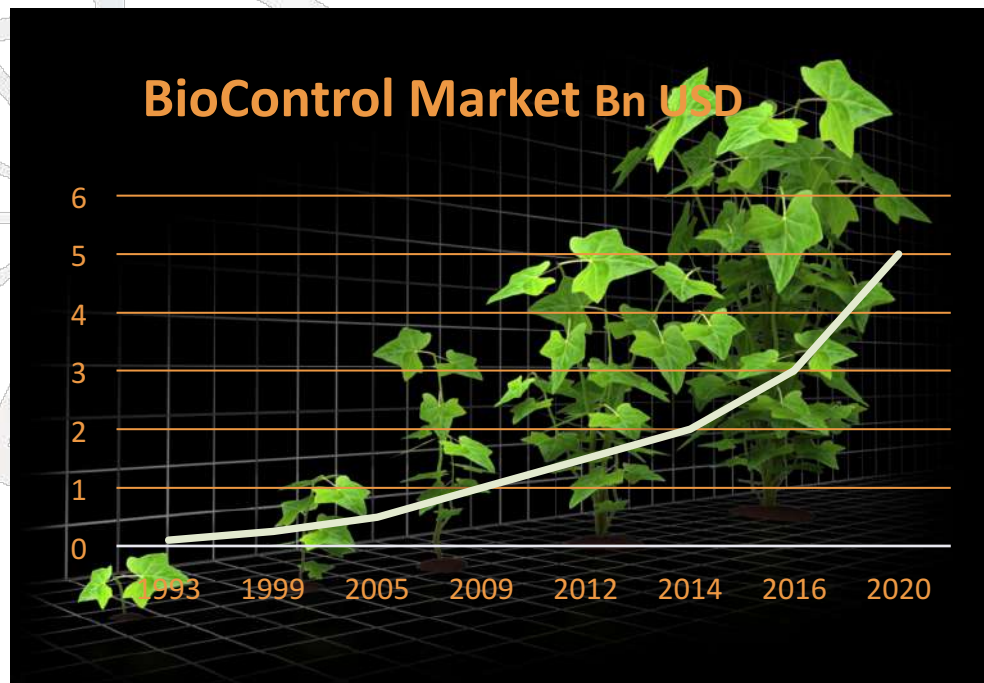
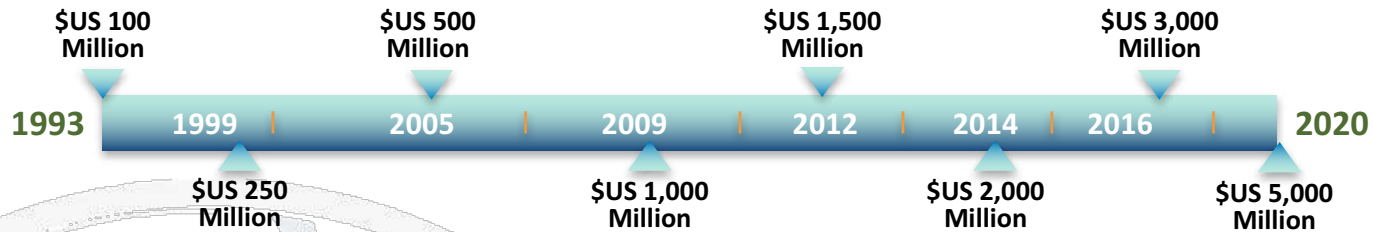


ACCELERATING GROWTH

Global BioControl Market Benchmark Values (USD)



Biological Products Markets Around the World



bpia 2018
Spring Meeting
& International
Symposium

BIO
CONTROLS
USA WEST 2018

7-Mar-2018

1

Introduction—Dunham Trimmer LLC

“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

Bill Dunham

42 Years—Crop Protection & Seeds
Global & Regional Strategic Marketing Teams
Subsidiary Managing Director

Mark Trimmer, Ph.D.

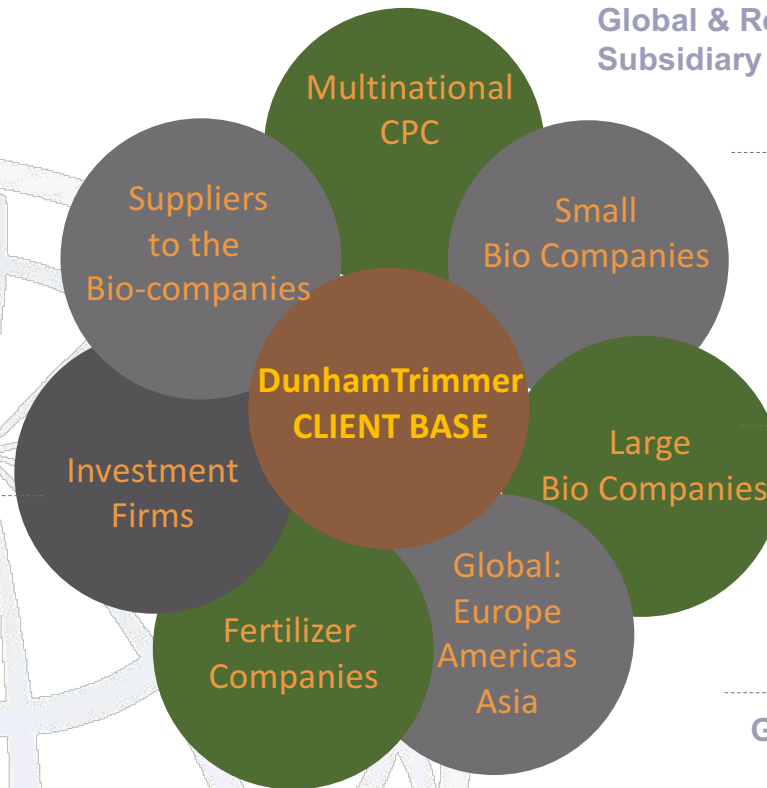
30 Years—Crop Protection
Global R&D
Global Technology Acquisition
& Licensing

Manel Cervera

15 Years—Biostimulants & Specialty Fertilizers
Regional / Global Marketing & Sales

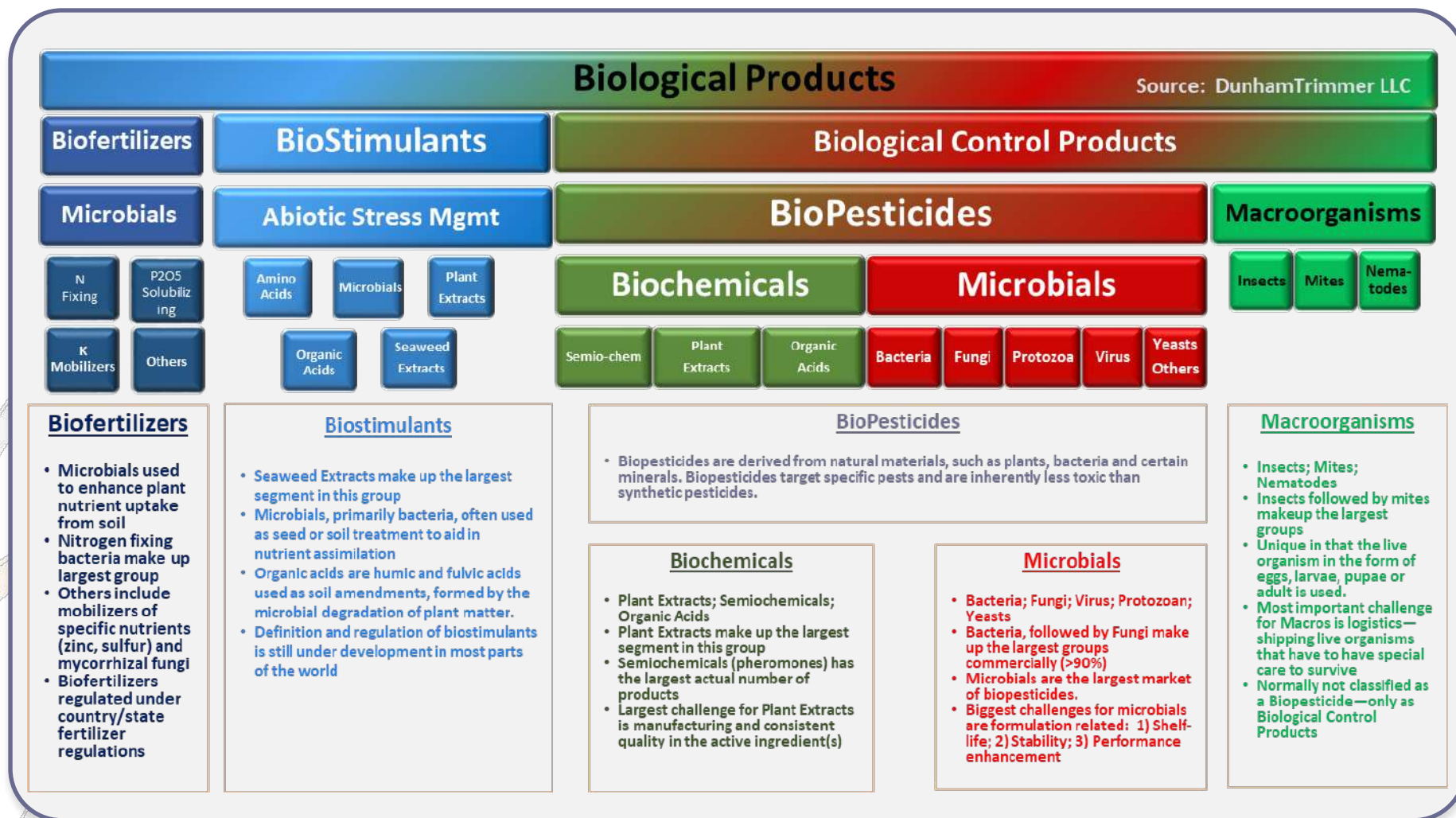
2BMonthly

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



BIOLOGICAL MARKET OVERVIEW –INTRODUCTION

—PRODUCT TYPES—



OBJECTIVES

- **Market data.**
 - Global Market Landscape on Biocontrol Market.
 - Global Market Landscape on Biostimulant Market.
- **Drivers (Influencers, Drivers & Trends).**
 - Factors driving actual & future growth.
- **Evolution of each Market.**
 - How driving factors are shaping evolution of both Markets as Business Models.



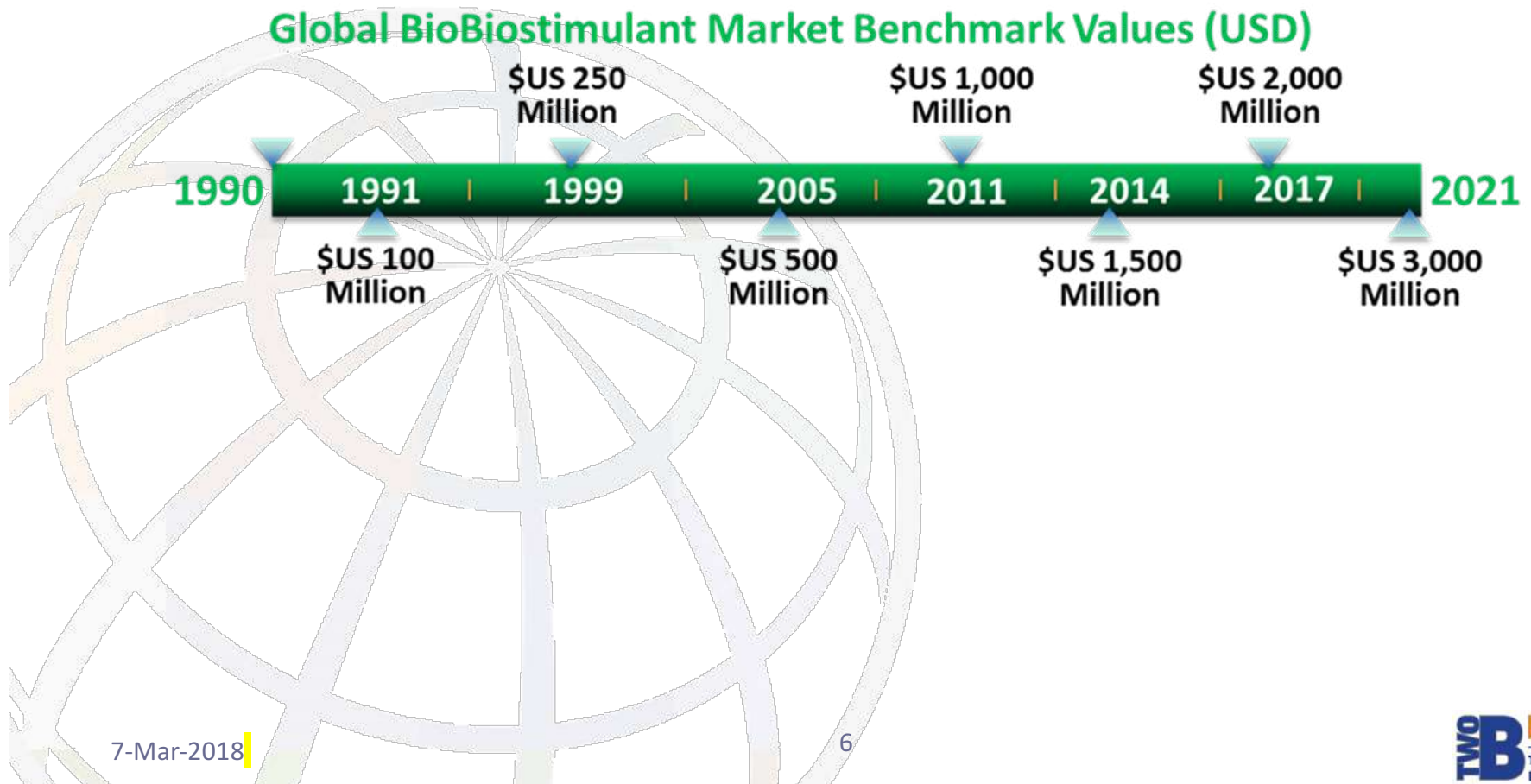
Biological Products Markets Around the World Market Landscape

7-Mar-2018



5

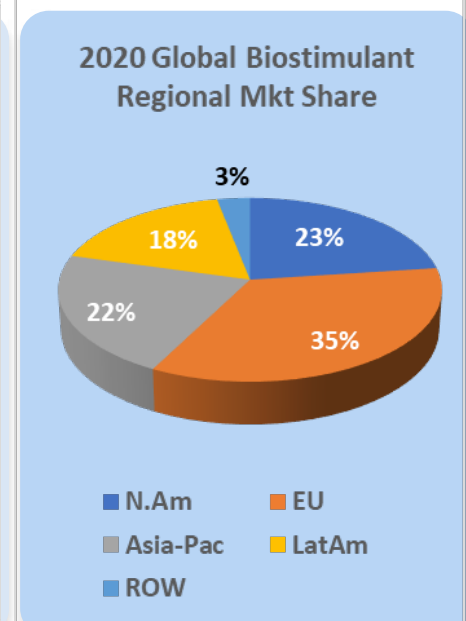
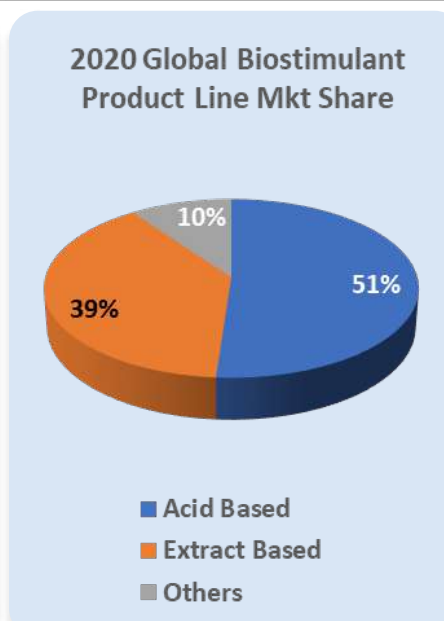
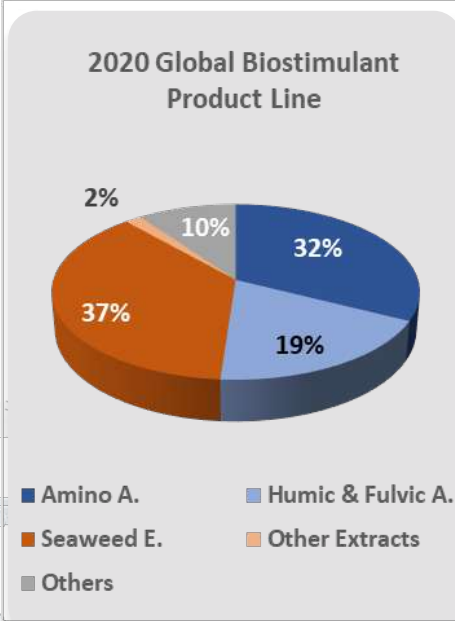
BIOSTIMULANTS MARKET GLOBAL GROWTH

Global BioBiostimulant Market Benchmark Values (USD)









GLOBAL MARKET PERFORMANCE—BIOSTIMULANT

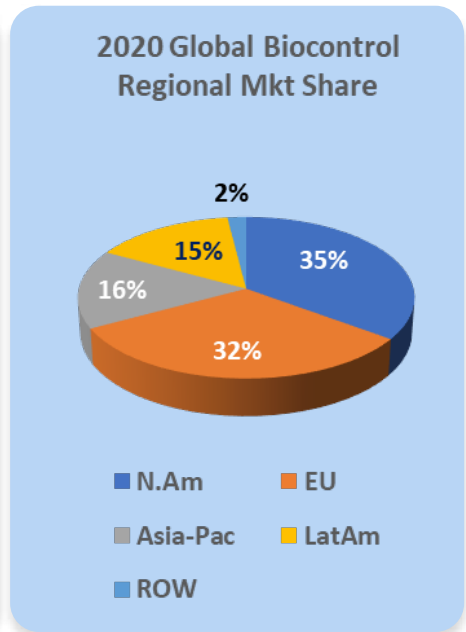
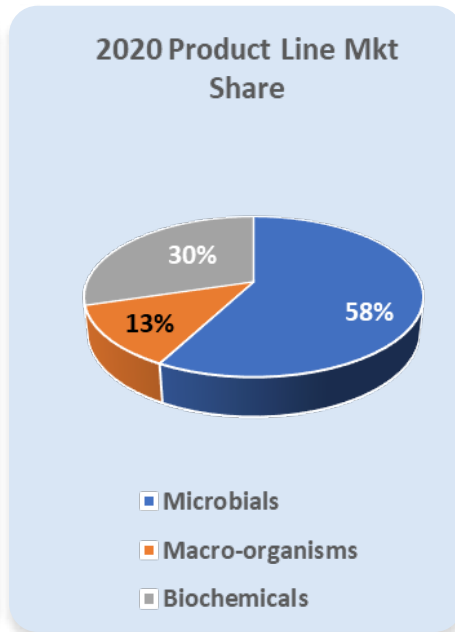
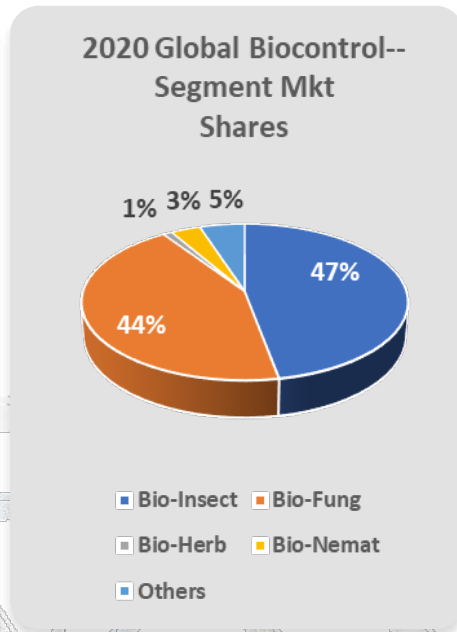
 35% Euro Share of Global Market slowest CAGR	 ~ 13% Global CAGR in 2020
 37% Seaweed E. Largest Product Line	 ~15% Microbials Product Line Fastest Growing
 74% Foliar Application Major Use	 >16% Seed Application Fastest Growing



- Biostimulants—Sustainable Growth—12 to 15%
 - **Latin American** market growing faster than any other region
 - Climate and crops grown in Latin America well adapted to use of biostimulants
- Technology for Abiotic stress & management’s constraints
 - More efficient use of resources (fertilizer, water, other inputs)
- Consumer willingness to pay for quality on fruits & vegs
- Biostimulant market still dominated by rapidly growing entrepreneurial companies
 - Large companies focused on microbials but consolidation has started
 - Market consolidation underway
- Market access as key success factor
- Possible impact of increasingly strict regulatory requirements
- R&D increase its importance as differentiation and future business sustainability issue

GLOBAL MARKET PERFORMANCE—BIOCONTROL

 67% NAm & Euro Share of Global Market	 >16% Global CAGR
 58% Microbials Largest Product Line	 >17% Microbials Product Line Fastest Growing
 47% Bioinsecticides Still Largest Use Segment	 18% Bionematicides Fastest Growing Use Segment



- Biological Control—Sustainable Growth--17%
 - **Latin American** market growing faster than any other region
 - Climate and crops grown in Latin America well adapted to use of biopesticides
- Green technology / Sustainable technology
 - **Consumer demand** for lower residues driving adoption
 - Key part of an integrated system for food production
- Biopesticide market still dominated by rapidly growing entrepreneurial companies, but consolidation has started
 - **New technology** & new companies continue to emerge
- Market access needs drive consolidation
 - Many existing small companies lack market access
 - Larger companies/investors will acquire & consolidate to eliminate inefficiencies in current market

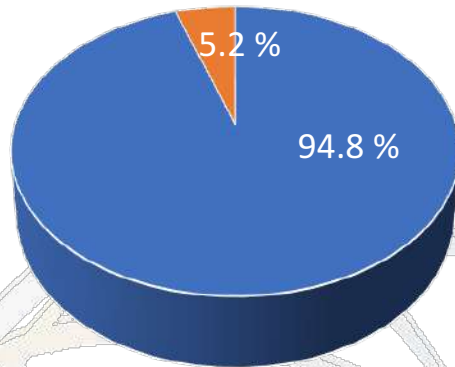
BIOCONTROL AS INTEGRATED ON PLANT PROTECTION MARKET

- **Assumptions:**
 - **Conventional Global Plant Protection:**
 - \$64 billion¹
 - Herbicides 40% | Insecticides 30% | Fungicides 25% |
 - Row Crops & Cereals 70% | Fruit & Veggies 20% |
 - Slow growth (<6% CAGR) or even stagnated
- **Conclusions:**
 - Biocontrol products represent ~ 5% of total P.P. Market.
 - They are positioned on a different way in terms of Use's & Crop's Segments²:
 - Biocontrol products are mainly used in Fruits & Veggies (~80%).
 - Bioherbicides are very small share of Biocontrol.
 - Biocontrol is growing at 17% CAGR

Source: 1: Philipps McDougal & Others | 2: Dunham Trimmer Bio Market Report

OVERALL CONTEXT- BIOCONTROL IN THE PROTECTION MARKET 2017

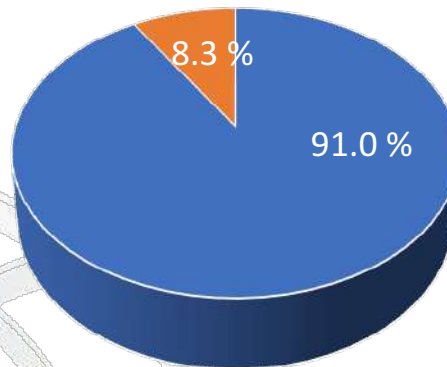
Global Crop Protection Market



5.2%

Share on
C. Protection

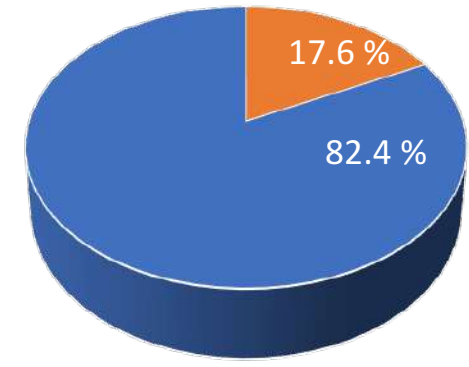
Without Herbicides & Bioherbicides



8.3%

Share on
C. Protection
w/o
Herbicides

Fruits & Veggies



17.6%

Share on
C. Protection
in **F&V**



MARKET LANDSCAPE

- **Both Bio. markets growing at two digit % number up to 2025.**
- **Biocontrol Market bigger than Biostimulant.**
- **Biocontrol Market growing faster (CAGR) than Biostimulant.**
- **LATAM fastest growing region up to 2025 for both Markets.**
- **Microbials fastest growing products for both Markets.**
- **Biocontrol well established in F&V sector.**

Biological Products Markets Around the World Drivers & Trends

DRIVERS, INFLUENCERS & TRENDS

Common Drivers

- Population Growth
- Climate Change
- Ecological Needs

Biocontrol More Specific Drivers

- Consumer Demands
- Pest Resistance
- Regulatory Advantages
- Entry Of Global Companies

Biostimulant More Specific Drivers

- Snake Oil To Science
- R&D Investment
- Industry Consolidation
- Regulatory Issues
- Precision Ag

Biological Products Markets Around the World Actual & Future Market Access

BIOPESTICIDES & BIOSTIMULANTS APPROACH TO MARKET

- **Both, as business, have common objective of gain access to the market in the most profitable long term way as possible.**
- **Both, from their beginning, or immediate evolution, have been shaped as different business models because differences on;**
 - Product characteristics.
 - Market integration & Consumer perception.
 - Key initial success factors to grow as a business.

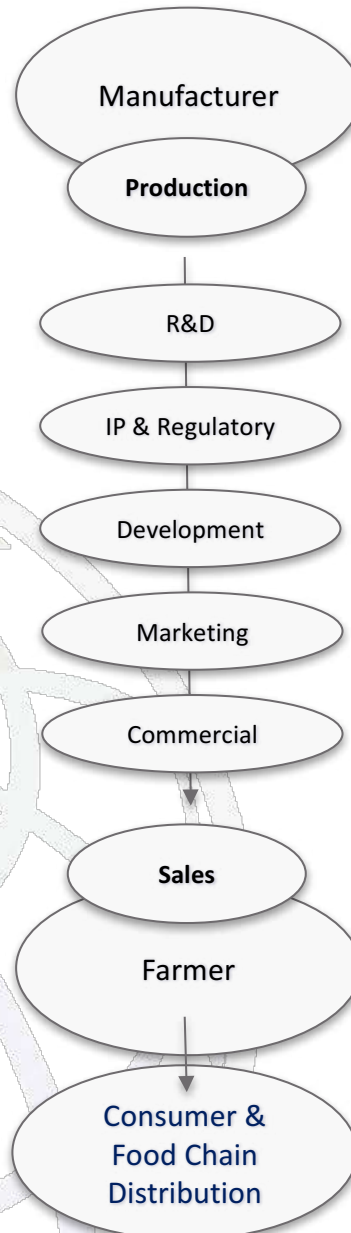
BIOPESTICIDE SECTOR

- Higher investment requirements
- Bigger barriers to enter
- More IP

- More specific solution oriented
- More differentiation
- More limited portfolio offer

- Market: They are compared with chemical pesticides:
 - Field performance of biopesticides
 - Preventative not curative!
 - Application thresholds may differ for biopesticides
 - Biopesticides perform best in a program with chemicals > Integration needs to be done
 - Integration needs involvement from commercial channel, which will depend on profitability & technical capacity and time.
 - Stronger market position Fruits & Veggies (Consumer demand, Secondary standards,...)
 - ¿profitability to farmer and/or commercial channel?

BIOPESTICIDE SECTOR



BIOSTIMULANT SECTOR

Original drivers for biostimulant adoption and growth

- **Consumer level:**
 - Increased willingness to pay for fresh & high quality fruits and vegetables (F&V) during the whole year.
- **Farm level:**
 - Intensive, added value production of F&V is subject to agroecological & management stress which increases producer's business risk.
 - Producers become avid for increasing number of inputs that could help them to reduce risks on production quality and stability, as well as assure the better possible yield.
 - Biostimulants prove to support farmer under these stressing conditions.
- **Manufacturer (& Distribution):**
 - Smart visionary's entrepreneurs who found in biostimulants a profitable business opportunity, began to appear.
 - In order to be closer to the farm (due to biostimulant product's characteristics) commercial channel players have found an important and profitable role to play.

BIOSTIMULANT SECTOR

Product characteristics

Biostimulants appeared into the market bringing some intrinsic characteristics that will be crucial on defining the business as we know it today.

- They have a multisite effect.
- Final result is dependent on triad **plant-environment-product**-(management).
- Replicability of results is not always the same.
- Most of them are based on organic materials. Many were waste products from other industries.
- Main active substances used are very similar among commercial products.
- Mode of action not completely understood.

- Biostimulants appear as a new additional solution, not directly substituting any existing one.

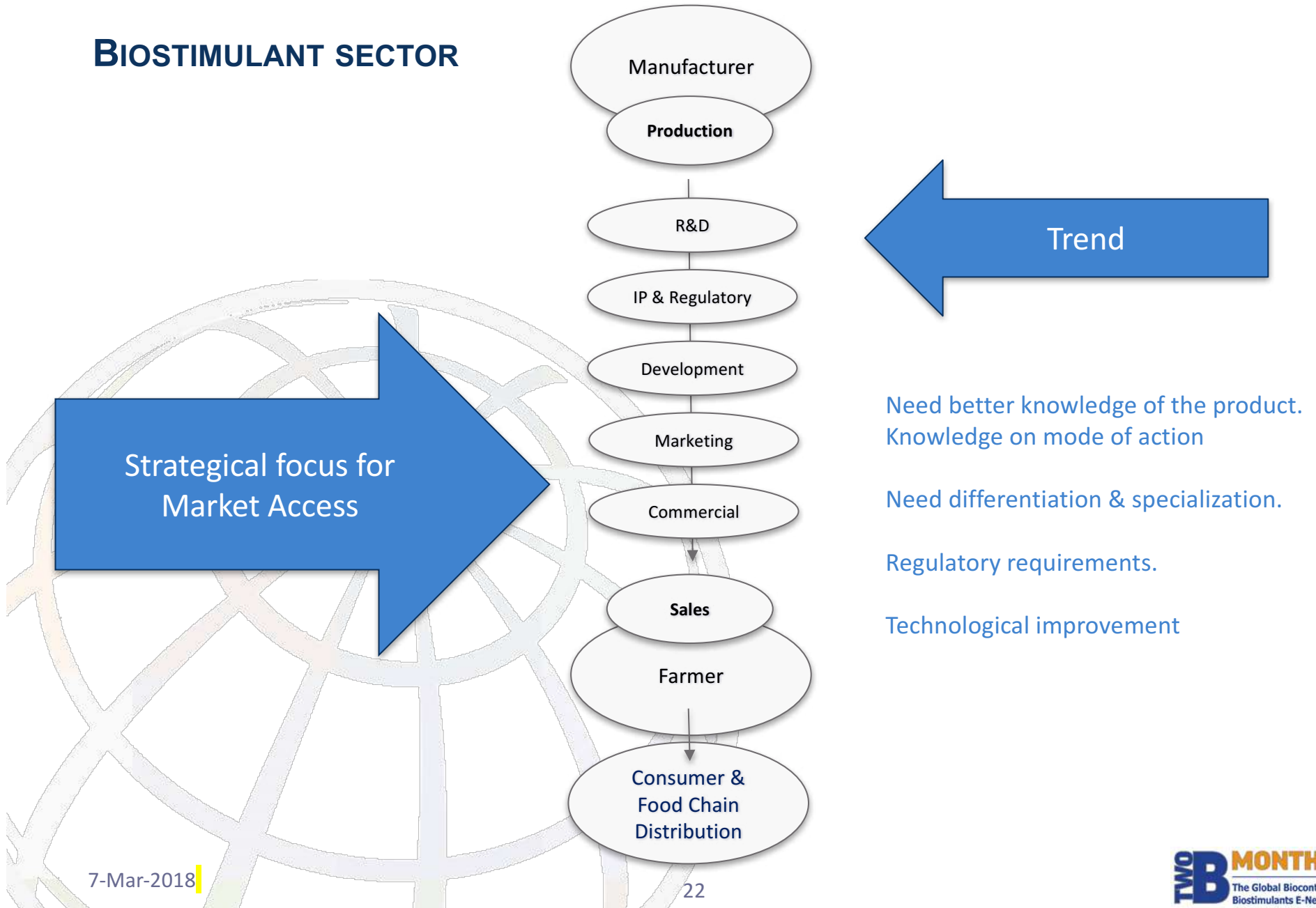
- IP level is low.
- At regulatory level most of times trend was to assimilated them as fertilizers (**special nutrition products**).
- There is a fragmented regulatory treatment. (talk better about commodity...)
- Result is a lack of clarity for industry and users.

BIOSTIMULANT SECTOR

Market needs

- **Offer side:**
 - **Low barriers to enter** (low IP & lack of harmonized strict regulatory framework at global level) create a good atmosphere for SME's to establish as main initial players in the market. Those companies lack of enough resources to invest in research.
 - Product characteristics create a high risk of **product commoditization**. Companies need to grow fast on the commercial chain. Marketing and Commercial approach are key.
 - Biostimulant business is not considered to jeopardize other agricultural input business in most of the cases.
- **Demand side:**
 - Risk of snake-oil claims due to lack of understanding of product characteristics and low barriers to enter that can favor opportunistic sales.
 - **Proximity to production level** (farm) is needed in order to address appropriate message & a close follow up of product performance, as well as building good relationship with consumer.
 - Intensive added value crops have high willingness to pay for biostimulants, but stressing conditions in row crops & cereals can make them interesting markets whenever willingness to pay exist.

BIOSTIMULANT SECTOR



MACRO DRIVERS & TRENDS

- INDUSTRY CONSOLIDATION -

Business consolidation will increase gap among companies in terms of market access, product differentiation capacity, and financial muscle to fund R&D.

The entry of global companies into this business will definitely impact the business model structure for other players

M&A / JVs / Investments

2017 – 17 Major Agreements
 2016 – 24 Major Agreements
 2015 – 23 Major Agreements
 2014 – 24 Major Agreements
 2013 – 16 Major Agreements

Distribution—Mkt Access

2017 – 31 Major Agreements
 2016 – 13 Major Agreements
 2015 – 04 Major Agreements
 2014 – 22 Major Agreements
 2013 – 14 Major Agreements

R & D / Manufacturing

2017 – 11 Major Agreements
 2016 – 08 Major Agreements
 2015 – 12 Major Agreements
 2014 – 16 Major Agreements
 2013 – 09 Major Agreements

Source: **2B MONTHLY** reported intercompany agreements

MACRO DRIVERS & INFLUENCERS

- PRECISION AG -

Precision ag provides growers with better knowledge about their crop status and information to use in decision making. Impact on biostimulant adoption has potential to be highly positive, especially on row crops and cereals, as knowledge of abiotic stress leads to increased use. Global company investment in precision ag may further accelerate this trend

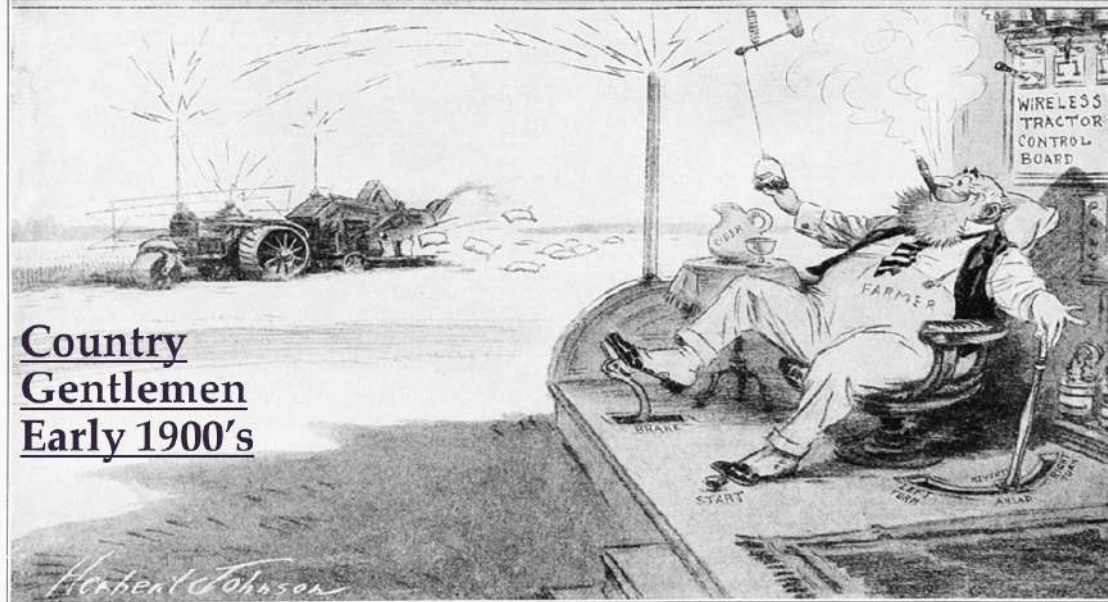
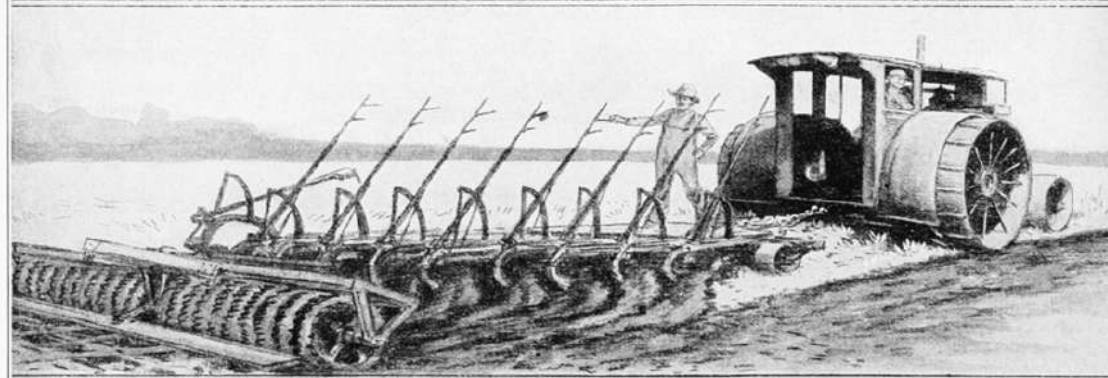


FUTURE TRENDS

- Both Markets have different focus as business model.
- Actual drivers and Trends are shaping a new business model for lot of Biostimulant companies.
- Biostimulant will boost when future efficiency needs for agricultural resources become more and more crucial.
- Biostimulant product's shares as we know them today will change.
 - More specific.
 - New technology & Products.
 - More unique and protected in terms of IP
- Consolidation process and entry of multinationals will reinforce those trends as will bring investment, resources and market access for new product to come.



FUTURE TRENDS



Country
Gentlemen
Early 1900's

YESTERDAY, TO-DAY AND TO-MORROW!

Pictorem

THANK-YOU FOR YOUR SUPPORT



NAIROBI, KENYA
MONDAY 19TH - FRIDAY 23RD MARCH, 2018

BIOCONTROL AFRICA | **19TH - 20TH MARCH, 2018** | Organized by: **NEWAC INTERNATIONAL** in conjunction with **IEMA**

The 18th NEWAC INTERNATIONAL CONFERENCE & EXHIBITION | **21ST - 23RD MARCH, 2018** | **THE WORLD'S LEADING ANNUAL EVENT ON HIGH TECH AGRICULTURE**

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Manel@DunhamTrimmer.com



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- The information in this document has been taken from as many sources as feasible, including alternate reviews and analysis, in order to improve its accuracy. The interpretation of that data is a subjective process and Dunham Trimmer does not accept any liability related to any loss, damage or other accident arising from the use of information presented in this document.
- Dunham Trimmer has developed databases covering the biological industries of Biocontrol, Biopesticides, Biostimulants & Biofertilizers including data on companies, products and market landscape. All databases are available for purchase from Dunham Trimmer.
- For more information about these products please contact Dunham Trimmer LLC at info@DunhamTrimmer.com