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Cash, Crops, Chemicals, and Cosmetics: A Mid-Green Eco-Labeling Approach

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CASH, CROPS, CHEMICALS, AND COSMETICS: A MID-GREEN ECO-LABELING APPROACH

*Michael T. Olexa, R. Benjamin Lingle, Kimberly Stewart and Damian C.
Adams**

I.	INTRODUCTION	223
II.	GRADE STANDARDS.....	227
III.	MARKETING ORDERS	233
IV.	GRADE STANDARDS, MYCOTOXINS, AND COSMETICS	239
V.	POSSIBLE EFFECTS OF LOWERING GRADE STANDARDS.....	245
VI.	THE BENEFITS OF LOWERED GRADE STANDARDS POLLUTION CONTROL, FARM LABOR SAFETY, COSTS, AND RESIDUES	250
	A. <i>Pollution Control</i>	251
	B. <i>Farm Labor Safety</i>	252
	C. <i>Costs</i>	253
	D. <i>Residues</i>	253
VII.	THE PRIVATIZATION OF GRADE STANDARDS AND THE EFFECTS ON CHEMICAL APPLICATIONS.....	254
VIII.	CONCLUSION.	255

I. INTRODUCTION

The United States Department of Agriculture (USDA) uses grade standards to uniformly characterize the quality and condition of agricultural commodities.¹ The standards are promulgated by the USDA's Agricultural

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1. Fresh Fruit, Vegetable, Nut and Specialty Crop Grade Standards, U.S. Department of Agriculture Agricultural Marketing Services, <http://www.ams.usda>.

Marketing Services (AMS) division in consultation with farming industry groups.² Emphasizing produce attributes such as surface defects, shape, cleanliness, color, maturity, and decay,³ grade standards improve the marketability of agricultural commodities by establishing a common industry language for use in contracts.⁴ Use of such a language enables wholesale buyers to know the quality of commodities without first having to inspect them, thus facilitating trade by lowering transaction costs.⁵

Though agricultural grade standards describe many attributes of agricultural commodities, the standards do not typically include information about the pesticides used in commodity production and packaging.⁶ Labeling for certain production and processing standards exist (e.g., 100% organic, kosher, all natural), but these provide no information about any pesticide residues that may remain on the commodities.⁷ This hampers consumers from expressing preferences for commodities grown with fewer pesticides.⁸ Additionally, because grade standards and labels disregard pesticide residues, there is little incentive for producers to limit exposure of pesticides that prevent costly cosmetic damage.⁹

The notion that cosmetically-driven grade standards incentivize high pesticide use is not a new observation.¹⁰ On July 30, 1992, the Senate Committee on Agriculture, Nutrition, and Forestry conducted hearings on the link between cosmetic standards and pesticide use.¹¹ Senators from

gov/AMSV1.0/ams.fetchTemplateData.do?template=TemplateN&navID=U.S.GradeStandards&rightNav1=U.S.GradeStandards&topNav=&leftNav=&page=FreshGradeStandardsIndex&resultType=&acct=freshgrdcert (last visited Aug. 16, 2012). [hereinafter *Fruit and Vegetable Market News*]

2. *Id.*

3. NICHOLAS J. POWERS & RICHARD G. HEIFNER, FEDERAL GRADE STANDARDS FOR FRESH PRODUCE: LINKAGES TO PESTICIDE USE, U.S. DEP'T OF AGRIC., ECON. RESEARCH SERV. iv (1991) [hereinafter *Federal Grade Standards*].

4. Thomas Reardon, Jean-Marie Codron, Lawrence Busch, James Bingen, & Craig Harris, *Global Change in Agrifood Grades and Standards: Agribusiness Strategic Responses in Developing Countries*, 2 *Int'l Food and Agribusiness Mgt Rev.* 421, 427 (2001).

5. *Federal Grade Standards*, *supra* note 3, at 7.

6. *Id.* at 18.

7. *Id.*

8. *Id.*

9. *Id.*

10. See ERIK LICHTENBERG, GRADING STANDARDS AND PESTICIDES IN THE ECONOMICS OF REDUCING HEALTH RISK FROM FOOD, PROCEEDINGS OF NE-165 CONFERENCE, JUNE 6-7, 1995, WASHINGTON, D.C. 91 (Julie A. Caswell, ed.), available at <http://ageconsearch.umn.edu/bitstream/25961/1/ne165c06.pdf>.

11. See generally *Cosmetic Standards and Pesticide Use on Fruits and Vegetables: Hearing on S.102-853 Before the S. Comm. on Agriculture, Nutrition, and Forestry*, 102nd Cong. (1992) [hereinafter *Cosmetic Standards Hearing*]

farming states, the Administrator of the USDA's AMS, representatives from industry groups such as the American Farm Bureau, and representatives from advocacy groups such as the Natural Resource Defense Council provided wide-ranging opinions on the link and varying positions on whether there was cause for concern.¹² The Environmental Protection Agency (EPA),¹³ the USDA¹⁴ and the AMS¹⁵ also issued reports on the subject; however, the reports lacked rigorous analysis and offered vague policy alternatives.¹⁶

Grade standards also fail to take into account fertilizer applications used during commodity production, which create many of the same issues as pesticides.¹⁷ Fertilizers such as nitrogen, phosphorous, and potassium help crops achieve optimum size in less time, helping producers achieve higher yields per acre of farmland.¹⁸ Grade standards often include specifications for commodity size.¹⁹ The demand for higher yields and the necessity of producing commodities in conformance with grade standards incentivize producers to maintain high levels of fertilizer application. Among other concerns, excessive fertilizer applications exacerbate problems with non-point source runoff that leads to water quality problems.²⁰ Similar to the link between pesticide use and grade standards, the USDA's failure to consider fertilizer use as a component of grade standards has led to standards that ignore key commodity attributes and environmental externalities that many consumers find important.²¹

12. *Id.*

13. U.S. ENV'T'L PROT. AGENCY, OFFICE OF PLANNING, POLICY, AND EVALUATION, AN OVERVIEW OF FRUIT AND VEGETABLE STANDARDS RELATING TO COSMETIC APPEARANCE AND PESTICIDE USE (1992).

14. *Federal Grade Standards*, *supra* note 3.

15. NEILSON C. CONKLIN & PAMELA A. MISCHEN, QUALITY STANDARDS AND PESTICIDE USE: A REVIEW OF LITERATURE, U.S. DEP'T OF AGRIC., AGRIC. MARKETING SERV. (1992).

16. Lichtenberg, *supra* note 10.

17. *See generally* GRADING, CERTIFICATION, AND VERIFICATION, U.S. DEP'T OF AGRIC., AGRIC. MARKETING SERV., <http://www.ams.usda.gov/AMSV1.0/Standards> (last visited Sept. 3, 2012); *see also* S.R. Carpenter et al., *Nonpoint Pollution of Surface Waters with Phosphorous and Nitrogen*, 8 ECOL. APPL. 559 (1998).

18. John Jennings & Leo Espinosa, Arkansas Nutrient Management Planner's Guide 3-1, http://www.arnatural.org/environmental_management/water/nutrient_mgmt/planners_guide/chapter3.pdf (last visited Sept. 7, 2012).

19. For information on grade standards for particular commodities, *see* GRADING, CERTIFICATION, AND VERIFICATION, U.S. DEP'T OF AGRIC., AGRIC. MARKETING SERV., <http://www.ams.usda.gov/AMSV1.0/Standards> (last visited Sept. 3, 2012).

20. Carpenter et al., *supra* note 17.

21. Jason J. Czarnetzki, *The Future of Food Eco-Labeling: Organic, Carbon Footprint, and Environmental Life-cycle Analysis*, 30(3) STANFORD ENV. LAW J. 4 (2011).

This Article explores the possibility of lowering cosmetic grade standards to incentivize producers to use fewer pesticides and fertilizers, examines the potential negative side effects of reduced pesticide use, and proposes ways to adjust the USDA's approach to setting grade standards. Reduced pesticide and fertilizer use may lead to less non-point source pollution, fewer hazards to farm laborers, lower levels of pesticide residue left on commodities, lower production costs, and the opportunity to develop niche markets to provide consumers a more economical alternative to organic produce. However, lowering grade standards could result in poor quality produce. Less pesticide use could also affect food safety by increasing the likelihood that commodities will contain hazardous mycotoxins. Of particular concern is the risk that lowering grade standards could result in increased aflatoxin levels in raw commodities headed to market. Aflatoxins and other mycotoxins are valid causes for concern, and the USDA should not lower grade standards without first assuring that these scenarios do not occur. Readjusting grade standards to levels high enough to prevent mycotoxin infestation, yet low enough to facilitate diminished pesticide and fertilizer use, could provide producers and consumers more flexibility and lower costs.

Following this Introduction, Part II provides a history of grade standards and their enabling legislation. Part III provides a history of federal marketing orders, which allow producers to establish standards and grades that bind other producers and processors in a geographic area, and how their implementation has historically promoted goals not always in line with environmental concerns. Part IV discusses the importance of grade levels and food safety with respect to mycotoxins, with particular emphasis on aflatoxins. Part V discusses the possible effects of lowering grade standards on pesticide and fertilizer use, in particular the opportunity to develop niche markets of "ecolabeled" products. Part VI discusses the benefits of lowering grade standards. Part VII discusses how the increased vertical integration and globalization of agricultural commerce may tend to diminish the importance and influence of grade standards. Agricultural conglomerates often dictate the standards their producers must meet. As these conglomerates take up more and more of the production market, their internal standards begin to spill over and have an effect on the broader market for the particular commodity. If private industry standards require stringent cosmetic standards, many producers will continue to produce to those specifications, resulting in sustained pesticide use, regardless of potentially lowered grade standards. Conversely, if agribusinesses see potential in the production and marketing of "ecolabeled" products, private industry standards fortified by vertical integration could work in favor of the niche market development discussed in Part V. Part VIII concludes that the lowering of grade standards would be no panacea, but it could result in

significantly decreased pesticide use and is a policy worth further exploring.

II. GRADE STANDARDS

The federal government first entered the field of agricultural commodity grading in 1912,²² when the congressionally-enacted Sulzer Bill established standard apple barrel dimensions and grades for barreled apples.²³ In 1915, Congress asked the USDA to begin issuing market reports on the price and movement of agricultural commodities.²⁴ This move furthered the need for a nation-wide communication of commodity quality to go along with the existing nation-wide communication of commodity prices.²⁵ The next federal move came two years later when Congress passed the Food Production Act of 1917 (FPA).²⁶ Prompted by an increase in long-distance agricultural commerce and the need to provide quality food for American soldiers fighting in the First World War, the FPA authorized the USDA to implement national grading and inspection standards for fresh fruits and vegetables.²⁷

Following the end of the Second World War, the USDA turned its attention to rural training and partnered with states and land-grant colleges to study the scientific and economic aspects of the nation's agricultural problems.²⁸ This resulted in the Agricultural Marketing Act of 1946 (AMA) and the Research and Marketing Act of 1946 (RMA), which together expanded the federal government's role in agricultural marketing, transportation, distribution, and research.²⁹ The AMA combined agricultural commodity grading, marketing research and news, and various other agricultural marketing functions into a single USDA agency³⁰ to

22. Carolyn Dimitri, *Contract Evolution and Institutional Innovation: Marketing Pacific-Grown Apples from 1890 to 1930*, 62 THE J. OF ECON. HISTORY 189, 201 (2001).

23. *Id.*

24. *Fruit and Vegetable Market News*, *supra* note 1. The USDA first reported on strawberry market conditions in Louisiana. By the end of 1915, the USDA was collecting and distributing agricultural market information from year-round terminals in New York City, Chicago, Saint Louis, Kansas City, Buffalo, and Baltimore and from seven seasonal terminals. *Id.*

25. *Federal Grade Standards*, *supra* note 3, at 1.

26. *Id.*

27. *Id.*

28. S. Comm. on Agriculture, Nutrition, and Forestry, Members, Jurisdiction, and History, Chapter 5: War, Peace, and Prosperity: 1940 – 1959, S. DOC. NO. 105-24 (1825-1998) <http://www.gpo.gov/fdsys/pkg/GPO-CDOC-105sdoc24/html/ch5.html> (last visited Sept. 3, 2012).

29. *Id.*

30. *Federal Grade Standards*, *supra* note 3, at 1.

provide “an integrated administration of all laws enacted by Congress to aid the distribution of agricultural products through research, market aids and services, and regulatory activities”³¹

AMA § 203(c) directs and authorizes the Secretary of Agriculture “to develop and improve standards of quality, condition, quantity, grade and packaging and recommend and demonstrate such standards in order to encourage uniformity and consistency in commercial practices.”³² Further, § 203(h) charges the Secretary “[t]o inspect, certify, and identify the class, quality, quantity, and condition of agricultural products when shipped or received in interstate commerce, under such rules and regulations as the Secretary of Agriculture may prescribe.”³³ Grading and inspection is typically voluntary.³⁴ However, adherence is mandatory in certain situations, such as when federal marketing orders have established minimum grades, when the agricultural commodities are sold to the federal government, and for certain commodities in import and export.³⁵ Further, adherence to USDA grade standards is mandatory when such standards are referenced in the contracts for sale.³⁶ Packers may stamp produce containers with USDA grade standards without having the produce inspected; however, as with using the standards in contracts, stamping the standards on containers makes adherence to the standards legally binding.³⁷ Packers must have the produce inspected if they are to stamp the USDA shield on the containers.³⁸ These practices stem from the AMA’s directive that though the Secretary must develop grade standards,³⁹ inspection must occur only “under such rules and regulations as the Secretary of Agriculture may prescribe.”⁴⁰

31. 7 U.S.C. § 1621 (2000).

32. *Id.* at 1622(c).

33. *Id.* at 1622(h)(1). As referenced in the statute, this authority is derived from Congress’ commerce powers, wherein “Congress shall have power To regulate Commerce . . . among the several States” U.S. CONST. art. 1, § 8, cl. 3.

34. *Federal Grade Standards, supra* note 3, at 10.

35. *Id.*

36. *Id.*

37. *Id.* 7 U.S.C. 1622(h)(4) (“Whoever knowingly shall falsely make, issue, alter, forge, or counterfeit any official certificate, memorandum, mark, or other identification . . . with respect to inspection, class, grade, quality, size, quantity, or condition, issued or authorized under this section . . . , or whoever knowingly represents that an agricultural product has been officially inspected or graded (by an authorized inspector or grader) under the authority of this section when such commodity has in fact not been so graded or inspected shall be fined not more than \$1,000 or imprisoned not more than one year, or both.”)

38. *Federal Grade Standards, supra* note 3, at 10.

39. 7 U.S.C. 1622(c).

40. 1622(h)(1).

Though use of grade standards is discretionary in the majority of agricultural commodity transactions, buyers and sellers oftentimes freely choose to utilize the standards.⁴¹ Grading is a convenient and reliable way for sellers to communicate to buyers the quality of the bargained-for commodities.⁴² Buyers may rely on the descriptions in the contract and avoid incurring potentially high inspection costs.⁴³ As commodity transactions through the twentieth century began to more frequently involve long distance transactions, the need for precise and agreed upon descriptions became evermore essential. In addition, sellers benefit from national grade standards because they know buyers understand exactly what they are purchasing.⁴⁴ This leads to fewer contractual disputes, which in turn leads to expedited transactions and reduced transaction costs.⁴⁵

Further, grading expedites dispute resolution in situations where it does not prevent dispute in the first place.⁴⁶ Should the purchased commodity not meet the grade agreed upon in the contract, the buyer may use the grade as the basis to argue that the seller breached the contract.⁴⁷ Should the seller hold that the commodity does meet the agreed upon grade, the seller may use the grade as a defense to the buyer's claim of breach.⁴⁸ The grieved party may file a complaint with the USDA, who through power vested to it pursuant to the Perishable Agricultural Commodities Act (PACA) will formally or informally resolve such disputes.⁴⁹ The use of grade standards allows the USDA's AMS to objectively assess whether the commodity quality meets the standards agreed upon in the contract.⁵⁰

In addition to dispute avoidance and resolution, grade standards facilitate price reporting, product development, and marketing and processing technology.⁵¹ Grading puts "all parties on a more even footing, where the qualities represented by reported prices are known and understood by potential buyers."⁵² When taken in conjunction with price reporting, grading provides essential data about what prices will be paid for commodities displaying particular attributes. This benefits both the commodities industry and consumers, where the latter is able to

41. *Federal Grade Standards*, *supra* note 3, at 10.

42. *Id.* at 3.

43. *Id.*

44. *Id.* at 5.

45. *Id.*

46. *Id.*

47. *Id.*

48. *Id.*

49. *Id.*

50. *Id.*

51. *Id.* at 3-5.

52. *Id.* at 3.

communicate to the former what is desired and what should be delivered to market.

Grading results in standardization of agricultural commodities, which allows for the standardization of the equipment used to package, process, and ship commodities.⁵³ Equipment is developed to handle a fixed quantity of produce at a fixed size; variance reduces efficiency and increases packaging and transportation costs.⁵⁴ Packaging is developed to prevent bruising of commodities at a fixed level of maturity and firmness.⁵⁵ Variance from these levels results either in bruised commodities or unnecessarily protective packaging, again reducing efficiency and increasing packaging and transportation costs.⁵⁶

A final benefit provided by grade standards is commodity differentiation.⁵⁷ The majority of fresh fruits and vegetables move through the market and arrive on a grocery store shelf without brand identification.⁵⁸ It is in producers' interest that sub-par commodities do not reach the market because, without brand identification, the sub-par commodity reflects poorly on the commodity in general, rather than on the specific producer who grew the commodity.⁵⁹ The ability to foreclose sub-par commodities from the market can occur only when all producers participate in the grading, which is a strong incentive for producers to push for a marketing order with grade standards.⁶⁰ The use of grade standards in marketing orders is discussed in Part III below.

53. *Id.* at 4.

54. *Id.*

55. *Id.*

56. *Id.*

57. Steven A. Neff & Gerald E. Plato, FEDERAL MARKETING ORDERS AND FEDERAL RESEARCH AND PROMOTION PROGRAMS, BACKGROUND FOR 1995 FARM LEGISLATION 4, (1995).

58. *Id.*

59. *Id.* Traditionally, the emphasis on grade standards has been to homogenize and standardize commodities. But in a 2001 article from the International Food and Agribusiness Management Review, the authors noted that, "[t]he shift from "mass markets" with broad commodities to markets with differentiated products and niches serving the consumers with relatively high incomes induced a shift from broad to differentiated [grades and standards]. Hence, the new role of [grades and standards] is increasingly to develop and differentiate markets, with standards being used as strategic tools for market penetration, system coordination, quality and safety assurance, brand complementing, and product niche definition." Thomas Reardon, Jean-Marie Codron, Lawrence Busch, James Bingen, & Craig Harris, *Global Change in Agrifood Grades and Standards: Agribusiness Strategic Responses in Developing Countries*, 2 INT'L FOOD AND AGRIBUSINESS MGMT. REV. 421, 423-24 (2001).

60. See generally Neff & Plato, *supra* note 57.

As of the time of this Article, the USDA lists more than 312 grade standards for fruits, vegetables, and specialty crops.⁶¹ These standards specify the required physical attributes and the amounts of defects permitted for each graded commodity.⁶² Higher standards typically require not only higher quality and fewer defects, but also more specificity in the required attributes.⁶³ Grades typically indicate attributes such as cleanness, color, shape, size, maturity, and decay.⁶⁴ Most of the standards concern external attributes that can be evaluated without cutting into or tasting the commodity.⁶⁵ However, destructive sampling is required to determine the presence or absence of some required attributes.⁶⁶ Attributes such as cleanness, color, shape, and size are easily observable.⁶⁷ Other attributes, such as discoloration, skin breaks, maturity, and invisible watercore may be observable only to more experienced buyers.⁶⁸

Though the majority of required attributes pertain to external qualities, many external attributes indirectly correlate to the product's internal attributes.⁶⁹ For example, size roughly correlates to a commodity's maturity, whereas discoloration may give clues as to the extent of internal decay of a commodity.⁷⁰ This latter correlation is of particular importance, as commodities with surface defects may have a shorter shelf-life than those without such defects, increasing both the possibility that the commodity will decay while in storage or transit and that the consumer may buy an unsatisfactory product that decays before the commodity is consumed.⁷¹

A report by the USDA Economic Research Service indicates that defects limited to a commodity's surface may have less importance to consumers if the skin is removed during preparation, whereas the

61. GRADING, CERTIFICATION, AND VERIFICATION, U.S. DEP'T OF AGRIC., AGRIC. MARKETING SERV., <http://www.ams.usda.gov/AMSV1.0/Standards> (last visited Sept. 6, 2012).

62. *Federal Grade Standards*, *supra* note 3, at 5. For example, fresh orange grade standards reference: cleanness; color; shape; size; smoothness; ammoniation; bruises; buckskin; caked melanose; creasing; green spots; hail injury; hard or dry skin; oil spots; orchid thrip; pulled stems; rust mite/resetting; scab; scale; skin breakdown; scars; split, rough, or protruding navel; sunburn; thorn scratches; and various fungal, viral, and bacteriological decay. *Id.* at 14-15.

63. *Id.*

64. *Id.* at 1, 7.

65. *Id.* at 5.

66. *Id.*

67. *Id.* at 7.

68. *Id.*

69. *Id.*

70. *Id.*

71. *Id.*

importance will be heightened if the commodity is consumed whole.⁷² Producers may put different importance on particular surface defects. While a consumer may be less concerned about a defect on an orange peel because the peel is not eaten, a producer may be quite concerned about such a defect because of knowledge that the pest causing the defect may decrease yield.⁷³

Due to the typically voluntary nature of adherence to grade standards, parties to an agricultural commodity transaction may choose to use the federal standard as a base rather than an exact contract term.⁷⁴ For example, a contract may stipulate that the bargained-for commodity must meet the federal grade standard except that each piece must be approximately *A* inches in diameter rather than the *B* inches stipulated in the standard, or that only *Y* % of the batch may be bruised rather than the *X* % stipulated in the standard.⁷⁵ This allows parties to use federal grades as reference points, enjoying the reliance provided by a shared national language yet still exercising the flexibility needed to meet particular needs.⁷⁶

In addition to federal grade standards, agricultural commodity quality may be categorized, and possibly regulated, by state grade standards, private industry standards, and marketing orders.⁷⁷ States may choose to promulgate standards to emphasize a regional preference that differs from the national standard.⁷⁸ The state standards may be stricter or laxer than the corresponding federal standard.⁷⁹ Typically, federal regulations set a floor rather than a ceiling. In most areas of regulation, state authorities are permitted to have more stringent standards but would not ordinarily be permitted to have standards laxer than a corresponding federal standard. However, as discussed, the USDA's grade standards are not mandatory unless falling within a few narrow exceptions.⁸⁰ The discretionary nature of grade standards allows states, if they so choose, to set corresponding standards below the federal "floor" set by the USDA.⁸¹

A particular firm may have quality preferences that differ from federal and state standards, and accordingly may choose to develop private

72. *Id.*

73. *Id.*

74. *Id.* at 10.

75. *See id.* at 13.

76. *Id.*

77. *Id.* at 11.

78. *Id.*

79. *Id.*

80. *See supra* notes 28-29 and accompanying text.

81. *Id.*; *see also Federal Grade Standards, supra* note 3, at 11.

standards for its suppliers.⁸² If the firm controls a significant market share of a raw commodity, its internal preferences may influence the standards used across an entire region or industry.⁸³ Lastly, if a commodity is subject to a federal marketing order or marketing agreement, minimum grade standards may be legally enforceable.⁸⁴ This segues into Part III, a discussion of federal marketing orders, their history, and their effects on the agricultural industry.

III. MARKETING ORDERS

The AMA's expansion and consolidation of the USDA's agricultural marketing functions followed several decades of increased federal involvement in agriculture. Roosevelt's New Deal ushered in such legislation as the Agricultural Adjustment Act of 1933⁸⁵ (AAA of 1933), the Agricultural Marketing Agreement Act of 1937⁸⁶ (AMAA), and the Agricultural Adjustment Act of 1938⁸⁷ (AAA of 1938). The AAA of 1933, considered to be the nation's first modern farm bill, aimed to reduce agricultural surplus and raise prices by paying farmers to leave portions of their fields fallow.⁸⁸ The AAA of 1938 amended and restructured portions of the AAA of 1933 that had been rendered unconstitutional by the U.S. Supreme Court in *United States v. Butler*.⁸⁹ The intervening legislation, 1937's Agricultural Marketing Agreement Act (AMAA)⁹⁰, reenacted marketing agreement provisions from the 1933 Act and instituted industry-initiated regulation of agricultural commodities in the form of federal marketing orders.⁹¹

Section 602 of the AMAA lays out the goals envisioned by the Act's framers. Through its enactment, the 73rd Congress sought to:

(1) . . . [E]stablish and maintain such orderly marketing conditions for agricultural commodities in interstate commerce as will establish [parity prices] . . . to farmers . . .

82. *Federal Grade Standards*, *supra* note 3, at 11.

83. For a discussion on private grade standards and the effects on producers and consumers, *see generally* Reardon et al., *supra* note 4, at 421-35.

84. Neff & Plato, *supra* note 57, at 2.

85. Pub.L. 73-10, 48 Stat. 31 (1933).

86. 7 U.S.C. 601-14, 671-674

87. Pub. L. No. 75-430, 52 Stat. 31 (1938).

88. *See generally* Pub.L. 73-10, 48 Stat. 31 (1933).

89. *United States v. Butler*, 297 U.S. 1 (1936).

90. 7 U.S.C. 601-14, 671-674

91. Neff & Plato, *supra* note 57, at 2.

- (2) [P]rotect the interest of the consumer by (a) approaching the level of prices . . . declared to be the policy of Congress to establish . . . by gradual correction of the current level . . . , and (b) authorizing no action . . . [for] maintenance of prices to farmers above the [established] level . . .
- (3) [E]stablish and maintain such production research, marketing research, [] development projects . . . , [] container and pack requirements[,] [] minimum standards of quality and maturity[,] and [] grading and inspection requirements for agricultural commodities . . . as will effectuate [] orderly marketing . . .
- (4) [E]stablish and maintain such orderly marketing . . . as will provide . . . an orderly flow of the supply [] to market throughout its normal marketing season to avoid unreasonable fluctuations in supplies and prices.
- (5) [C]ontinue for the remainder of any marketing season or . . . year, such regulation pursuant to any order as will tend to avoid a disruption of the orderly marketing of any commodity⁹²

Congress authorized the USDA to establish and implement federal marketing orders to achieve these goals.⁹³

Marketing orders are tools used to stabilize markets, standardize quality, standardize packaging, regulate market flows, and support research and development of particular agricultural commodities.⁹⁴ Once established, they are binding on all agricultural handlers, which include “processors, associations of producers, and others engaged in the handling of any agricultural commodity.”⁹⁵ After the USDA implements an order, all handlers within the order’s geographic jurisdiction are legally bound to adhere to its provisions.⁹⁶ The USDA may also implement marketing agreements, which function in the same way as marketing orders except that the former bind only signatories.⁹⁷ The USDA may enact marketing

92. 7 U.S.C. 602(1)-(5).

93. 7 U.S.C. 608.

94. See Federal Marketing Orders and Agreements: An Overview, National Agricultural Law Center, <http://www.nationalaglawcenter.org/assets/overviews/marketingorders.html> (last visited Sept. 6, 2012). See also OECD Glossary of Statistical Terms, Marketing Orders, <http://stats.oecd.org/glossary/detail.asp?ID=1624> (last visited Sept. 6, 2012).

95. 7 U.S.C. § 608(c)(1).

96. Neff & Plato, *supra* note 57, at 2.

97. *Id.*

orders and agreements only on commodities authorized for orders by Congress.⁹⁸ This list has grown over the years and currently covers twenty-two fruits and vegetables, several of which are governed by one of several different marketing orders depending on the geographic origin of the commodity.⁹⁹ The USDA also establishes marketing orders for milk, though this is beyond the scope of this Article.¹⁰⁰

The need for extensive regularity in agricultural marketing was a result of the improvements in refrigerated rail transport of the late nineteenth century.¹⁰¹ Producers were now able to ship fruits and vegetables to previously unreachable markets.¹⁰² This new ability fostered a desire for producers to pool resources and to use the same terms in transactions with packers and transporters.¹⁰³ Such activities seemed to contravene the antitrust provisions of the Sherman Act¹⁰⁴ and the Clayton Antitrust Act.¹⁰⁵ However, the Capper-Volstead Act of 1922¹⁰⁶ granted agricultural producers the right to form voluntary cooperative associations and exempted producers from antitrust laws.¹⁰⁷ In pertinent part, the Act stated:

98. *Id.*

99. USDA MARKETING ORDERS, <http://www.ams.usda.gov/AMSV1.0/ams.fetchTemplateData.do?template=TemplateN&navID=CommoditiesCoveredUnderFederalFruitandVegetableMarketingOrders&rightNav1=CommoditiesCoveredUnderFederalFruitandVegetableMarketingOrders&topNav=&leftNav=MarketingOrders&page=FVMarketingOrderIndex&resultType=&acct=fvmktord> (last visited Aug. 31, 2012). The twenty two fruits and vegetables currently covered by grade standards are: almonds, apricots, avocados, cherries, citrus, cranberries, dates, grapes, hazelnuts, kiwifruit, nectarines, olives, onions, peaches, pears, pistachios, plums/prunes, potatoes, raisins, spearmint oil, tomatoes, and walnuts. *Id.*

100. There are currently ten federal milk marketing order areas. Marketing Orders, Federal Milk Marketing Orders, U.S. Dep't of Agric.: Agric. Marketing Serv., <http://www.ams.usda.gov/AMSV1.0/ams.fetchTemplateData.do?template=TemplateD&navID=CommodityAreas&leftNav=CommodityAreas&page=FederalMilkMarketingOrders&description=Federal+Milk+Marketing+Orders> (last visited Sept. 4, 2012).

101. Neff & Plato, *supra* note 57, at 2.

102. *Id.*

103. *Id.*

104. 15 U.S.C. § 1 et. seq. (2006).

105. 15 U.S.C. § 12 et. seq. (2006).

106. “[T]he Capper-Volstead Act (7 U.S.C.A. § 291), . . . permits persons engaged in the production of agricultural products to act together in association for the purpose of processing, preparing for market, handling, and marketing such products. This Act was enacted to clarify and extend the exemption from the operation of the antitrust laws which is granted to agricultural co-operatives in the Clayton Act (15 U.S.C.A. § 17).” 20 A.L.R. Fed. 924.

107. 7 U.S.C. § 291-292 (2006).

Persons engaged in the production of agricultural products as farmers, planters, ranchmen, dairymen, nut or fruit growers may act together in associations, corporate or otherwise, with or without capital stock, in collectively processing, preparing for market, handling, and marketing in interstate and foreign commerce, such products of persons so engaged. Such associations may have marketing agencies in common; and such associations and their members may make the necessary contracts and agreements to effect such purposes¹⁰⁸

Though granting broad authority to engage in cooperative schemes, § 292 of the Act limited this authority by prohibiting producers from forming monopolies and by dictating recourses should producers so act.¹⁰⁹

The associations permitted by the Capper-Volstead Act were not compulsory, and so free-riders were able to circumvent the self-imposed restrictions of the associated producers while taking advantage of the benefits of such associations.¹¹⁰ With the 1937 enactment of the AMAA, however, marketing orders became mandatory when two thirds of the producers gave their approval.¹¹¹ This effectively eliminated the free-rider problem.

Marketing orders begin with an industry proposal to the USDA.¹¹² The Secretary must first establish that the proposed order serves the public interest and then may set a public hearing where all interested parties opine on the order's merits or shortcomings.¹¹³ The Secretary then approves or disapproves the order's terms, and in the case of approval, calls for a referendum.¹¹⁴ In order to become binding, either two thirds of the producers or producers owning two thirds of the growing acreage must vote in the affirmative.¹¹⁵ With the Secretary's approval, a referendum can terminate an order.¹¹⁶ The Secretary may terminate a marketing order without a referendum if the order ceases to promote the AMAA's goals.¹¹⁷

108. *Id.* § 291

109. *Id.* § 292.

110. Neff & Plato, *supra* note 57, at 2.

111. *Id.*

112. *Id.*

113. *Id.*

114. *Id.*

115. *Id.*

116. *Id.*

117. *Id.*

Once implemented, marketing orders stabilize market conditions by regulating the treatment of the commodity in the market.¹¹⁸ Importantly, the orders support research and market development, allowing otherwise unaffiliated producers to pool resources for their mutual benefit.¹¹⁹ These activities, implemented through what are known as “check-off” programs, work to increase sales and expand markets.¹²⁰ The programs, funded through assessments on producers and buyers, engage in brand neutral marketing campaigns that promote the commodity attributes common to all brands of the commodity.¹²¹

Marketing orders also contain provisions that standardize container and pack dimensions, as well as provisions that regulate aspects relating to commodity quality and quantity.¹²² Quality provisions set size, grade, and maturity standards for the commodity regulated by the marketing order.¹²³ These provisions make legally enforceable the grade standards discussed in Part II of this Article.¹²⁴ The lack of brand identification for many agricultural commodities on the grocery shelf incentivizes producers to desire enforceable quality standards.¹²⁵ In the absence of such standards, sub-par commodities reflect negatively on the industry as a whole rather than on the unidentified producer.¹²⁶ Marketing orders with enforceable standards foreclose this scenario.

Quantity provisions regulate and set limits on market volumes and market flows.¹²⁷ In the USDA’s *Agricultural Economic Report: Federal Marketing Orders and Federal Research and Promotion Programs: Background for 1995 Farm Legislation*, agricultural economists Steven Neff and Gerald Plato write that there are five basic quantity provisions found in market orders.¹²⁸ The first is producer allotment, where market order provisions stipulate:

118. See Federal Marketing Orders and Agreements: An Overview, National Agricultural Law Center, <http://www.nationalaglawcenter.org/assets/overviews/marketingorders.html> (last visited Sept. 6, 2012) ; see also OECD Glossary of Statistical Terms, Marketing Orders, <http://stats.oecd.org/glossary/detail.asp?ID=1624> (last visited Sept. 6, 2012).

119. Neff & Plato, *supra* note 57, at 3.

120. *Id.* at 7.

121. *Id.* at 8.

122. *Id.* at 4.

123. *Id.*

124. *Id.*; see also *supra* notes 32-40 and accompanying text.

125. Neff & Plato, *supra* note 57, at 4.

126. *Id.*

127. *Id.* at 3.

128. *Id.* at 3-4.

[A] maximum quantity, ordinarily based on historical marketings, that a handler can market from each producer in a single season. USDA determines the total quantity that will be eligible for sale and multiplies it by each producer's share to arrive at the allotment to the individual producer for the season.¹²⁹

Producer allotment provisions are rarely used.¹³⁰ The second quantity provision is the market allocation provision, where the marketing order stipulates what percentage of the commodity should be brought to market fresh and what percentage processed, or the percentages used domestically versus percentages set for export.¹³¹ Third, marketing orders establish reserve pools, where producers are required to withhold the commodity from the market if supply exceeds demand.¹³² These provisions allow the commodities to be released into the market only once market conditions improve.¹³³ Fourth, prorate provisions regulate how much of a product can be released into the market on a weekly (or other temporal) basis.¹³⁴ Lastly, shipping holiday provisions prohibit producers from shipping commodities to produce terminals during holidays and other times where activity at the terminal is expected to be slow.¹³⁵

Marketing orders' check-off programs, standardization of commodity packaging, and standardization of commodity quality and quantity provisions have helped agricultural producers to stay afloat during times of economic hardship and to maintain a consistently viable industry. Through the legitimacy granted by the Capper-Volstead Act and the enforceability granted by the AMAA, producers of agricultural commodities have maintained levels of market protection and control enjoyed by few other industries in America's free market system.

129. *Id.* at 3.

130. For an example of a producer allotment order, see *MARKETING ORDER REGULATING THE HANDLING OF SPEARMINT OIL PRODUCED IN THE FAR WEST; REVISION OF THE SALABLE QUANTITY AND ALLOTMENT PERCENTAGE FOR CLASS 3 (NATIVE) SPEARMINT OIL FOR THE 2010-2011 MARKETING YEAR*, 76 *FED. REG.* 4204 (2011).

131. Neff & Plato *supra* note 57, at 3. A USDA report put together in preparation for the 1995 farm bill reported market allocation provisions for almonds, filberts, walnuts, and prunes. *Id.*

132. *Id.* at 4.

133. *Id.* The 1995 report found reserve pool provisions for the marketing orders of walnuts, spearmint oil, raisins, and prunes. *Id.*

134. *Id.*

135. *Id.* Five marketing orders contain shipping holiday provisions. *Id.*

IV. GRADE STANDARDS, MYCOTOXINS, AND COSMETICS

Marketing order-enforced grade standards have enabled producers to preclude all but consistently high-quality commodities from reaching the market.¹³⁶ Grade standards emphasizing cosmetic attributes result in supermarket shelves lined with perfectly formed and colored produce with minimal blemishes and variation.¹³⁷ This is good for producers, as abnormal commodities lacking brand identification reflect poorly on the industry as a whole rather than on the unidentified producer.¹³⁸ However, maintaining high cosmetic standards limits the options available to consumers, many of whom would prefer commodities not subjected to the pesticide treatments necessary to produce cosmetically perfect commodities.¹³⁹

Grade standards overwhelmingly emphasize cosmetic attributes and largely disregard pesticide and fertilizer use, and so producers are incentivized to apply high levels of pesticides and fertilizers to assure an appealing and sizable commodity.¹⁴⁰ If standards were adjusted to allow a wider range of commodities to reach the market, consumers could exercise their preferences for commodities treated with fewer chemicals. Standards that protect health and safety benefit consumers and are essential to a healthy food supply. Furthermore, a move to readjust standards to deemphasize those attributes unassociated with health and safety would benefit consumers concerned over pesticide residues and excessive fertilizer applications.

Any move to readjust grade standards must be steadfast in maintaining standards sufficiently high to protect against the various toxins that pose risks to the food supply. Long term exposure to pesticide residues may be an unwise trade-off for the benefit of cosmetically flawless commodities. Yet pesticide application plays an essential role in large-scale farming operations.¹⁴¹ The insects targeted by pesticides do more than decrease crop yield and degrade cosmetics. Insect damage creates conditions where crops are susceptible to toxins harmful to human health.¹⁴² Exposure to

136. See generally *Federal Grade Standards*, *supra* note 3.

137. *Id.*

138. *Id.*

139. A 2008 Consumer Reports National Research Center poll found that 83% of Americans are concerned or very concerned about harmful bacteria of chemicals in food. FOOD-LABELING POLL 2008, CONSUMER REPORTS NATIONAL RESEARCH CENTER at 8, <http://www.greenerchoices.org/pdf/foodpoll2008.pdf> (last visited Aug. 21, 2012).

140. *Federal Grade Standards*, *supra* note 3, at 7.

141. David Pimental et al., *Environmental and Economic Costs of Pesticide Use*, 42(10) BIOSCIENCE 750 (1992).

142. AFLATOXINS: OCCURRENCE AND HEALTH RISKS, CORNELL UNIVERSITY DEPARTMENT OF ANIMAL SCIENCE, <http://www.ansci.cornell.edu/plants/toxicagents>

these toxins can have much more immediate and injurious effects than exposure to the trace pesticide residues that protect against insect damage.¹⁴³ Permitting variability in commodity cosmetics may lead to less pesticide use.¹⁴⁴ But it is imperative that grade standards remain high enough to preclude the marketing of commodities damaged to an extent indicative of toxin infestation.

Of particular importance is the risk posed by mycotoxins. Mycotoxins are secondary metabolites produced by certain types of fungi.¹⁴⁵ Mycotoxin poisoning is termed mycosis when it is the result of a mycotoxin-producing fungi attaching to an animal host; it is termed mycotoxicosis when it is the result of dietary, respiratory, or dermal exposure to mycotoxin-producing fungi.¹⁴⁶ Most mycotoxicoses are caused by eating mycotoxin-contaminated foods.¹⁴⁷ In a 2003 article in *Clinical Microbiology Reviews*, Tulane University scientist J.W. Bennett and Southern Regional Research Center scientist M. Klich described the effects of mycotoxicosis on the human body:

The symptoms of a mycotoxicosis depend on the type of mycotoxin; the amount and duration of the exposure; the age, health, and sex of the exposed individual; and many poorly understood synergistic effects involving genetics, dietary status, and interactions with other toxic insults. Thus, the severity of mycotoxin poisoning can be compounded by factors such as vitamin deficiency, caloric deprivation, alcohol abuse, and infectious disease status. In turn, mycotoxicoses can heighten vulnerability to

/aflatoxin/aflatoxin.html (last visited Aug. 22, 2012) [hereinafter OCCURRENCE AND HEALTH RISKS].

143. See generally J. W. Bennett & M. Klich, *Mycotoxins*, 16 *CLINICAL MICROBIOLOGY REVIEWS* 497 (2003), available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC164220/pdf/0050.pdf>; see also Aflatoxins in Your Food – and their Effects on Your Health, Environmental, Health and Safety Online, <http://www.ehso.com/ehshome/aflatoxin.php> (last visited Aug. 22, 2012).

144. Lichtenberg, *supra* note 10.

145. Bennett & Klich, *supra* note 143, at 498.

It is difficult to define mycotoxin in a few words. All mycotoxins are low-molecular-weight natural products (i.e., small molecules) produced as secondary metabolites by filamentous fungi. These metabolites constitute a toxigenically and chemically heterogeneous assemblage that are grouped together only because the members can cause disease and death in human beings and other vertebrates.

Id.

146. *Id.* at 497.

147. *Id.* at 498.

microbial diseases, worsen the effects of malnutrition, and interact synergistically with other toxins.¹⁴⁸

Mycotoxicoses can be acute or chronic.¹⁴⁹ Acute mycotoxicoses result in immediate and readily apparent poisoning,¹⁵⁰ while chronic mycotoxicoses occur after an extended period of low-dose mycotoxin exposure.¹⁵¹ Long-term exposure produces potentially irreversible and lethal health effects, including kidney toxicity, immune suppression, and cancers.¹⁵² Chronic mycotoxicoses present the principle concern to human health.¹⁵³

The danger posed by mycotoxins further comes into focus when considering their prevalence within the global food supply; approximately twenty-five percent of crops worldwide are contaminated with the toxins.¹⁵⁴ Commodities can become contaminated while growing in the field or while in storage.¹⁵⁵ Mycotoxins grow under a plethora of climatic conditions,¹⁵⁶ occur in every part of the world,¹⁵⁷ and come in many different forms.¹⁵⁸ However, one thing is common amongst the different strains: the risk of contamination is higher when commodities are handled or stored in conditions favorable to mold growth.¹⁵⁹

Contamination is most common in the developing world, where malnutrition, limited regulatory oversight, and handling and storage practices conducive to mold growth are more common than in the developed world.¹⁶⁰ Drs. Bennett and Klich noted in their 2003 article on mycotoxins that, "People who have enough to eat normally avoid foods that are heavily contaminated by molds, so it is believed that dietary exposure to acute levels of mycotoxins is rare in developed countries."¹⁶¹ However, certain populations are at risk even in the developed world, such as those who consume large amounts of particularly vulnerable crops and those who live in homes conducive to mold growth.¹⁶²

148. *Id.* at 497.

149. *Id.* at 499.

150. *Id.*

151. *Id.*

152. *Id.*

153. *Id.*

154. *Id.* at 509.

155. *Id.* at 509-510.

156. *Id.*

157. *Id.*

158. *Id.* at 499-508.

159. *Id.* at 509-10.

160. *Id.* at 499.

161. *Id.* at 510.

162. *Id.* at 499. Drs. Bennett and Klich write that "specific subgroups may be vulnerable to mycotoxin exposure. In the United States, for example, Hispanic

The United States' comparatively low mycotoxin exposure rates are largely the result of our high health and safety standards. Though grade standards promoting pesticide use are cause for concern, it would be foolhardy to compromise the standards in a way that opens the door to contamination risks.

The most well-known and researched mycotoxin is aflatoxin.¹⁶³ Aflatoxins occur naturally and are produced by the molds *Aspergillus flavus* and *Aspergillus parasiticus*.¹⁶⁴ *Aspergillus flavus* is widespread in nature, occurring most commonly in grains grown under stressful conditions such as drought or high temperatures coupled with high humidity.¹⁶⁵ There are four major strains of aflatoxins, though scientists have described more than a dozen.¹⁶⁶ One of the major strains, Aflatoxin B₁, is the most potent naturally occurring carcinogen scientists have identified.¹⁶⁷

Aflatoxins cause a number of diseases in humans and animals, most notably aflatoxicosis.¹⁶⁸ Acute aflatoxicoses cause death;¹⁶⁹ infected humans exhibit symptoms such as abdominal pain, vomiting, pulmonary edema,¹⁷⁰ convulsions, and coma.¹⁷¹ Chronic aflatoxicoses cause conditions such as cancer and immune suppression.¹⁷² The toxins often attack the liver, and aflatoxin exposure increases one's risk of developing hepatocellular carcinoma.¹⁷³ One's likelihood of contracting an aflatoxicosis is affected not only by exposure rates, but also by one's age, sex, nutritional health, and exposure or contraction of other conditions such as viral hepatitis and parasitic infestation.¹⁷⁴

populations consume more corn products than the rest of the population, and inner city populations are more likely to live in buildings that harbor high levels of molds." *Id.*

163. OCCURRENCE AND HEALTH RISKS, *supra* note 142.

164. Aflatoxins in Your Food – and their Effects on Your Health, Environmental, Health and Safety Online (Benivia, LLC, Mar. 26, 2011), <http://www.ehso.com/ehshome/aflatoxin.php> (hereinafter Aflatoxins in Your Food).

165. *Id.*

166. Bennett & Klich, *supra* note 143, at 499-500.

167. *Id.* at 500.

168. *Id.*

169. *Id.*

170. Pulmonary edema is a build-up of fluid in air sacs in the lung. U.S. Nat'l Library of Med., *PubMed Health*, <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001195/> (last visited Aug. 22, 2012).

171. OCCURRENCE AND HEALTH RISKS, *supra* note 142.

172. Bennett & Klich *supra* note 143, at 500.

173. *Id.* at 501. Hepatocellular carcinoma is cancer of the liver. Nat'l Inst. of Health, Medline Plus, <http://www.nlm.nih.gov/medlineplus/ency/article/000280.htm> (last visited Sept. 7, 2012).

174. OCCURRENCE AND HEALTH RISKS, *supra* note 142.

Stressful growing conditions cause aflatoxin-producing molds to take hold in soil and in decaying crops.¹⁷⁵ In addition to heat and water stress, factors contributing to pre-harvest aflatoxins include insect or rodent infestation, substandard fertility, high crop densities, and competition from weeds.¹⁷⁶ Post-harvest infestation occurs as a result of delays in crop drying and storage in facilities with high humidity rates.¹⁷⁷ The commodities most at risk of aflatoxicoses are corn, peanuts, and cottonseed, though infestation also occurs in nuts, figs, spices, and other crops.¹⁷⁸ Further, aflatoxins can make it into meat and dairy products when animals are fed aflatoxin-contaminated feed.¹⁷⁹

Though aflatoxins are the mycotoxins that pose the largest threat to agricultural commodities, other mycotoxins pose substantial risk to the food supply as well. The mycotoxin citrinin has been found in substances used in the production of cheeses and sake.¹⁸⁰ The toxin has been linked to yellow rice disease in Japan.¹⁸¹ It has been found in grains such as oats, rye, corn, barley, and rice, and has also been found in fermented Italian sausages.¹⁸²

Ergot alkaloids are mycotoxins that typically make it into the food supply through breads baked from contaminated flours.¹⁸³ Ingestion of ergot-contaminated breads results in the disease popularly known as St. Anthony's Fire.¹⁸⁴ Fumonisms are mycotoxins that primarily effect corn, causing stalk and ear rot.¹⁸⁵ The toxin affects metabolism in animals and causes esophageal cancer in humans.¹⁸⁶ Additional mycotoxins include ochratoxins, patulin, trichothecenes, and zearalenone, all of which pose risks when introduced into the food supply.¹⁸⁷

Any move to readjust agricultural grade standards must be cognizant of the risks posed by aflatoxins and other mycotoxins. One commentator has ranked mycotoxins as "the most important chronic dietary risk factor, higher than synthetic contaminants, plant toxins, food additives, or

175. Aflatoxins in Your Food, *supra* note 143.

176. OCCURRENCE AND HEALTH RISKS, *supra* note 142.

177. *Id.*

178. *Id.*

179. *Id.*

180. Bennett & Klich *supra* note 143, at 501-02.

181. *Id.* at 502.

182. *Id.*

183. *Id.* Drs. Bennett and Klich write that a 2,600 year old Assyrian tablet speaks of a "noxious postule in the ear of grain," likely a reference to ergot. *Id.*

184. *Id.*

185. *Id.* at 503.

186. *Id.*

187. *Id.* at 504-07.

pesticide residues.”¹⁸⁸ Lowering grade standards to reduce pesticides at the expense of increasing the risk of mycotoxin contamination would be a detrimental move. Standards must remain at a level sufficiently high to minimize the risks posed by mycotoxins.

A move to readjust grade standards should begin by establishing the level at which commodities will be sufficiently protected from mycotoxin infestation and other health and safety risks. Cosmetically-driven standards could then be lowered to this threshold. This will facilitate those producers who value the benefits of lower pesticide applications over the benefits of purely cosmetic produce attributes, thus allowing these producers to deliver to market commodities subjected to only those chemicals necessary to promote health and safety.

Some standards correlating to cosmetics also correlate to toxin susceptibility.¹⁸⁹ For example, the standards for fresh apples include attributes such as “worm holes and unhealed insect injury,” “sooty blotch,” and “fly speck.”¹⁹⁰ These standards are patently factors affecting a commodity’s cosmetic appeal.¹⁹¹ However, these factors are also indicative of a commodity’s susceptibility to dangerous toxins.¹⁹² A move to readjust standards to focus predominantly on health and safety would leave these particular standards in place.

Other apple standards, such as color, shape, and size, correlate solely to cosmetics and have no impact on the commodities susceptibility to toxin infestation.¹⁹³ These standards could be lowered with little or no impact on human health and safety. In addition, many standards lie in the middle, having less ascertainable impacts on health and safety. Apple standards such as “stem and calyx cracks,” “hail marks,” and “limb rubs” likely have some impact on health and safety;¹⁹⁴ however, the standards are perhaps largely cosmetic. Other commodities likewise have both standards pertaining to health and safety, standards pertaining to cosmetics, and standards pertaining to both cosmetics and health and safety.¹⁹⁵

188. *Id.* at 510 (citing T. Kuiper-Goodman, Food Safety: Mycotoxins and Phycotoxins in Perspective 25-48 in M. Miraglia, H. van Edmond, C. Brera, and J. Gilbert (ed.), *Mycotoxins and Phycotoxins—Developments in Chemistry, Toxicology and Food Safety* (Alaken Inc. 1998)).

189. *Federal Grade Standards*, *supra* note 3 at 12.

190. *Id.* These attributes are described as “[l]arge punctures, canals, or tunnels,” “[d]ark granular spots or smudges on surface caused by fungus,” and “[n]umerous small black circular spots caused by a fungus growing on insect excrement,” respectively. *Id.*

191. *See id.*

192. *See id.*

193. *Id.*

194. *Id.*

195. *Id.* at 13-16.

Researchers should evaluate whether and to what extent standards could be lowered while maintaining the requisite safeguards to human health and safety. Closing the gap between health and safety-driven grade standards and cosmetically-driven grade standards could benefit consumers. A lowering of standards without first understanding the relation between the standards and mycotoxin infestation would be dangerously premature. Scientists and economists should take the lead and establish thresholds based solely on health and safety.

V. POSSIBLE EFFECTS OF LOWERING GRADE STANDARDS

While it is clear that lowering standards that correlate solely to cosmetics would have little to no impact on human health and safety, it is less clear what effect lowering standards would have on pesticide and fertilizer application levels. The correlation between cosmetic grade standards and pesticide and fertilizer application levels is an area that has been left largely unexplored statistically.¹⁹⁶

Extensive research found no studies evaluating the impact of a decrease in grade standards on pesticide and fertilizer application. However, in 1997, economist Erik Lichtenberg theoretically evaluated the effect of a hypothetical increase in cosmetic quality standards on producer pesticide use.¹⁹⁷ Lichtenberg showed that a profit-maximizing grower's response to changes in the stringency of quality standards depended on the marketing arrangement under which the produce was sold.¹⁹⁸ He found that, theoretically, an increase in quality standards could result in either an increase or a decrease in pesticide use.¹⁹⁹ However, Lichtenberg indicated that more detailed empirical analysis was needed to support a claim that more stringent cosmetic standards increase pesticide use.²⁰⁰

196. Erik Lichtenberg, *The Economics of Cosmetic Pesticide Use*, 79 AMER. J. AGR. ECON. 39 (1997). "But even the more narrow issue of whether quality standard and cosmetic concerns affect pesticide use is hardly a settled question. Evidence regarding these connections remains largely anecdotal. There has been no rigorous theoretical economic analysis supporting the contention that quality standards create incentives for greater pesticide use. Similarly, there is a lack of rigorous empirical analysis demonstrating that these incentives are substantial enough to warrant reconsideration of the way quality standards are set." *Id.*

197. *Id.* at 39-46.

198. *Id.* at 39.

199. *Id.* at 42. "The contention that stricter quality standards unambiguously result in greater pesticide use holds only for a restricted set of circumstances, namely the case where produce is sold in mixed quality and no sampling error is present." *Id.* Under "more commonly encountered conditions," Lichtenberg found that stricter quality standards could reduce pesticide use." *Id.*

200. *Id.* at 40.

Unfortunately, a detailed empirical analysis of the effect of an increase or a decrease in cosmetic standards on pesticide use has not occurred in the past fifteen years and we are left without empirical data to support the assertion that lowering cosmetic grade standards would result in a decrease in pesticide and fertilizer use.²⁰¹

However, testimony presented to Congress buttresses the argument that lower grade standards would result in lower levels of pesticide application.²⁰² In 1992 hearings before the Senate Committee on Agriculture, Nutrition, and Forestry, environmentalists and representatives from food and health policy organizations asserted that cosmetically-driven grade standards drive higher pesticide application.²⁰³ The groups cited citrus, apples, lettuce, and celery as crops that would receive lower pesticide applications if cosmetically-driven grade standards were not a factor.²⁰⁴ Producers apply pesticides to prevent apple scab and thrips damage on citrus.²⁰⁵ Neither of these conditions are health or safety factors.²⁰⁶ During the hearings, Senator Wyche Fowler cited reports that claim up to half of pesticides used in orchards are to promote cosmetics, while more than sixty percent of pesticides used on California oranges are cosmetically-driven.²⁰⁷ This testimony indicates that if cosmetic grade standards were lowered, cosmetically-driven pesticide use would decrease as profit-maximizing producers seek to meet grade standards in the least expensive way.

As previously discussed, grade standards are minimum, voluntary standards.²⁰⁸ When grade standards are referred to in a contract they establish a "floor" below which produce is not acceptable.²⁰⁹ A reduction in the cosmetic-floor would not require producers to change their pesticide or fertilizer application levels, but it could give them a cost-incentive to do so.²¹⁰ If consumers are willing to pay the same price for produce that is less cosmetically appealing, producers would be able to reduce the use of pesticides that traditionally prevented the characteristics that were cosmetically taboo, such as apple scab and thrips damage on citrus, and

201. *Id.* at 39.

202. *See Cosmetic Standards Hearing, supra* note 11, at 2, *discussed in* Lichtenberg, *supra* note 10, at 91.

203. *Id.*

204. *Id.* at 3.

205. *Id.* at 22.

206. *Id.* at 2-5. Lichtenberg notes that the Natural Resource Defense Council has argued that thrips cause scarring on citrus but have no impact on flavor or juiciness. Lichtenberg, *supra* note 10, at 91.

207. *Id.* at 2.

208. *Federal Grade Standards, supra* note 3, at 10.

209. *Id.* at 13.

210. *See generally Cosmetic Standards Hearing, supra* note 11, at 2.

increase their profits by saving on pesticide costs.²¹¹ Additionally, if consumers are willing to pay a premium for products created in a more environmentally friendly manner or that contain less pesticide and fertilizer residue, producers may have an additional cost-incentive to reduce pesticide and fertilizer application.

However, the potential cost savings may not be enough of an incentive to change producer behavior. Depending on the producers' risk preferences, they may choose not to alter their pesticide or fertilizer application levels. Uncertainty about the effect of a decrease in pesticide or fertilizer use might cause producers to choose to maintain their pesticide and fertilizer application levels despite a decrease in cosmetic grades standards.

While advocacy groups in the 1992 Senate hearings argued that cosmetically-driven grade standards drive high levels of pesticide application, they did not articulate what initially caused grade standards to be cosmetically-driven.²¹² If cosmetically-driven grade standards are a manifestation of consumer demand, then their reduction will only encourage retail-consumers to contract above the grade standard floor.

Grade standards are developed and revised by AMS in partnership with industry members to always reflect modern business practices.²¹³ AMS indicates that "[a]ny action taken on a U.S. grade standard should reflect the broad interest of either individuals, an industry involved in growing and shipping the product, or a federal, state, or local agency."²¹⁴ Thus, the presence of cosmetically-driven grade standards may indicate consumer demand for cosmetically appealing produce. In a country where many end-consumers prefer cosmetically appealing produce²¹⁵, retailers may reflect those preferences in their contracts with producers by contracting above the grade standard floor to the level where USDA standards are today, thus removing any incentive for producers to reduce pesticide and fertilizer application levels. Additionally, even if retail-consumers accept the less cosmetically appealing produce, it is possible that negative end-consumer reaction to the product could offset any savings

211. *Id.*

212. *Id.*

213. Fruit and Vegetable Market News, *supra* note 1.

214. *Id.*

215. Chengyan Yue et al, *Estimating Consumers' Valuation of Organic and Cosmetically Damaged Apples*, 42 HORTSCIENCE 1366-71 (2007) (evaluating consumers' preferences for either organically or conventionally grown apples to gauge buyers' tolerance for blemishes and other "cosmetic" defects, this study found that when given a choice between organically grown apples with surface blemishes or conventionally grown apples, consumers prefer the conventionally grown apples because they "look better" even though the consumers understood that the spots were merely a cosmetic problem and would not affect the taste or quality of the apples).

the producers gained from a reduction in pesticide use as consumers shift their consumption choices.

Niche Markets

Though lowering of grade standards will not mandate a reduction in pesticide and fertilizer use, it could foster the development of a niche market of “eco-labeled” food. Since the 1990s, consumer food preferences have been shifting.²¹⁶ Organic sales increased rapidly over the 1990s, with annual sales growth of approximately 20% for most of the 1990s.²¹⁷ This trend has continued into the 21st century as organic food sales have increased steadily with annual sales growth of at least 15% from 2000 to 2008.²¹⁸ Organic fruits and vegetables reached nearly \$10.6 billion in 2010, up 11.8% from 2009 performance.²¹⁹ In a study published by the Organic Trade Association (OTA), four in ten families indicated they are buying more organic products than they were a year ago.²²⁰ Nearly half of parents surveyed revealed that their strongest motivator for buying organic is their belief that organic products “are healthier for me and my children.”²²¹ One other motivator listed for purchasing organic was concern over the effects of pesticides.²²²

Many consumers would prefer to purchase agricultural commodities grown with fewer applications of pesticides and fertilizers.²²³ However, the high prices of many organic crops shut some consumers out of the market.²²⁴ Economic studies indicate that consumers are willing to pay a premium for pesticide-free fresh product; however, it is not a very large one.²²⁵ Scholars D. Bernard and J. Bernard have reviewed current economic literature that examines consumers’ willingness to pay (WTP) for pesticide-free fresh produce:

216. Carolyn Dimitri & Catherine Greene, *Recent Growth Patterns in the U.S. Organic Foods Market*, U.S. DEPARTMENT OF AGRICULTURE, ECONOMIC RESEARCH SERVICE, MARKET AND TRADE ECONOMICS DIVISION AND RESOURCE ECONOMICS DIVISION, AGRICULTURE INFORMATION BULLETIN NUMBER 777, Sept. 2002, at 2.

217. *Id.*

218. ORGANIC TRADE ASSOCIATION, “U.S. ORGANIC INDUSTRY OVERVIEW”, available at <http://www.ota.com/pics/documents/2011OrganicIndustrySurvey.pdf>.

219. *Id.*

220. *Id.*

221. ORGANIC TRADE ASSOCIATION, “2011 ORGANIC INDUSTRY SURVEY.”

222. *Id.*

223. *Id.*

224. Daria J. Bernard & John C. Bernard, *Comparing Parts with the Whole: Willingness to Pay for Pesticide-Free, Non-GM, and Organic Potatoes, and Sweet Corn*. 35 J. AGR. RESOURCE ECON. 457, 457-59 (2010).

225. *Id.*

In a survey of supermarket shoppers, Ott (1990) reported that two-thirds of respondents were willing to pay at least 5% higher prices for certified pesticide residue-free (CPRF) fresh produce. In a similar study, Misra, Huang, and Ott (1991) found that of the respondents who were willing to pay a higher price for CPRF produce, 54% were not willing to pay more than a 5% premium. Weaver, Evans, and Luloff (1992) examined consumers' concern about pesticide use in tomato production and their WTP for chemical pesticide residue-free tomatoes. Although consumers surveyed expressed concern about the use of pesticides, the majority did not report any change in their buying habits. Of those who did, 41% bought more organic or CPRF produce.²²⁶

Commodities grown with minimal chemical applications could fit into a median price range between organics and traditionally grown commodities. If producers were to market commodities grown with minimal pesticides and fertilizers as an affordable alternative to organics, these producers could capture a share of the consumer market for pesticide-free fruits and vegetables

Producers could market commodities grown with minimal pesticides as "eco-labeled" or "green-labeled" fruits and vegetables. The labeling could emphasize that pesticide applications were reduced to only those necessary to protect health and safety, that fertilizer applications were kept below a threshold sufficient to prevent non-point source (NPS) pollution, and that no chemicals were applied solely for cosmetic purposes. Labeling and advertising could also emphasize some of the other benefits emphasized in this paper: improvements in farm labor safety and reductions in pesticide residues remaining on commodities.

Research shows consumers are willing to pay a premium not only for reductions in pesticide consumption, but also for reductions in pesticide exposure to farmers and the environment.²²⁷ In a recent economic study,²²⁸ a group of economists conducted a meta-analysis²²⁹ of consumers'

226. *Id.* at 458-59.

227. Chiara M. Travisi, Peter Nijkamp, & Raymond J.G.M. Florax, *A meta-analysis of the willingness to pay for reductions in pesticide risk exposure*. 32(4) *EUROP. REV. AGR. ECON.*, 441-67 (2005).

228. *Id.*

229. Meta-analysis is a statistical technique for combining the findings from independent studies. "Meta-analysis is essentially the 'analysis of analyses'... [m]eta-analysis constitutes a systematic framework for synthesizing and comparing previous research, because it systematically exploits existing empirical results to produce more

willingness to pay for reductions in pesticide risk exposure.²³⁰ Drs. Travisi, Nijkamp, and Florax used the observations from fifteen economic studies that concerned pesticide risk exposure and evaluated how much consumers are willing to pay to reduce the negative effects of pesticide exposure on various targets such as farmers, aquatic and terrestrial systems, and consumer health.²³¹ Most of the studies were from the United States and were published during the 1990s and the early 2000s.²³² The exploratory analysis indicated that consumers are willing to pay for pesticide risk reduction.²³³ While the authors warn “that it may still be too early for a meta-analysis to be able to provide a consistent and robust picture of the large range of WTP assessments across different target types,” their meta-analysis indicates that across varied economic studies,²³⁴ consumers are willing to pay a positive amount to reduce exposure to the risks associated with pesticide usage.²³⁵

As the last decade’s consumer move toward “green” living continues to gain momentum, now is an opportune time for producers to capitalize on consumers’ desires for healthier food. “Ecolabeling” could help secure tangible, financial benefits for producers utilizing minimal pesticide and fertilizer applications. With the potential cost savings and the reductions to NPS pollution, farm laborer injuries, and pesticide residues, lowering grade standards to facilitate reductions in chemical applications could provide substantial benefits to producers, consumers, and society as a whole.

VI. THE BENEFITS OF LOWERED GRADE STANDARDS: POLLUTION CONTROL, FARM LABOR SAFETY, COSTS, AND RESIDUES

Lowering grade standards to deemphasize cosmetics would produce benefits for the environment, producers, and consumers. Pesticide and fertilizer application are substantial sources of NPS pollution.²³⁶ Further, pesticides and fertilizers present health hazards to the laborers involved in

general results by focusing on a joint kernel of previously undertaken research.” *Id.* at 445-447.

230. *Id.* at 441-67.

231. *Id.* at 445-60.

232. *Id.* at 444.

233. *Id.* at 461.

234. *Id.*

235. *Id.* at 451-52.

236. U.S. ENV’T’L PROT. AGENCY, POLLUTED RUNOFF (NON-POINT SOURCE POLLUTION): AGRICULTURE, http://www.epa.gov/owow_keep/NPS/agriculture.html (last visited Aug. 24, 2012).

application.²³⁷ Lowering pesticide and fertilizer applications levels would mitigate these problems. There could also be the benefit of substantial cost savings. Allowing producers to forego purchasing and applying high levels of pesticides could potentially save producers money, savings that could be passed along to consumers. Of particular importance for consumers, lowered standards could lead to lower residue levels. When considered in tandem, these benefits offer substantial support to the argument for lowering grade standards.

A. Pollution Control

The EPA's 2000 National Water Quality Inventory found that agricultural NPS pollution is the leading cause of water quality impairments for the rivers and lakes included in the study.²³⁸ Agricultural NPS pollution is the second largest cause of wetland impairment and is a major cause of impairment to surface estuaries and ground water.²³⁹ This NPS pollution is caused by misplaced or mismanaged farms, overgrazing, plowing too often, and excessive application of irrigation water, fertilizers, and pesticides.²⁴⁰

Pesticides and fertilizers cause NPS pollution when they migrate off the land and into water supplies.²⁴¹ The EPA reports that "[t]hese chemicals can enter and contaminate water through direct application, runoff, and atmospheric deposition."²⁴² Additionally, "[t]hey can poison fish and wildlife, contaminate food sources, and destroy the habitat that animals use for protective cover."²⁴³ Agricultural runoff impedes water-bodies from achieving the Total Maximum Daily Loads of permissible pollution that states have set for impaired water-bodies.²⁴⁴ If lowered grade standards facilitated reduced applications of pesticides and fertilizers, agricultural producers could mitigate their impacts to the nation's water,

237. Farm Worker Exposure to Pesticides, Testimony of Daniel G. Ford, Advocacy Coordinator of Columbia Legal Services, before the Washington State Board of Health, available at http://www.sboh.wa.gov/Meetings/2001/06_13/documents/Tab10-DanFord.pdf (hereinafter Ford).

238. ENVT'L PROT. AGENCY, PROTECTING WATER QUALITY FROM AGRICULTURAL RUNOFF: CLEAN WATER IS EVERYONE'S BUSINESS (2005), available at http://water.epa.gov/polwaste/nps/upload/2005_4_29_nps_Ag_Runoff_Fact_Sheet.pdf.

239. *Id.*

240. *Id.*

241. *Id.*

242. *Id.*

243. *Id.*

244. For information on the EPA's Total Maximum Daily Load program, see U.S. ENVT'L PROT. AGENCY, TOTAL MAXIMUM DAILY LOADS, <http://www.epa.gov/OWOW/tmdl/> (last visited Aug. 26, 2012).

benefiting both water quality and the life that depends on that quality for survival.

B. Farm Labor Safety

Pesticide applications pose health risks to farm laborers, and reduced applications resulting from lowered grade standards would provide health benefits to these workers.²⁴⁵ The U.S. Bureau of Labor Statistics has found that farm laborers have higher rates of chemically related illnesses than any other work sector.²⁴⁶ Farm laborers are injured because of pesticide spray, drift, spills, and residues.²⁴⁷ There are primarily three different ways that farm laborers are exposed to pesticides during agricultural operations.²⁴⁸ First, laborers are exposed when preparing pesticides for application, such as when pesticides are mixed or are loaded into the application equipment.²⁴⁹ Second, laborers are exposed when applying the pesticides.²⁵⁰ Lastly, laborers are exposed when working in areas where pesticide application has occurred.²⁵¹ This occurs when laborers pick crops in heavily applied areas.²⁵² Reentry standards set forth in the Code of Federal Regulations govern how laborers must work around pesticides and pesticide application areas,²⁵³ however, injuries from pesticide exposure are still common.

EPA reports indicate farm workers suffer up to 300,000 acute illnesses as a result of pesticide exposure each year.²⁵⁴ Pesticide exposure can lead to initial symptoms of rashes, sweating, vomiting, cramping, dizziness, headaches, eye irritation, and respiratory problems.²⁵⁵ Severe exposures can lead to severe burns, permanent blindness, and in some cases can be lethal.²⁵⁶

245. See ENV'T'L PROT. AGENCY, PESTICIDES: HEALTH AND SAFETY: PROTECTING WORKERS, <http://www.epa.gov/pesticides/health/protecting-workers.html> (last visited Aug. 25, 2012) [hereinafter PROTECTING WORKERS].

246. Ford, *supra* note 236.

247. *Id.*

248. PROTECTING WORKERS, *supra* note 241.

249. *Id.*

250. *Id.*

251. *Id.*

252. *Id.*

253. See 40 C.F.R §§ 156, 170 (2011).

254. Ford, *supra* note 236 (citing GENERAL ACCOUNTING OFFICE, HIRED FARMWORKERS: HEALTH AND WELL-BEING AT RISK 13 (1992); ENV'T'L PROT. AGENCY, SUMMARY OF RISK-BENEFIT ANALYSIS FOR WORKER Protection Standard, 57 Fed. Reg. 38105 (1992)).

255. *Id.*

256. *Id.* Mr. Ford continued,

Reducing farm laborers' exposure to pesticides would reduce the likelihood that a laborer is exposed to dangerous levels of pesticides. A recent cross-sectional study of the prevalence of pesticide exposure and its risk factors indicated that the amount of pesticides used was positively correlated to the exposure of farm laborers to pesticides.²⁵⁷ This supports the notion that reducing pesticide application levels would reduce pesticide exposure levels, thereby reducing the dangers farm laborers face on the job.

C. Costs

To bolster the environmental and health benefits of lowering grade standards, a further benefit would be a reduction in agricultural production costs. Commodities producers spend substantial sums on purchasing and applying chemicals to their crops.²⁵⁸ If grade standards were readjusted to make some of these chemical applications optional, producers could forego these extra costs and apply the savings to other parts of the farming operation. Though reductions in chemical applications may lead to reduced yields in certain crops,²⁵⁹ producer could offset these losses by the savings from pesticide and fertilizer expenditures. Reallocating money that would have been spent on chemical purchase and application could not only save on production costs, but could allow producers to pass some of these savings on to consumers.

D. Residues

Lowering grade standards could also lead to lower levels of pesticide residues on agricultural commodities. The Federal Food, Drug, and Cosmetic Act (FDCA) mandates that the EPA establish maximum levels of pesticide residues for processed foods.²⁶⁰ The Food Quality Protection Act

Acute organophosphate poisoning can also cause long-term effects, including (1) a dying back of nerves resulting in a loss of motor function, paralysis, and muscle atrophy; (2) loss of intellectual functioning including impaired concentration, information processing, psychomotor speed, memory, and language; and (3) neurobehavioral effects including anxiety, irritability, and depression. In addition to the immediate danger of acute poisoning, many pesticides have been epidemiologically linked to long-term effects, such as cancer, birth defects, and damage to the kidneys, liver, and nervous system.

Id.

257. Jinky Leilanie Lu, *Total Pesticide Exposure Calculation among Vegetable Farmers in Benguet, Phillipines*, 2009 J.OF ENVIRONMENTAL AND PUBLIC HEALTH, <http://www.hindawi.com/journals/jeph/2009/412054/> (last visited Sept. 7, 2012).

258. Pimental et al., *supra* note 141.

259. *Id.*

260. 21 U.S.C. § 346a(a) (2006).

(FQPA) amended the FDCA to require pesticide residue levels for all foods to be set at the same level, thereby eliminating the prior distinctions between raw and processed foods.²⁶¹ Though the FDCA-amended FQPA prevents pesticide residues at levels the EPA deems dangerous, many consumers would rather have a larger zone of safety.²⁶² Many consumers would rather purchase commodities with as little pesticide residue as possible.²⁶³ Lowering grade standards to deemphasize cosmetics would allow for lower levels of pesticide application, which in turn would lead to lower levels of pesticide residue. This would facilitate those consumers who wish to minimize their consumption of pesticides, regardless of where the EPA sets the threshold of safe consumption.

With the potential cost savings and the reductions to NPS pollution, farm laborer injuries, and pesticide residues, lowering grade standards to facilitate reductions in chemical applications could provide substantial benefits to producers, consumers, and society as a whole.

VII. THE PRIVATIZATION OF GRADE STANDARDS AND THE EFFECTS ON CHEMICAL APPLICATIONS

A caveat to the benefits of lowering the USDA's grade standards is the effect that private grade standards will have on the agricultural market. In a 2001 article on global trends in agricultural grades, researchers from Michigan State University and the Institut National de Recherche Agronomique in Montpellier, France noted a "a concomitant shift from public toward private standards" and "a shift in center of gravity from technical norms to reduce transaction costs in broad homogeneous commodity markets, to strategic instruments of product differentiation, agrifood chain coordination, market creation and share growth."²⁶⁴ Many of these changes have come from multinational firms buying from producers in developing countries.²⁶⁵ The grades are often the creation of

The FFDCA achieves this by defining "food additive" to include pesticide residues, and by assigning the EPA to determine tolerances for pesticide residues on processed foods. If a processed food retains a residue of a pesticide for which the EPA has not set a tolerance, the food is "adulterated" and is prohibited under the FFDCA.

Heidi Gorovitz Robertson & Samuel Gorovitz, *Pesticide Toxicity, Human Subjects, and the Environmental Protection Agency's Dilemma*, 16 J. CONTEMP. HEALTH L. & POL'Y 427, 437 (2000).

261. 21 U.S.C. § 321(s) (2006).

262. See generally Trivisi et al., *supra* note 226.

263. *Id.*

264. Reardon et al., *supra* note 4, at 423.

265. *Id.* at 427.

supermarkets and large processors who wish to compensate for what they deem inadequate public standards.²⁶⁶

If domestic processors and supermarkets utilize cosmetically-driven private grade standards, lowered USDA grade standards will likely have less of an impact on the commodities markets than they would otherwise have. However, private standards also have the potential to emphasize the health, social, and environmental concerns that USDA grades currently disregard. An example of an international firm adopting such a private grade standard is Chiquita Brands International, which integrated environmental and social grade standards in response to pressure from the Rainforest Alliance.²⁶⁷ Firms purchasing coffee and wheat from Brazil have likewise instituted grades emphasizing food safety and environmental concerns.²⁶⁸

Depending on how processors and supermarkets understand consumer demand, private grade standards could have a harmful or beneficial effect on current production norms. If processors and supermarkets understand consumers to desire cosmetically flawless commodities, private grades could negate the positive effects of lowering USDA grade standards to emphasize only health and safety factors. However, if processors and supermarkets understand consumers to emphasize health, social, and environmental concerns in their buying patterns, private grades could reflect these desires and make up for some of the shortfalls of current USDA grade standards. Regardless of how these trends play out, policy-makers should look to current USDA grade standards and reevaluate them in light of the concerns posed by pesticides, fertilizers, and other factors effecting human and environmental health and safety.

VIII. CONCLUSION

Cosmetically-driven grade standards likely incentivize agricultural producers to use pesticides and fertilizers beyond that which is necessary to produce healthy, safe products. Scientists, economists, and policy-makers should reassess the link between grade standards and the chemicals producers apply to crops. However, any move to adjust grade standards must not jeopardize the health and safety of consumers. Standards should not be lowered in a way that would put the food supply at risk of infestation by mycotoxins or other dangerous toxins. Though pesticides and fertilizers contribute to agricultural NPS pollution, cause harm to farm laborers, and potentially pose health and safety concerns to consumers, the chemicals also play a vital role in the mass production of food. Grade standards

266. *Id.*

267. *Id.* at 423.

268. *Id.* at 427.

should not be lowered in a way that would promote unhealthy growing practices and risk consumer health.

If standards were lowered, many consumers would still value and demand cosmetically flawless commodities, regardless of the chemical applications required to produce such products. However, many consumers would prefer to have commodities grown with fewer chemical applications. Lowering grade standards would facilitate producers to create a niche market of “eco-labeled” products. “Eco-labeled” products could be marketed as a less cost-prohibitive alternative to pricey organics. Exploring the merits of lowering grade standards could prove to be a wise venture. Lowered grade standards could potentially reduce the harmful environmental and social impacts of current agricultural practices. In addition, such a move would give agricultural producers and consumers more choice in what commodities they choose.