2012;31:781–96.
11. Tillotson J. America's obesity: conflicting public policies, industrial economic development, and unintended human consequences. *Annu Rev Nutr* 2004;24:617–43.
12. Horrygan L, Lawrence RS, Walker P. How sustainable agriculture can address the environmental and human health harms of industrial agriculture. *Environ Health Perspect* 2002;110:445–56.
13. Morris MN, Misra S, Sibary S. Global fattening: designing effective approaches to reducing obesity. *J Am Acad Bus* 2008;12:249–55.
14. Novak NL, Brownell KD. Obesity: a public health approach. *Psychiatr Clin North Am* 2011;34:895–909.
15. Blanck HM, Kim SA. Creating supportive nutrition environments for population health impact and health equity: an overview of the nutrition and obesity policy research and evaluation network's efforts. *Am J Prev Med* 2012;43(3S2):S85–S90.
16. French SA, Story M, Jeffery RW, et al. Pricing strategy to promote fruit and vegetable purchase in high school cafeterias. *J Am Diet Assoc* 1997;97:1008–10.
17. Fields S. The fat of the land: do agricultural subsidies foster poor health? *Environ Health Perspect* 2004;112:A820–A823.
18. Miner J. Market incentives could bring U.S. agriculture and nutrition policies into accord. *Cal Ag* 2006;60:8–13.
19. Schoonover H. A fair farm bill for public health. Minneapolis MN: The Institute for Agriculture and Trade Policy, 2007.
20. Hawkes C. Promoting healthy diets and tackling obesity and diet-related chronic diseases: what are the agricultural policy levers? *Food Nutr Bull* 2007;28(2S):S312–S322.
21. Soy Stats 2009. Welcome to SoyStats 2009. [www.soystats.com/2009/Default-frames.htm](http://www.soystats.com/2009/Default-frames.htm).
22. Muller M, Schoonover H, Wallinga D. Considering the contribution of U.S. food and agricultural policy to the obesity epidemic: overview and opportunities. Minneapolis MN: Institute for Agriculture and Trade Policy, 2007.
23. Schoonover H, Muller M. Food without thought: how U.S. farm policy contributes to obesity. Minneapolis MN: Institute for Agriculture and Trade Policy, 2006.
24. Hu FB. Globalization of diabetes: the role of diet, lifestyle, and genes. *Diabetes Care* 2011;34:1249–57.
25. Beghin JC, Jensen HH. Farm policies and added sugars in U.S. diets. *Food Policy* 2008;33:480–8.
26. Russell JB, Rychlik JL. Factors that alter rumen microbial ecology. *Science* 2001;292:1119–22.
27. Alston JM, Sumner DA, Vosti SA. Are agricultural policies making us fat? Likely links between agricultural policies and human nutrition and

- obesity, and their policy implications. *Appl Econ Perspect Pol* 2006;28:313–22.
28. Farnese PL. Remembering the farmer in the agriculture policy and obesity debate. *Food Drug Law J* 2010;65:391–401.
  29. Schaffer H, Hunt DB, Ray DE. U.S. agricultural commodity policy and its relationship to obesity. Knoxville TN: Agricultural Policy Analysis Center, 2007.
  30. 2011 Farm Subsidy Database. Environmental Working Group. [farm.ewg.org/regionsummary.php?fips=00000&progcode=total&yr=2010](http://farm.ewg.org/regionsummary.php?fips=00000&progcode=total&yr=2010).
  31. Manning R. *Against the grain: how agriculture has hijacked civilization*. New York: North Point Press, 2004.
  32. Shields DA, Monke J, Schnepf R. Farm safety net programs: issues for the next Farm Bill. Congressional Research Service, 2010. [www.cnire.org/NLE/CRSreports/10Oct/R41317.pdf](http://www.cnire.org/NLE/CRSreports/10Oct/R41317.pdf).
  33. Office of Management and Budget. *Living within our means and investing in the future: the president's plan for economic growth and deficit reduction*. 2011. [www.whitehouse.gov/sites/default/files/omb/budget/fy2012/assets/jointcommitteereport.pdf](http://www.whitehouse.gov/sites/default/files/omb/budget/fy2012/assets/jointcommitteereport.pdf).
  34. Farm Subsidy Primer. Environmental Working Group. [farm.ewg.org/subsidyprimer.php](http://farm.ewg.org/subsidyprimer.php).
  35. Sealing KE. Attack of the balloon people: how America's food culture and agricultural policy threaten the food security of the poor, farmers and the indigenous peoples of the world. *Vanderbilt J Transnational Law* 2007;40.
  36. U.S. General Accounting Office. *Farm programs: information on recipients of federal payments, 2001*. [www.gao.gov/new.items/d01606.pdf](http://www.gao.gov/new.items/d01606.pdf).
  37. Korth S. Federal farm subsidies limitations proposal. *Policy Studies J* 2007;35:558–9.
  38. Alston JM, Sumner DA, Vosti SA. Farm subsidies and obesity in the U.S.: national evidence and international comparisons. *Food Policy* 2008;33:470–9.
  39. Alston JM, Rickard Bradley J, Okrent, Abigail M. Farm policy and obesity in the U.S. *Choices* 2010;25:(3).
  40. Elitzak H. Food marketing costs at a glance. *Food Rev* 2001;24:47–8.
  41. Ludwig DS. Technology, diet, and the burden of chronic disease. *JAMA* 2011;305:1352–3.
  42. Agricultural productivity in the U.S. [www.ers.usda.gov/data-products/agricultural-productivity-in-the-us.aspx](http://www.ers.usda.gov/data-products/agricultural-productivity-in-the-us.aspx).
  43. 2009 crop year is one for the record books, USDA reports. National Agricultural Statistics Service, U.S. Department of Agriculture. [www.nass.usda.gov/Newsroom/2010/01\\_12\\_2010.asp](http://www.nass.usda.gov/Newsroom/2010/01_12_2010.asp).
  44. Nestle M. Increasing portion sizes in American diets: more calories, more obesity. *J Am Diet Assoc* 2003;103:39–40.
  45. Foster J. Subsidizing fat: how the 2012 Farm Bill can address America's obesity epidemic. *U Penn Law Review* 2011;160:235–76.
  46. Okrent AM, Alston JM. The effects of farm commodity and retail food policies on obesity and economic welfare in the U.S. *Am J Agric Econ* 2012;94:611–46.
  47. Pollan M. The vegetable-industrial complex. *The New York Times*, 2006, Oct 15.
  48. One way to pass farm bill: attach it to fiscal cliff. [www.cbsnews.com/8301-250\\_162-57553439/one-way-to-pass-farm-bill-attach-it-to-fiscal-cliff/](http://www.cbsnews.com/8301-250_162-57553439/one-way-to-pass-farm-bill-attach-it-to-fiscal-cliff/).
  49. Bill Summary & Status, 112th Congress (2011-2012), S.3240. [thomas.loc.gov/cgi-bin/bdquery/z?d112:SN03240:@@L&summ2=m&](http://thomas.loc.gov/cgi-bin/bdquery/z?d112:SN03240:@@L&summ2=m&).
  50. Chairwoman Stabenow applauds Majority Leader Reid for making farm bill a top priority. [www.ag.senate.gov/newsroom/press/release/chairwoman-stabenow-applauds-majority-leader-reid-for-making-farm-bill-a-top-priority](http://www.ag.senate.gov/newsroom/press/release/chairwoman-stabenow-applauds-majority-leader-reid-for-making-farm-bill-a-top-priority).
  51. H.R. 6083 Federal Agriculture Reform and Risk Management Act. [agriculture.house.gov/farmbill](http://agriculture.house.gov/farmbill).
  52. s. 3240 Agriculture Reform, Food and Jobs Act of 2012. [www.ag.senate.gov/issues/farm-bill](http://www.ag.senate.gov/issues/farm-bill).
  53. Lang TR, G. Overcoming policy cacophony on obesity: an ecological public health framework for policymakers. *Obes Rev* 2007;8:165–81.
  54. McKinnon RA, Orleans CT, Kumanyika SK, et al. Considerations for an obesity policy research agenda. *Am J Prev Med* 2009;36:351–7.
  55. Kimmons J, Gillespie C, Seymour J, Serdula M, Blanck HM. Fruit and vegetable intake among adolescents and adults in the U.S.: percentage meeting individualized recommendations. *Medscape J Med* 2009;11:26.

Have you seen the *AJPM* website lately?  
Visit [www.ajpmonline.org](http://www.ajpmonline.org) today!