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The U.S. Experience with Agricultural Biotechnology

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US Department of Agriculture
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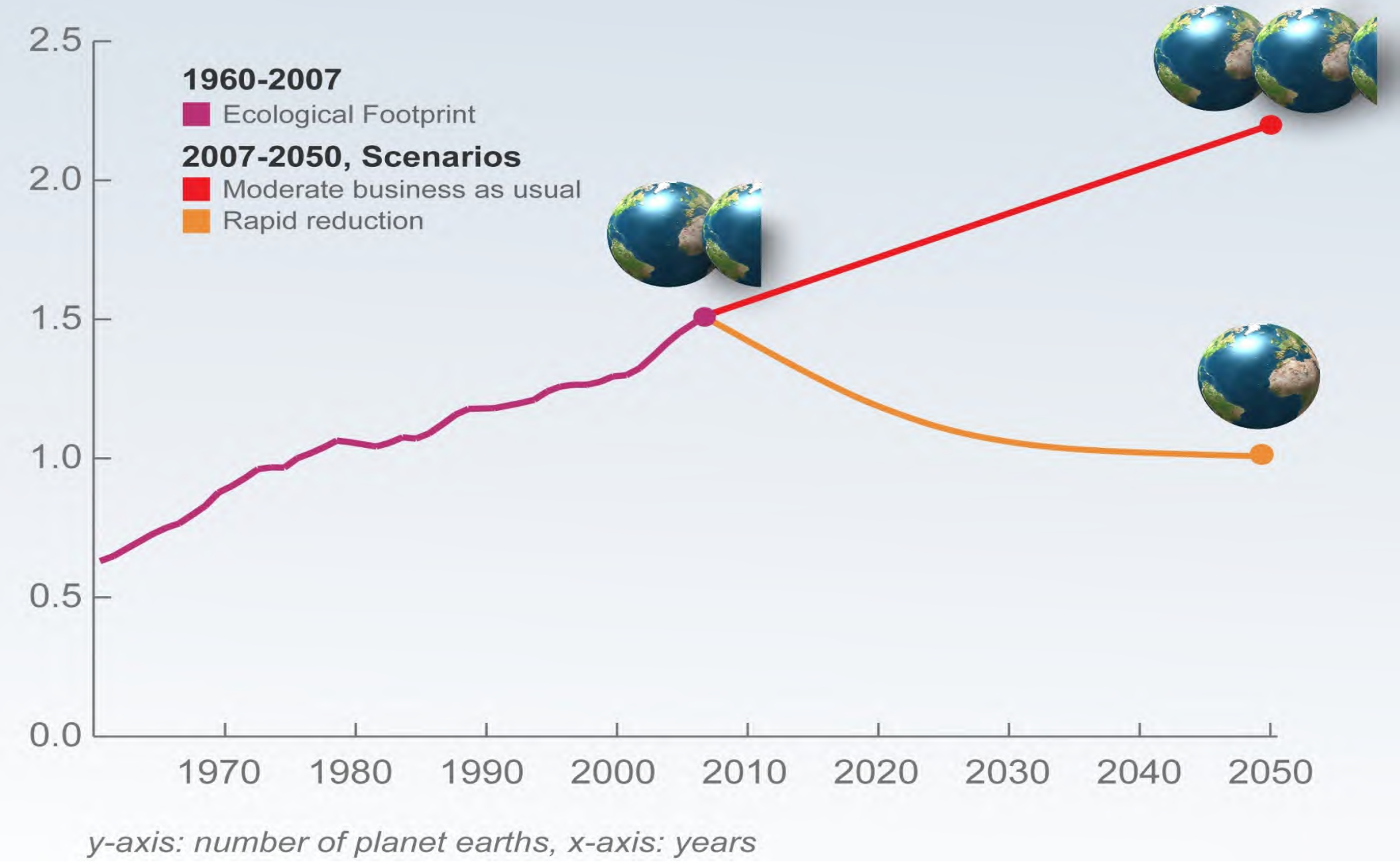
Food Security and Sustainability



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Coordinated Framework (1986)

Federal role in the safe use of biotechnology:

- The safety risks of GE organisms are not fundamentally different from safety risks posed by non-GE organisms with similar traits.
- The existing laws provide adequate authority.
- Regulation should be science-based and conducted on a case-by-case basis.

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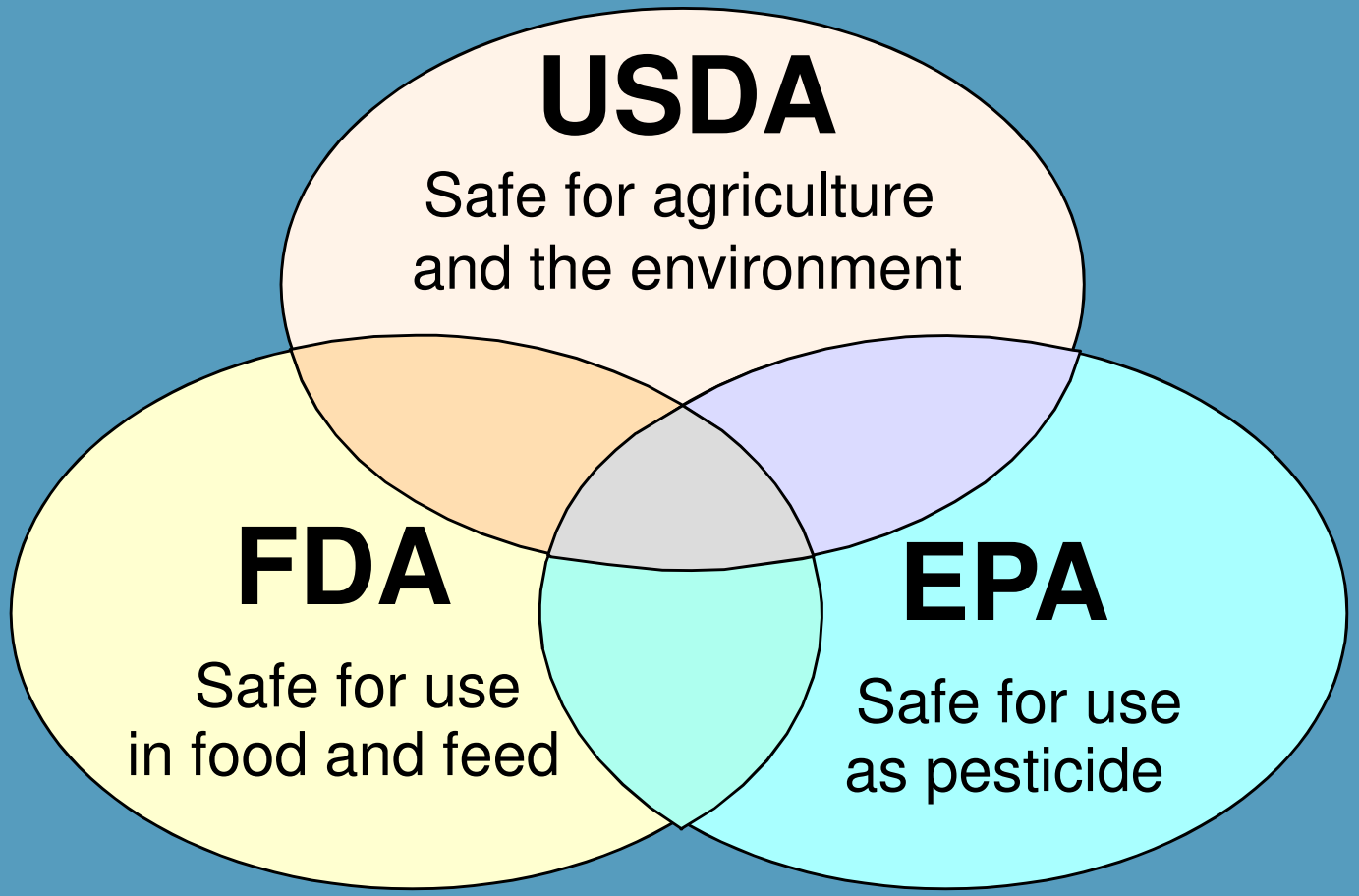
Regulation Under the Coordinated Framework



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Regulation Under the Coordinated Framework

- **Department of Agriculture (USDA-APHIS-BRS)**
  - PPA: Protecting against damage from plant pests and noxious weeds
- **Environmental Protection Agency (EPA)**
  - FIFRA: Regulating the safe use of pesticides
  - FFDCA: Setting allowable levels of pesticides in food
  - TSCA: Regulating toxic substances
- **Food and Drug Administration (FDA)**
  - FFDCA: Regulating safety of food, drugs, and cosmetics

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Regulation Under the Coordinated Framework

New Trait/Crop	Agency	Review
Insect resistance in food crop (Bt corn)	USDA EPA FDA	Agricultural and environmental safety Environmental, food/feed safety of pesticide Food/feed safety
Herbicide tolerance in food crop (glyphosate tolerant soybeans)	USDA EPA FDA	Agricultural and environmental safety New herbicide use Food/feed safety
Herbicide tolerance in ornamental crop (glufosinate tolerant tulips)	USDA EPA	Agricultural and environmental safety New herbicide use
Modified oil in food crop (high oleic acid soybeans)	USDA FDA	Agricultural and environmental safety Food/feed safety
Modified flower color (blue poinsettias)	USDA	Agricultural and environmental safety

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GE plants with Nonregulated Status under 7 CFR part 340

- Corn – HT, IR, AP
- Soybean – HT, PQ, IR
- Cotton – HT, IR
- Canola – HT, AP, PQ
- Papaya – VR
- Squash – VR
- Tobacco – PQ
- Alfalfa – HT
- Sugar beet – HT

❖ Tomato – PQ
❖ Chicory – AP
❖ Potato – IR, VR
❖ Rice – HT
❖ Flax – AP
❖ Plum – VR
❖ Rose – PQ

• large scale production
❖ not in large scale production

HT – herbicide tolerance
IR – insect resistance
AP – agronomic properties
VR – virus resistance
PQ – product quality

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Adoption of Genetically Engineered Crops in the United States (2012)

	Insect Resistant	Herbicide Tolerant	Stacked Gene Varieties	Total*
Corn	15	21	52	**88**
Cotton	14	17	63	**94**
Soybeans	0	93	0	**93**

*** Values represent percentages of each crop planted in 2012**

Source: http://www.ers.usda.gov/Data/BiotechCrops/

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Why growers use biotech crops: Environmental Benefits

- Reduction in pesticides
- Savings on fossil fuels
- Decreasing CO2 emissions through no/less plowing
- Improved soil health by conserving soil and moisture by optimizing the practice of no till
- Increased birdlife and beneficial insects

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Why growers use biotech crops: Economic Benefits

- Fuel savings
- Labor savings
- Herbicide savings
- Increased yields

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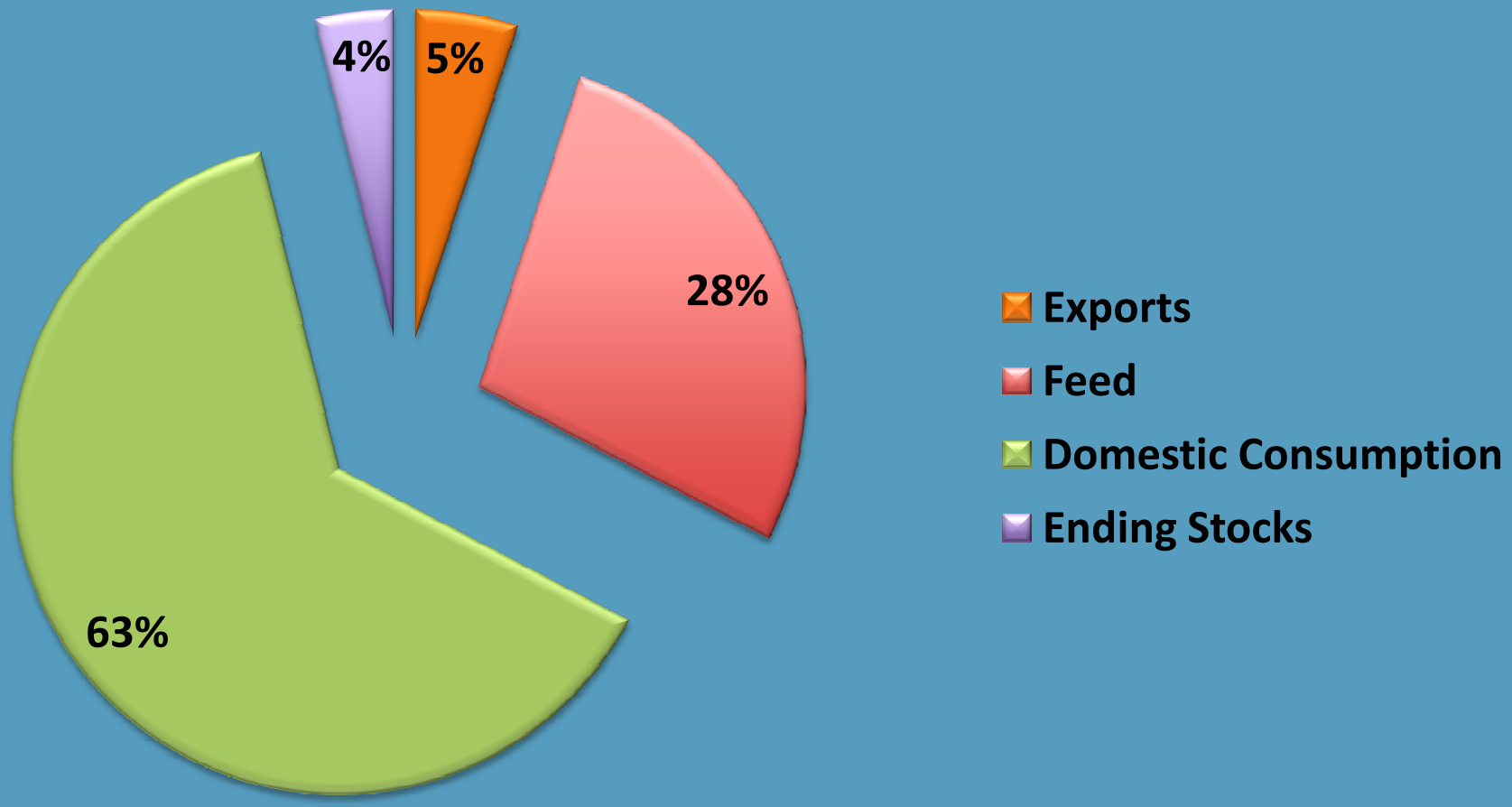
2012/13 U.S. Corn Domestic Consumption and Exports



Source: United States Department of Agriculture, March 8/2013

http://www.fas.usda.gov/psdonline/psdreport.aspx?hidReportRetrievalName=BVS&hidReportRetrievalID=873&hidReportRetrievalTemplateID=13

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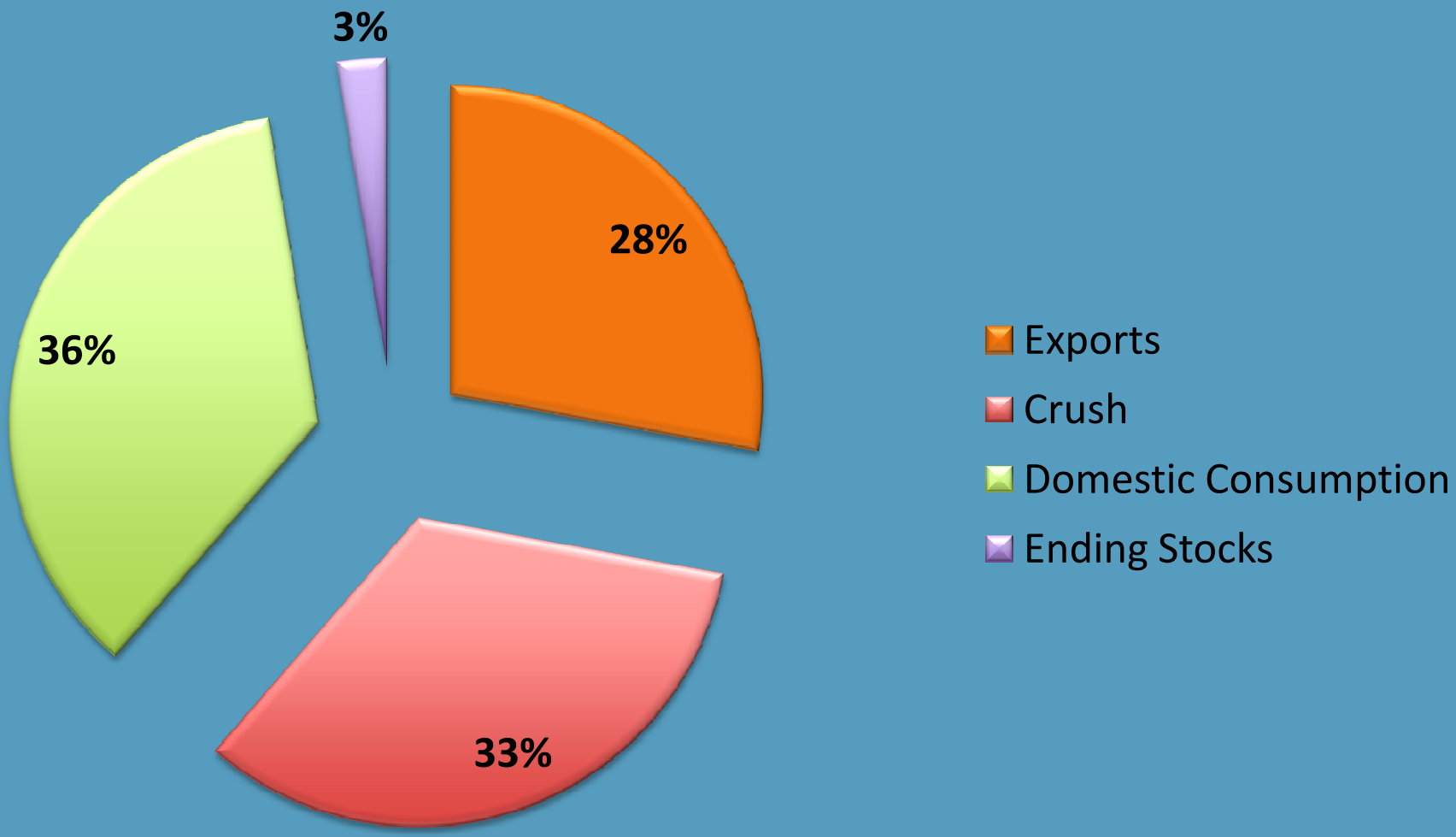
2012/13 U.S. Soybean Domestic Consumption and Exports



Source: United States Department of Agriculture, March 8/2013

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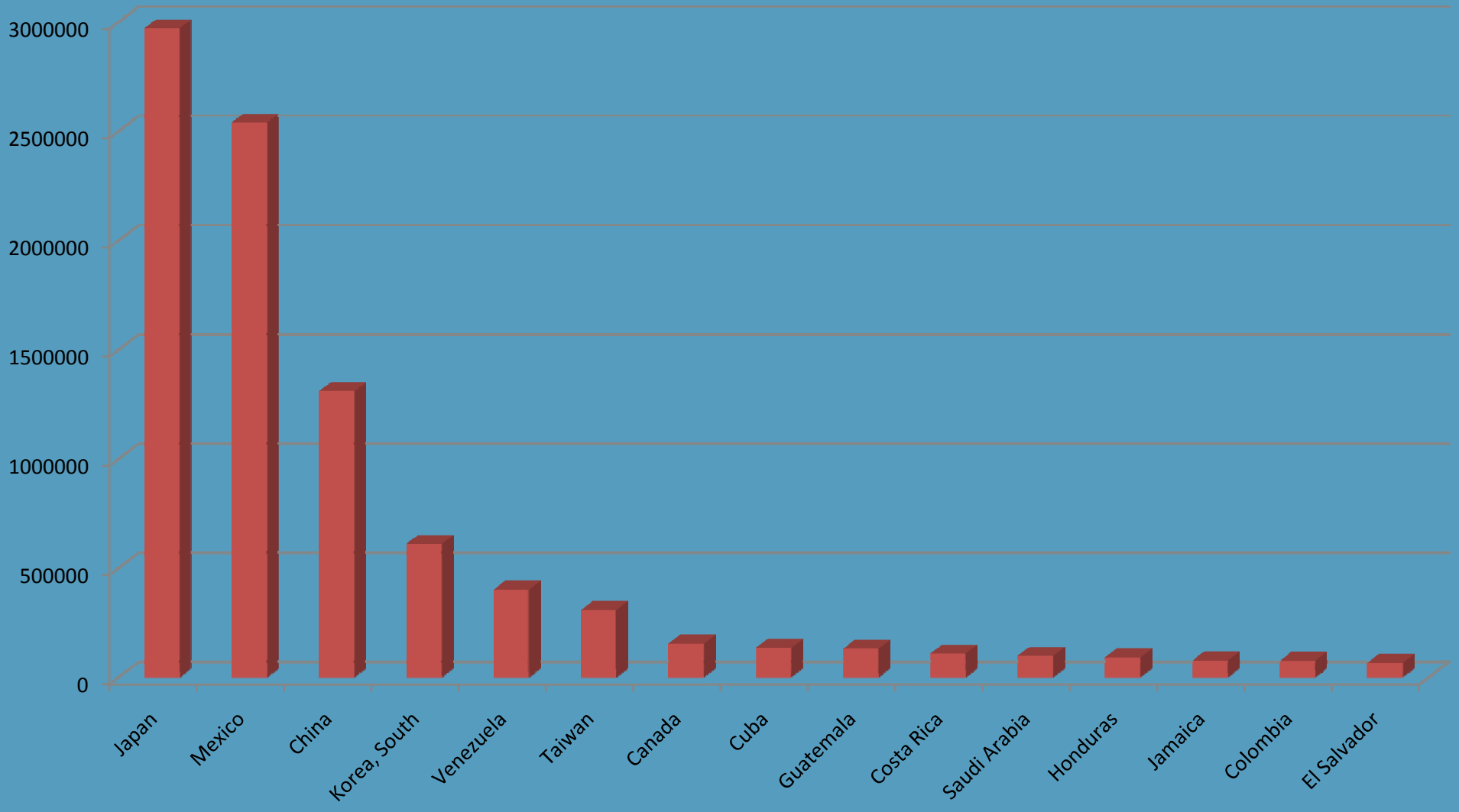
U.S. Corn Exports 2012 in Thousands of US Dollars



Source: United States Department of Agriculture, April2013

http://www.fas.usda.gov/gats/ExpressQuery1.aspx?Source=homepage&publish=1

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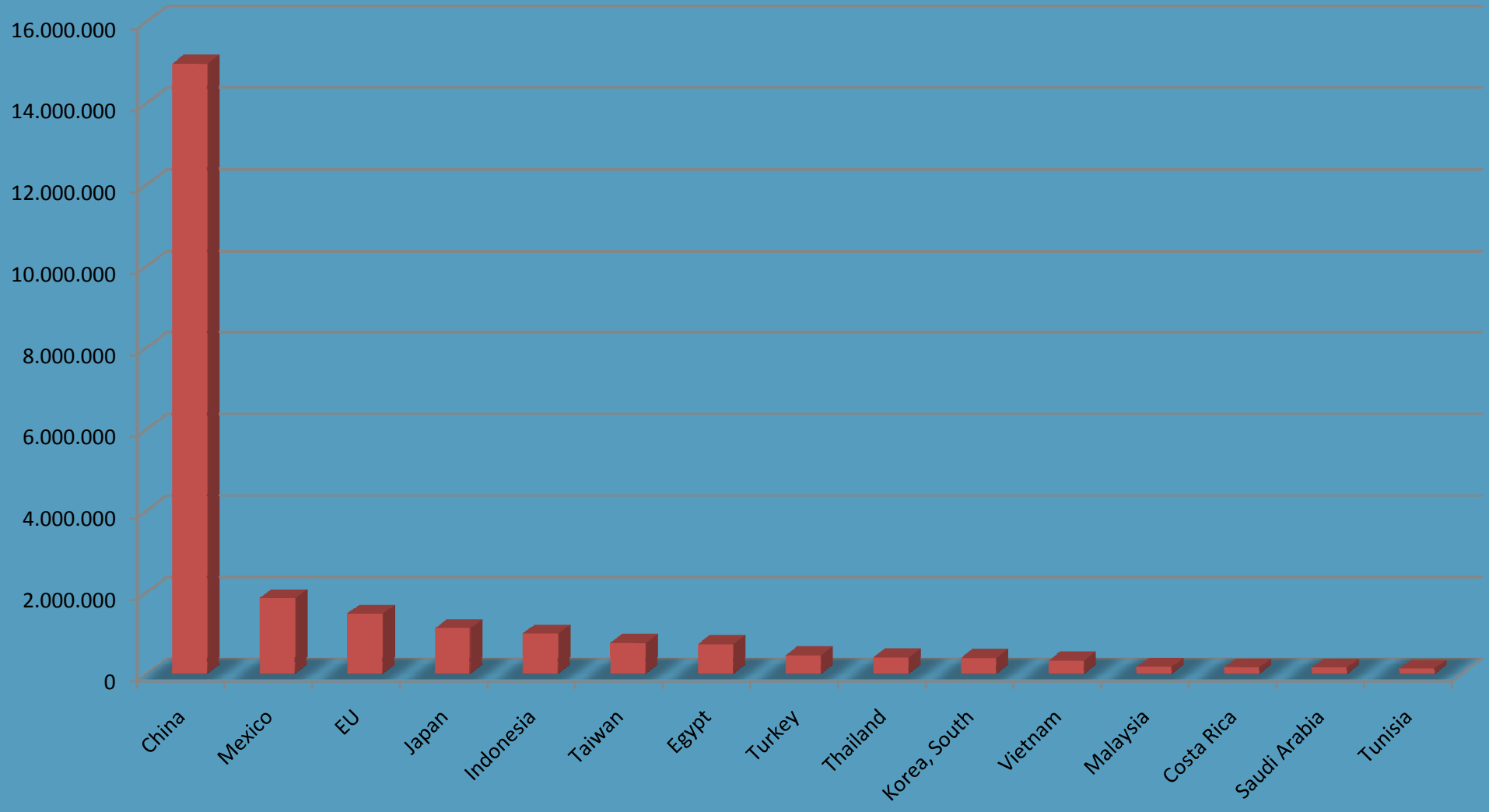
U.S. Soybean Exports 2012 in Thousands of US Dollars



Source: United States Department of Agriculture, April 2013

http://www.fas.usda.gov/gats/ExpressQuery1.aspx?Source=homepage&publish=1

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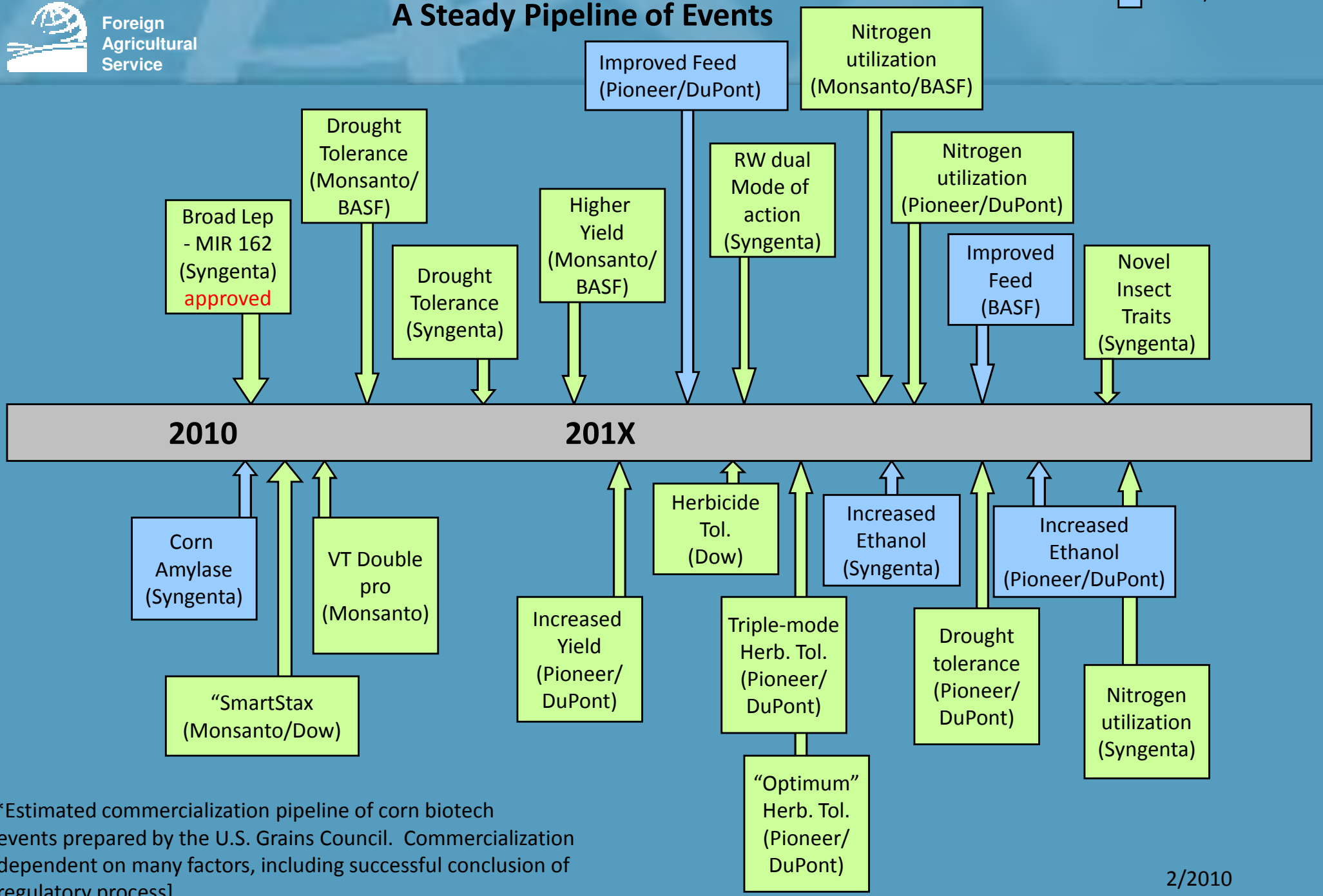
Industry Corn Portfolio*

A Steady Pipeline of Events

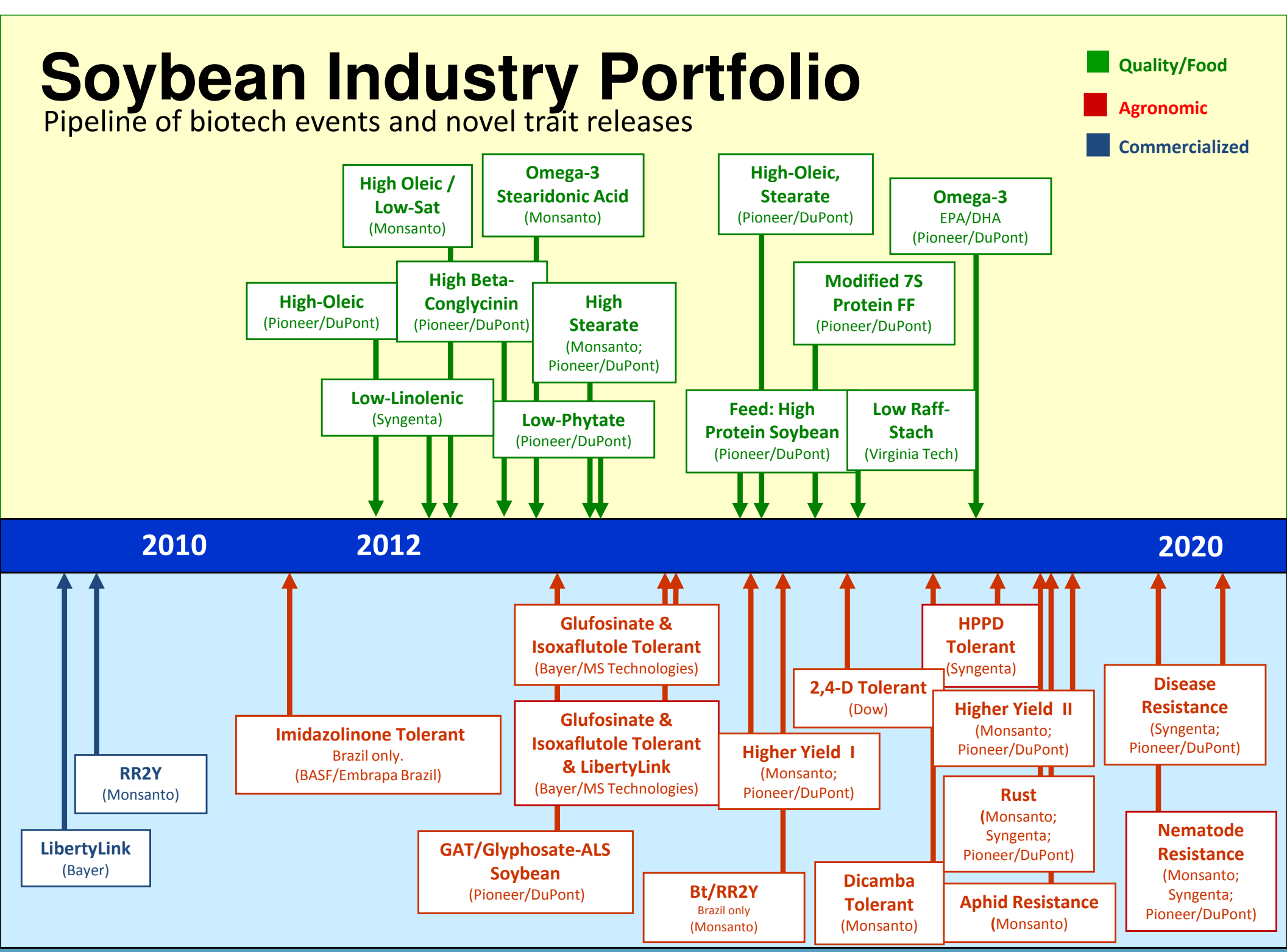


[*Estimated commercialization pipeline of corn biotech events prepared by the U.S. Grains Council. Commercialization dependent on many factors, including successful conclusion of regulatory process]

2/2010

Soybean Industry Portfolio

Pipeline of biotech events and novel trait releases



Source: Pipeline from Industry Sources; prepared by ASA, USSEC, USB. Updated January, 2010

RVSD Biotech Pipeline 02-04-10 V3

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Questions?