

# Potential Trade Effects on U.S. Agricultural Exports of European Union Regulations on Endocrine Disruptors



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## Executive Summary

In 2009 the European Union adopted a wide-ranging update to its regulations on crop protection products, Regulation 1107/2009.<sup>1</sup> This regulation introduced a new “categorization” system for groups of active crop protection substances. For a number of these categories a regulatory policy based on the use of hazard based cut-offs to remove the product from the market was introduced. Under this policy the accepted science-based risk assessment process found in international standards and guidelines would not be followed. Rather, regulatory policy would be based on the existence of a hazard, irrespective of exposure to the hazard, the risk of the hazard to human health, or whether safe uses can be identified. Products would be removed from the market, and maximum residue levels (MRLs) in commodities produced with active crop protection substances identified under this categorization system could either be withdrawn entirely or set at a default level of 0.01 ppm.

Seven different categories have been identified as subject to hazard based cut-offs. Among these, substances classified as mutagens, carcinogens, reproductive toxicants or having endocrine disrupting properties are subject to this new policy. The EU Directorate for Environment (DG ENV) was originally charged with developing the criteria for the identification of substances which may be categorized as endocrine disruptors, and had a deadline of December 14, 2013 to complete this work. To date DG Environment’s work does not allow for a precise assessment of which crop protection products may be included in these categories and be subject to the new “hazard-based” regulatory policy.

Based on an assessment of initial DG ENV work on criteria to define endocrine disruptors<sup>2</sup> the UK Health and Safety Executive Chemical Regulation Directorate (HSE CRD) developed a list of active substances that are either likely or possible to be subject to this hazard-based regulation or for which additional information may be required<sup>3</sup>. The European Crop Protection Association (ECPA) developed a list of 37 active substances that are either likely or possible to be subject to this regulation from the HSE CRD list.<sup>4</sup>

This report summarizes the potential effects on trade in agricultural products between the United States and the European Union of application of a hazard-based regulatory process for substances that may be classed as endocrine disruptors for purposes of Regulation 1107/2009. Trade data reflects the potential change in agricultural trade flows from the U.S. to the E.U. It does not include potential changes in trade flows in active pesticide ingredients exported from the U.S to the E.U. It does not estimate total economic effects that may be caused by these changes in trade flows. Non-trade effects may include disruption in production, marketing and prices for U.S. commodities and development of resistance to remaining acceptable active substances.

Based on the assumptions and methods discussed below approximately \$4.04 billion of U.S. exports to the E.U. of raw agricultural commodities could be affected by this policy change. The largest effects would be felt in exports of tree nuts and fruit (\$1.577 billion), soybeans and groundnuts (\$1.516 billion) and grains (\$0.586 billion). Inclusion of processed food and feed products from these commodities would increase the potential effect to \$4.77 billion.

This report was commissioned by and financed by Crop Life America. All data presented in this report were independently gathered by the study author.

## Study Assumptions

Because EU policies on MRLs for these substances are evolving, and existing data on both actual use of each of the substances on affected crops and residues of the substances on either raw commodities or processed products are incomplete, the following assumptions were made in the data presented under Results on pages seven and eight:

- All active substances for which there is a U.S. MRL for a commodity are used in production of that commodity.<sup>5</sup> This cannot be fully confirmed through existing U.S. pesticide use databases.
- All raw agricultural commodities with a U.S. MRL and clearly identifiable processed products from that commodity will contain identifiable residues of the substance at some level, irrespective of currently reported detection levels.

## Methodology

- A list of all potentially affected raw agricultural commodities with existing U.S. MRLs was obtained from the “MRL Database” sponsored by the USDA Foreign Agricultural Service. The database was queried for all commodities for each of the twenty-four substances identified in the ECPA study that have U.S. MRLs.<sup>6</sup>
- A list of the top twenty-five U.S. export groups (BICO-6) of raw agricultural commodities and their processed food and feed products exported to the European Union was gathered from the USDA-FAS Global Agricultural Trade System database<sup>7</sup> (See Appendix I). Each of the major products in these export groups was assigned to a six-digit Harmonized Tariff System code. The export group list was limited to categories with average annual exports to the E.U. of \$850,000 or above.
- The volume and value of European Union imports of these products, either in fresh or processed form, was extracted from the International Trade database operated by Eurostat.<sup>8</sup> While trade data may be collected either from export statistics (e.g. the USDA Global Agricultural Trade System) or import statistics, import data is generally considered more reliable because it is gathered not only for statistical purposes, but for enforcement/collection of border tariffs, and is subject to greater attention by customs officials.
- For each commodity, data were gathered for imports from the United States and from the world (including the U.S.). While this report focuses on potential trade effects on U.S. exports, world data can provide some sense of overall trade impacts within Europe if other suppliers of these commodities face the same issues as the U.S.

- The reported data are averages of E.U imports trade for the five year period 2008 - 2012. This average was used to smooth variations in year-to-year trade caused by agronomic issues (short- or long-supply), year-to-year competitive changes among different suppliers and effects of regulatory-driven trade interruptions.<sup>9</sup> While use of a five-year average masks trends for individual products that are either increasing or decreasing in export value it provides a better estimate of overall trade than single year snapshot.
- There is little concordance between the identification of commodities in MRLs and the harmonized system used for classifying trade data.<sup>10</sup> To the maximum extent possible the 337 distinct commodities identified by the MRL database search have been assigned to a trade classification associated with their botanical identity.
- As noted under the study assumptions, existing U.S. pesticide use databases are insufficient to confirm the actual use of each of the actives substances on raw agricultural products or their processed products exported to the E.U. To confirm that one or more of these active substances are used on a substantial amount of raw agricultural commodities, a series of queries was run using the USDA National Agricultural Statistics Service survey of commodities treated with insecticide, fungicide and herbicide products. These surveys are not a complete compilation either all raw agricultural commodities or all active substances. However, the results of this query indicate that one or more of the active substances are used on a large number of raw agricultural commodities. Details of this query are in Appendix III.
- Trade data were gathered (with limited exception) using the 6-digit Harmonized Tariff System published by the World Customs Organization and adopted by the U.S., the E.U. and the vast majority of WTO members. This system groups products by 2, 4, and 6 digit codes. For example, for fresh vegetables the 2-digit code is 07, for fresh potatoes the 4-digit code is 0710, and the 6-digit code is 070790. Individual countries supplement the HTS system with additional 8 and 10-digit codes for internal use. While 8 and 10-digit codes have greater specificity they are not applicable worldwide. In 2012 a number of changes were introduced to the HTS which lead to inconsistent year-to-year data in the Eurostat database in some cases. In these limited instances some 8-digit EU import codes were used.
- The use of 6-digit HTS codes can lead to instances of both under- and over-inclusion of commodities. 6-digit codes will occasionally include small amounts of commodities for which the crop protection substances under review may not be used. Conversely, there are 6-digit codes where small amounts of affected commodities are included, but only in groupings with large amounts of non-affected commodities. Where a 6-digit code clearly consists of a majority of affected commodities it was been included in the analysis. Where a 6-digit code consists of a minority of affected products it was excluded.

## **Non-Trade Effects**

Data presented in this report represent ceiling estimates of potential lost export sales to U.S. agricultural producers and exporters. Actual lost export sales will depend on final decisions of criteria to determine what active substances will be considered endocrine disruptors subject to Regulation 1107/2009. Depending on these decisions a variety of other economic and agronomic effects are likely. Quantifying these effects is beyond the scope of this report. However, it is important to recognize these potential effects.

### **Disruptions in Commodity Marketing and Exporting**

Depending on the specific active substances that are subject to the new criteria cut-offs, U.S. producers and exporters currently serving the E.U. market will be faced with several production and marketing options, all of which would result in increased costs and decreased profitability.

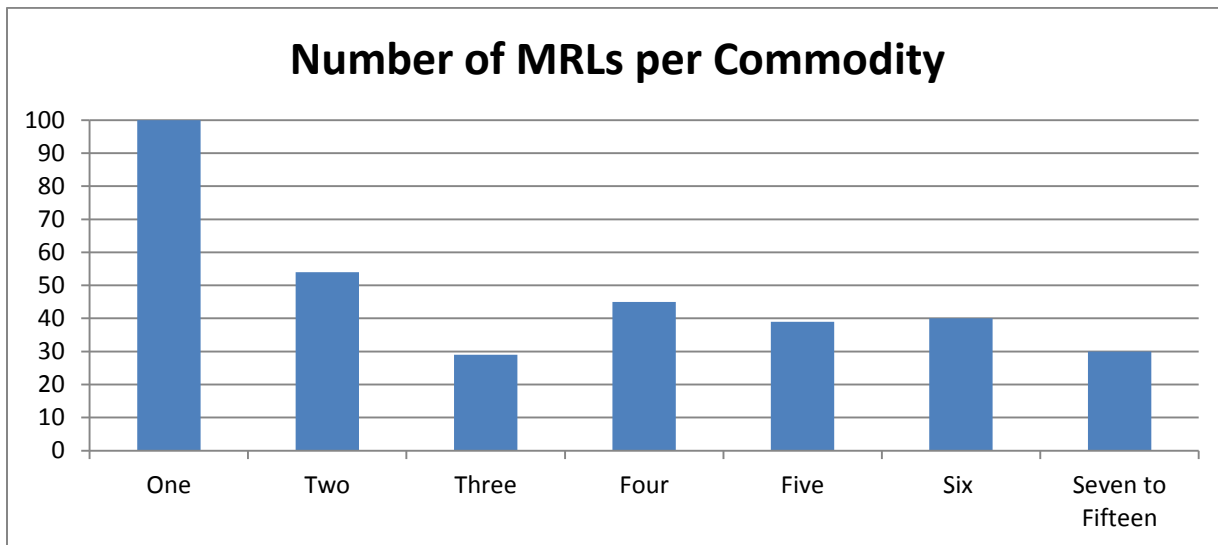
Some exporters could attempt continue to serve the E.U. market by sourcing commodities produced without affected active substances, either by changing geographic sourcing or specifying that affected active substances not be used. Either would involve establishing new supply chains with increased logistical and compliance monitoring costs. If particular substances were not permitted to be used by exporters crop production costs would increase because producers would be precluded from using the most cost effective and agronomically efficient combination of crop protection products.

Conversely Exporters could seek to replace sales to the E.U. with sales to other export destinations. Supply chain costs would increase and increased supply to other markets would have a price depressing effect.

### **Increased Resistance to Remaining Products**

If, in order to protect existing E.U. export markets, producers eliminate use of particular active substances no longer considered acceptable for use in commodities exported to Europe established programs to combat resistance programs would be disrupted.

Within the 25 commodity categories included in the data, 337 distinct raw agricultural products were identified which have a U.S. MRL for one or more of the active substances potentially subject to E.U. restrictions. The number of agricultural products with an MRL for any of the twenty-four active substances ranges from one to fifteen:



MRLs Per Commodity	Number of Commodities
<b>One</b>	100
<b>Two</b>	54
<b>Three</b>	29
<b>Four</b>	45
<b>Five</b>	39
<b>Six</b>	40
<b>Seven to Fifteen</b>	30

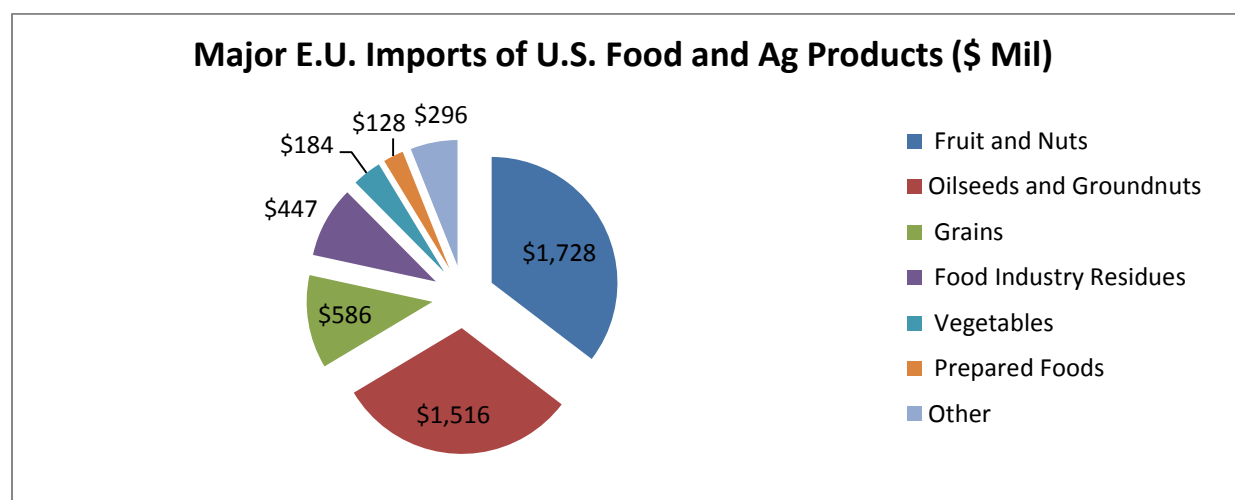
Of the twenty-four substances with U.S. MRLs three are insecticides, five are herbicides and sixteen are fungicides. A chart showing the number of MRLs for each active substance, grouped by function is attached as Appendix II. This range of product/MRL combinations suggests a range of potential affects depending on the eventual detail of the DG ENV criteria and the number and type of substances which may have their existing MRLs eliminated or reduced to default levels

For example, the 100 products with only one MRL among this group of substances (primarily deltamethrin) suggest that the substance(s) may be widely used either for superior efficacy, cost or incorporation into a resistance mitigation program. Likewise, the substances with a large number of MRLs per product (predominantly fungicides), are likely used in rotation as part of fungal resistance mitigation programs, and removal of the substance could decrease the effectiveness and lead to resistance issues.<sup>11</sup>

The Food and Environment Research Agency (FERA), an executive agency of the UK Department for Environment, Food and Rural Affairs, recently noted the danger of reliance on a narrowed range of active substances and modes of action on the development of resistance to remaining active substances.<sup>12</sup> FERA also noted issues with control of alien species in the event use of a number of active substances is no longer feasible, and potential financial losses to growers and increased resistance problems if active substances that may be used to partially replace now-banned neo-nicotinoid insecticides are no longer available because they are classified as endocrine disruptors.

## Results

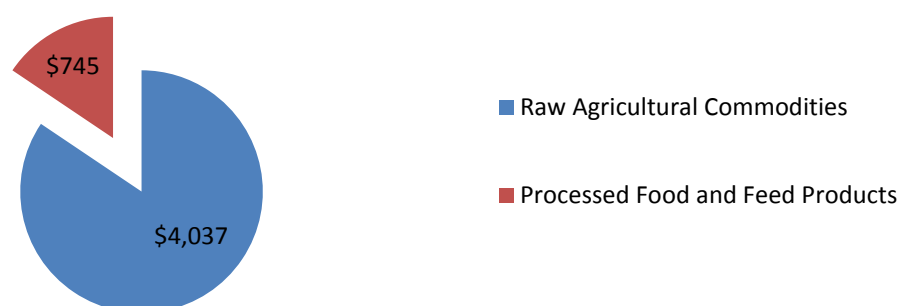
Summary results of the combined MRL/trade database compilation are below, and the detailed results for each individual HTS chapter examined are found in Appendices IV - XV. Data in the Eurostat database is reported in Euros (value) and 100 kg (volume). While all original data have been retained in the individual HTS Chapter files, for this summary chart they have been converted into units of measure typically used in reporting U.S. agricultural trade.<sup>13</sup>



EU Imports from World and United States of Potentially Affected Products				
Imports From:	World	US	World	US
Unit of Measure	\$ (1000s)	\$ (1000s)	MT	MT
<b>Chapter 8 - Fruit and Nuts</b>	\$14,019,887	\$1,727,525	9,449,479	411,118
<b>Chapter 12 - Oilseeds and Groundnuts</b>	\$9,525,405	\$1,516,490	17,001,070	2,721,920
<b>Chapter 10 - Grains</b>	\$4,602,261	\$585,660	13,238,275	1,706,166
<b>Chapter 23 - Food Industry Residues</b>	\$9,985,875	\$447,169	25,402,273	1,335,186
<b>Chapter 7 - Vegetables</b>	\$3,162,585	\$183,874	2,966,599	151,412
<b>Chapter 20 - Prepared Foods</b>	\$2,350,715	\$127,743	1,798,173	111,181
<b>Chapter 15 - Vegetable Oils</b>	\$1,998,470	\$92,371	1,724,085	76,428
<b>Chapter 21 - Miscellaneous Edible Preparations</b>	\$250,757	\$32,629	129,949	9,498
<b>Chapter 9 - Coffee, Tea</b>	\$10,558,691	\$23,158	3,030,559	3,400
<b>Chapter 11 - Grain Milling Products</b>	\$76,251	\$20,222	82,786	8,393
<b>Chapter 19 - Grain-Based Cereals</b>	\$159,592	\$18,142	50,060	3,241
<b>Chapter 18 - Cocoa Products</b>	\$6,032,441	\$6,393	1,899,417	2,095
<b>Total<sup>14</sup></b>	<b>\$62,722,930</b>	<b>\$4,781,378</b>	<b>76772,726</b>	<b>6,540,037</b>



### Major E.U. Imports of Raw and Processed Commodities from U.S. (\$ Mil.)



EU Imports from World and United States of Potentially Affected Raw Commodities				
Imports From:	World	US	World	US
Unit of Measure	\$ (1000s)	\$ (1000s)	MT	MT
Chapter 8 - Fruit and Nuts	\$14,019,887	\$1,727,525	9,449,479	411,118
Chapter 12 - Oilseeds and Groundnuts	\$9,525,405	\$1,516,490	17,001,070	2,721,920
Chapter 10 - Grains	\$4,602,261	\$585,660	13,238,275	1,706,166
Chapter 7 - Vegetables	\$3,162,585	\$183,874	2,966,599	151,412
Chapter 9 - Coffee, Tea	\$10,558,691	\$23,158	3,030,559	3,400
<b>Total</b>	<b>\$41,868,830</b>	<b>\$4,036,708</b>	<b>45,685,982</b>	<b>4,994,016</b>

EU Imports from World and United States of Potentially Affected Processed Products				
Imports From:	World	US	World	US
Unit of Measure	\$ (1000s)	\$ (1000s)	MT	MT
Chapter 23 - Food Industry Residues	\$9,985,875	\$447,169	25,402,273	1,335,186
Chapter 20 - Prepared Foods	\$2,350,715	\$127,743	1,798,173	111,181
Chapter 15 - Vegetable Oils	\$1,998,470	\$92,371	1,724,085	76,428
Chapter 21 - Miscellaneous Edible Preparations	\$250,757	\$32,629	129,949	9,498
Chapter 11 - Grain Milling Products	\$76,251	\$20,222	82,786	8,393
Chapter 19 - Grain-Based Cereals	\$159,592	\$18,142	50,060	3,241
Chapter 18 - Cocoa Products	\$6,032,441	\$6,393	1,899,417	2,095
<b>Total</b>	<b>\$20,854,100</b>	<b>\$744,670</b>	<b>31,086,744</b>	<b>1,546,022</b>

## APPENDICES

Appendix I - US Exports of USDA-FAS BICO-6 Crop Export Groups to E.U. and Corresponding HTS-6 Codes

Appendix II - Number of MRLs per Active Substance

Appendix III – NASS Survey Results of Active Substance Treatment of Commodities

Appendices IV – XV – Individual HTS Chapter Results

Appendix IV– Chapter 7 – Edible Vegetables, Roots and Tubers

Appendix V – Chapter 8 – Edible Fruits and Nuts

Appendix VI – Chapter 9 – Coffee, Tea and Spices

Appendix VII – Chapter 10 – Cereal Grains

Appendix VIII – Chapter 11 – Product of the Milling Industry

Appendix IX – Chapter 12 – Oilseeds

Appendix X – Chapter 15 – Vegetable Oils

Appendix XI – Chapter 18 – Cocoa Products

Appendix XII – Chapter 19 – Preparations of Cereals, Flour, Starch or Milk

Appendix XIII – Chapter 20 - Preparations of Vegetables, Fruit, Nuts

Appendix XIV – Chapter 21 – Miscellaneous Edible Preparations

Appendix XV– Chapter 23 - Residues of the Food Industry

Appendix XVI – Study Author

**Appendix I – US Exports of USDA-FAS BICO-6 Crop Export Groups to E.U.  
And Corresponding HTS-6 Code**

Product	2008 - 2012		Cumulative %	HTS Chapters
	Value (\$1000)	% of Total		
Tree Nuts	\$1,480,451	21.9%	21.9%	8
Soybeans	\$1,155,755	17.1%	38.9%	12
Other Consumer Oriented Products	\$800,548	11.8%	50.8%	19,20
Other Intermediate Products	\$643,484	9.5%	60.3%	11, 23
Processed Fruit & Vegetables	\$547,074	8.1%	68.4%	20
Vegetable Oils Exc Soybean Oil	\$288,909	4.3%	72.6%	15
Soybean Meal	\$258,034	3.8%	76.4%	23
Wheat	\$261,289	3.9%	80.3%	11
Feeds & Fodders (Exc Pet Food)	\$299,374	4.4%	84.7%	23
Planting Seeds	\$225,606	3.3%	88.1%	7,8,10,12
Fruit & Vegetable Juices	\$179,657	2.7%	90.7%	20
Pulses	\$118,539	1.8%	92.5%	7,12
Other Oilseeds	\$135,480	2.0%	94.5%	12
Fresh Fruit	\$154,348	2.3%	96.7%	8
Snack Foods (Exclud. Nuts)	\$56,564	0.8%	97.6%	19
Peanuts	\$59,629	0.9%	98.5%	12
Rice	\$57,192	0.8%	99.3%	10
Fresh Vegetables	\$21,013	0.3%	99.6%	7
Other Bulk Commodities	\$5,198	0.1%	99.7%	Various
Tea (Incl. Herb Tea)	\$8,175	0.1%	99.8%	9
Soybean Oil	\$3,485	0.1%	99.9%	15
Breakfast Cereals/Pancake Mix	\$4,175	0.1%	99.9%	19
Wheat Flour	\$3,707	0.1%	100.0%	11
Raw Coffee	\$891	0.0%	100.0%	9
Cocoa Beans	\$849	0.0%	100.0%	18
<b>Total</b>	<b>\$6,769,426</b>	<b>100.0%</b>		

## Appendix II – Number of MRLs per Active Substance

Active Substance	Number of MRLs
<b>Insecticides</b>	
Thiacloprid	18
Deltamethrin	336
Dimethoate	52
<b>Herbicides</b>	
2,4-D	112
Metribuzin	18
Picloram	3
Tepraloxym	4
Triflurosulfuron-methyl	5
<b>Fungicides</b>	
Tritconazole	14
Triadimenol	9
Thiram	4
Tetraconazole	16
Prothioconazole	25
Propiconazole	111
Metiram	2
Myclobutanil	76
Folpet	2
Difenoconazole	124
Tebuconazole	88
Metconazole	57
Mancozeb	64
Iprodione	48
Fenbuconazole	40
Cyproconazole	4

### Appendix III – NASS Survey Results of Active Substance Treatment of Commodities

Active Substance	Type	Commodities with Reported Use in NASS Database During 2003-2012 (1999 for Tree Nuts) <sup>15</sup>
	Insecticide	
Thiacloprid		Apples, Asparagus, Blueberries, Cherries, Cucumbers, Grapes, Oranges, Peaches, Pears, Pumpkins, Squash, Sweet Corn
Deltamethrin		Apples, Carrots, Corn, Cotton, Onions, Pears, Sweet Corn
Dimethoate		Apples, Asparagus, Barley, Beans, Broccoli, Cabbage, Cauliflower, Celery, Cherries, Corn, Cotton, Cucumbers, Grapefruit, Grape, Lemons, Lettuce, Melons, Onions, Oranges, Pears, Peas, Pecans, Peppers, Potatoes, Pumpkins, Sorghum, Soybeans, Spinach, Squash, Strawberries, Sweet Corn, Tangelos, Tangerines, Tomatoes, Wheat
	Fungicide	
Cyproconazole		Wheat
Fenbuconazole		Apples, Apricots, Blueberries, Cherries, Grapefruit, Nectarines, Oranges, Peaches, Pears, Plums, Prunes, Raspberries, Tangelos, Tangerines
Folpet		Melons
Iprodione		Almonds, Apples, Apricots, Beans, Blackberries, Blueberries, Broccoli, Carrots, Cherries, Cotton, Garlic, Grapes, Lettuce, Melons, Nectarines, Onions, Peaches, Plums, Potatoes, Prunes, Raspberries, Squash, Strawberries
Mancozeb		Apples, Asparagus, Barley, Beans, Blueberries, Cabbage, Carrots, Cherries, Cotton, Cucumbers, Eggplant, Grapes, Lettuce, Melons, Onions, Oranges, Peaches, Pears, Peppers, Potatoes, Pumpkins, Squash, Strawberries, Sweet Corn, Tomatoes
Maneb		Almonds, Apples, Asparagus, Beans, Broccoli, Cabbage, Cauliflower, Cucumbers, Eggplant, Grapes, Lettuce Melons, Onions, Peaches, Peppers, Potatoes, Pumpkins, Spinach, Squash, Sweet Corn, Tomatoes, Walnuts
Metconazole		Apricots, Barley, Cherries, Corn, Peaches, Plums, Soybeans, Wheat

Active Substance	Type	Commodities with Reported Use in NASS Database During 2003-2012 (1999 for Tree Nuts)
Tebuconazole		Apples, Asparagus, Barley, Beans, Blueberries, Cabbage, Cherries, Corn, Garlic, Grapes, Melons, Nectarines, Olives, Onions, Peaches, Peanuts, Pears, Plums, Prunes, Pumpkins, Soybeans, Spinach, Squash, Sweet Corn, Wheat
Difenoconazole		Apples, Cabbage, Cherries, Grapefruit, Grapes, Melons, Oranges, Peaches, Pears, Peppers, Pistachios, Potatoes, Pumpkins, Squash, Tangelos, Tangerines, Tomatoes
Metiram		Apples, Melons, Onions, Peaches, Potatoes, Pumpkins
Myclobutanil		Almonds, Apples, Apricots, Asparagus, Beans, Blackberries, Blueberries, Broccoli, Cherries, Cucumbers, Grapes, Lettuce, Melons, Nectarines, Peaches, Pears, Peppers, Plums, Potatoes, Prunes, Pumpkins, Raspberries, Soybeans, Squash, Strawberries, Sweet Corn, Tomatoes
Propiconazole		Almonds, Apples, Apricots, Barley, Beans, Blackberries, Blueberries, Cabbage, Carrots, Celery, Cherries, Corn, Garlic, Grapefruit, Grapes, Melons, Nectarines, Onions, Oranges, Peaches, Peanuts, Pears, Pecans, Plums, Prunes, Pumpkins, Rice, Soybeans, Squash, Strawberries, Sweet Corn, Tomatoes, Wheat
Prothioconazole		Barley, Soybeans, Wheat
Tetraconazole		Barley, Grapes, Melons, Olives, Peppers, Soybeans, Wheat
Thiram		Apples, Blackberries, Peaches, Pumpkins, Squash, Strawberries, Sweet Corn
	Herbicide	
2, 4-D		Almonds, Apples, Apricots, Asparagus, Barley, Beans, Blueberries, Cabbage, Cherries, Corn, Cotton, Cucumbers, Grapefruit, Grapes, Hazelnuts, Lemons, Melons, Nectarines, Oats, Onions, Oranges, Peaches, Peanuts, Pears, Plums, Potatoes, Prunes, Raspberries, Rice, Sorghum, Soybeans, Squash, Strawberries, Sweet Corn, Tangelos, Tangerines, Tomatoes, Walnuts, Wheat
Metribuzin		Asparagus, Beans, Blueberries, Carrots, Corn, Cotton, Eggplant, Onions, Peas, Peppers, Potatoes, Soybeans, Strawberries, Sweet Corn, Tomatoes, Wheat
Picloram		Barley, Blackberries, Cotton, Sorghum, Wheat

## Appendix IV – Chapter 7 – Edible Vegetables, Roots and Tubers

Chapter 7 - Vegetables								
	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US
	€	€	\$	\$	100 kg	100 kg	MT	MT
Arrowroot	28,359,028	7,097	38,847,984	9,722	291,162	40	29,116	4
Artichoke	21,473,507	0	29,415,763	0	121,504	0	12,150	0
Asparagus	122,498,976	703,799	167,806,816	964,108	360,396	2,263	36,040	226
Beans	691,819,503	29,727,264	947,697,950	40,722,279	6,639,413	260,526	663,941	26,053
Broccoli	2,838,387	267,936	3,888,202	367,036	15,001	1,387	1,500	139
Brussel Sprout	2,207,428	5,737	3,023,874	7,859	17,371	25	1,737	3
Cabbage	20,403,350	1,014,517	27,949,795	1,389,749	448,367	6,804	44,837	680
Carrots	30,461,873	3,676,121	41,728,593	5,035,782	845,481	27,675	84,548	2,768
Cassava	49,623,377	5,826	67,977,228	7,981	2,630,837	20	263,084	2
Corn, Sweet	11,153,215	1,449,333	15,278,377	1,985,388	134,050	16,483	13,405	1,648
Cucumber	50,576,699	3,044	69,283,150	4,170	732,708	7	73,271	1
Lentils	135,262,550	29,956,451	185,291,164	41,036,234	1,844,069	431,175	184,407	43,118
Lettuce	4,108,663	949,338	5,628,305	1,300,463	37,765	5,344	3,776	534
Mushrooms-Truffles	142,404,089	4,218,191	195,074,094	5,778,344	183,741	3,199	18,374	320
Olives	724,216	34	992,077	47	7,397	0	740	0
Onions	218,404,564	16,924,871	299,184,334	23,184,754	3,504,097	84,764	350,410	8,476
Peas-Dry	254,024,423	19,114,588	347,978,662	26,184,367	4,168,464	254,071	416,846	25,407
Peppers-Bell	303,898,786	205,487	416,299,707	281,489	2,543,800	963	254,380	96
Potato	158,257,464	263,800	216,791,047	361,370	4,247,770	2,494	424,777	249
Pumpkin	12,483,649	38,650	17,100,888	52,945	152,923	247	15,292	25
Spinach	4,310,671	606,083	5,905,029	830,251	45,256	1,685	4,526	168
Sweet Potato	43,392,609	25,090,215	59,441,930	34,370,158	694,421	414,950	69,442	41,495
<b>Total</b>	<b>2,308,687,028</b>	<b>134,228,381</b>	<b>3,162,584,970</b>	<b>183,874,495</b>	<b>29,665,994</b>	<b>1,514,122</b>	<b>2,966,599</b>	<b>151,412</b>

## Appendix V – Chapter 8 – Fruit and Nuts

Chapter 8 - Fruit and Tree Nuts								
	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US
	€	€	\$	\$	100 kg	100 kg	MT	MT
Almonds	634,724,914	594,792,426	869,486,183	814,784,146	2,018,837	1,902,979	201,884	190,298
Apples	607,707,141	22,542,793	832,475,535	30,880,539	6,624,177	192,598	662,418	19,260
Apricots	134,092,968	589,397	183,688,998	807,393	510,089	1,322	51,009	132
Avocados	292,438,560	218,483	400,600,768	299,292	1,957,092	1,052	195,709	105
Bananas and Plantains	2,848,776,502	45,925	3,902,433,565	62,911	46,930,012	890	4,693,001	89
Cashews	387,566,126	851,750	530,912,501	1,166,781	800,741	1,871	80,074	187
Cherries	133,279,522	15,236,492	182,574,687	20,871,907	401,632	37,598	40,163	3,760
Coconuts	119,772,392	109,751	164,071,770	150,344	1,100,942	1,080	110,094	108
Cranberries	102,678,436	5,201,099	140,655,392	7,124,793	185,646	12,699	18,565	1,270
Currants	1,681,481	0	2,303,398	0	2,951	0	295	0
Dates	133,081,828	2,540,418	182,303,873	3,480,025	705,134	5,327	70,513	533
Grapes, Raisins	1,524,985,099	109,599,824	2,089,020,684	150,136,746	9,209,851	645,974	920,985	64,597
Hazelnuts	538,379,363	4,681,673	737,505,976	6,413,251	1,140,513	18,059	114,051	1,806
Macadamia	42,483,861	1,149,475	58,197,069	1,574,624	57,205	1,199	5,721	120
Peaches and Nectarines	57,226,012	867,562	78,391,797	1,188,442	330,229	4,583	33,023	458
Pears	284,041,630	3,405,637	389,098,123	4,665,256	3,110,077	36,303	311,008	3,630
Persimmons	4,857,498	23,299	6,654,107	31,916	26,338	162	2,634	16
Pineapple	558,887,078	9,019	765,598,737	12,355	8,991,865	24	899,186	2
Pistachios	392,154,869	244,243,754	537,198,450	334,580,485	694,363	465,626	69,436	46,563
Plums, Prunes	208,642,325	50,661,231	285,811,404	69,398,946	1,326,340	215,547	132,634	21,555
Raspberries, Blackberries	392,293,800	400,493	537,388,767	548,620	2,259,969	1,162	225,997	116
Strawberries	216,546,823	7,280,906	296,639,483	9,973,844	1,677,866	28,951	167,787	2,895
Tangerines and Similar Citrus	276,871,401	2,516,446	379,275,892	3,447,187	3,625,516	27,138	362,552	2,714
Walnuts	341,348,159	194,125,451	467,600,218	265,925,275	807,403	509,037	80,740	50,904
Total	10,234,517,785	1,261,093,306	14,019,887,376	1,727,525,076	94,494,786	4,111,180	9,449,479	411,118



## Appendix VI – Chapter 9 – Coffee, Tea and Spices<sup>16</sup>

Chapter 9 - Coffee, Tea								
	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US
	€	€	\$	\$	100 kg	100 kg	MT	MT
Coffee	7,106,085,137	9,580,964	9,734,363,202	13,124,608	27,673,422	24,531	2,767,342	2,453
Tea	601,759,197	7,324,186	824,327,667	10,033,131	2,632,172	9,465	263,217	946
Total	7,707,844,335	16,905,149	10,558,690,869	23,157,739	30,305,594	33,996	3,030,559	3,400

## Appendix VII – Chapter 10 – Cereal Grains

Chapter 10 - Cereal Grains								
	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US
	€	€	\$	\$	100 kg	100 kg	MT	MT
Barley	56,079,539	119,487	76,821,286	163,680	2,679,741	3,386	267,974	339
Buckwheat	6,688,933	21,035	9,162,922	28,815	136,172	260	13,617	26
Corn	1,290,403,370	59,990,592	1,767,675,849	82,178,893	63,418,758	2,409,141	6,341,876	240,914
Oats	1,402,714	11,579	1,921,526	15,861	34,731	131	3,473	13
Rice	903,711,691	50,274,523	1,237,961,220	68,869,210	15,625,287	936,550	1,562,529	93,655
Sorghum	183,498,948	147,433,710	251,368,422	201,963,987	9,135,141	7,186,140	913,514	718,614
Wheat	917,865,277	169,681,227	1,257,349,695	232,440,037	41,352,923	6,526,053	4,135,292	652,605
Total	3,359,650,471	427,532,152	4,602,260,920	585,660,482	132,382,753	17,061,661	13,238,275	1,706,166

## Appendix VIII – Chapter 11 – Products of the Milling Industry

Chapter 11 - Grain Milling Products								
	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US
	€	€	\$	\$	100 kg	100 kg	MT	MT
Corn Milling	24,719,024	10,075,080	33,861,677	13,801,479	385,083	57,591	38,508	5,759
Oat Milling	795,519	266,333	1,089,752	364,840	6,369	1,296	637	130
Wheat Milling	15,395,454	2,016,755	21,089,663	2,762,679	257,841	11,277	25,784	1,128
Other Cereal Flours	8,071,097	814,146	11,056,298	1,115,269	88,248	3,552	8,825	355
Other Groats and Meals	864,457	12,102	1,184,188	16,579	14,620	16	1,462	2
Potato Flakes	2,213,305	964,398	3,031,924	1,321,093	19,715	6,231	1,972	623
Pea, Bean and Lentil Flour	2,639,852	595,672	3,616,235	815,988	33,905	3,793	3,390	379
Malt	964,252	17,582	1,320,893	24,085	22,080	172	2,208	17
<b>Total</b>	<b>55,662,961</b>	<b>14,762,069</b>	<b>76,250,631</b>	<b>20,222,012</b>	<b>827,861</b>	<b>83,928</b>	<b>82,786</b>	<b>8,393</b>

## Appendix IX – Chapter 12 – Oilseeds and Groundnuts

Chapter 12 - Oilseeds and Groundnuts								
	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US
	€	€	\$	\$	100 kg	100 kg	MT	MT
Canola	1,068,621,570	1,889,333	1,463,865,165	2,588,127	26,206,343	39,440	2,620,634	3,944
Cottonseed	19,516,548	1,018,913	26,734,997	1,395,771	618,908	40,570	61,891	4,057
Groundnuts	618,080,291	62,115,262	846,685,330	85,089,400	5,636,614	534,881	563,661	53,488
Hop Cones	24,819,257	19,456,489	33,998,982	26,652,725	28,330	21,465	2,833	2,147
Linseed	210,444,479	11,306,303	288,280,108	15,488,087	4,750,346	244,070	475,035	24,407
Soybeans	4,720,227,963	937,495,356	6,466,065,703	1,284,240,214	129,042,764	25,813,264	12,904,276	2,581,326
Sunflower Seed	291,835,890	73,756,394	399,775,192	101,036,157	3,727,394	525,509	372,739	52,551
<b>Total</b>	<b>6,953,545,999</b>	<b>1,107,038,051</b>	<b>9,525,405,478</b>	<b>1,516,490,481</b>	<b>170,010,698</b>	<b>27,219,199</b>	<b>17,001,070</b>	<b>2,721,920</b>

## Appendix X – Chapter 15 – Vegetable Oils

Chapter 15 - Vegetable Oils								
	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US
	€	€	\$	\$	100 kg	100 kg	MT	MT
Canola Oil	369,070,214	41,914,734	505,575,635	57,417,443	4,432,297	530,087	443,230	53,009
Corn Oil	36,312,900	23,083,261	49,743,698	31,620,905	358,785	220,381	35,879	22,038
Cottonseed Oil	2,133,172	69,485	2,922,154	95,184	21,577	179	2,158	18
Groundnut Oil	95,987,249	768,102	131,489,382	1,052,194	775,783	3,511	77,578	351
Soybean Oil	160,022,044	588,949	219,208,280	806,779	2,051,106	3,295	205,111	330
Sunflower Oil	795,357,612	1,006,521	1,089,530,976	1,378,796	9,601,303	6,825	960,130	682
<b>Total</b>	<b>1,458,883,191</b>	<b>67,431,051</b>	<b>1,998,470,125</b>	<b>92,371,302</b>	<b>17,240,852</b>	<b>764,277</b>	<b>1,724,085</b>	<b>76,428</b>

## Appendix XI – Chapter 18 – Cocoa Products

Chapter 18 - Cocoa Products								
	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US
	€	€	\$	\$	100 kg	100 kg	MT	MT
Cocoa Beans	3,153,803,509	558,616	4,320,278,780	765,228	14,667,057	4,249	1,466,706	425
Cocoa Butter	563,681,971	479,453	772,167,083	656,785	1,605,096	1,430	160,510	143
Cocoa Paste	559,780,215	730,446	766,822,213	1,000,611	2,169,827	3,992	216,983	399
Cocoa Powder	126,416,016	2,898,647	173,172,624	3,970,749	552,190	11,283	55,219	1,128
<b>Total</b>	<b>4,403,681,711</b>	<b>4,667,162</b>	<b>6,032,440,700</b>	<b>6,393,372</b>	<b>18,994,170</b>	<b>20,954</b>	<b>1,899,417</b>	<b>2,095</b>

## Appendix XII – Chapter 19 – Preparations of Cereals, Flour, Starch or Milk

Chapter 19 - Grain Based Cereals								
	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US
	€	€	\$	\$	100 kg	100 kg	MT	MT
Corn Flakes	29,512,936	2,279,889	40,428,680	3,123,136	130,928	8,417	13,093	842
Malt Extract	74,707,796	10,397,262	102,339,447	14,242,824	327,969	22,728	32,797	2,273
Other Grain Based Cereals	12,281,603	566,377	16,824,114	775,859	41,704	1,269	4,170	127
Total	116,502,335	13,243,528	159,592,240	18,141,820	500,601	32,414	50,060	3,241

## Appendix XIII – Chapter 20 – Prepared, Processed Foods

Chapter 20 - Prepared Foods and Juices								
	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US
	€	€	\$	\$	100 kg	100 kg	MT	MT
Apricots	42,062,072	285,637	57,619,277	391,284	449,192	725	44,919	72
Asparagus	165,142,060	27,712	226,222,001	37,962	996,760	285	99,676	29
Beans	56,701,170	543,658	77,672,836	744,737	427,481	5,061	42,748	506
Cherries	19,358,458	3,754,471	26,518,436	5,143,111	152,814	21,453	15,281	2,145
Citrus and Citrus Jam	74,446,566	315,226	101,981,597	431,817	838,947	2,512	83,895	251
Fruit Jams	69,117,736	1,082,988	94,681,830	1,483,545	379,841	6,117	37,984	612
Groundnuts	37,419,766	11,460,626	51,259,953	15,699,487	212,781	47,315	21,278	4,732
Mushrooms and Truffles	49,234,236	30,689	67,444,159	42,039	403,502	28	40,350	3
Peaches and Nectarines	20,861,709	103,528	28,577,683	141,820	225,979	871	22,598	87
Pears	31,412,572	8,984	43,030,920	12,307	375,517	117	37,552	12
Peas	3,281,586	29,498	4,495,323	40,408	19,361	252	1,936	25
Pineapple	282,158,308	30,293	386,518,230	41,497	3,520,971	294	352,097	29
Potatoes	15,210,217	4,301,660	20,835,914	5,892,684	73,290	22,727	7,329	2,273
Strawberries	11,586,000	59,525	15,871,233	81,541	121,419	227	12,142	23
Sweet Corn	48,401,916	7,459,124	66,303,995	10,217,979	559,303	72,184	55,930	7,218
Tomatoes	215,211,061	44,996,413	294,809,672	61,638,921	3,108,945	675,587	310,894	67,559
Apple Juice	231,085,457	118,352	316,555,421	162,126	2,433,416	1,358	243,342	136
Grape Juice	7,902,591	1,968,408	10,825,467	2,696,450	0	13,022	0	1,302
Grapefruit Juice	70,730,475	15,399,636	96,891,062	21,095,392	1,018,737	233,112	101,874	23,311
Other Citrus Juice	79,092,381	570,461	108,345,727	781,454	436,541	1,497	43,654	150
Pineapple Juice	184,150,838	422,372	252,261,421	578,592	2,204,432	4,538	220,443	454
Tomato Juice	1,454,558	283,222	1,992,545	387,975	22,505	2,524	2,250	252
<b>Total</b>	<b>1,716,021,732</b>	<b>93,252,483</b>	<b>2,350,714,702</b>	<b>127,743,128</b>	<b>17,981,733</b>	<b>1,111,806</b>	<b>1,798,173</b>	<b>111,181</b>



## Appendix XIV – Chapter 21 – Miscellaneous Edible Preparations<sup>17</sup>

Chapter 21 - Miscellaneous Edible Preparations								
	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US
	€	€	\$	\$	100 kg	100 kg	MT	MT
Coffee Extracts	37,511,281	633,156	51,385,317	867,337	40,657	1,197	4,066	120
Soy Sauce	51,888,884	10,165,781	71,080,664	13,925,728	369,677	36,717	36,968	3,672
Tea Extracts	62,863,426	7,688,456	86,114,282	10,532,131	542,763	11,665	54,276	1,167
Tomato Catsup and Sauce	30,789,245	5,331,635	42,177,048	7,303,609	346,396	45,400	34,640	4,540
Total	183,052,837	23,819,028	250,757,310	32,628,805	1,299,492	94,979	129,949	9,498

## Appendix XV – Chapter 23 – Residues of the Food Industry

Chapter 23 - Food Industry Residues								
	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US	Total EU Imports	From US
	€	€	\$	\$	100 kg	100 kg	MT	MT
Canola Meal	39,444,433	236,770	54,033,469	324,342	1,928,042	6,909	192,804	691
Corn Bran	234,462	111,995	321,181	153,418	6,960	1,320	696	132
Corn Gluten Feed	68,211,743	64,711,299	93,440,744	88,645,615	4,175,862	3,961,395	417,586	396,139
Corn Gluten Meal	1,654,363	1,182,967	2,266,250	1,620,503	30,686	23,183	3,069	2,318
Cottonseed Meal	2,366,172	1,317,587	3,241,331	1,804,913	235,220	14,057	23,522	1,406
Distillers Grains	63,220,437	50,915,687	86,603,338	69,747,517	3,836,358	2,754,863	383,636	275,486
Soybean Meal	6,599,366,812	193,749,137	9,040,228,510	265,409,776	211,767,449	5,764,382	21,176,745	576,438
Sugar Beet Pulp	96,631,087	13,465,851	132,371,352	18,446,372	6,034,402	780,484	603,440	78,048
Sunflower Meal	412,317,943	662,819	564,819,100	907,972	25,584,120	44,815	2,558,412	4,481
Wheat Bran	6,241,048	79,352	8,549,381	108,702	423,629	451	42,363	45
<b>Total</b>	<b>7,289,688,499</b>	<b>326,433,465</b>	<b>9,985,874,656</b>	<b>447,169,130</b>	<b>254,022,730</b>	<b>13,351,857</b>	<b>25,402,273</b>	<b>1,335,186</b>

## APPENDIX XVI – Study Author

### Kyd Brenner

Kyd Brenner is an independent consultant providing international trade policy counseling and trade analysis to clients in the global food and agriculture industries. Kyd Brenner joined DTB Associates following twenty-six years of experience in U.S. and international government policy and regulation, public relations, research and technical services. From 2001 – 2012 Brenner was a Partner in DTB Associates LLP and remains affiliated with the firm as a Senior Consultant. From 1975 – 2000 he held a variety of executive positions with the Corn Refiners Association representing the \$10 billion U.S. corn processing industry in domestic and international policy matters.

Mr. Brenner has participated in the development of U.S. legislation and federal regulation that facilitated development of major food and feed markets, including the market for the country's largest volume food additive. He has extensive experience in U.S.-E.U. agricultural trade relations and served on the Agricultural Technical Advisory Committees for Trade in Grain, Feeds and Oilseeds and Sweeteners on behalf of the Secretary of Agriculture and U.S. Trade Representative.

Mr. Brenner has served on the U.S. delegation to the FAO/WHO Codex Alimentarius Commission and many of its committees since 1991. His areas of expertise include international food and feed safety and standards, trade in products of modern biotechnology and the interface between science and trade policy.

Currently Mr. Brenner provides services to clients engaged in: primary crop and animal production; commodity handling and export; biofuels production; food and feed ingredient processing; and supply of seed and seed technology, food additives and veterinary drugs.

Representative projects have included:

- Counseling clients on priorities and strategies in the Uruguay and Doha GATT/WTO rounds of international trade negotiations, multi-lateral agreements including NAFTA , current TPP and TTIP negotiations and all U.S. bi-lateral FTA negotiations since 1985
- Representation on Sanitary and Phytosanitary Standard issues including MRLs for food/feed contaminants and veterinary medicines, and international guidelines on risk assessment and management established by the Codex Alimentarius Commission
- Resolution of bi-lateral disputes including SPS and customs classification issues
- Comparative tariff, trade data and regulatory analysis to assist clients in raw material sourcing and plant siting decisions

## NOTES

<sup>1</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:309:0001:0050:EN:PDF>

<sup>2</sup> European Commission DG Environment, Brussels, 13 February 2013, ED-AD-HOC-6/2013/01, The Community Strategy for Endocrine Disrupters

<sup>3</sup> UK/DEFRA Chemicals Regulation Directorate/Pesticide Safety Directorate:

[http://www.pesticides.gov.uk/Resources/CRD/Migrated-Resources/Documents/O/Outcomes\\_paper\\_-\\_summary\\_impact\\_assessment\\_\(Jan\\_09\).pdf](http://www.pesticides.gov.uk/Resources/CRD/Migrated-Resources/Documents/O/Outcomes_paper_-_summary_impact_assessment_(Jan_09).pdf). 2,4-D, Amitrole, Bifenthrin, Bitertanol, Carbetamide, Chlorotoluron, Cyproconazole, Deltamethrin, Difenconazole, Dimethoate, Dinocap, Epoxiconazole, Esfenvalerate, Fenbuconazole, Flufenoxuron, Flumioxazine, Fluometuron, Fluquinconazole, Flusilazole, Folpet, Fuberidazole, Glufosinate, Ioxynil, Iprodione, Linuron, Lufenuron, Mancozeb, Maneb, Metam, Metconazole, Metiram, Metribuzin, Molinate, Myclobutanil, Penconazole, Pendimethalin, Picloram, Prochloraz, Propiconazole, Prothioconazole, Quinoxifen, Tebuconazole, Tepraloxym, Tetraconazole, Thiacloprid, Thiram, Tralkoxydim, Triadimenol, Triflurosulfuron, Triticonazole. (Endnote modified 11-22-13 to reference correct PSD/CRD assessment).

<sup>4</sup> Potential Impact of current Draft Proposal for Endocrine Disruption Criteria, European Crop Protection Association, Auderghem, Belgium, March 2013. Substances identified by ECPA are: Thiacloprid, Cyproconazole, Epoxiconazole, Fenbuconazole, Iprodione, Mancozeb, Maneb, Metconazole, Tebuconazole, Amitrole, Ioxynil, Molinate, Deltamethrin, Dimethoate, Difenconazole, Folpet, Fluquinconazole, Fuberidazole, Metiram, Myclobutanil, Penconazole, Prochloraz, Propiconazole, Prothioconazole, Tetraconazole, Thiram, Triadimenol, Triticonazole, 2,4-D, Carbetamide, Chlorotoluron, Fluormeteron, Metribuzin, Picloram, Tepraloxym, Triflurosulfuron and Metam.

<sup>5</sup> Of active substances listed in the ECPA and WRC reports there are no U.S. MRLs for Epoxiconazole, Maneb, Amitrole, Ioxynil, Molinate, Fluquinconazole, Fuberidazole, Penconazole, Prochloraz, Carbetamide, Chlorotoluron, Fluormeteron, Terbutylazine, Bupimate, Carbendazim, Hymexazol, Prochloraz and Silthofam and Metam.

<sup>6</sup> <http://www.mrlatabase.com/>

<sup>7</sup> <http://www.fas.usda.gov/gats/default.aspx>

<sup>8</sup> <http://epp.eurostat.ec.europa.eu/newxtweb/setupdimselection.do>

<sup>9</sup> During 2008 - 2012 there were large disruptions in U.S. exports of rice and corn products caused by the presence, or potential presence, of unapproved biotechnology traits. U.S. soybean exports have also suffered from policies under the Renewable Energy Directive which limit the ability of European soy crushers to use U.S. soybeans to produce oil for biodiesel production.

<sup>10</sup> For example, the MRL database identifies U.S., Codex and EU MRLs on a product identified as "Calamondin". Trade databases do not contain a product with this identification, but do contain data for the class of fruit (citrus fruits) associated with the botanical identity of Calamondin.

<sup>11</sup> e.g., pp 7 – 8 in Fungicides, Bactericides and Biologicals for Deciduous Tree Fruit, Nut, Strawberry and Vine Crops, University of California Davis, 2012 at <http://plantpathology.ucdavis.edu/files/146650.pdf>

<sup>12</sup> Agronomic and economic impact assessment for possible human health and ecotoxicology criteria for endocrine disrupting substances." The Food and Environment Research Agency, Sand Hutton, York UK. June 2013.

<sup>13</sup> Thousand dollars and metric tons. Euro values from 2008 – 2012 converted to U.S. dollars at 0.73€ = \$1, the numerical average of annual average exchange rates over the period.

<sup>14</sup> Totals modified 11-12-13 to correct spreadsheet error.

<sup>15</sup> No use is reported for Triadimenol, Triticonazole or Tepraloxym in the NASS database for the commodities covered using the most recent year of available data. However, because this is a survey program rather than a collection of full data it cannot be assumed that these products with U.S. MRLs are not used on the raw agricultural products identified in this report.

<sup>16</sup> Because of difficulty in matching botanical spice names with HTS descriptions spices have been omitted.

<sup>17</sup> Because this Chapter contains numerous compound/processed foods only those clearly identifiable as consisting predominantly of a single raw commodity were selected.