



Top 20 Crop Protection Companies **2016**

Profiles and product portfolios;
Sales performance and pipelines

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Executive summary

This report reviews the top 20 crop protection companies as of October 2016. Whilst the landscape for crop protection companies is in a state of constant flux, the current phase of industry restructuring makes the present time particularly opportune to take a snapshot of the industry. In 2 or 3 years it might look completely different, with some of the independent entities which now exist absorbed into or merged with other companies and no longer reporting separately.

The companies fall into three broad categories:

- The western R&D based majors: Syngenta, Bayer, BASF, Dow, DuPont and Monsanto
- The Japanese companies, which also engage in R&D: Sumitomo and Kumiai fall within the top 20
- Generic companies which specialise in off-patent products: FMC, Adama, Nufarm, Platform, UPL, Albaugh, Gowan, Sipcam-Oxon, Wynca, Nutrichem, Red Sun and Yangnong

Each company profile provides a summary of the corporate picture, to put crop protection into a wider company context, and then looks at the following aspects of the crop protection business:

- Financial performance
- Product sector representation
- Territorial presence and marketing
- Manufacturing
- Research and development (R&D)
- Strategy and outlook

Where the companies have a seeds business this is also described for completeness.

Based on the company profiles certain trends emerge:

- The prevalence of restructuring programmes in the face of the industry downturn
- Broadening of product ranges to include biopesticides and seed care
- Crop solutions
- A move into digital agriculture
- Increasing outsourcing of production to China

2. Crop protection industry structure

2.1 Types of crop protection and seeds company

The companies operating in the crop protection market can broadly be categorised as 3 types:

- The large R&D-based companies which invent and develop new products
- Japanese companies, which also have new product discovery capabilities
- Generic companies specialising in post-patent products

Each of these groups is briefly described below.

Large R&D based companies

This group comprises Syngenta, Bayer, BASF, Dow, DuPont and Monsanto. They are all fully vertically integrated, have extensive sales and marketing capabilities and devote considerable resources to R&D. Their average spend on R&D is over 10% of sales.

Table 2: R&D metrics and strategies			
Company	R&D spend: \$m	Comments/Performance/Targets	Claimed value of pipeline at peak sales: \$bn
Monsanto	1580	Mainly on seeds and traits	Accessing a market of >\$20bn
Syngenta	1362	10 new active ingredients planned for launch 2014-2024	\$4bn
Bayer	1209	1-2 new products launched per year, on average	€5bn peak sales by 2020
DuPont	1040	Deliver one innovative product to the crop protection pipeline/year, on average	Seeds & traits: \$2100m-\$2700m Crop protection: \$400m - \$2000m
BASF	740	Includes estimated \$170m spend for Plant Science	\$3.3 bn: \$2.2 bn for products to 2020; \$1.1 bn for products to 2025
Dow	n.a.	Launched 1 new product a year between 2010 and 2015	>£1bn

The combined R&D spend of the crop protection and seed companies exceed \$6bn, making it the largest source of R&D investment into the agri-food chain – exceeding that originating from the public sector or private food companies.

Table 6: Seed care activities by company

Company	Seed care activities
Albaugh	Seed treatments are one of 3 sectors. Opened new technology centre in 2016
Bayer	Long established as one of the 2 leading seed care companies
DuPont	Several new seed care products based on chlorantraniliprole launched 2014 and 2015
Monsanto	Seed care products sold under Acceleron brand
Nufarm	Under the Seed Technology business. Ca. \$50m sales
Platform	Obtained a position through the acquisition of Chemtura
Sipcam	Seed treatment plant in Italy
Syngenta	Vies with Bayer for leadership of the sector. Seed Care Institutes established around the world

3.5 Plant nutrition related activities

Crop protection and seed companies are increasingly venturing into products and services which are aimed at improving plant nutrition. There are three routes being pursued:

- Optimisation of existing fertilizer use using digital agriculture
- New plant nutrition-related products such as biostimulants and products which enhance nitrogen uptake
- Seed traits which enhance nitrogen use

Some examples are given below:

Table 7: Examples of plant nutrition-related activities by company

Company	Plant nutrition related activities
Monsanto	Nitrogen manager; BioAg products to increase nitrogen uptake from the air
Dupont	Nitrogen manager as part of Encirca
Platform	Various biostimulants
Sipcam	Already sells fertilizers. Focus on development of biostimulants in EU
Syngenta	Focus on root care

- Shorter global supply chains
- Higher inventory turns and thus improved customer service
- Lower working capital costs
- Decreased transport costs

It is in the process of constructing a new 60,000 tonnes capacity global formulation centre in China. 45,000 tonnes of the capacity will be for herbicides and 15,000 tonnes for insecticides and fungicides.

Just under a half of Adama's total workforce – around 2000 people – is engaged in the supply chain.

R&D

Adama spends around 1% of sales on R&D. The R&D function is engaged in registration activities and development of new formulations and mixtures. It is in the process of building a new global R&D centre in Nanjing China. However, Adama also cites a total spend of \$93 m on registration activities in its Annual Report, so there must be considerable additional spend outside the R&D budget.

Strategy

Adama's strategy appears to be:

- Marketing
 - leverage its global sales force as a conduit for ChemChina's products outside China
 - build distribution infrastructure and sales force in China
- Manufacturing
 - take advantage of opportunities afforded by the ChemChina link for backward integration and supply chain efficiencies
- R&D
 - direct R&D towards higher value-added, more unique and differentiated products
 - gain registrations for ChemChina's products outside China

4.2 Albaugh

Introduction and history

With estimated sales of around \$1bn, Albaugh is the largest privately owned crop protection company in the world and the largest US-based generic manufacturer. The company was founded in 1979 and began producing 2,4-D in 1986 and glyphosate in 2006. Those two products are still very important for Albaugh although it has diversified its range to include many other products.

Originating in the US Albaugh has expended geographically, acquiring the Argentinian company Atanor in 1997 and subsequently establishing a presence in Mexico, Brazil, Canada and Europe. As a result of these

Table 17: BASF's sales by region

	Sales: \$m		% total	
	2014	2015	2014	2015
Europe	2674	2326	37.0%	36.0%
North America	2096	2067	29.0%	32.0%
Asia Pacific	723	581	10.0%	9.0%
South America, Africa, Middle East	1735	1486	24.0%	23.0%
Total	7227	6460	100.0%	100.0%

In March 2016 BASF launched an online platform called Maglis to help farmers improve crop management.

Manufacture

BASF's crop protection manufacture follows the company philosophy of being highly vertically integrated. The company continues to invest heavily in its supply chain, having spent \$370 million in 2015 and with plans to spend \$900 million on expanding production and formulation capacities between 2016 and 2020.

R&D

Crop Protection

R&D accounts for around 9-10% of sales which is somewhat above the industry average for crop protection. This does not include its plant science research of around \$170 million which comes under a corporate budget. The company puts the value of its crop protection and traits pipeline at \$3.3 bn in peak sales of which \$2.2 bn will come from products and traits to be launched between 2015 and 2020:

Table 18: BASF's Agricultural Solutions Pipeline

Type of products	Common name	Trade name	Launch	Peaks sales
Herbicide tolerant trait	Dicamba HT	Engenia	2016	\$2,2 billion
Herbicide tolerant trait, rice	Quizalofop-p-butyl HT	Provisia	2017	
Fungicide	mefentrifluconazole	Revysa	2018/19	
Insecticide	afidopyropen	Inscalis	2018/19	
Insecticide	broflanilide		2018/19	
Bioinsecticide/acaricide	<i>Beauveria bassiana</i>	Velifer	2016-2020	\$1.1 billion
Fungicide	Na	Na	2020-2025	
Fungicide	Na	Na	2020-2025	
Herbicide	Na	Na	2020-2025	
Insecticide	Na	Na	2020-2025	

Note: HT – herbicide tolerance

In recent years it has invested heavily in biopesticides, partly through acquisition, purchasing 4 companies between 2010 and 2014. This is a component of its integrated crop strategy aimed at providing complete solutions for crops.

Table 23: Bayer's biopesticide company acquisitions since 2010		
Company acquired	Date	Details
AgroGreen	January 2010	Acquisition
Agraquest	July 2012	Acquisition (\$425m)
Prophyta	January 2013	Acquisition
Biagro	March 2014	Acquisition

Bayer has a strong relationship with the downstream food chain and has set up 240 food chain partnerships in 30 countries focusing on fruit and vegetables, to ensure product quality and acceptability to the consumer.

In its seed business Bayer has traditionally focused on four crop areas: vegetables, rice, cotton and canola in all of which it has a relatively strong position. Recently it has expanded its efforts in wheat and soybeans.

In 2014 Bayer launched its Digital Farming department. It is currently selling and developing digital farming products in 10 countries and it plans to invest \$220m in the area between 2015 and 2020.

Marketing

The size of Bayer's Crop Science business is also reflected in a strong presence in all regions.

Table 24: Bayer's Crop Science Sales by Region					
Region	Sales: \$m		Growth	Adjusted growth	CP Ranking
	2014	2015			
Europe	3924	3467	-11.7%	8.20%	1
North America	3097	2985	-3.6%	-1.60%	2
Asia Pacific	1823	1699	-6.8%	1.30%	2
Latin America/Africa/Middle East	3754	3357	-10.6%	-0.50%	2
Total Crop Science	12599	11507	-8.7%	1.50%	2

Manufacture

Bayer has a large network of manufacturing facilities around the world with plants in Europe, North and South America and Asia.

Products

Crop Protection

Herbicides are Dow's most important product sector accounting for around 60% of sales. Dow's products cover a broad range of crop sectors. As well as being present in both broad-acre crops and fruit and vegetables it has traditionally had a strong position in pasture and rangeland.

Table 30: Dow's sales by product sector, 2015		
	\$m sales 2015	% total
Herbicides	3900	61%
Insecticides	1808	28%
Fungicides	674	11%
Total	6381	100%

As part of its process of product range refreshment Dow sells products which it feels are no longer sufficiently profitable to meet its internal requirements to other companies. For example, it has divested its range of dinitroaniline herbicides to Gowan and oxyfluorfen and tebuthiuron to Nutrichem.

Seeds

Dow has invested heavily in its seeds business over the years, developing both input and output traits, and built up positions in corn, which accounts for around half of its seeds sales, soybean, canola and cotton.

Table 31: Dow's sales by key crops, 2015		
	\$m sales 2015	% total
Corn	3297	52%
Soybeans	1152	18%
Oilseeds	815	13%
Cotton	425	7%
Others	691	11%
Total	6381	100%

Dow claims over 10% share of the corn market in the Americas and the number two seed company position in Brazil. Since 2006 seeds sales have grown by an annual rate of 19%.

Precision Agronomy Platform

Dow is launching a new Precision Agronomy Platform based on John Deere's Integrated Solution for which it will charge no fee.

Table 39: DuPont's CP sales by product group

Product sector	\$m sales, 2015	% total sales
Insecticides	1372	45%
Herbicides	980	32%
Fungicides	686	23%
Total	3037	100%

Like other companies DuPont is boosting its efforts in seed treatments, with the launch of several insecticidal seed treatments based on the active ingredient of Rynaxapyr in recent years under the Lumigen brand.

- Lumiderm, 2104 launch on Canadian canola
- Dermacor, 2014 launch on Brazilian soybean
- Lumivia, 2015 launch on US corn

It is also investing in bio-pesticides through acquisition (e.g. of Taxon Biosciences in 2015) and organic growth. It divested its Public Health business to Syngenta.

Digital agriculture

DuPont's digital platform is branded Encirca. Launched in 2014 it provides farmers with a suite of services including hyper-local weather forecasting, soil analysis, and crop/nitrogen models. In order to deliver this DuPont has formed alliances with John Deere, AGCO and Raven Industries. As of March 2016 the nitrogen management service was used and paid for on over 1 million acres.

DuPont anticipates peak sales from Encirca of \$500m.

Manufacture

DuPont has various production sites around the world.

R&D

DuPont invest around \$1bn in R&D for its agricultural business and has full pipelines in seeds and crop protection.

The seeds and traits pipelines have products which span input traits (insect resistance, herbicide tolerance and disease resistance), agronomic traits (drought tolerance) and processor/consumer traits (improved oils and meal). The combined value of the seeds R&D pipeline at peak sales is around \$2.5 billion.

Manufacture

Gowan has no manufacturing facilities.

Strategy and outlook

Gowan's strategy is to be selective in the products and territories it takes on. It is cautiously expanding both whilst maintaining a niche positioning. It sees its core competences as defending products under regulatory pressure and 'rescue[ing] mature products that larger companies do not find value in retaining'.

The current round of industry restructuring is likely to provide further opportunities to pursue this strategy.

4.9 Kumiai

Corporate/Crop protection

Kumiai was founded in 1949. Over 90% of Kumiai's sales are in crop protection, the rest being mainly specialty chemicals.

Table 49: Kumiai's sales, income and profit 2011-2015					
	2011	2012	2013	2014	2015
Net sales \$m					
Chemical products	480	501	464	484	469
Others	48	52	41	39	36
Total sales	528	552	505	523	505
Ordinary income: \$m					
Chemical products	19	21	23	27	32
Others	6	7	4	4	5
Adjustments	-7	-7	-6	-6	-6
Total ordinary income	18	21	22	25	31
Profit margin %					
Chemical products	4.0%	4.2%	5.1%	5.6%	6.8%

Sales have been fairly flat in \$ terms over the last 5 years.

Table 50: Kumiai's chemical products sales and ordinary income 2011-2015: \$m					
	2011	2012	2013	2014	2015
Sales \$m	480.4	501.1	464.3	485.1	468.7
Ordinary income \$m	19.3	21.0	23.5	26.9	31.9
Profit margin %	4.0%	4.2%	5.1%	5.6%	6.8%

Territorial

80% of Monsanto's sales in 2015 were into North and South America, reflecting the high penetration of its GM crops in the seed markets there. Indeed, its technology has driven the growth of these seed markets.

Table 58: Monsanto's sales by country/region, 2015

Country/Region	Sales \$m	% Total
US	8612	57%
Canada	601	4%
Mexico	537	4%
NAFTA	9750	65%
Brazil	1725	11%
Argentina	871	6%
Europe-Africa	1834	12%
Asia-Pacific	686	5%
Other	135	1%
Total	15001	100%

R&D

At \$1.6 bn Monsanto's R&D spend is the highest in the industry. Most of this is devoted to seeds. When it took the decision to transform itself into a seed company it began to cut back on crop protection R&D, which was mainly devoted to supporting glyphosate. There are 4500 R&D staff in 40 countries, although this is being cut back as part of the company's restructuring

It has a full pipeline of new seed traits coming along which it claims will gain access to a global market value of over \$20bn.

Table 59: Peak net sales value of the global opportunity: \$bn

	Yield enhancement	Weed control	Insect control	Disease control	Other (e.g. hybrids)
Corn	7-10	1-1.5	1.5-2	<0.5	<0.5
Soybean	1.5-2	1.5-2	0.5-1		
Cotton	<0.5	<0.5	0.5-1	<0.5	
Vegetables					1.5-2
Others	<0.5	<0.5			1-1.5
Total	12	3.5	4		3.5

Table 102: Syngenta seed sales by crop, 2015

Crop	\$m	% total
Corn	1173	39%
Soybeans	391	13%
Specialty crops	0	0%
Cereals	133	4%
Vegetables	616	20%
DFC	512	17%
Rice	13	0%
Sugar cane	0	0%
Other crops	0	0%
L&G	193	6%

Territorially 75% of Syngenta's seed sales are in North America and Europe.

Table 103: Syngenta's seed sales by region, 2015

	\$m	% total
Europe, Middle East and Africa	1017	36%
North America	1116	39%
Latin America	400	14%
Asia Pacific	305	11%
Sub-total	2838	100%

Manufacture

Syngenta has several plants around the world. It also sources product from China.

R&D

Syngenta invests \$1.4bn in R&D annually equivalent to 10% of sales. It has a strong pipeline with 10 new active ingredients planned for launch between 2014 and 2024 with \$4bn peak sales potential.