The Global Agrochemical Market

Trends by Crop

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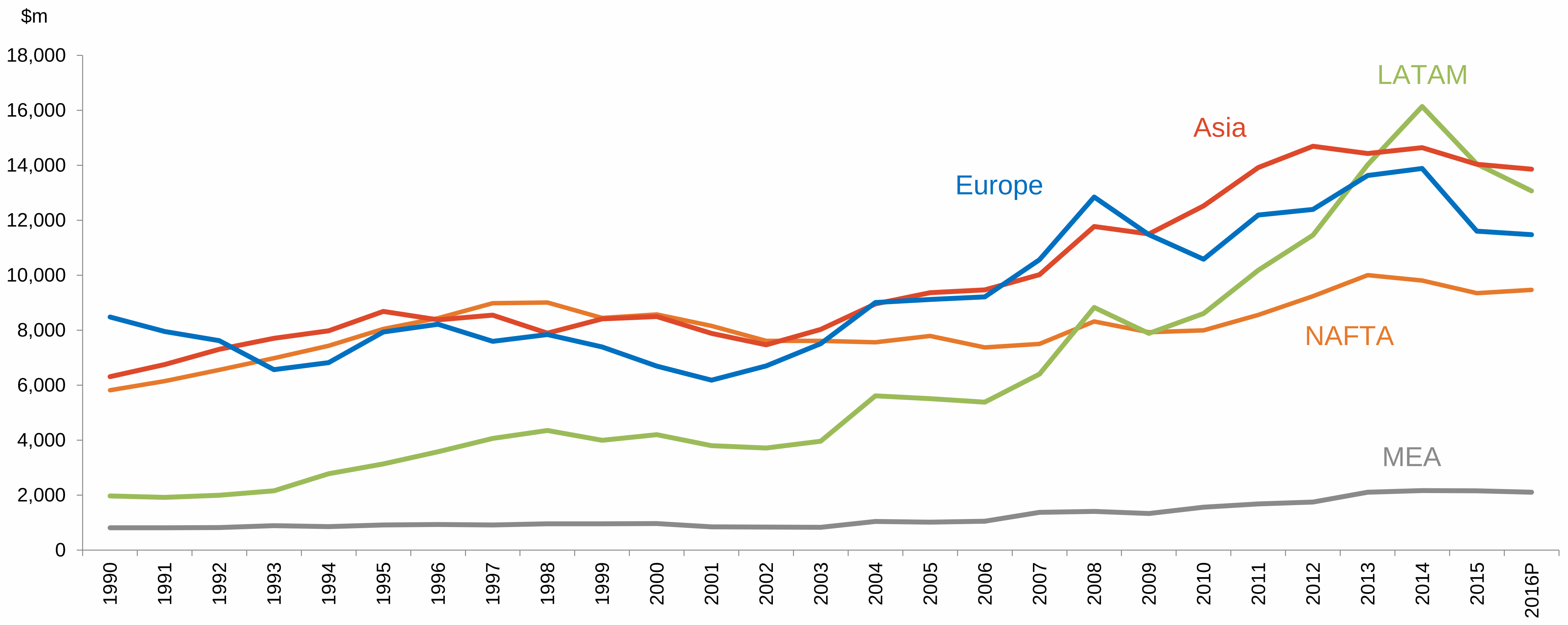
Market Performance 2015

(Ex-manufacturer level – average exchange rates - nominal US$)

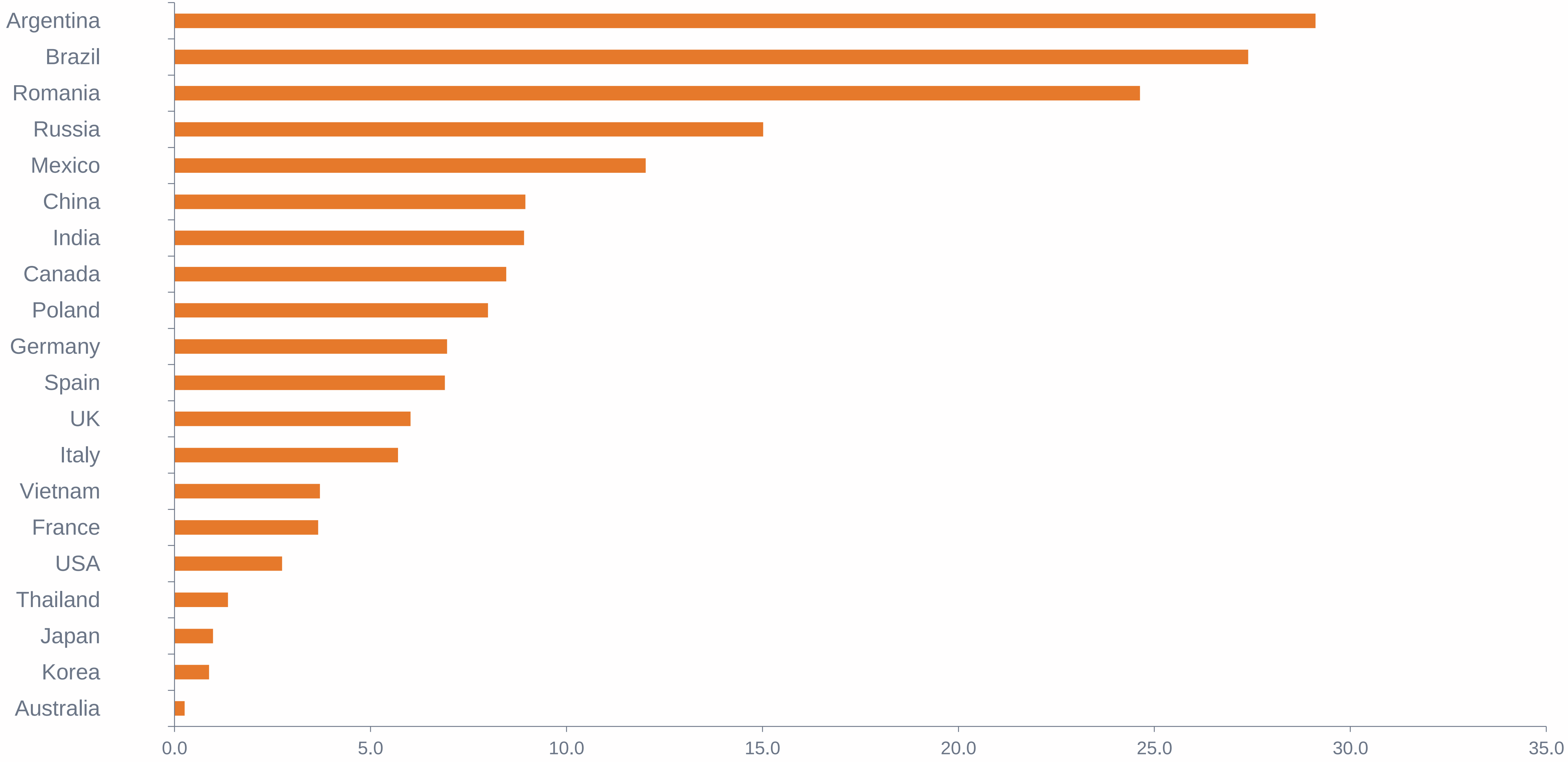
Year	Crop Protection ($m)	Non-Crop Agrochemicals ($m)	GM Seed ($m)	Conventional Seed ($m)
2006	32508	5150	5855	14485
2007	35885	5365	7062	14648
2008	43187	5655	9150	16870
2009	40147	5860	10570	17185
2010	41291	5880	12870	17950
2011	46539	6290	15685	18810
2012	49549	6372	18495	19065
2013	54208	6481	20100	19325
2014	56655	6557	21054	19481
2015	51210	6322	19789	17441
2015 / 2014	-9.6%	-3.6%	-6.0%	-10.5%
	Agrochemicals = $57,532 (-9.0%)		Seed= $37,230 (-8.2%)	
2016 Preliminary	49985	6535		
2016 / 2015	**-2.4%**	**+3.4**		

Regional Crop Protection Market Development: 1990 – 2016P



Top Twenty Country Markets – Local Currency Growth

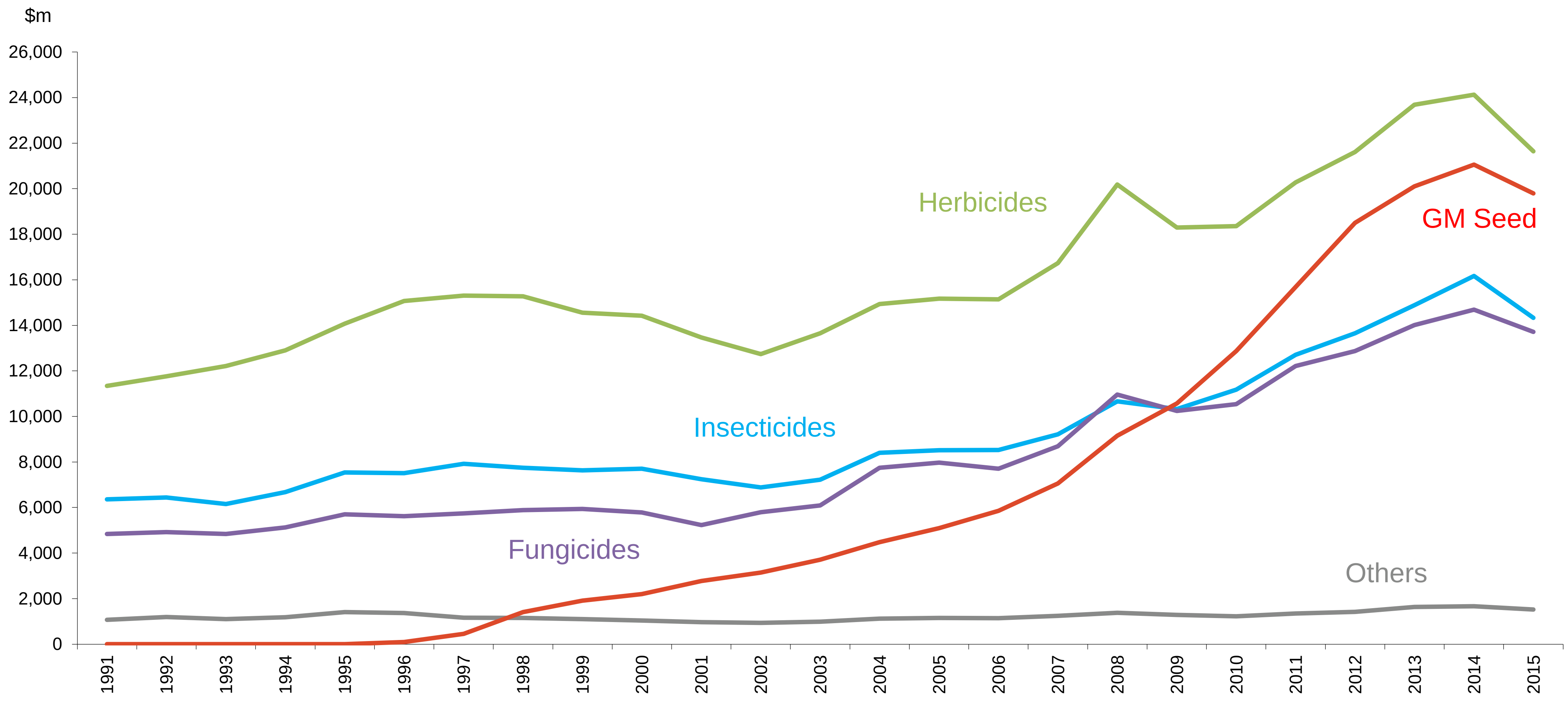
2015/2010 (% p.a.)



Change in Planted and Treated Areas 2013/2008 % p.a.

		Planted Area	Treated Area		
		Change %	Herbicides	Insecticides	Fungicides
India	Cereals	-0.2	9.3		
	Cotton	4.5	16.5	24.7	
	Rice	-0.7	16.8	20.8	25.1
Russia	Cereals	-2.0	8.2	13.7	7.9
	Maize	6.2	15.9		
Brazil	Maize	1.4	10.8	-3.5	15.9
	Soybean	5.4	22.0	74.0	10.8
China	Rice	1.0	15.8	16.3	4.8
	Maize	3.8	23.0	24.1	
	Cereals	0.0	22.0	9.8	-0.2
USA	Maize	2.1	2.4	6.4	
	Soybean	0.3	12.0		-2.3
France	Cereals	-0.7	-3.2	-1.3	12.0

Agrochemical Market Development by Sector



Agrochemical Company Market Shares 2015

	>15%	15% - 5%	5% - 1.0%	1.0% - 0.5%	<0.5%
Europe	Bayer Syngenta	BASF		Sipcam Oxon	Isagro Helm Phyteurop
USA		Dow Monsanto DuPont	FMC Arysta LifeScience Albaugh	Amvac Gowan	
Japan			Sumitomo Chemical	Ishihara Kumiai Nihon Nohyaku Nippon Soda Nissan Mitsui Chemicals	Hokko Agro Kanesho SDS Biotech OAT Nippon Kayaku Kyoyu Agri
Other			Adama Nufarm UPL Wynca Red Sun	Nutrichem Sinochem Rotam	Rallis Sinon Excel Gharda

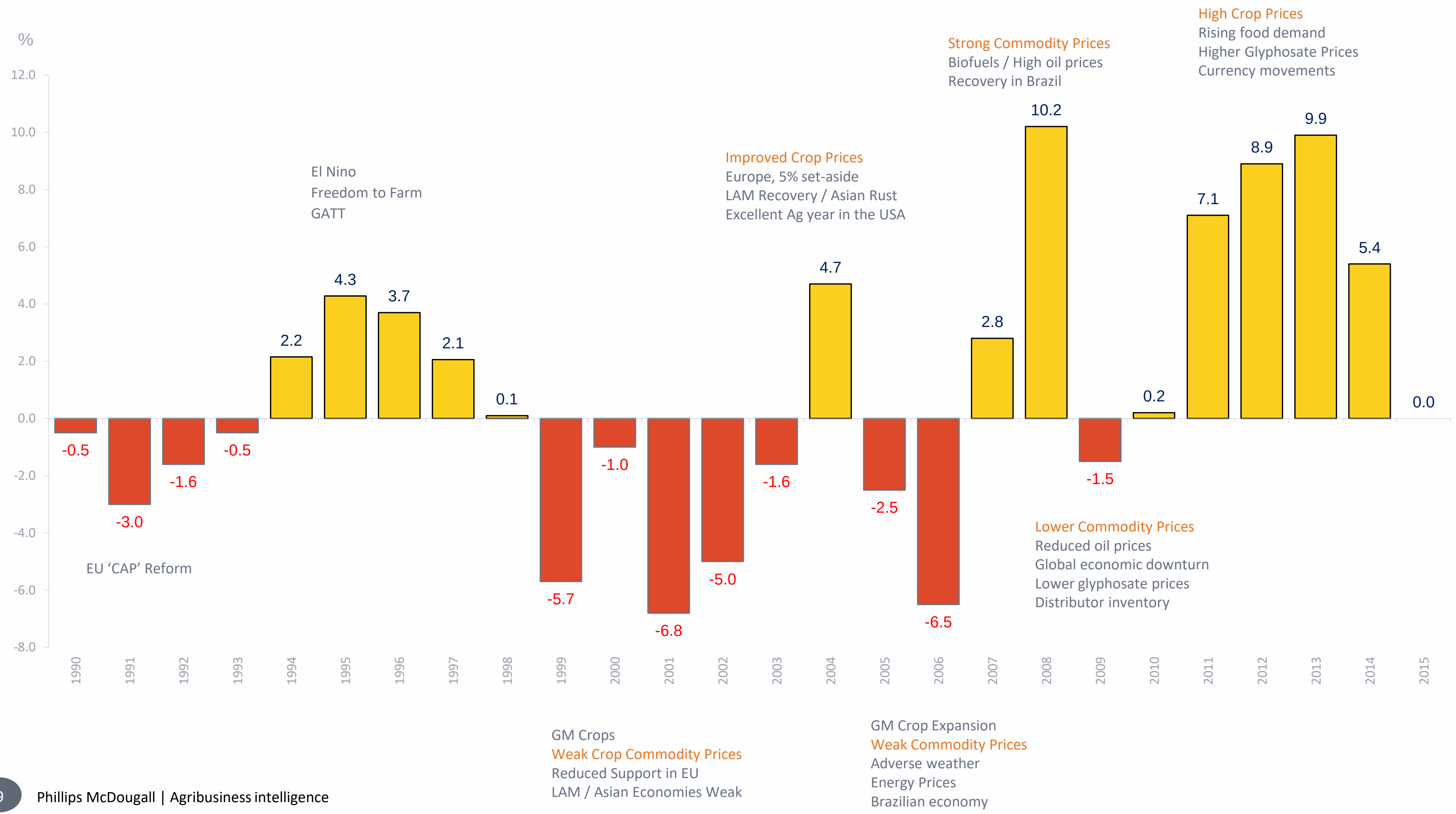
Company Agrochemical Sales: Nine Months 2016

		First Nine Months 2015		First Nine Months 2016		% Change 2016/15	
Company	Currency	Local m	$m	Local m	$m	Local m	$m
Syngenta	$	7851	7851	7280	7280	-7.3	-7.3
Bayer	€	6667	7441	6414	7166	-3.8	-3.7
BASF	€	4653	5193	4288	4792	-7.8	-7.7
Dow**	$	4778	4778	4458	4458	-6.7	-6.7
Monsanto	$	3509	3509	2694	2694	-23.2	-23.2
DuPont	$	2411	2411	2220	2220	-7.9	-7.9
Adama	$	2414	2414	2402	2402	-0.5	-0.5
FMC***	$	1958	1958	1657	1657	-15.4	-15.4
Arysta	$	1354	1354	1323	1323	-2.3	-2.3
Amvac	$	181	181	193	193	+6.6	+6.6
Isagro	€	114	128	110	123	-3.2	-3.9

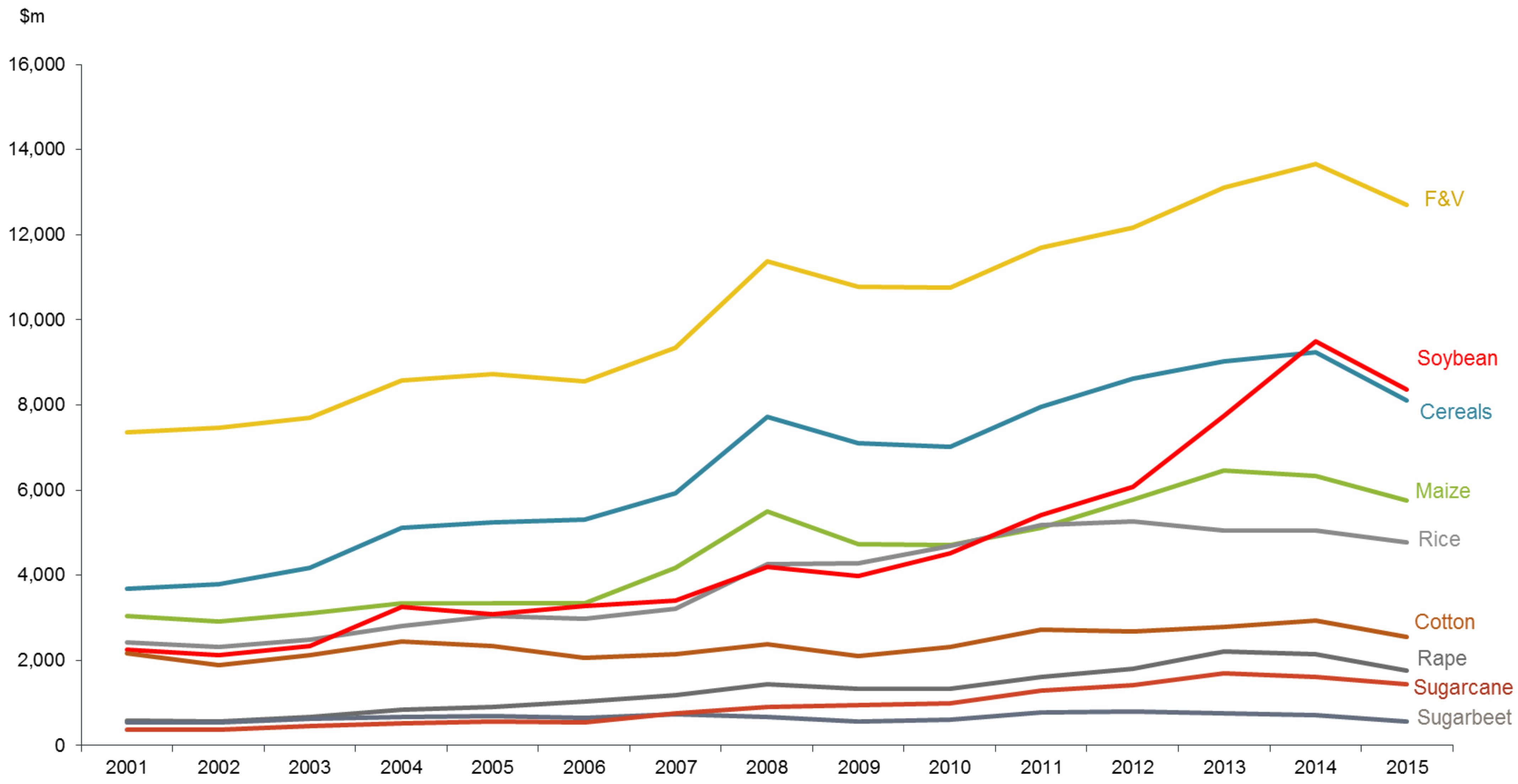
* Monsanto results are for the three quarterly periods ending August
** Includes Seeds
*** Pro-forma

Mean $ performance of these companies: -6.5%

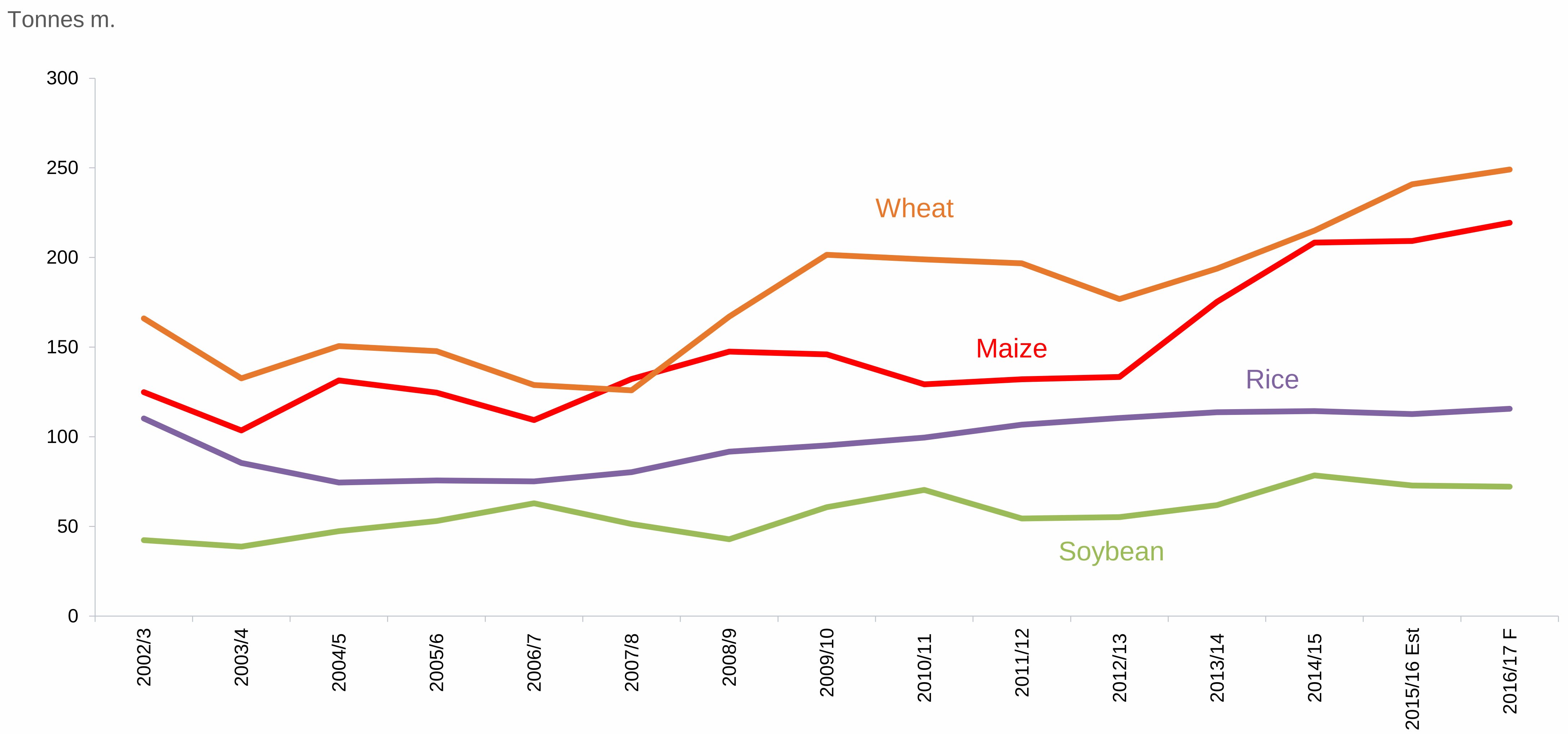
Crop Protection Market Growth: Real Terms



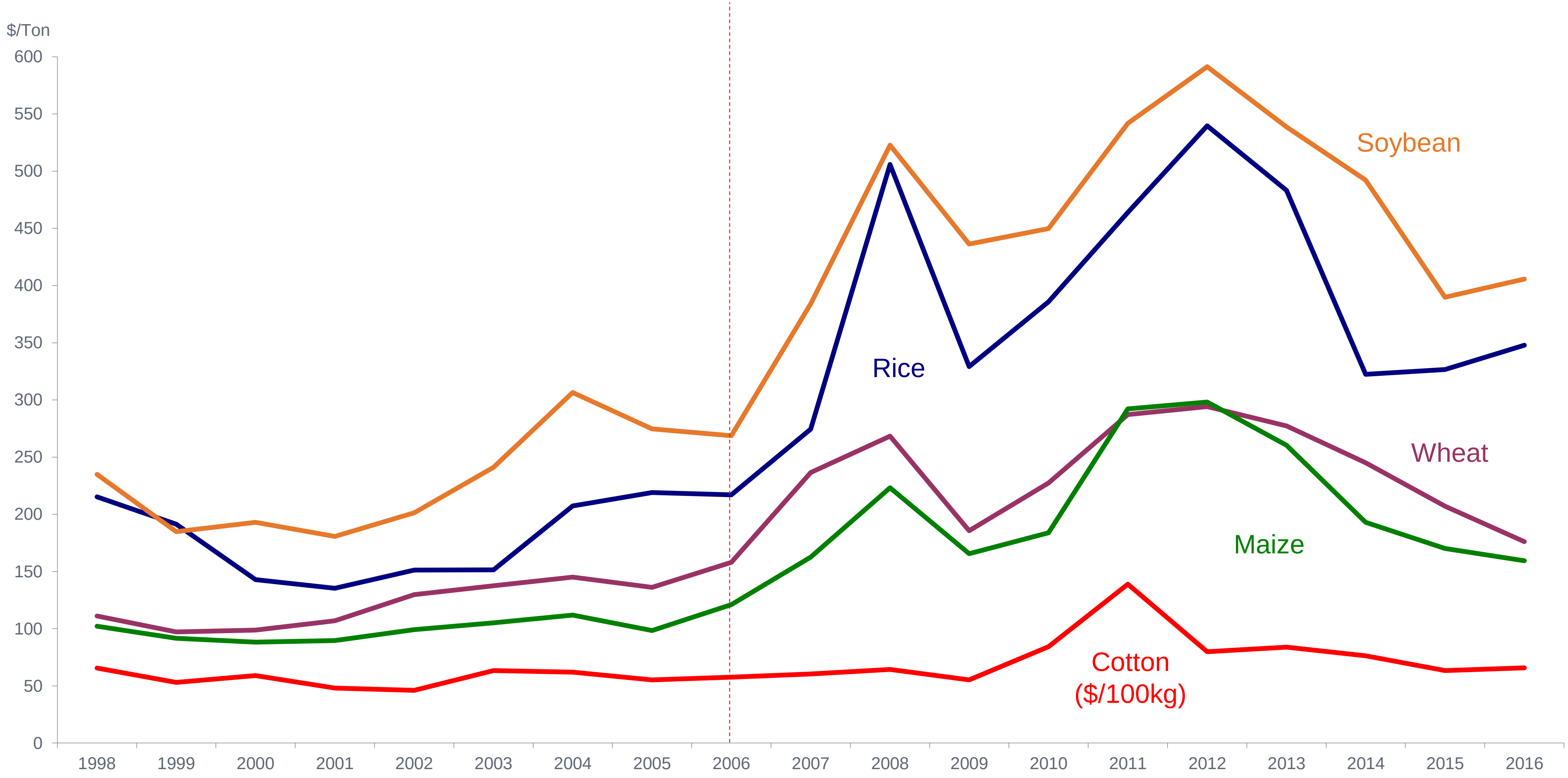
Agrochemical Market Development by Crop



USDA Global End Marketing Year Crop Stocks

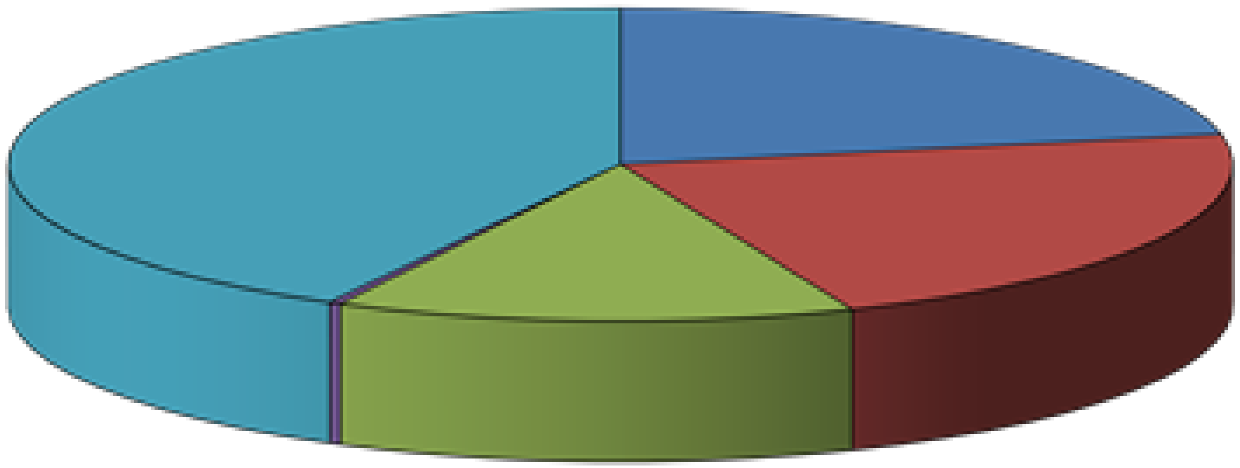


Indicative Global Trade Commodity Prices: Annual Average



Crop Sectors 2015

Soybean Market By Sector 2015

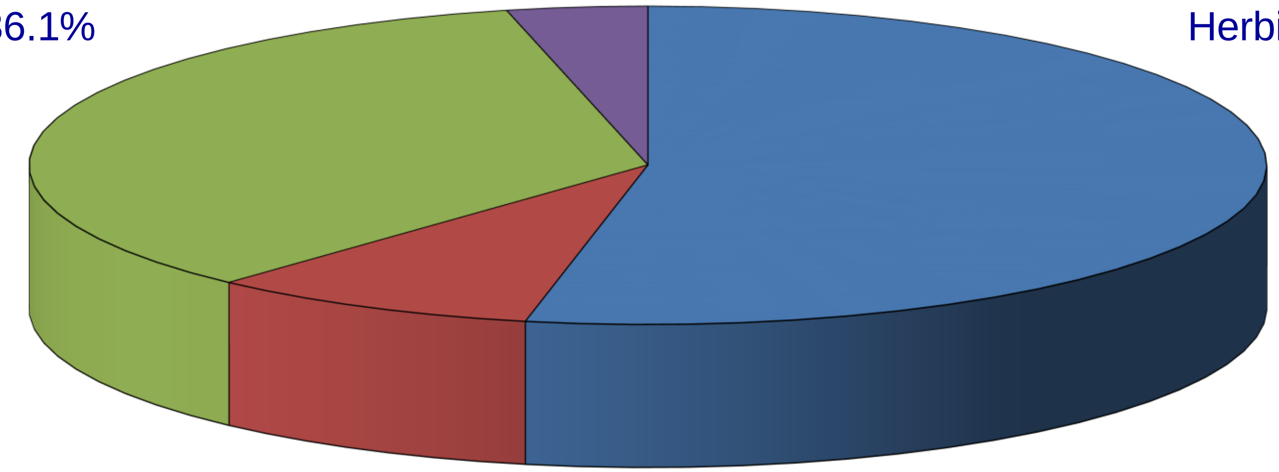


Total = $15,159 million

Leading Soybean Agrochemicals 2015

	Herbicides	Insecticides	Fungicides
1	Glyphosate	Chlorantraniliprole	Azoxystrobin
2	Flumioxazin	Thiamethoxam	Pyraclostrobin
3	Clethodim	Flubendiamide	Trifloxystrobin
4	Imazethapyr	Lambda-cyhalothrin	Prothioconazole
5	Paraquat	Acephate	Cyproconazole
6	Chlorimuron	Imidacloprid	Benzovindiflupyr
7	Diclosulam	Fipronil	Picoxystrobin
8	Fomesafen	Methomyl	Fluxapyroxad
9	2,4-D	Teflubenzuron	Epoxiconazole
10	Haloxyfop	Chlorpyrifos	Carbendazim
Major Factors			
	Roundup Ready acceptance	Helicoverpa (Brazil)	Asian soybean rust / resistance
	Glyphosate resistant weeds	Aphids (USA)	Yield improvement (USA)
Key Markets			
	Brazil	Brazil	Brazil
	USA	Argentina	USA

Cereal Market By Sector 2015

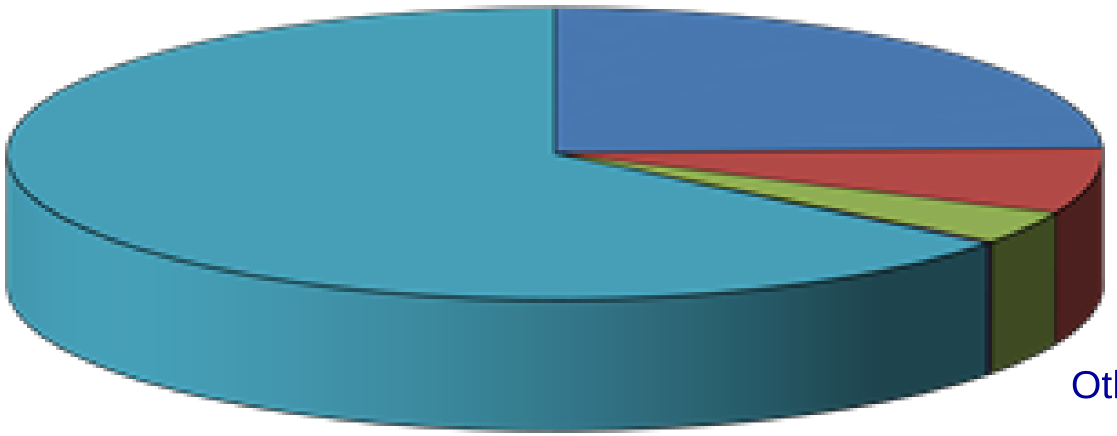


Total = $8,120 million

Leading Cereals Agrochemicals 2015

	Herbicides	Fungicides
1	Glyphosate	Prothioconazole
2	Pinoxaden	Epoxiconazole
3	Flufenacet	Fluxapyroxad
4	Mesosulfuron	Tebuconazole
5	Clodinafop	Propiconazole
6	2,4-D	Azoxystrobin
7	Florasulam	Pyraclostrobin
8	Fluroxypyr	Bixafen
9	Pyroxsulam	Cyproconazole
10	Fenoxaprop	Metconazole
Major Factors		
	Resistance	Resistance (*Septoria*/mildew)
	Lack of new modes of action	‘Greening’ / yield enhancement
Key Markets		
	USA	France
	Canada	Germany

Maize Market By Sector 2015

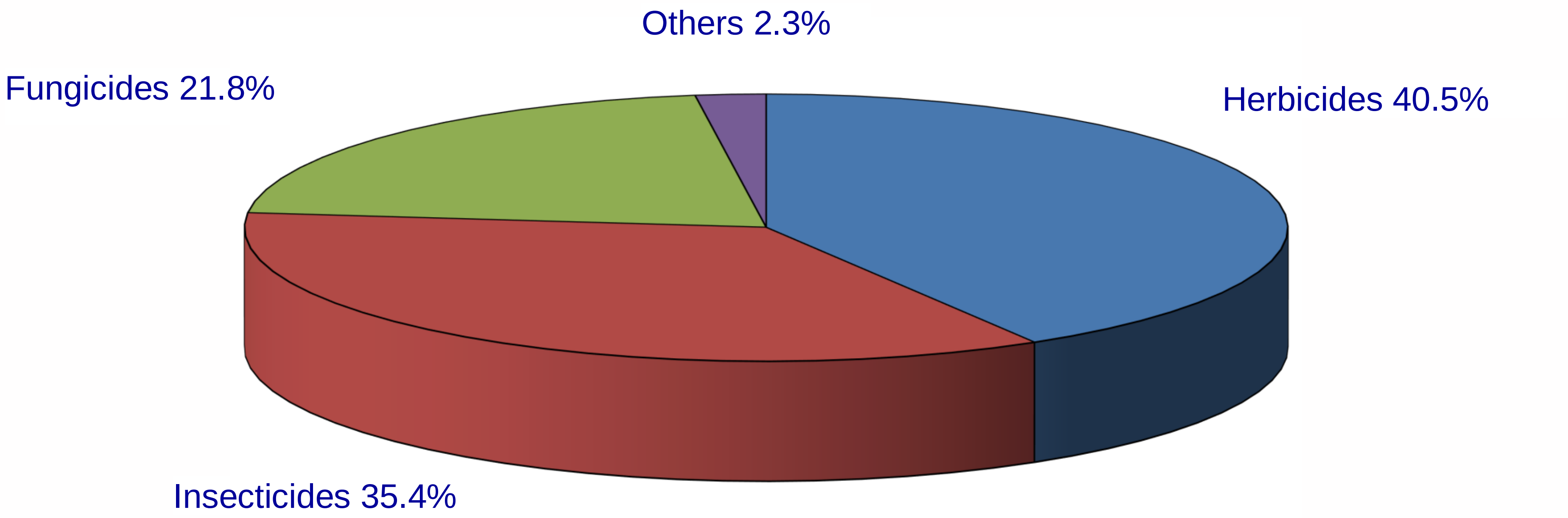


Total = $16,305 million

Leading Maize Agrochemicals 2015

	Herbicides	Insecticides
1	Glyphosate	Thiamethoxam
2	Atrazine	Clothianidin
3	Mesotrione	Tefluthrin
4	Metolachlor	Lambda-cyhalothrin
5	Acetochlor	Chlorantraniliprole
6	Nicosulfuron	Imidacloprid
7	Tembotrione	Cypermethrin
8	Isoxaflutole	Chlorpyrifos
9	Paraquat	Fipronil
10	Thiencarbazone-Methyl	Spinosad
Major Factors		
	Roundup Ready acceptance	B.t. trait acceptance
	Glyphosate resistant weeds	Rootworm resistance (USA)
Key Markets		
	USA	USA
	China	Brazil

Rice Market By Sector 2015



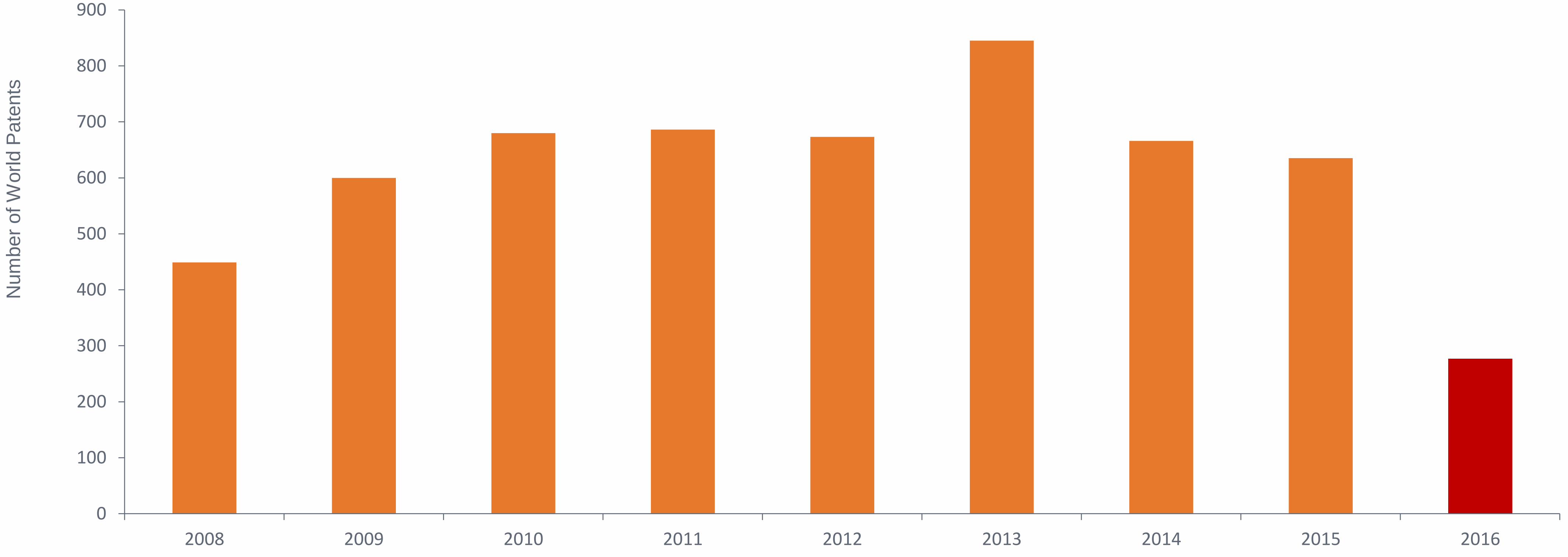
Total = $4,759 million

Leading Rice Agrochemicals 2015

	Herbicides	Insecticides	Fungicides
1	Cyhalofop-butyl	Chlorpyrifos	Tricyclazole
2	Penoxsulam	Imidacloprid	Azoxystrobin
3	Butachlor	Chlorantraniliprole	Difenoconazole
4	Pretilachlor	Fipronil	Isoprothiolane
5	Pyraclonil	Cartap	Mancozeb
6	Bispyribac-sodium	Acephate	Probenazole
7	Quinclorac	Buprofezin	Hexaconazole
8	Bensulfuron	Carbofuran	Kasugamycin
9	Bentazone	Dinotefuran	Orysastrobin
10	Propanil	Thiamethoxam	Propiconazole
Major Factors			
	‘One-shot’ formulations (Japan)	Formulation/nursery box treatments	Formulation/nursery box treatments
	Many herbicides registered	B.t. Rice?	Technification of developing markets
Key Markets			
	Japan	China	Japan
	China	India	China

Market Drivers

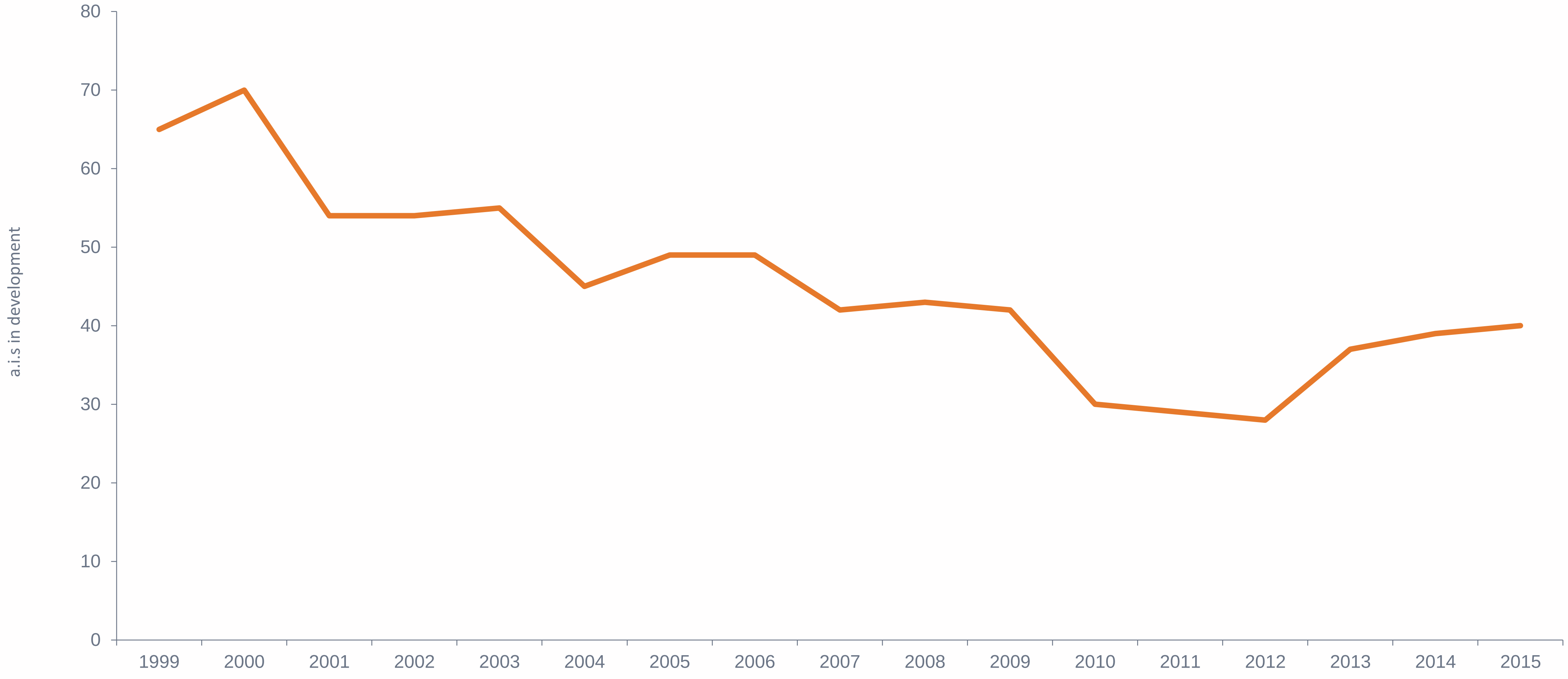
Agrochemical Patent Activity



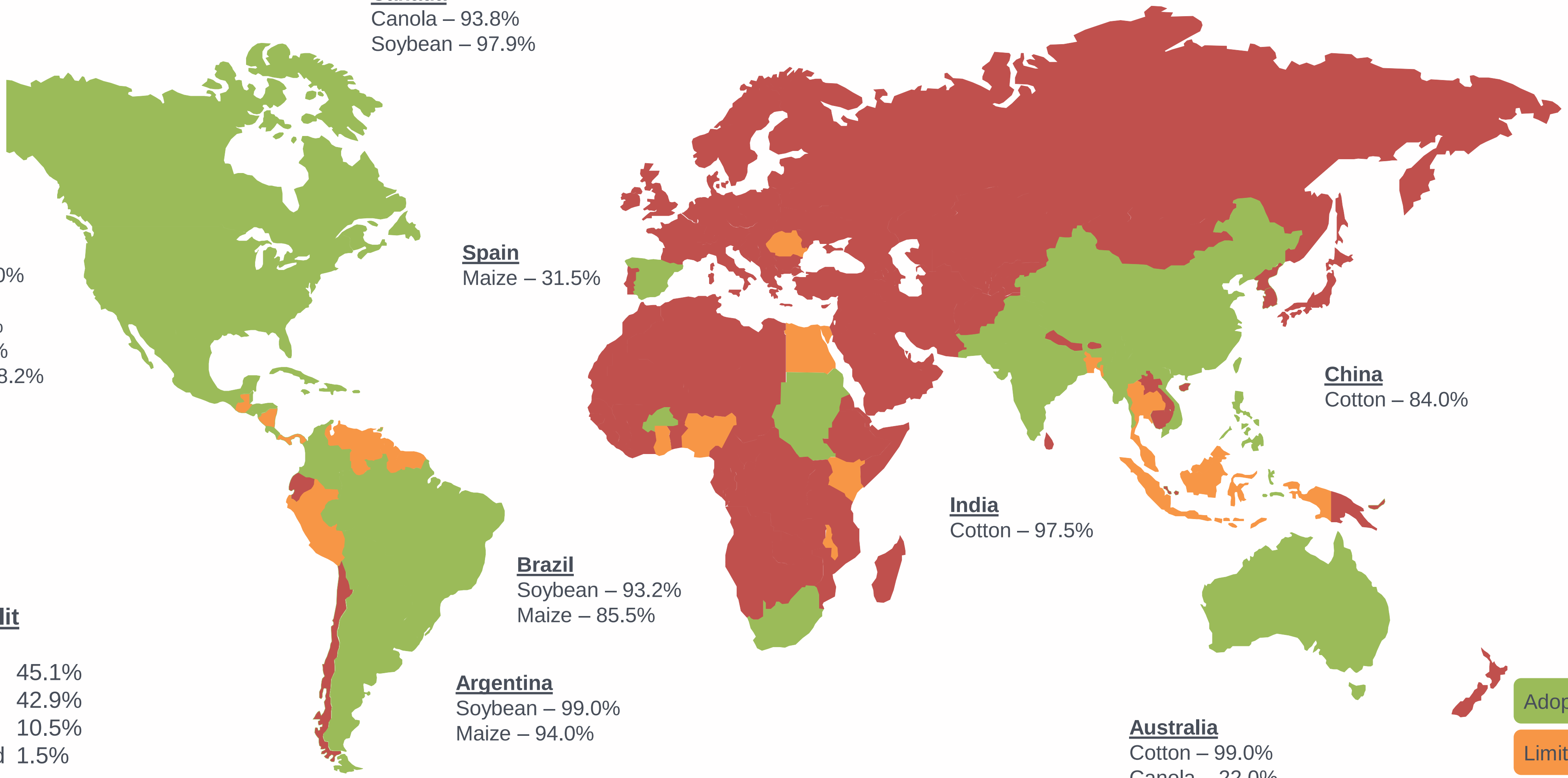
Important: Patents are categorised by priority date. Patents are usually filed later than their priority date.

We reassign patents as they are released according to their priority date.

Agrochemical Active Ingredients in Development



Global GM Uptake 2015



Canada
Canola – 93.8%
Soybean – 97.9%

USA
Soybean – 96.0%
Maize – 93.0%
Cotton – 98.8%
Canola – 91.0%
Sugar beet – 98.2%

Spain
Maize – 31.5%

China
Cotton – 84.0%

India
Cotton – 97.5%

Brazil
Soybean – 93.2%
Maize – 85.5%

Argentina
Soybean – 99.0%
Maize – 94.0%

Australia
Cotton – 99.0%
Canola – 22.0%

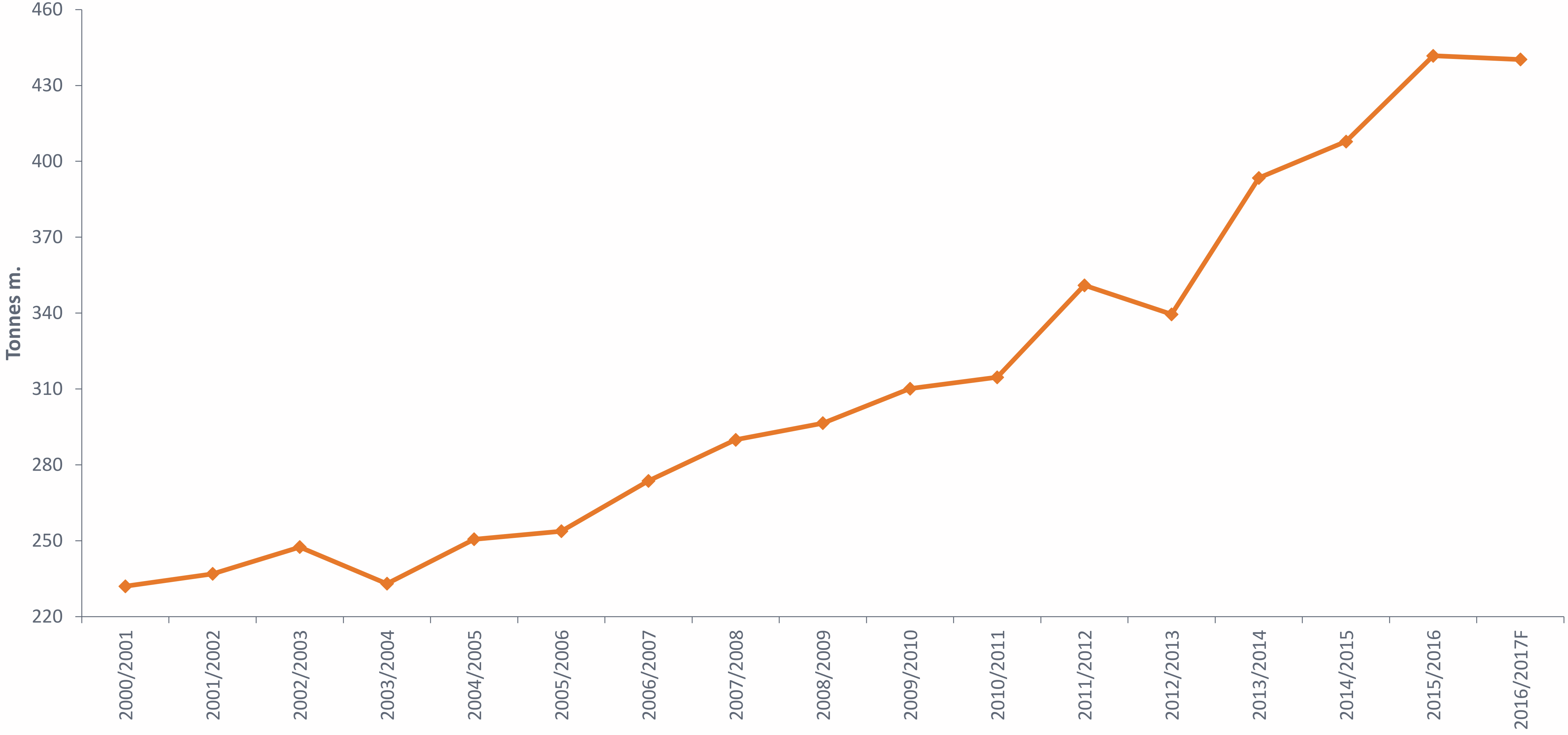
Adoption
Limited adoption
No adoption

Regional Split

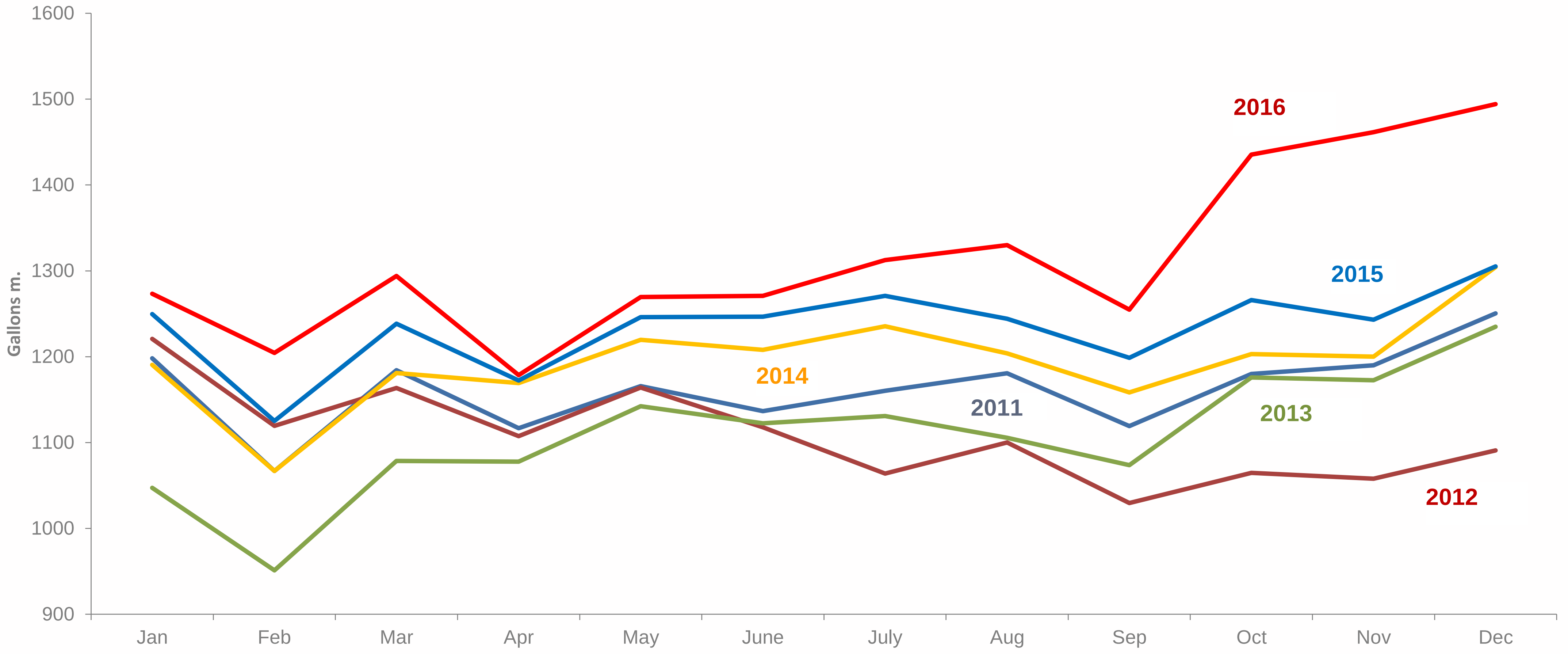
NAFTA	45.1%
LATAM	42.9%
Asia	10.5%
Rest of World	1.5%

Total: 443.7 million acres (+0.4% over 2014)

Global Wheat, Maize and Soybean Import Volumes



US Ethanol Production



Total Production 2016 = 15.78 bn. gallons

Corn use for EtOH 34.6%

EU Common Agricultural Policy Reform 2015

- **Direct Payments**
  - Basic Payment
  - Green Direct Payment
    - Permanent Grassland
    - Ecological Focus Areas
      - Farms >15 Ha, 5% Focus Area
    - Crop Diversification
      - Farms >30 Ha, 3 different crops
  - Additional Support
- **Rural Development**
  - Improve the competitive position of EU agriculture
  - Restructuring and Modernisation
  - Young Farmer Start Up Support
  - Farm Advisory System
  - Crisis Reserve
  - Risk Management

Political Change

United Kingdom: Brexit

Key Factors

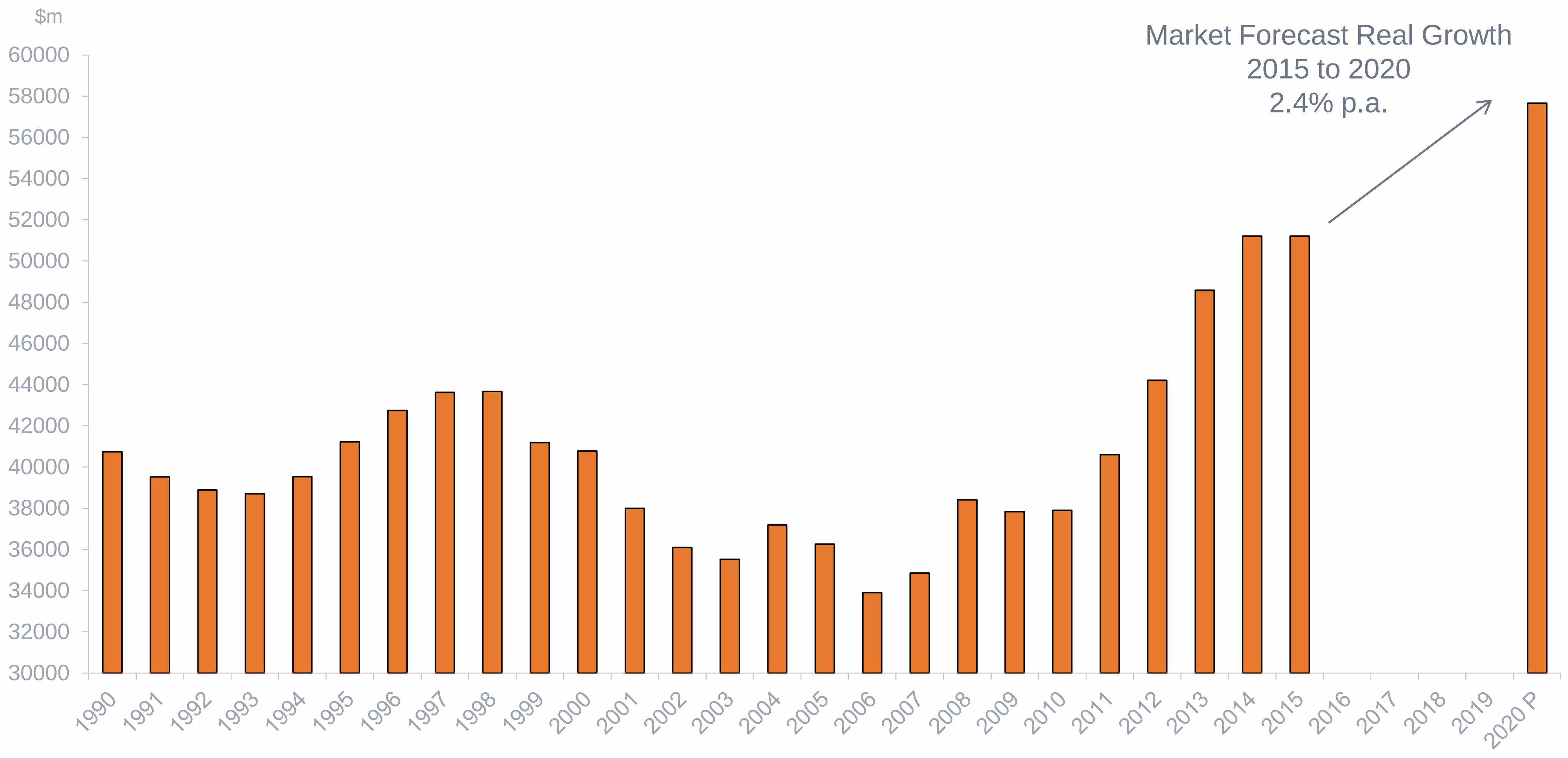
- 55 per cent of UK total income from farming comes from CAP support.
- Future UK involvement in EU regulatory system uncertain
- Exports to EU
- Uncertainty surrounding policy

USA: Trump Administration

Key Factors

- Uncertainty surrounding policy
- Future of EPA
    - Potential easing of regulatory framework?
- Pence previously voted for H.R.2646 - the Farm Security and Rural Investment Act of 2002, increasing US farm subsidies.

Crop Protection Market and Forecast in 2015 Dollar Terms



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