



Shaping the Future of Agriculture



**Capital Markets Day
London, December 5, 2018**

Liam Condon
Head of the Crop Science Division





Disclaimer

Cautionary Statements Regarding Forward-Looking Information

This presentation contains forward-looking statements. A forward-looking statement is any statement that does not relate to historical facts and events, but rather reflects Bayer's current beliefs, expectations and assumptions regarding the future. This applies, in particular, to statements in this presentation on revenue growth, including product introductions and peak sales potential, synergies, especially in relation to the acquisition and integration of Monsanto Company, portfolio adjustments, cost reduction, financial targets and earnings, cash flow generation, deleveraging and other similar statements relating to future performance, including with respect to the markets in which Bayer is active.

Although the forward-looking statements contained in this presentation are based upon what Bayer's management believes are reasonable assumptions, they necessarily involve known and unknown risks and uncertainties that could cause actual results and future events to differ materially from those anticipated in such statements. Forward-looking statements are not guarantees of future performance and undue reliance should not be placed on them. Bayer undertakes no obligation to update forward-looking statements if circumstances or management's estimates or opinions should change except as required by applicable securities laws.

For more information on factors that could cause actual results and future events to differ from those anticipated in forward looking statements, please refer to the factors discussed in Bayer's public reports which are available on the Bayer website at <https://www.investor.bayer.com/en/reports/annual-reports/overview/>, including in the Annual Report 2017 under the caption "Report on Future Perspectives and on Opportunities and Risks".



Need for Innovation Driven by Megatrends

Producing More with Less: A Fundamental Driver for our Crop Science Business

*Megatrends
through 2050*

Societal Needs

Growing Population

+2.2bn
people¹



+50%
more food and feed
required to meet
growing demand and
changing diets²

**Secure a sufficient
supply of quality food**

Pressure on Ecosystems



-17%

Harvest losses from
climate change³

-20%



2016 2050
Significant loss in
arable land per capita⁴

**Use natural resources more
efficiently and responsibly**



Science For A Better Life

¹ UNDESA 2017 (United Nations Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision); ² FAO 2017 (FAO Global Perspective Studies)

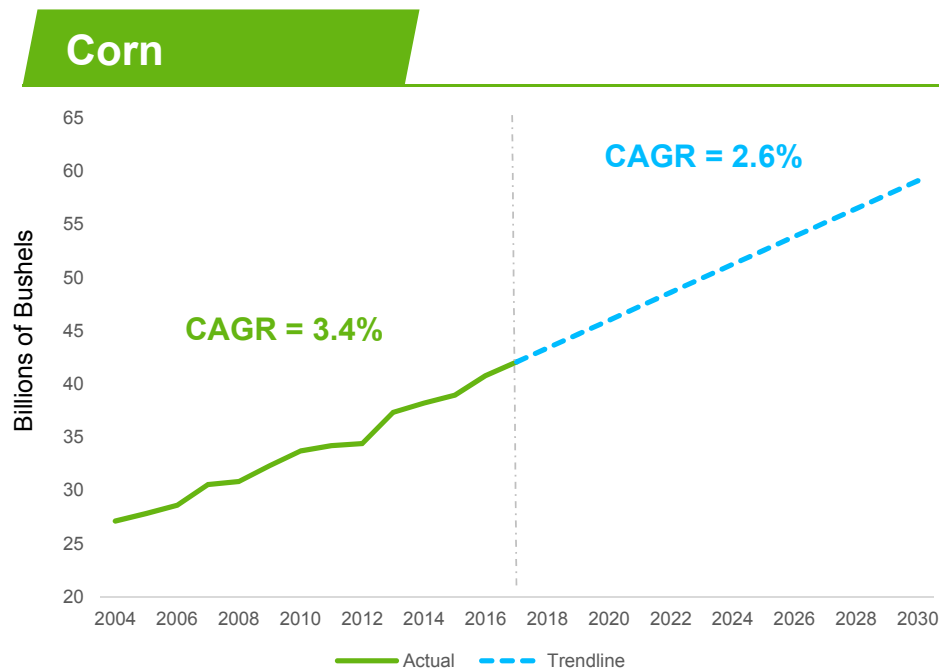
³ Nelson et. al. (2104); (2) FAO 2016 "Climate change and food security"; ⁴ FAOSTAT (accessed Oct 30, 2018) for 1961-2016 data on land, FAO 2012 for 2030 and 2050 data on land, and UNDEDA 2017: World Population Prospects for world population data.



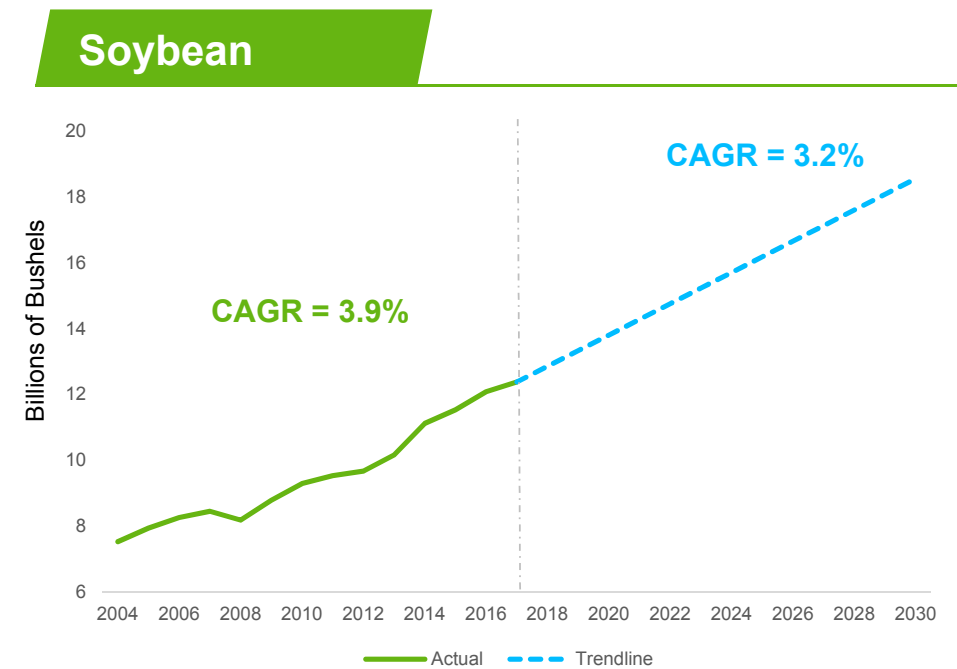
Trendline Demand Requires Substantive Yield Improvement

Global Corn Yield Rate of Gain must More than Double and Soybean Yield Rate of Gain must Triple by 2030

Long-term Demand Trendlines¹



Incremental corn demand of ~1bn bushels expected in 2018/19 would require 13m additional acres of arable land at constant global yields



Incremental soybean demand of ~600m bushels expected in 2018/19 would require ~14m additional acres of arable land at constant global yields

¹ USDA WASDE September 2018, historical data for actual and trendline, trendline based on avg. growth from 2011-2017



Shaping Agriculture to Benefit Farmers, Consumers and Our Planet

As the Industry Leader Uniquely Positioned to Create Value and Pioneer Tailored Solutions

Our Mission



Deliver
world-class
innovation



Pioneer
the digital
transformation

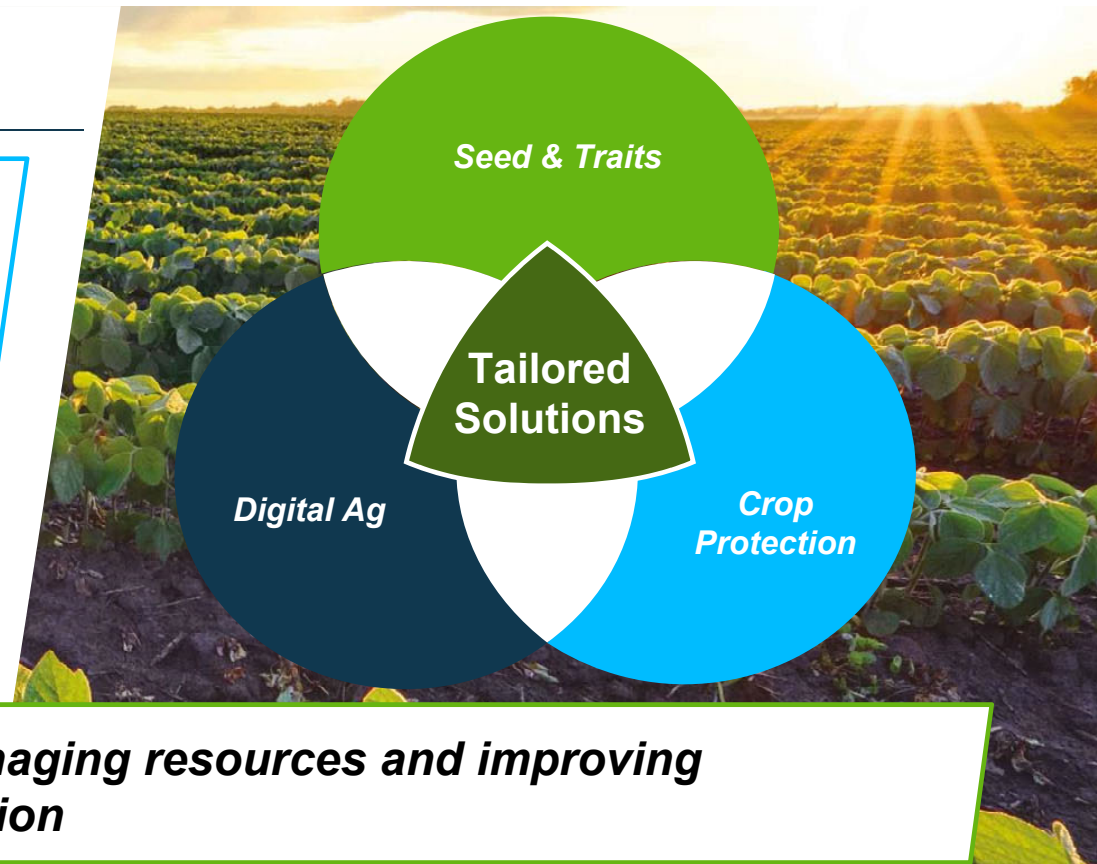


Set new
standards of
sustainability



Drive operational excellence

> Tailored solutions are key to sustainably managing resources and improving productivity to feed a growing global population





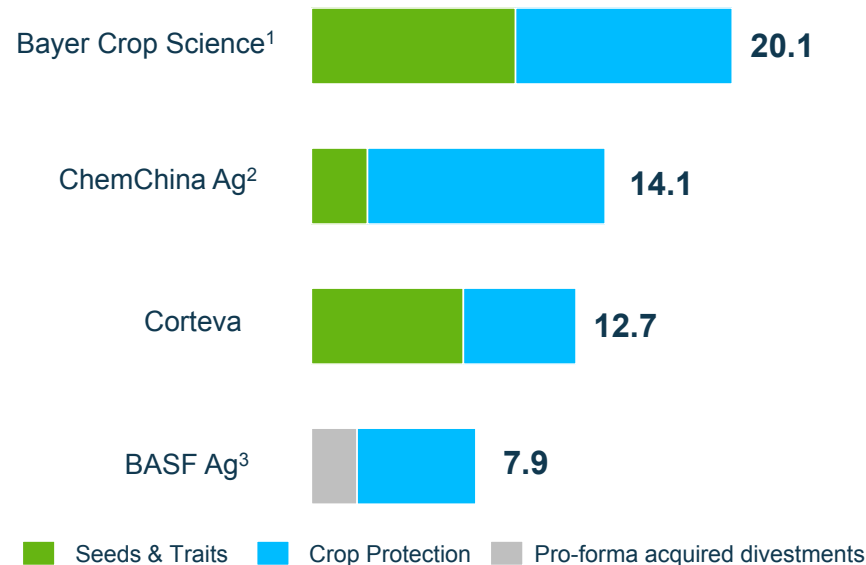
The Established Leader in Crop Science

Grower Endorsement of Excellent Product Portfolio Evidenced by Industry Leading Sales

Broadest Crop Science Product Portfolio



Sales 2017 (€bn)



¹ The unaudited Pro-forma data are presented as if both the acquisition of Monsanto and the associated divestments had taken place as of January 1, 2017. Sales of Monsanto are presented in periods as per the Bayer fiscal year. One-time effects of business operations, the accounting for discontinued operations and the recognition and measurement of sales from certain business transactions have been adjusted in line with our accounting.

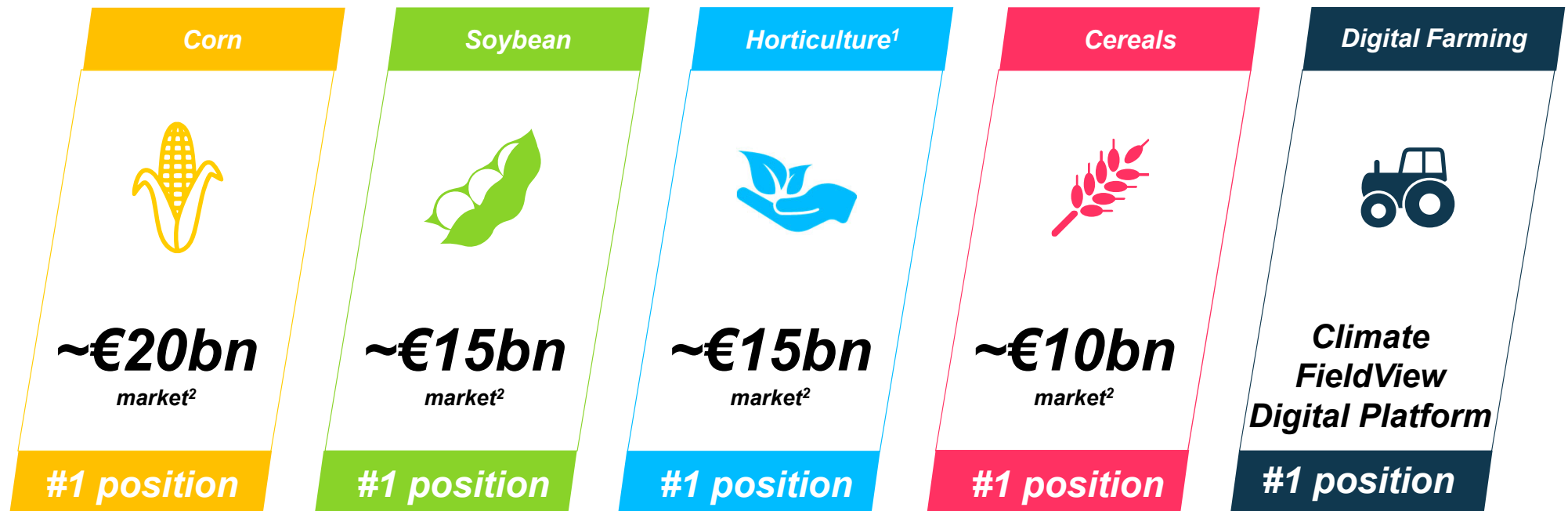
² Excludes non-agro business sales of ADAMA (nutritional supplements, aromatic products, industrial products)

³ Includes BASF Ag Sales 2017 as reported (€ 5.7bn) plus €2.2bn Pro-forma sales in 2017 from Bayer businesses sold to BASF



Leading Position in All Major Categories

Crop Science Market² Currently Valued at ~€90bn // ~3% Long-term CAGR Expected



¹ Includes fruits, vegetables, flowers and nuts

² Includes seeds, traits, crop protection chemistries and environmental science; does not include fertilizer

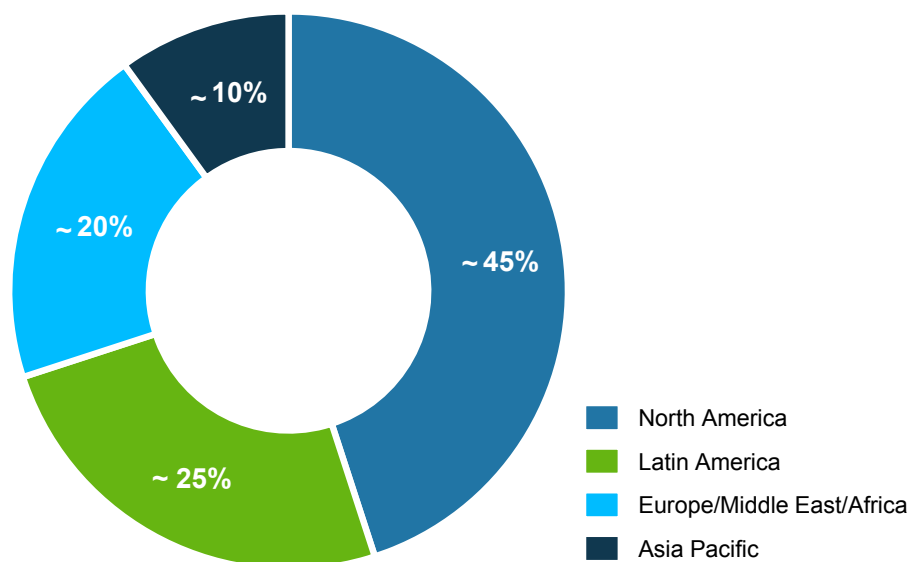
Note: Reflecting BCS' portfolio after divestments. Market sizes rounded to nearest \$5bn. Source: Pro-forma calculations Bayer; Bayer CS market model



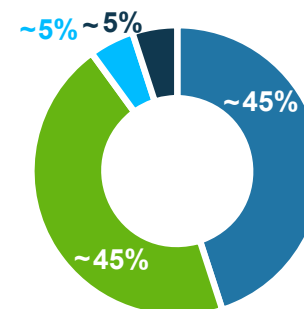
World's Broadest Commercial Footprint in Agriculture

~7,800 Customer-facing Employees with Significant Opportunity to Optimize Portfolio Across Key Regions

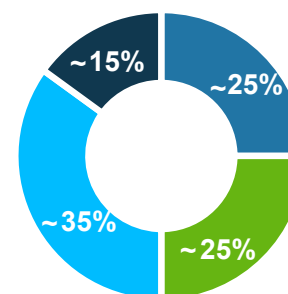
Sales 2017¹: €20.1bn



Seed & Trait Technology Acres 2017/2018²: >400m acres (160m ha)



Crop Protection Sales 2017¹: ~€9.5bn



¹ The unaudited Pro-forma data are presented as if both the acquisition of Monsanto and the associated divestments had taken place as of January 1, 2017. Sales of Monsanto are presented in periods as per the Bayer fiscal year. One-time effects of business operations, the accounting for discontinued operations and the recognition and measurement of sales from certain business transactions have been adjusted in line with our accounting. Rounded to the nearest 5%.

² Internal estimates; represents acres containing at least one Bayer seed or biotech trait technologies



Unmatched Investment in R&D

Shaping the Future of Agriculture with Most Productive Innovation Platform in the Industry

#1 R&D Platform in Crop Science

// ~7,300 R&D employees

// >35 R&D sites

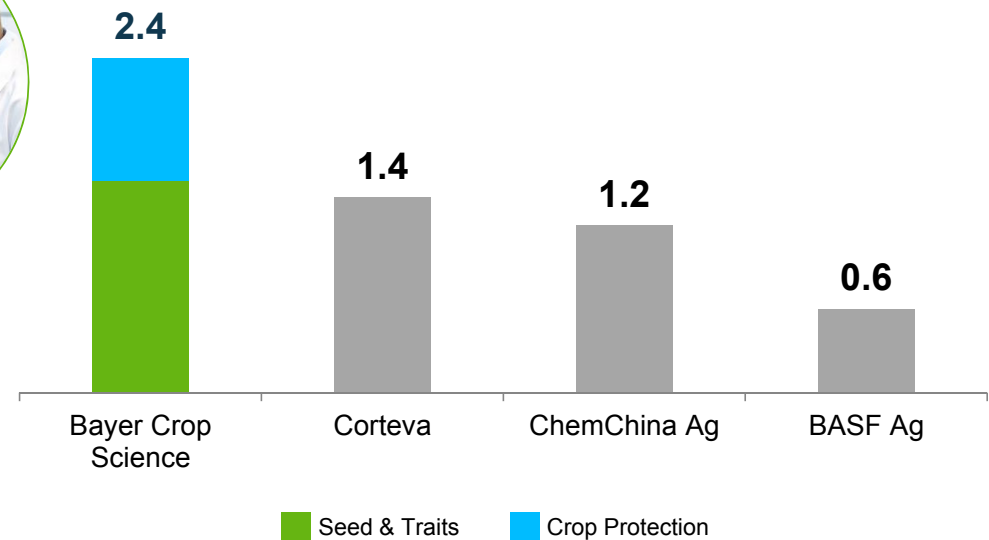
// >175 breeding locations delivering innovation

// Partner of choice

// Technology provider to the industry



2017 Ag R&D Investment (€bn)¹

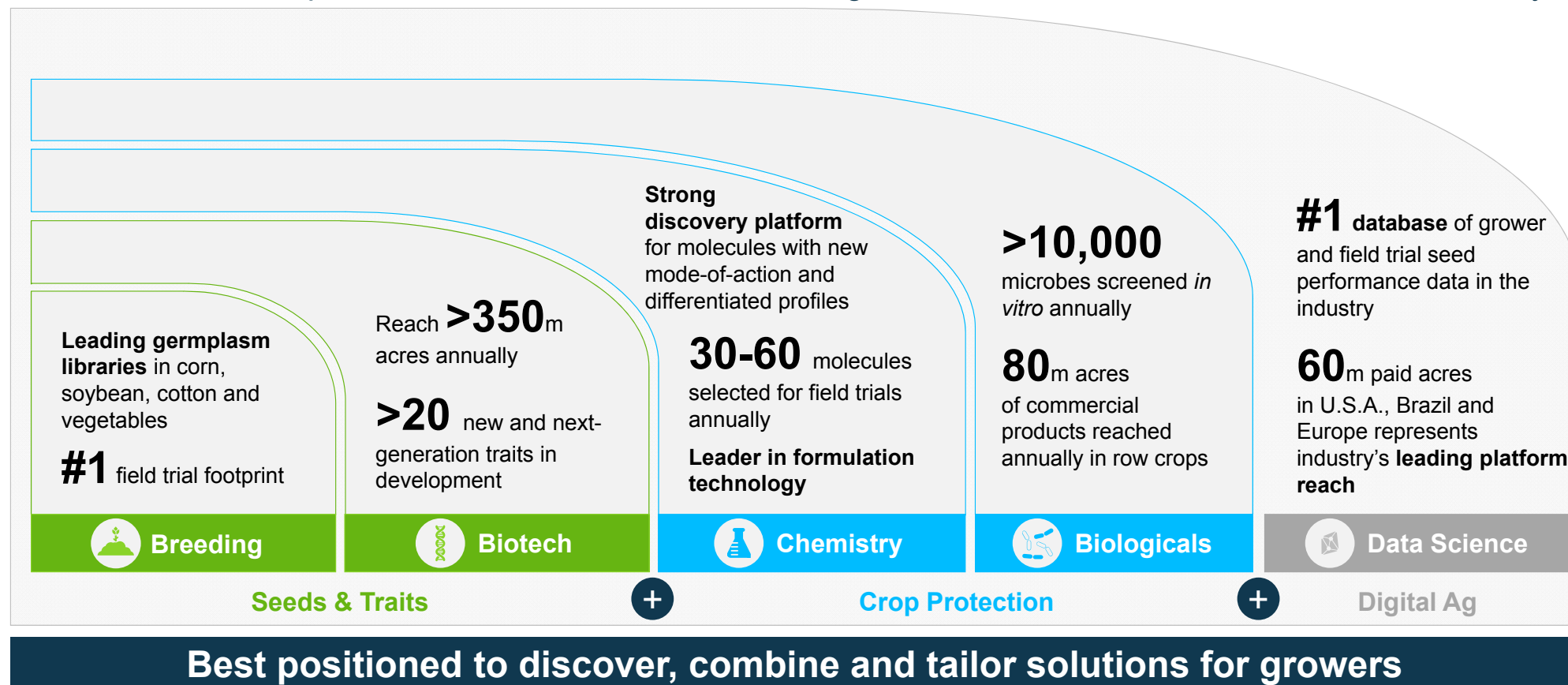


¹ Pro-forma estimates based on company information and internal calculations. | Bayer Pro-forma figures consider Monsanto acquisition and related divestments | Monsanto calendarized to twelve-month-period end ended November 30, 2017



Next Growth Opportunity: Convergence of Leading R&D Platforms

Extensive Germplasm and Biotech Foundation, Combined with Leadership in Chemistry and Biologicals and Data Science Optimization, Serves As Innovation Engine To Accelerate Benefits Across The Industry





Driving the Largest and Most Valuable R&D Pipeline in Ag

Highly Effective in Converting Investment into Meaningful Products for Farmers

Newly Combined Pipeline

Scale

Unmatched in the Industry

- // **>75** projects in seed & traits, crop protection and digital ag pipelines
- // **100's** of new hybrids and varieties commercialized annually

Advancements

Outpacing Competitors

- // **>70** advancements in 2016 and 2017
- // **>50** advancements in 2018

Value

Up to **€30bn** Peak Sales¹

- // Potential to accelerate with combined pipelines
- // Climate tools serve as an enabler to reach peak opportunity

Peak Sales Opportunity by Crop

Corn
~ €11-14bn



Soybean
~ €6-7bn



Cereals & Other
~ €4-5bn



Horticulture
~ €3-4bn



¹ Represents non-risk adjusted estimated peak sales for the combined breeding, biotech, crop protection and environmental science pipelines. Applied FX rate of USD/EUR of 1.15



Expect €17bn in Peak Sales from Recent and Near-Term Launches

	Recent Launches	2019-2020 ¹		2021-2022 ¹
Corn	<ul style="list-style-type: none"> // Annual germplasm upgrades // BioRise 2 microbial seed treatment // Trecepta insect control trait // Delaro Fungicide, U.S.A. 	<ul style="list-style-type: none"> // Annual germplasm upgrades // Nemastrike™ Technology nematicide // Vayego insecticide 		<ul style="list-style-type: none"> // Annual germplasm upgrades // SmartStax PRO corn // 3rd gen weed control management system
Soybean	<ul style="list-style-type: none"> // Annual germplasm upgrades // Roundup Ready 2 Xtend soybean // XtendiMax Herbicide with VaporGrip Technology 	<ul style="list-style-type: none"> // Annual germplasm upgrades // XtendFlex soybean // Soybean Cyst Nematode resistance trait // Nemastrike Technology nematicide // Fox Xpro fungicide, Brazil 		<ul style="list-style-type: none"> // Annual germplasm upgrades // Intacta 2 Xtend trait // Indiflin fungicide
Horticulture	<ul style="list-style-type: none"> // Annual germplasm upgrades (vegetables) 	<ul style="list-style-type: none"> // Annual germplasm upgrades(vegetables) // Tiviant fungicide // Vayego insecticide 		<ul style="list-style-type: none"> // Annual germplasm upgrades (vegetables) // Highly concentrated biological fungicide
Cereal and Others	<ul style="list-style-type: none"> // Annual germplasm upgrades // Bollgard II XtendFlex cotton // Bollgard 3 XtendFlex cotton // XtendiMax Herbicide with VaporGrip Technology 	<ul style="list-style-type: none"> // Annual germplasm upgrades // Vayego insecticide (rice, other crops) // TruFlex canola weed management // Nemastrike™ Technology nematicide 		<ul style="list-style-type: none"> // Annual germplasm upgrades // Lygus & Thrips control cotton
Digital Ag	<ul style="list-style-type: none"> // Advance Seed Scripting - corn // Manuel Seed Scripting - corn // Nitrogen Management // Manuel Fertility Scripting for P,K, N,Lime 	<ul style="list-style-type: none"> // Corn Seed Advisor // Expanded FieldView - EA // FieldView - AR, PY, UY // Advanced Seed Scripting - BR // Crop Protection Risk Tool // Crop Protection Outcome-Based Models 	<ul style="list-style-type: none"> // FieldView Machine Compatibility // Irrigation mgmt.- EA // FarmRise features // FieldView – Retail // Fertility Risk Tool 	<ul style="list-style-type: none"> // Outcome-based Models in Seed and Fertility // Crop Disease Diagnosis // FieldView – Fruits & Vegetables // Soybean Seed Advisor

¹ Subject to regulatory approvals. Represents a subset of the pipeline; not representative of the entire €30bn peak sales opportunity.



FieldView Platform Leads the Digital Transformation in Agriculture

Provides Multiple Ways to Create Value for Farmers, the Industry and the Enterprise

Today: Agronomic services

- // Applications that visualize, analyze and recommend
- // Driven by data



\$1,000 subscription + \$300 hardware

- // Data Visualization and Storage
- // Yield Analysis
- // Manual Fertility Scripting
- // Manual Seed Scripting
- // Field Health Imagery

Per-Acre Offerings

Advanced Seed Scripting

Seed Placement Advisor

Today: FieldView platform¹

50+ partners leverage FieldView platform to bring their digital Ag innovations to farmers, and pay for access to platform



Tomorrow: Enterprise benefit

Driving value across our internal operations and businesses by reducing production costs and enabling outcome-based pricing models to drive incremental sales

- // Commercial sales
- // Supply chain
- // Technology
- // Business analytics

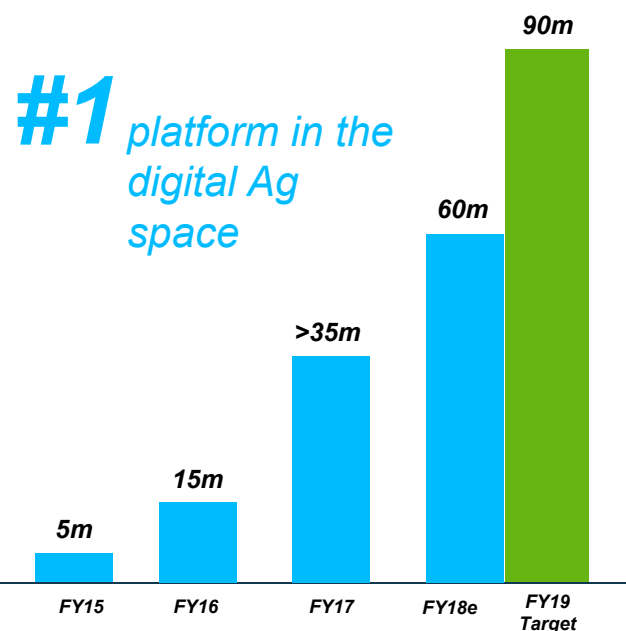
¹ All trademarks are the property of their respective owners.



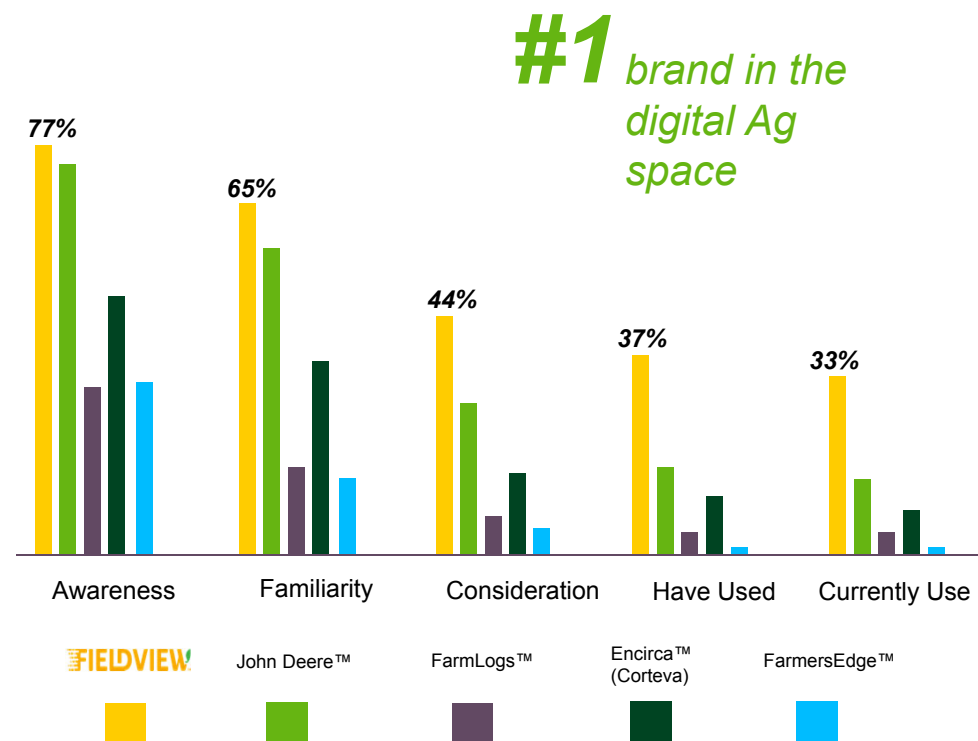
FieldView: The Leading Brand and Platform for Growers

Our Value Creation is Supported by our Performance Trends; Paid Acres >7x Closest Competitor

Global Paid Acres¹



Brand Health² (U.S.)



>35 next-generation projects in the pipeline

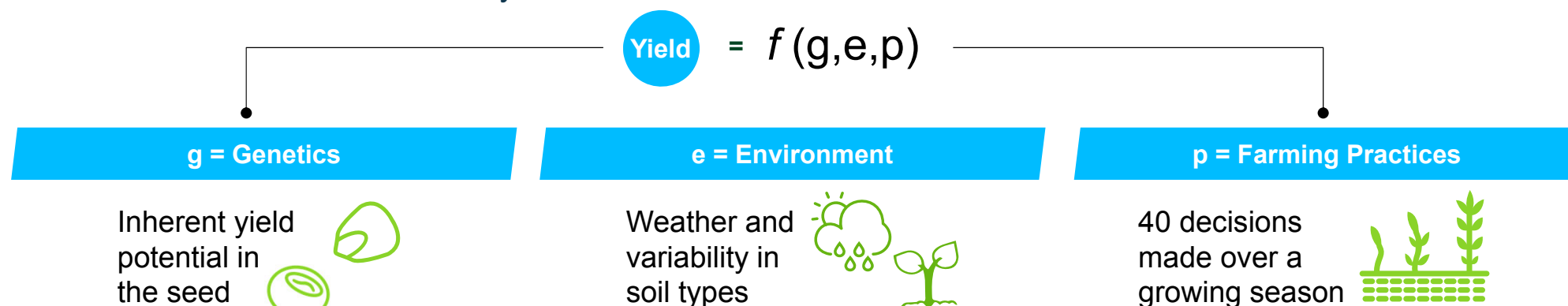
¹ Internal estimates

² 2018 Brand Health Monitor



Opportunity for Digital Transformation and Tailored Solutions

Precise Resource Use and Innovation Required to Address Significant Demand Growth, Field Variability and Increased Pressure On Ecosystems



Opportunity from optimized yield equation

542 bu/ac vs. 175 bu/ac
national average¹



**2017 NCGA Corn
Yield Contest
winner**

138 bu/ac vs. 49 bu/ac
national average¹



**2017 Soybean
Yield Contest
winner**

Our evolution to capture the opportunity



Leading
Products



Product
Combinations



Digitally Informed
Offerings



Tailored
Solutions

¹ USDA crop production summary report



Poised to Solve Grower Challenges and Capture the Opportunity

Leadership in Digital Tools and Innovation Accelerates the Transformation

Significant opportunities ahead



Digitally informed offerings

Data science drives more informed decisions for growers and enables outcome-based offerings; 75% of U.S.A. farmers more likely to purchase a product with outcome-based pricing

FieldView Fungicide Pilot Program

// **~8** bu/acre¹ more yield when DEKALB® hybrids used with a fungicide¹

// **15-20%** of U.S.A. corn growers use a fungicide²

// **SOLUTION:** Offer outcome-based pricing at defined bu/ac threshold using Climate FieldView; rebate fungicide and application if yield gain is not achieved



Tailored solutions

Tailored solutions create new value for farmers beyond the sum of the products, benefit consumers and increase environmental sustainability

Short-Stature Corn Production System (Phase 2)

Benefits

// Increases precision of crop input applications through extended in-season crop access due to shorter height

// Reduced crop loss from lodging and greensnap due to improved plant stability

// Increased environmental sustainability from optimized use of fertilizer, inputs, land and water



¹ Internal R&D trials

² USDA NASS 2016/2017 report, figure 2 and internal estimates



Base Case Targets at Least 30% EBITDA Margin by 2022

Upside Potential in Case of Commodity Cycle Recovery

	2018e ^{1, 2}	Indicative Guidance 2019	Target 2022
Sales/Sales growth	~€19.3bn	~4%	CAGR >4%
EBITDA/EBITDA margin	€4.5bn (~23%)	~25%	>30%

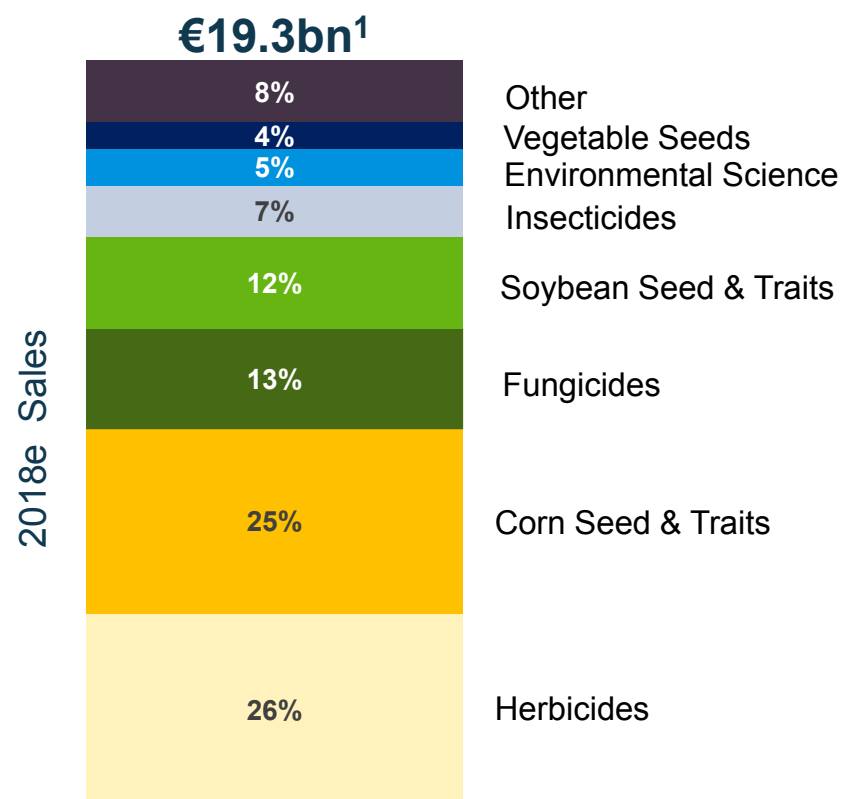
¹ The unaudited Pro-forma data are presented as if both the acquisition of Monsanto and the associated divestments had taken place as of January 1, 2018. Sales of Monsanto are presented in periods as per the Bayer fiscal year. One-time effects of business operations, the accounting for discontinued operations and the recognition and measurement of sales from certain business transactions have been adjusted in line with our accounting. Due to this simplified procedure, they explicitly do not reflect sales according to IFRS or IDW RH HFA 1.004, meaning they have not been audited.

² The currency and portfolio adjusted growth rate as compared to the Pro-forma 2017 sales of ~€20.1bn, (excluding transitional service agreement sales) is 3.4%; 2022 targets at constant currencies, not including portfolio measures. EBITDA / EBITDA margin based on EBITDA before special items



Target Greater than 4% Sales CAGR from 2018 to 2022

Leadership and Innovation Translate into Above Market Sales Growth



Key Sales Growth Drivers

- // Deliver annual germplasm refresh across the seeds portfolio to drive price and share gains
- // Continue penetration of Roundup Ready Xtend crop system; transition to XtendFlex with expected U.S.A. launch in 2020²
- // Continue penetration of Intacta RR2PRO; transition to Intacta 2 Xtend with expected launch in South America in 2021²
- // Increase crop protection sales on the >400m acre seed & trait footprint; FieldView platform an enabler
- // Maximize sales synergies

¹ The unaudited Pro-forma data are presented as if both the acquisition of Monsanto and the associated divestments had taken place as of January 1, 2018. Sales of Monsanto are presented in periods as per the Bayer fiscal year. One-time effects of business operations, the accounting for discontinued operations and the recognition and measurement of sales from certain business transactions have been adjusted in line with our accounting. Due to this simplified procedure, they explicitly do not reflect sales according to IFRS or IDW RH HFA 1.004, meaning they have not been audited.

² Pending regulatory approvals



Integration on Track and Culture Evolving to Serve our Customers

Leadership in Place and Very Positive Engagement Scores Noted Across Both Legacy Companies

Cultural Integration Priorities

1

Build on similarities

Center our efforts on shared passion for innovation, science and agriculture

2

Bridge complementary approach

Drive work that leverages global scale and respects local needs

3

Actively manage differences

Foster courageous decision-making and thorough execution based on data insights



Achievement-to-Date Highlights

- // **Customer:** Leadership met >2,000 customers in 15 countries
- // **Leadership positions:** Top leadership teams named and operational (300 positions), ~50/50 balance of legacy companies represented
- // **Cultural activation:** All named leaders engaged in driving integrated culture
- // **Exchange:** ~30 leaders based in other legacy company site
- // **Cultural integration:** High engagement scores of ~85% at both legacy companies
- // **Synergies:** Validated ~€1bn synergies
- // **Systems and Processes:** Day One IT fully functional, future integration approach confirmed
- // **Governance:** Bayer policy adoption confirmed across crop science

Focus on customers, business continuity and innovation



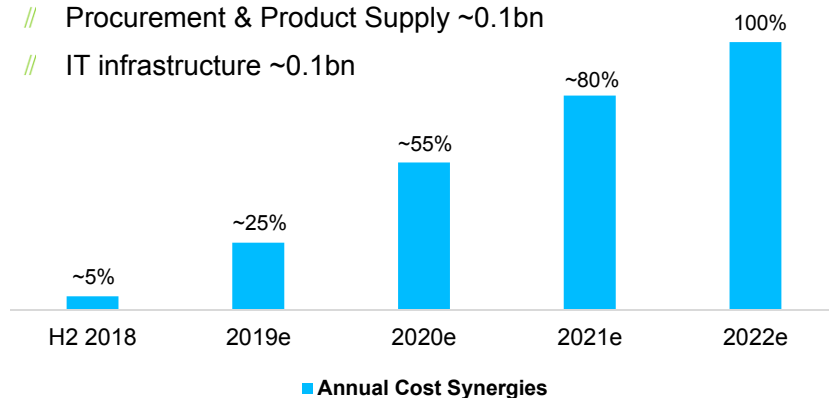
Targeted Synergies of ~€1bn (\$1.2bn) as of 2022

Cost Synergies

EBITDA Target^{1,2}: ~€870m (~\$1bn) as of 2022

// Key Initiatives:

- // Commercial and R&D Operations ~0.3bn
- // Support Functions & Country Integration ~0.3bn
- // Procurement & Product Supply ~0.1bn
- // IT infrastructure ~0.1bn



Sales Synergies

EBITDA Target¹: ~€170m (~\$200m) as of 2022



// **Four countries** to generate **>60%** of the sales synergies

// U.S.A., Brazil, Argentina and Mexico

// **Increase crop protection chemistry sales** in Americas on the **>400m acre seed & trait footprint**; digital ag to serve as an enabler

Expected one-time costs (~€1.3bn)

¹ Net EBITDA impact before special items, net of estimated dissynergies such as termination of selected distribution agreements as well as sales disruptions

² Majority of one time costs to achieve synergies expected to be recorded as special items

Applied FX rate of USD/EUR of 1.15



Sustainability Engagement to Increase with Broader Impact

Focus on Access Programs and Reducing the Ecological Footprint

Our Engagement Highlights

Future Targets

Access Programs

- // Empowering smallholder farmers¹ to reach their full farming potential
- // Tools include education, partnerships and tailored solutions

Empower >100 million smallholder farmers by 2030

- // Enhancing social innovation (e.g. with *Better Life Farming*) and digital transformation with *FarmRaise*



Reduce ecological footprint

Reducing our environmental footprint throughout our operations by:

- // Systematic reduction of CO2 emissions
- // Water-smart agricultural initiatives
- // Maintaining biodiversity
- // Driving innovative agricultural technologies

Advance a carbon-neutral future of agriculture

- // Climate-smart practices (no-tillage, highly productive crops, cover crops, precision agriculture); share knowledge and technologies

Significant reduction of inputs/ha through digital and biotech

- // Climate FieldView for precision application of pesticides / fertilizers
- // Intacta RR2 Pro soybean technology reduces insecticide use by 90%



¹ With farms less than 2 hectares in size and relying mainly on family labor



Committed to Responsibility, Transparency and Dialogue

Living up to our Responsibility to Farmers, Consumers and our Planet

Collaborative

Transparent

Inclusive



- // We set *high ethical standards* for ourselves and our partners.
- // We *serve farms of all sizes* to make our *innovations accessible*.
- // We encourage *diversity in agricultural practices*.
- // We prioritize *inclusion and diversity* in our company.
- // We are committed to *transparency and dialogue*.
- // We are passionate about *collaborating with others* to find better solutions.



Key Takeaways

Shaping agriculture to benefit farmers, consumers and our planet

1 Successfully integrate Monsanto and strengthen leadership position in Crop Science

2 Deliver world class innovation from industry's leading R&D pipeline

3 Pioneer the digital ag transformation with FieldView platform

4 Deliver financial targets through operational excellence, new technologies and synergy benefits

5 Set new standards of sustainability

6 Commit to responsibility, transparency and dialogue



Excited and Engaged Crop Science Executive Leadership Team

Working Together to Deliver Better Solutions for Growers, Consumers and the Planet



Liam Condon
President, Crop Science



Brett Begemann
Commercial Operations



Dirk Backhaus
Product Supply



Bob Reiter
Research & Development



Frank Terhorst
*Crop Strategy & Portfolio
Management*



Jesus Madrazo
*Agricultural Affairs &
Sustainability*



Michael Schulz
Finance



Michael Stern
*Digital Farming / Climate
Corporation*



Martin Dawkins
Post-Merger Integration



Gabriele Oehlschlaeger
*Human Resources
Business Partner*



Lars Benecke
*Law, Patents & Compliance
Business Partner*



James Swanson
*IT Business Partner /
Digital Transformation*



Shaping the Future of Agriculture



**Capital Markets Day
London, December 5, 2018**

Liam Condon
Head of the Crop Science Division

