



DunhamTrimmer's Global Biocontrol Market Merger & Acquisition Overview

“The Premier Biological Industries Strategic Business Consulting & Market Research Firm”

Industries

Biocontrol • Biostimulants • Biofertilizers

Services

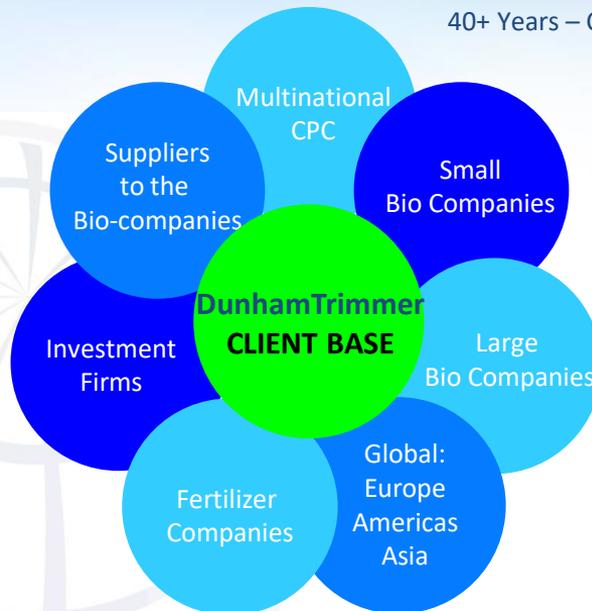
Strategic Marketing
Bio Market Data
Technology Evaluation
Market Evaluations
Investment Due Diligence

Products

Single-Client Custom Projects
Multi-Client Reports
Retainer Support

Size of Organization

Headcount: 3
Global Network of Professionals



40+ Years – Crop Protection & Seeds Global & Regional Strategic Marketing Teams
Subsidiary Managing Director
USA- Arizona

Bill Dunham

Mark Trimmer, Ph.D.
30+ Years – Crop Protection
Global R&D
Global Technology Acquisition & Licensing
USA- Florida

Manel Cervera

15+ Years – Biostimulants & Specialty Fertilizers
Regional/Global Marketing & Sales
SPAIN-Cataluna

TWO B MONTHLY
The Global Biocontrol & Biostimulants E-Newsletter

Global Biocontrol & Biostimulants E-Newsletter
Organize Annual Biocontrol LatAm, Asia and Africa Conferences

BIOLOGICAL PRODUCTS

Source: DunhamTrimmer®, LLC

CROP IMPROVEMENT PRODUCTS				BIOLOGICAL CONTROL PRODUCTS			
BIOFERTILIZERS ¹		BIOSTIMULANTS ²		BIOPESTICIDES ³		MACROORGANISMS ⁴	
NUTRIENT UPTAKE ENHANCERS		STIMULATE NATURAL PROCESSES		BIOCHEMICALS ⁵		MICROBIALS ⁶	
N FIXING	K MOBILIZERS	AMINO ACIDS	ORGANIC ACIDS	PLANT EXTRACTS	ORGANIC ACIDS	BACTERIA	FUNGI
P ₂ O ₅ SOLUBILIZER	OTHERS	MICROBIALS	PLANT & SEAWEED EXTRACTS	SEMICHEMICALS	PROTOZOA	VIRUS	
					YEASTS	OTHERS	
							INSECTS
							MITES
							NEMATODES



DunhamTrimmer®



1 Microbials used to enhance plant nutrient uptake from soil

- Nitrogen fixing bacteria make up largest group
- Others include mobilizers of specific nutrients (zinc, sulfur) and mycorrhizal fungi
- Biofertilizers regulated under country/state fertilizer regulations

2 Biostimulants are products which mitigate abiotic stress, enhance crop quality and increase nutrient assimilation

- Seaweed Extracts make up the largest segment in this group
- Microbials, primarily bacteria, often used as seed or soil treatment
- Organic acids are mainly humic and fulvic acids used as soil amendments

Definition and regulation of biostimulants is under development in many parts of the world, though, in most cases today they are regulated under country/state fertilizer regulations

3 Biopesticides are derived from natural materials, such as plants, bacteria and certain minerals. Biopesticides target specific pests and are inherently less toxic than synthetic pesticides.

5 Plant Extracts; Semio-chemicals; Organic Acids

- Plant Extracts make up the largest segment in this group
- Semiochemicals (pheromones) has the largest actual number of products
- Largest challenge for Plant Extracts is manufacturing and consistent quality in the active ingredient(s)

6 Bacteria; Fungi; Virus; Protozoan; Yeasts

- Bacteria, followed by Fungi make up the largest groups commercially (>90%)
- Microbials are the largest market of biopesticides.
- Biggest challenges for microbials are formulation related to: 1) Shelf-life; 2) Stability; 3) Performance enhancement

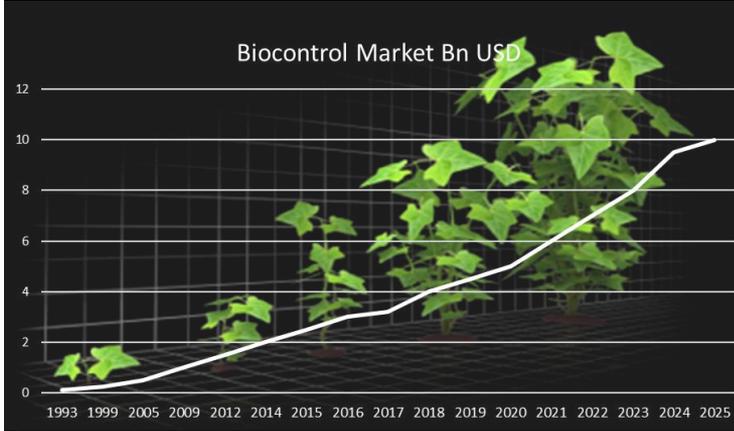
4 Insects; Mites; Nematodes

- Insects followed by mites makeup the largest groups
- Unique in that the live organism in the form of eggs, larvae, pupae or adult is used.
- Most important challenge for Macros is logistics—shipping live organisms that have to have special care to survive
- Normally not classified as a Biopesticide—only as Biological Control Products



DunhamTrimmer®
International Bio Intelligence

Accelerating Growth > Global Biocontrol



- DunhamTrimmer started tracking the Global Biocontrol marketing in the early 1990's.
- At that time in the 90's it took 8-9 years to double the market
- In the 00's it reached the point to double only took 4-6 years.
- Since 2005 the global biocontrol market has been doubling consistently every 4-5 years.
- As demonstrated by the graph to the left the growth rate (steepness of the curve) has been accelerating or holding steady for the past 20 years.
- DunhamTrimmer does not see the growth rate decreasing until around 2024, the last years of this report's timeframe.

Regional > Global Biocontrol Market

2018 Regional Key Stats



USA/Canada
\$1.2 Bn

LatAm
\$0.7 Bn

Europe
\$1.0 Bn

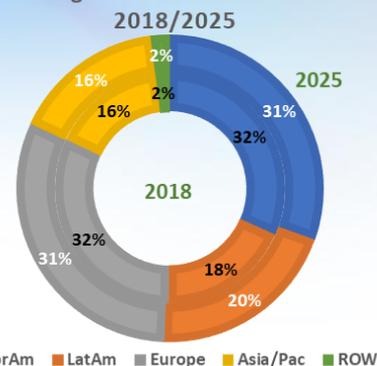
Asia-Pac
\$0.5 Bn

ROW
\$0.08 Bn

Regional CAGR



Regional Market Shares



Biological Control—Sustainable Growth Globally—16.4%-16.5% (cagr)

- ✓ USA/Canada is the largest region and is projected to maintain that position until 2022, when Europe is projected to surpass the USA/Canada region in sales value.
- ✓ Europe has had a very challenging regulatory environment and DunhamTrimmer believes this has stifled growth in Europe, however we expect the regulatory environment to greatly improve during the projected timeframe.
- ✓ LatAm is by far projected to have the highest CAGR during the forecasted timeframe. This is mainly to the expected entrance of biocontrol into row crops and cereals in Brazil.
- ✓ Asia-Pac is the most difficult region to project accurately due to the diversity of the countries, regulatory regulations, government policies and how biocontrol is defined. However, DunhamTrimmer expects the present growth to continue and likely increase in the 2020's, but not to the degree as in LatAm.

Biocontrol M&A



Bayer CropScience



Has M&A slowed?

Over the last 7 years, the Biological Products sector has seen¹:

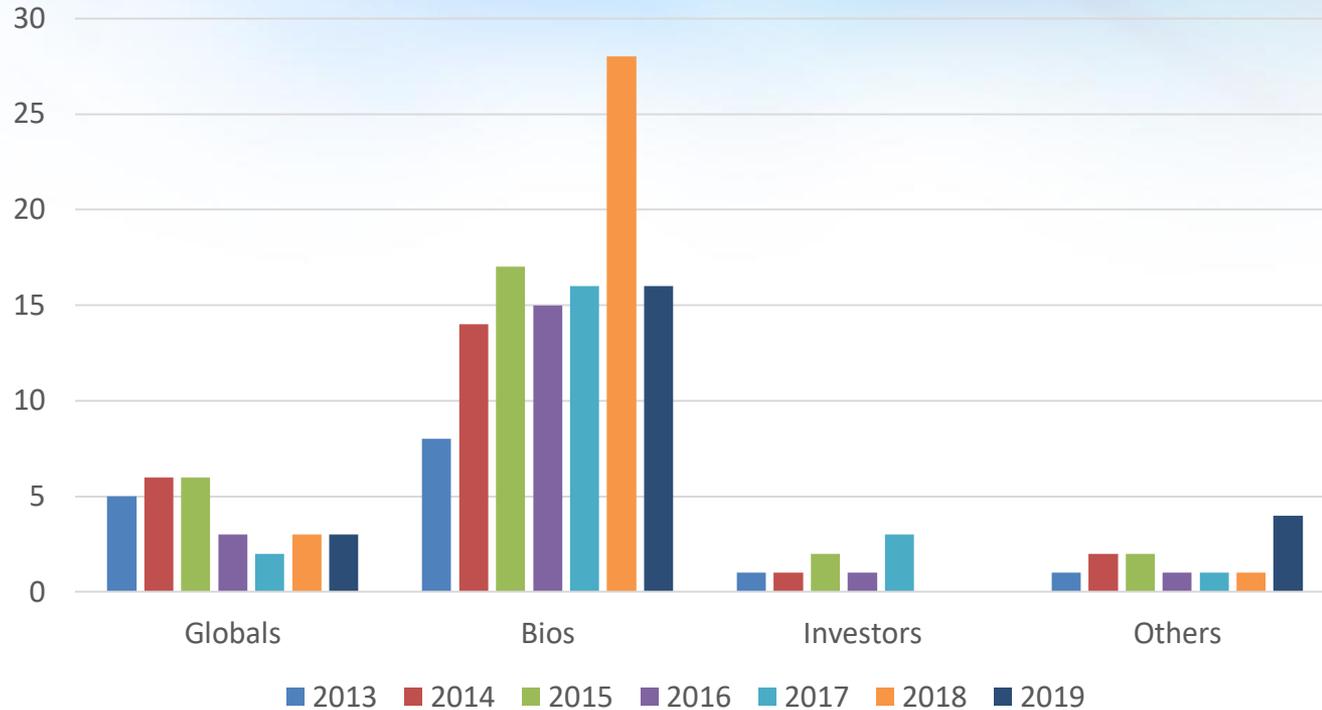
- 169 mergers, acquisitions and joint venture agreements
- 112 distribution and market access agreements
- 67 R&D and manufacturing agreements

Since 2013, on average, a new biological products M&A or JV agreement is announced nearly every 2 weeks!

¹ As reported in  **TWO B MONTHLY**
The Global Biocontrol &
Biostimulants Newsletter

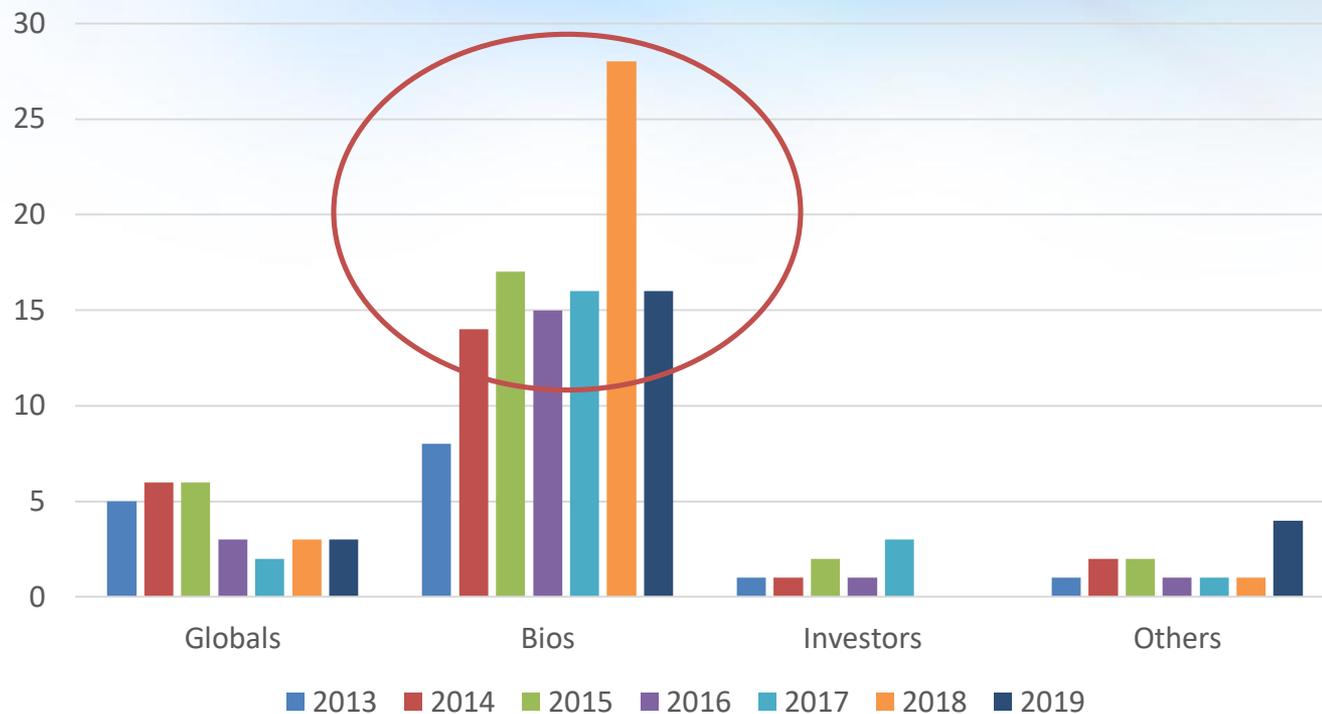
Who is involved in M&A?

Biological Products M&A Categories



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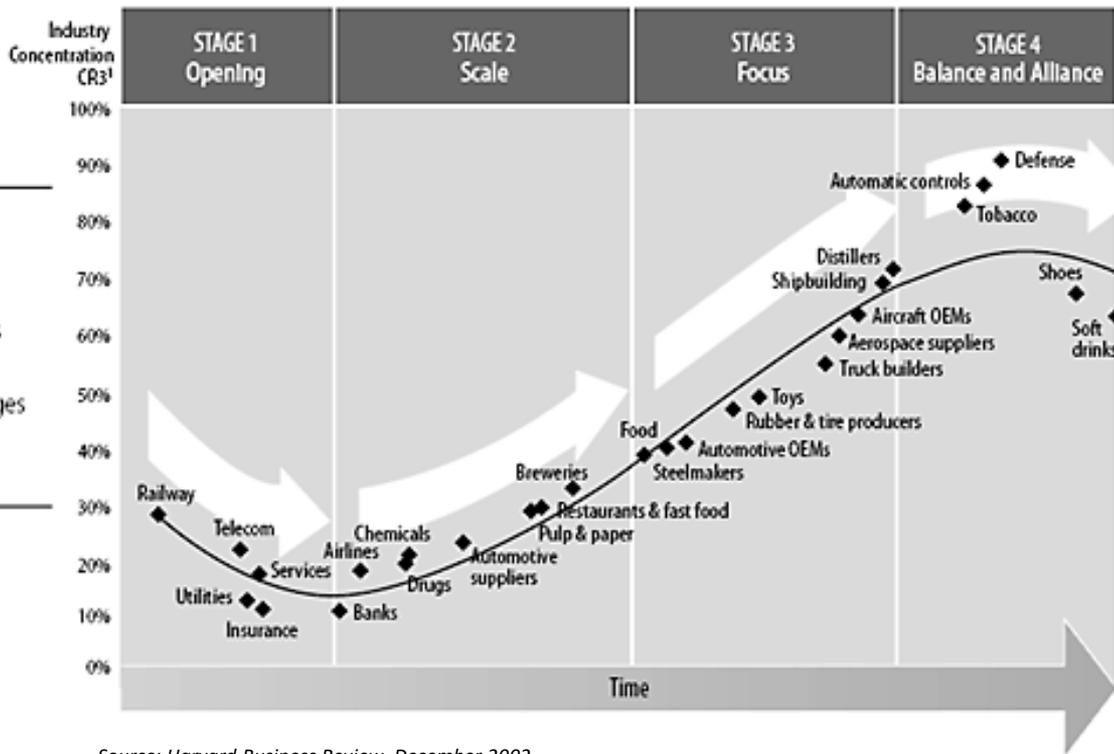


Consolidation Curve

Industry Consolidation Life Cycle

Once an industry forms or is deregulated, it will move through four stages of consolidation – or disappear.

¹CR3 = The combined market share of the three largest companies in an industry (based on A.T. Kearney's Value-Building Growth database of 25,000 companies).



Source: Harvard Business Review, December 2002

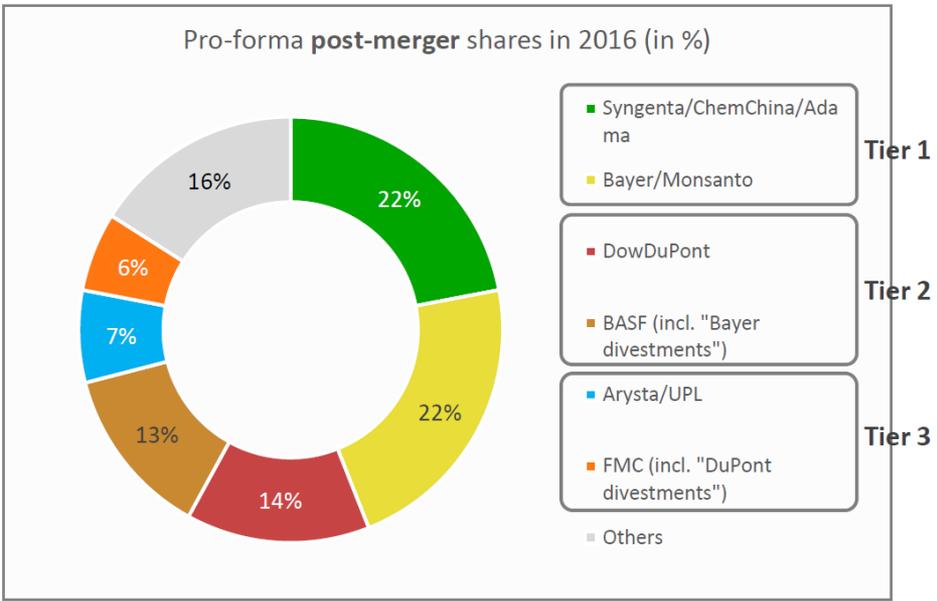
Consolidation – other markets

2017 Seed Company Family Tree



Consolidation in Crop Protection Market

Pro-forma post-merger shares in 2016 (in %)



Fragmentation in biocontrol

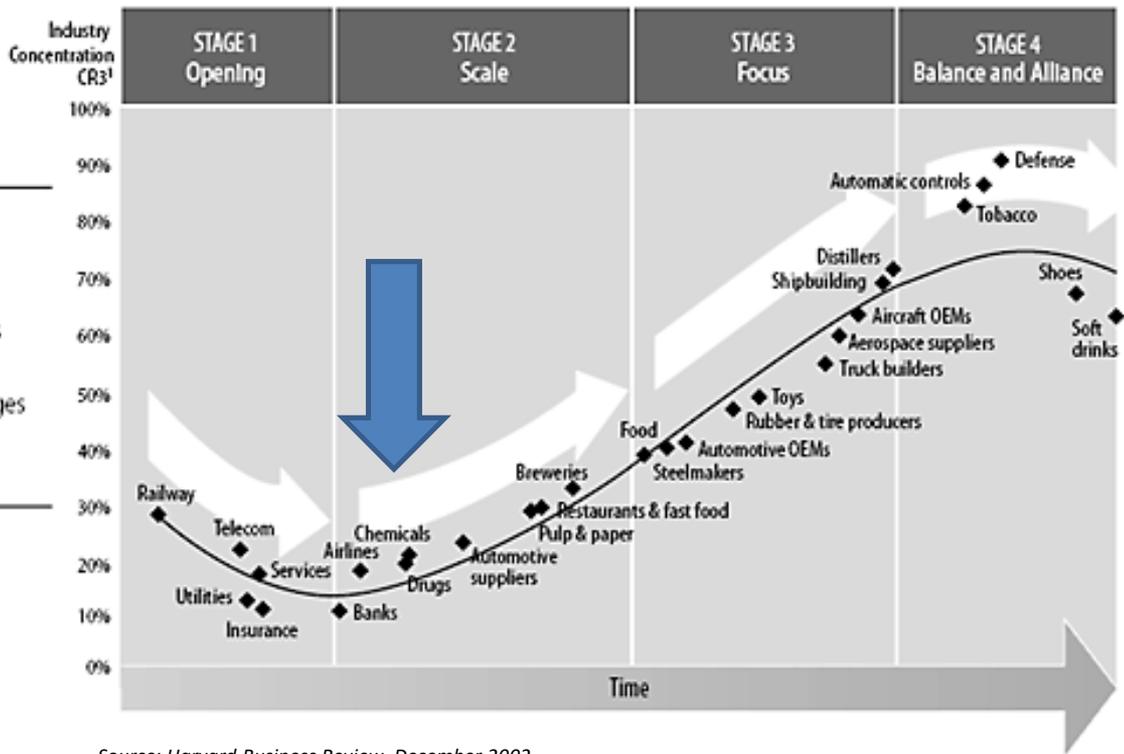
- Comparing biocontrol to other ag input industries:
 - Crop protection – 4 companies hold ~70% of revenue
 - Seed industry – 4 companies dominate the industry
- In comparison, biocontrol:
 - 100's of companies participate in global market
 - New companies are continuing to enter the industry
 - In excess of 30 companies to reach 60% of revenue

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What is driving M&A?

For global companies:

- Participation in fast growing market segment
- Integration of bio into portfolio to meet consumer demands
- Use strong market access fills major need for bio companies

For bio companies (and investment partners):

- Added technology and product types increases addressable market
- Broader product portfolio more attractive to distribution
- Expanded geographic presence
- Increasing footprint boosts cash flow and resources for reinvestment

What is future for M&A?

- DunhamTrimmer believes continued consolidation will occur in sector
- Majority of deals will be between companies already present in the sector as companies seek to build “critical mass”
 - Fill gaps in their portfolio
 - Expand presence into new geographies
 - Add new technology or product types to increase their market
 - Partnering with investors for strategic acquisitions
- Global companies will continue to participate, but they will be selective in their investments
- Possible new entrants driving consolidation may come from other industries
 - Precision ag companies
 - Data companies looking to enter ag space
 - Biostimulant companies

Biocontrol M&A Summary

- Biocontrol industry is in early growth stage
- A large number of companies are competing aggressively to build scale and establish strong position in market
- Consolidation activity has been extremely high in last 6 years
- This pace will continue until clear market leaders emerge and begin to capture dominant market share
- M&A activity between companies already present in sector is signal the market is beginning to mature
- However, much more consolidation must occur before the biocontrol segment enters Stage 3 and dominant market leaders emerge who begin to focus on expanding existing market share versus growth by acquisition



Biocontrol Global Market Research Report

The comprehensive biocontrol market overview from DunhamTrimmer, the leading experts in biologicals, is now available to all stakeholders.

Order your copy now at orders@dunhamtrimmer.com.



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Thank You

