



DunhamTrimmer®
International Bio Intelligence

Biocontrol Market Status and Trends

October 25, 2022

ABIM - Basel

Mark Trimmer, DunhamTrimmer
Co-Founder & Managing Partner



The Biological Products Industry's Premier Strategic Business Consulting & Market Research Firm



Founding Partner
35 Years—
Crop Protection,
Global R&D,
Global
Technology
Acquisition
& Licensing

Mark Trimmer, Ph.D.



Managing Partner
20 Years
Biostimulants
& Specialty
Fertilizers,
Regional/Glob
al Marketing
and Sales

Manel Cervera



Partner Vice President
27 Years—
Crop Protection,
Biocontrol,
Strategic Marketing,
Branding,
Communications,
Past Chair, BPIA

Rick Melnick



Vice President
40 Years—
Product
Development
20 Years—
Biologicals
Industry
Executive
Management

Massimo Toni



Vice President
28 Years—
Plant nutrition,
Specialty
Fertilizers &
Biostimulants
New Product
Innovation
& Development

Vtren Jurin



BIOLOGICAL PRODUCTS

Source: DunhamTrimmer® LLC

BIOSTIMULANTS¹

MICROBIALS		NON-MICROBIAL	
NUTRIENT USE EFFICIENCY (NUE) (BIOFERTILIZERS) ²	PLANT GROWTH PROMOTION (PGP)	PLANT & SEAWEED EXTRACTS	AMINO ACIDS
		ORGANIC ACIDS	INORGANIC COMPOUNDS

¹ Biostimulants are products which elicit one or more of the following effects: 1) mitigate abiotic stress; 2) enhance crop quality; 3) improve nutrient assimilation. Their functions are typically classified as NUE (Nutrient Use Efficiency) or PGP (Plant Growth Promotion).

² Biofertilizers are Microbials used to enhance plant nutrient uptake from soil (NUE).

- N-fixing bacteria make up the largest segment.
- N-fixing bacteria for non leguminous crops make up the fastest growing segment.
- Other NUE microbials include mobilizers and solubilizers or chelators of specific nutrients such as P, K, S, Zn, Fe.

PGP Microbials target other biostimulant properties beyond NUE.

Non-microbial biostimulants may target either NUE or other PGP effects.

- Amino Acids and Seaweed Extracts are the fastest growing segments.
- Seaweed Extracts are a complex mixture of components including plant hormones, phenolic compounds, and other active substances.
- Amino Acid products include peptide fractions.
- Organic acids are mainly humic and fulvic acids used as soil amendments.

BIOCONTROLS

BIOPESTICIDES ³				MACROORGANISMS ⁶		
BIOCHEMICALS ⁴		MICROBIALS ⁵		INSECTS	MITES	NEMATODES
PLANT EXTRACTS		BACTERIA	FUNGI			
ORGANIC ACIDS	PGRs	PROTOZOA	VIRUSES			
SEMIOCHEMICALS		YEASTS	OTHERS			

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.

⁴ Biochemicals include Plant Extracts (largest by sales volume), Organic Acids, PGRs (plant hormones e.g. cytokinins, auxins, etc), and Semochemicals (allelochemicals and pheromones).

⁵ Microbials refer to products based on bacteria, fungi, viruses, and protozoans. Microbials comprise the largest market of biopesticides.

- Bacteria, followed by fungi, make up the largest groups commercially (>90%).
- Biggest challenges relate to product formulation with regard to shelf-life, stability, and performance enhancement.

⁶ Macroorganisms include insects, mites, and nematodes. Insects & mites are the largest groups.

- Unique in that the live organism is used in the form of eggs, larvae, pupae, or adults.
- The most important challenge in this category is logistics — shipping live organisms that require special care to survive.
- Normally not classified as Biopesticides but rather Biocontrols.

BIO MARKET LANDSCAPE

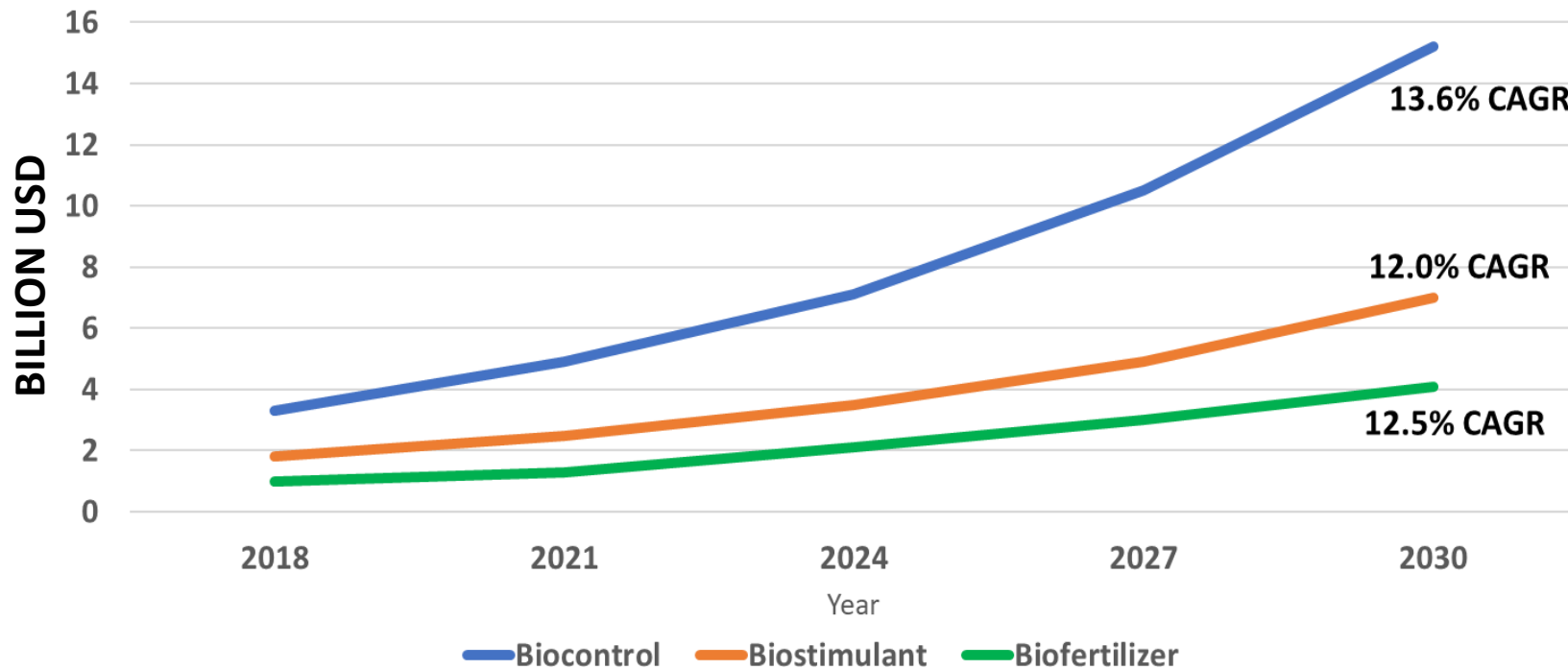
Market Segmentation
Market Data



BIOLOGICAL PRODUCTS MARKET LANDSCAPE



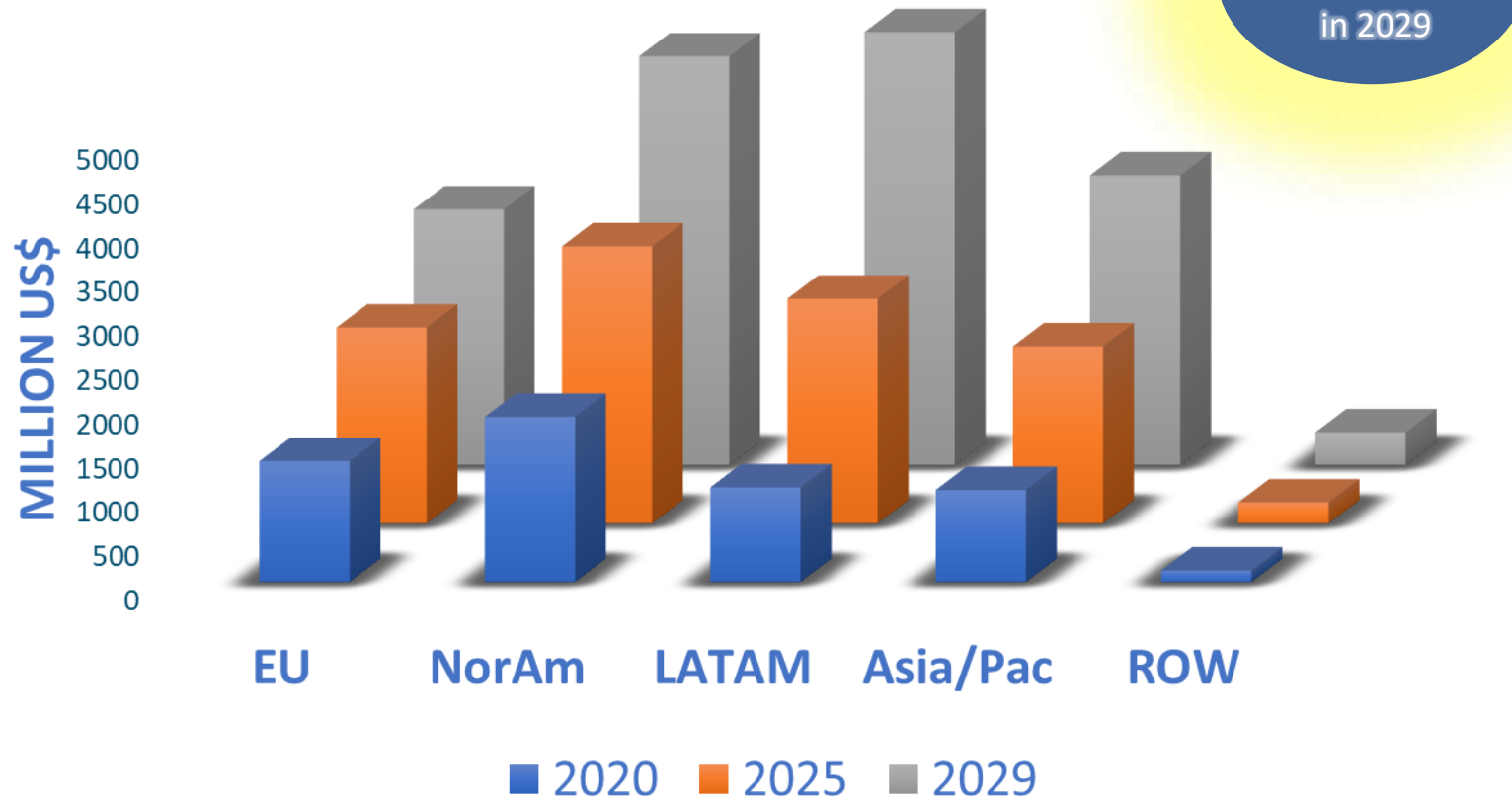
GLOBAL BIOLOGICAL MARKET EVOLUTION



CAGR 2018 - 2030	
BIOCONTROL	13.6%
BIOSTIMULANT	12.0%
BIOFERTILIZER	12.5%

BIOCONTROL MARKET LANDSCAPE

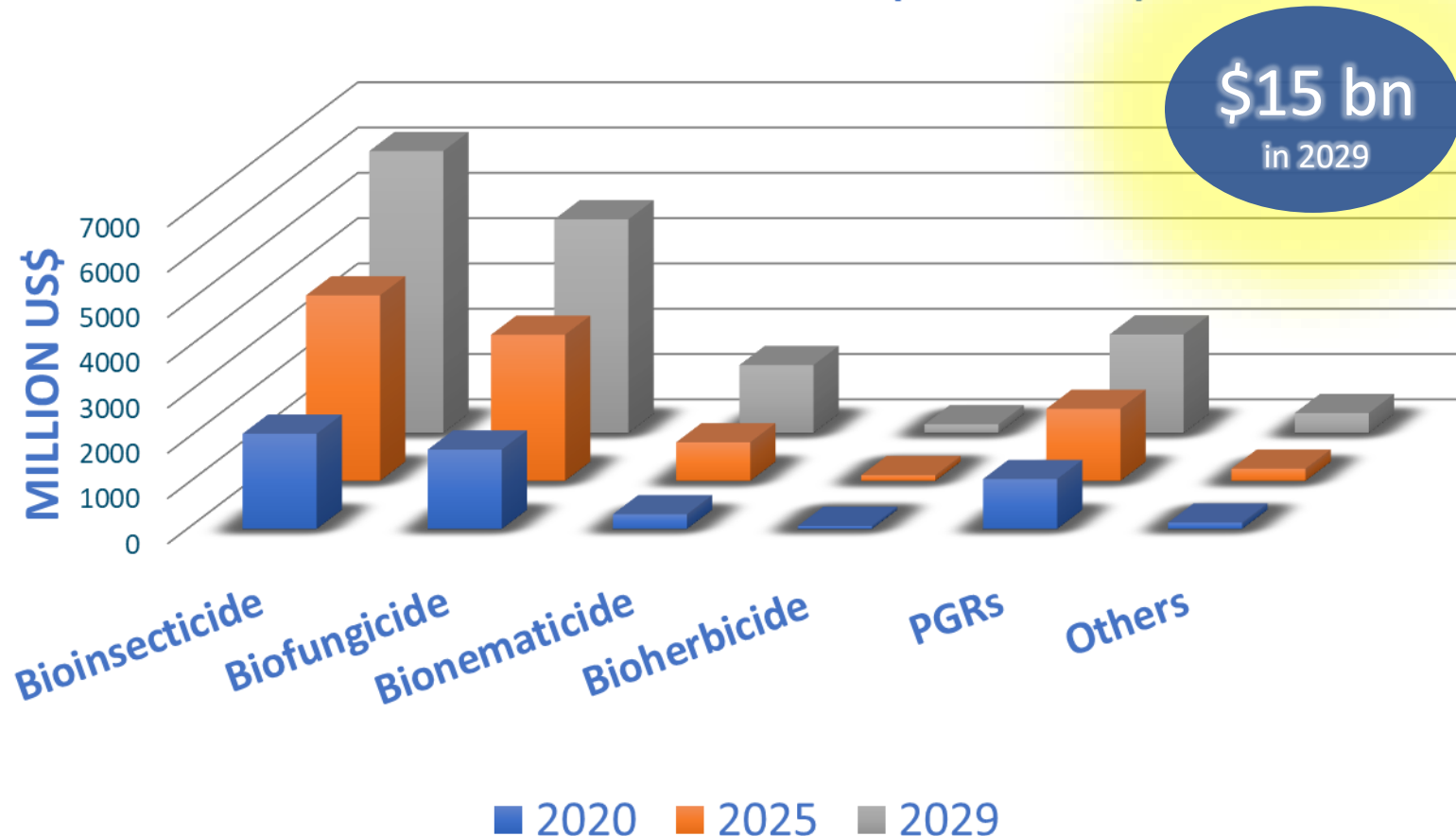
GLOBAL BIOCONTROL MARKET (MN\$USD)



- Total market (including PGRs) exceeds US\$15 billion by 2029
- LatAm surpasses NorAm as largest region by 2029
- Brazil driving LATAM growth as first country with significant use of biologicals in row crops
- Seeing signs of market maturity in US and western EU
- EU slowed by regulatory system based on chemicals

BIOCONTROL MARKET LANDSCAPE

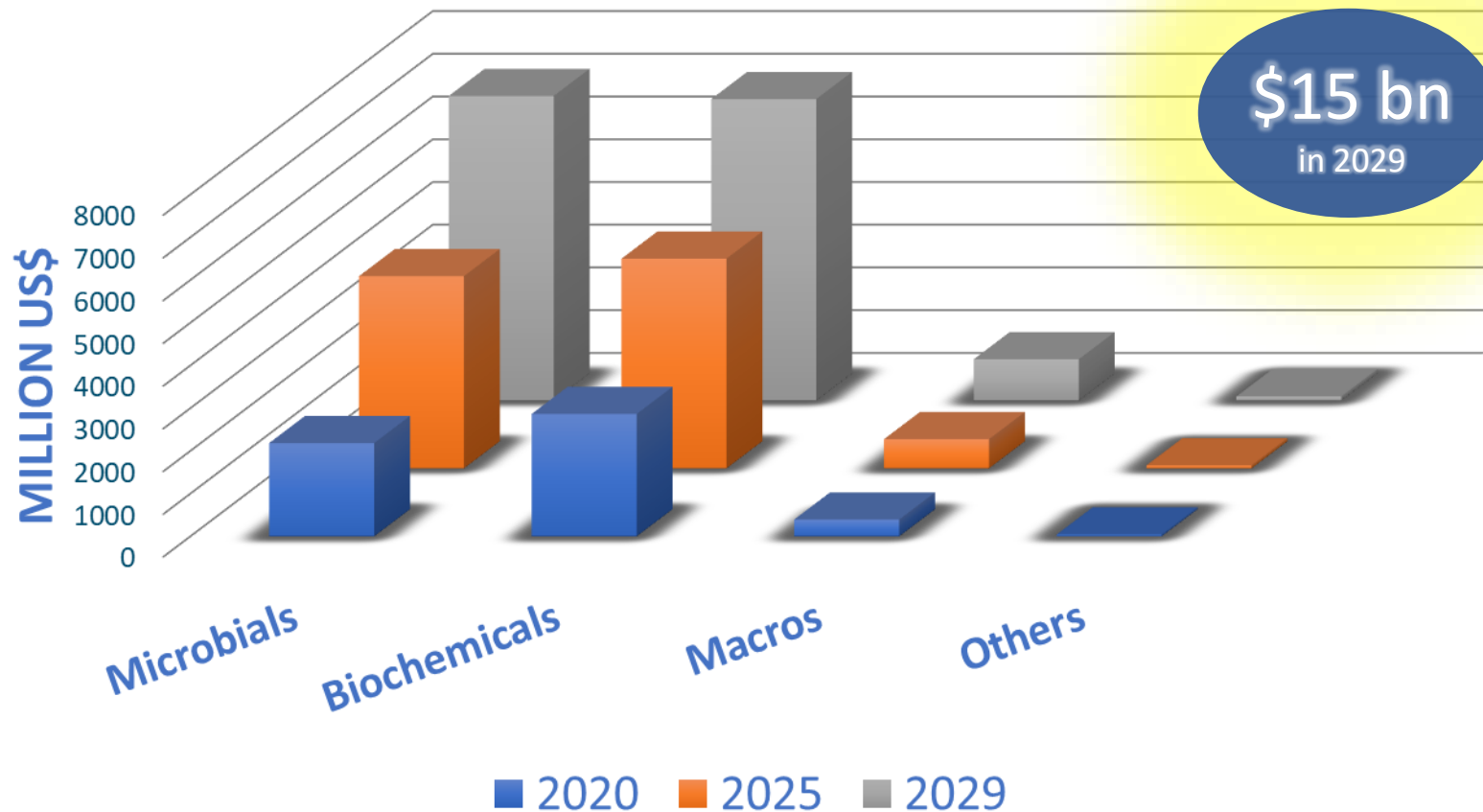
GLOBAL BIOCONTROL MARKET (MN\$USD)



- Bioinsecticide remain leading use for biocontrol
- Bioinsecticide and biofungicides combined represent >80% of market
- Bionematicide use growing rapidly, particularly in Brazil
- PGRs show steady growth with strongest expansion in LatAm
- Bioherbicides remain the missing piece of biocontrol

BIOCONTROL MARKET LANDSCAPE

GLOBAL BIOCONTROL MARKET (MN\$USD)



- Microbials and biochemicals lead market in value and growth rate
- Microbials and biochemicals represent >90% of market
- Biochemical values include plant extracts, pheromones, and PGRs
- Macroorganisms important in protected markets

BIOCONTROL MARKET LANDSCAPE

EU 2021



LatAm 2021



NorAm 2021



Asia/Pac 2021



- LatAm and NorAm markets dominated by microbials
- Asian market higher use of biochemicals due to long history of plant extract and PGR use
- EU market has by far smallest microbial share, a direct result of regulatory policies hindering microbial introduction

BIO MARKET
**EMERGING
TRENDS**



BIOCONTROL MARKET EMERGING TRENDS

Brazil market is doubling every two years

First country with substantial use of biocontrol in row crops



BIOCONTROL MARKET EMERGING TRENDS

Growth in US and western EU is slowing

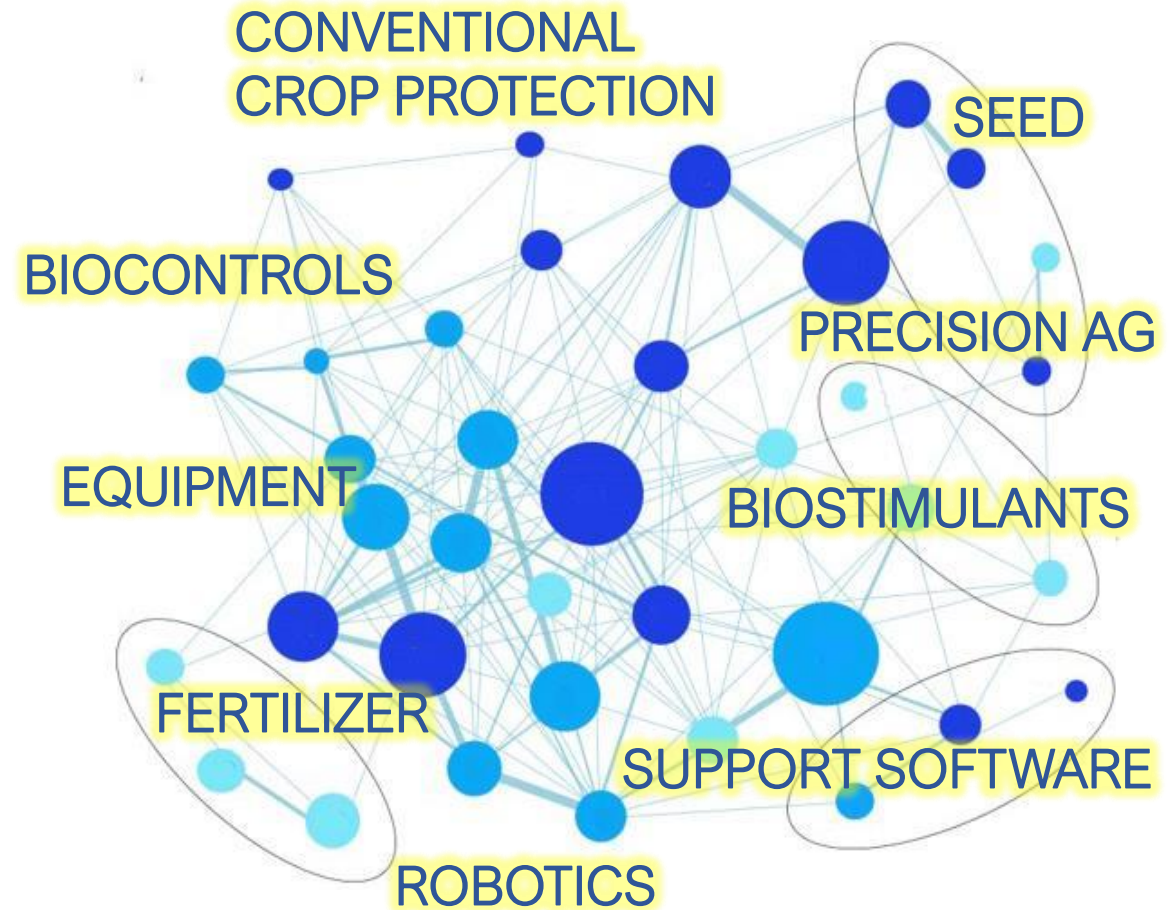
Fruit & vegetable markets are maturing

Row crop use of biocontrol lags behind Brazil



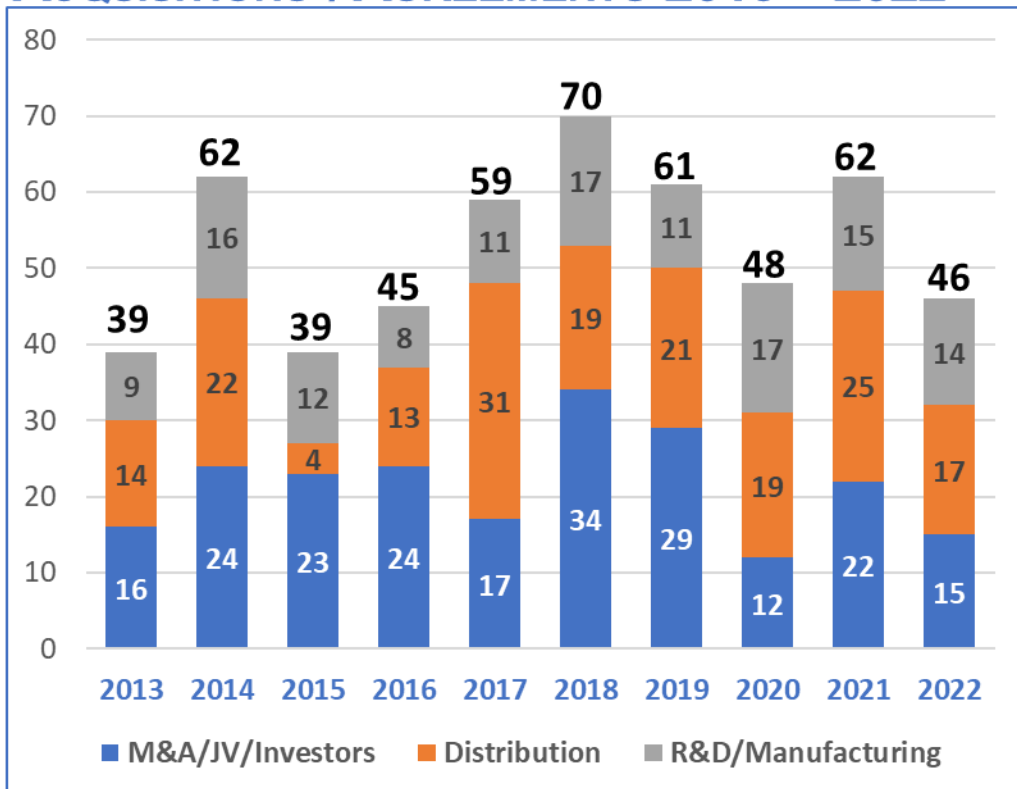
BIOCONTROL MARKET EMERGING TRENDS

- Understanding the important role biocontrols can play in an ag production **system** is driving adoption
- Better and more consistent products are driving grower confidence
- Experience and understanding about how biologicals work allows growers to better evaluate success and impact
- Increasing consumer and societal demands have driven grower awareness on the value of resistance management, residue management, target specificity, and quality – all tangible benefits of biocontrols



BIOCONTROL MARKET INVESTMENT & CONSOLIDATION

BIOCONTROL, BIOSTIMULANT, BIOFERTILIZER ACQUISITIONS / AGREEMENTS 2013 – 2022



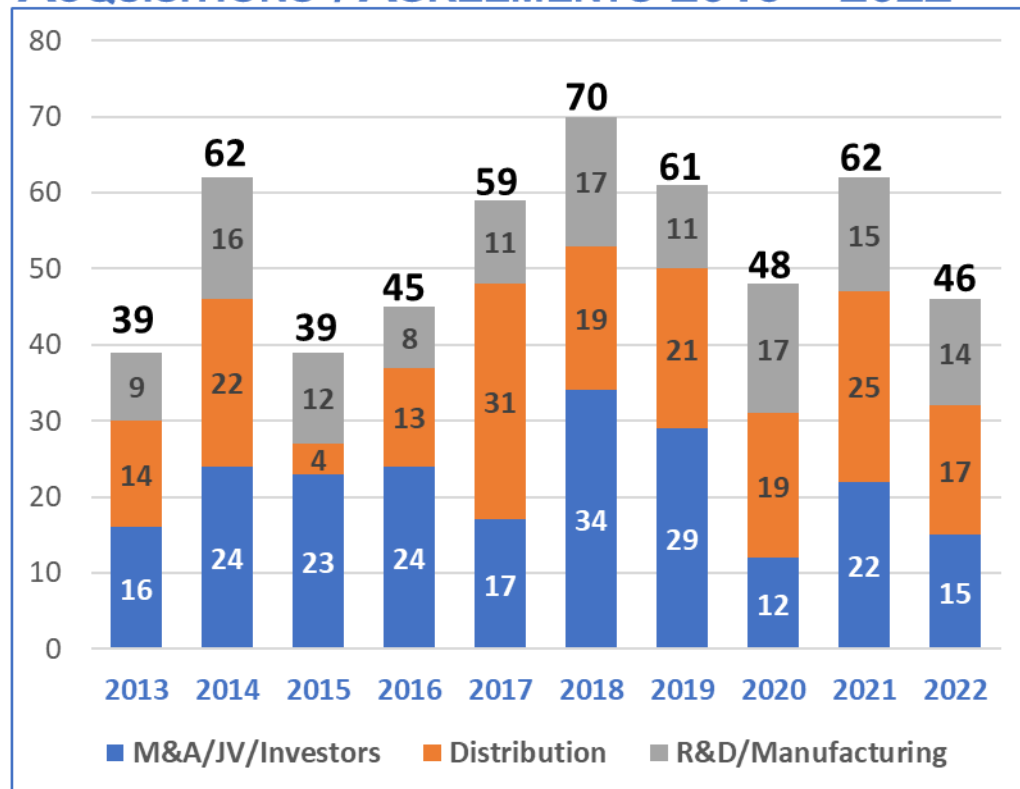
2022 data Jan - June

	Total Deals 2013-2022	Avg/Year
M&A/JV/Investors	216	23
Distribution	185	19
R&D/Manufacturing	120	13
Grand Total	521	55

- M&A activity accelerating following a COVID-related pause in 2020
- Market fragmentation, resource and market access limitations have driven consolidation

BIOCONTROL MARKET INVESTMENT & CONSOLIDATION

BIOCONTROL, BIOSTIMULANT, BIOFERTILIZER ACQUISITIONS / AGREEMENTS 2013 – 2022



2022 data Jan - June

- Innovation (research and technology) continues to come mainly from smaller players
- Big players inject much needed resources by outright acquisition, exclusive license agreements, etc.
- From **January - June 2022**, we have already recorded nearly 50 deals
- Several recent announcements for major deals not yet included in 2022 totals

BIOCONTROL MARKET INVESTMENT & CONSOLIDATION

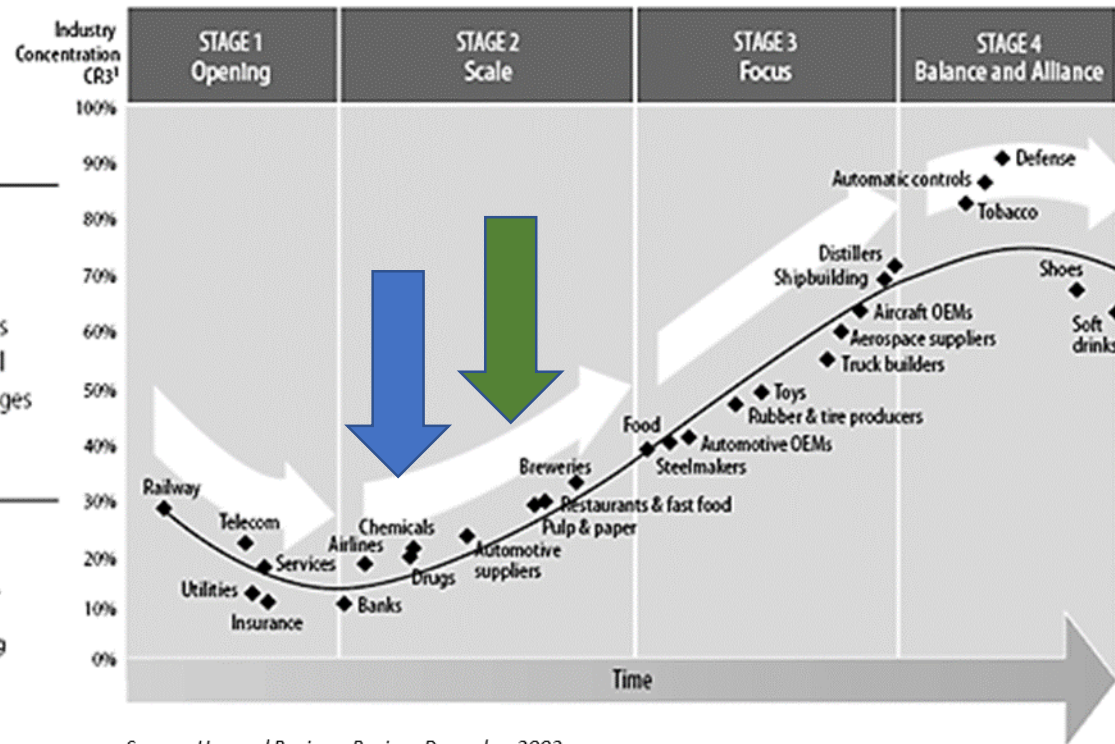
Where is Biocontrol industry in consolidation life cycle?

In 2019, I put this industry in early Stage 2

I believe now have advanced to mid Stage 2

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

DUNHAMTRIMMER GLOBAL BIOLOGICAL MARKETS REPORTS



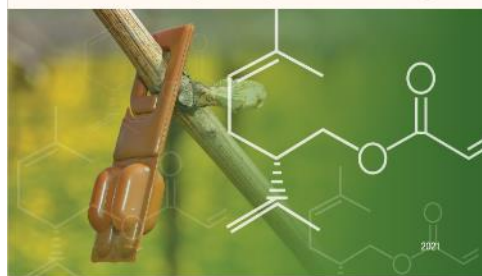
DunhamTrimmer[®]'s Global Biostimulant Report
Market Overview, Trends, Drivers and Insights



BIOSTIMULANTS - 2020



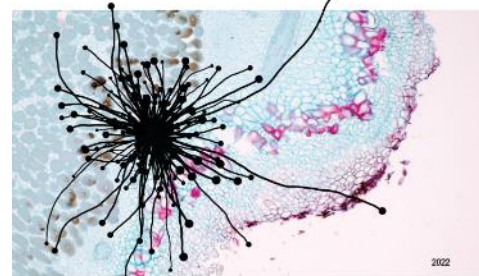
DunhamTrimmer[®] Global Pheromones Report
Market Overview, Trends, Drivers and Insights



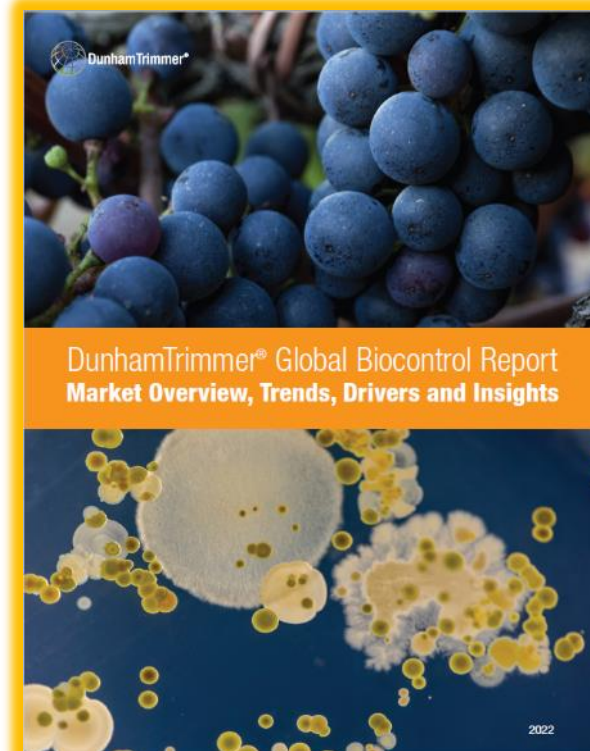
PHEROMONES - 2021



DunhamTrimmer[®] Global Biofertilizers Report
Market Overview, Trends, Drivers and Insights



BIOFERTILIZERS - 2022



DunhamTrimmer[®] Global Biocontrol Report
Market Overview, Trends, Drivers and Insights

BIOCONTROL
(COMING JAN 2023)

**THANK YOU FOR YOUR
KIND ATTENTION!**

Visit us at Booth 83

QUESTIONS?

mark@dunhamtrimmer.com

