Shaping the Future of Agriculture

Capital Markets Day
London, December 5, 2018

Liam Condon
Head of the Crop Science Division
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Need for Innovation Driven by Megatrends

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

**Megatrends through 2050**

- **Growing Population**
  - +2.2bn people
  - +50% more food and feed required to meet growing demand and changing diets

- **Pressure on Ecosystems**
  - -17% Harvest losses from climate change
  - -20% Significant loss in arable land per capita

**Societal Needs**

- Secure a sufficient supply of quality food
- Use natural resources more efficiently and responsibly

**Science For A Better Life**

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

Trendline Demand Requires Substantive Yield Improvement

Long-term Demand Trendlines

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

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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
TheEstablishedLeaderinCropScience
GrowerEndorsementofExcellentProductPortfolioEvidencedbyIndustryLeadingSales

<table>
<thead>
<tr>
<th>Broadest Crop Science Product Portfolio</th>
<th>Sales 2017 (€bn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arize</td>
<td>Bayer Crop Science¹</td>
</tr>
<tr>
<td>FOX</td>
<td>ChemChina Ag²</td>
</tr>
<tr>
<td>PROSARÔ</td>
<td>Corteve</td>
</tr>
<tr>
<td>BELT</td>
<td>BASF Ag³</td>
</tr>
</tbody>
</table>

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 (€ 5.1bn) plus €2.2bn Pro-forma sales in 2017 from Bayer businesses sold to BASF
Leading Position in All Major Categories
Crop Science Market\(^2\) Currently Valued at \(~\text{€90bn} \) // \(~3\%\) Long-term CAGR Expected

- **Corn**: \(~\text{€20bn} \) \(^2\) market\(^2\) \#1 position
- **Soybean**: \(~\text{€15bn} \) \(^2\) market\(^2\) \#1 position
- **Horticulture\(^1\)**: \(~\text{€15bn} \) \(^2\) market\(^2\) \#1 position
- **Cereals**: \(~\text{€10bn} \) \(^2\) market\(^2\) \#1 position
- **Digital Farming**: #1 position

\(^1\) 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

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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

Bayer Crop Science 2.4
Corteva 1.4
ChemChina Ag 1.2
BASF Ag 0.6

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 ended November 30, 2017.

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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

- Leading germplasm libraries in corn, soybean, cotton and vegetables
- Reach >350m acres annually
- >20 new and next-generation traits in development

- Strong discovery platform for molecules with new mode-of-action and differentiated profiles
- 30-60 molecules selected for field trials annually
- Leader in formulation technology

- >10,000 microbes screened in vitro annually
- 80m acres of commercial products reached annually in row crops

- 60m paid acres in U.S.A., Brazil and Europe represents industry’s leading platform reach

- #1 database of grower and field trial seed performance data in the industry

Best positioned to discover, combine and tailor solutions for growers

Breeding
Biotech
Chemistry
Biologics
Data Science

Seeds & Traits
Crop Protection
Digital Ag

World-class Innovation
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 Sales\(^1\)
  - Potential to accelerate with combined pipelines
  - Climate tools serve as an enabler to reach peak opportunity

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**Peak Sales Opportunity by Crop**

- **Corn**
  - ~ €11-14bn

- **Soybean**
  - ~ €6-7bn

- **Cereals & Other**
  - ~ €4-5bn

- **Horticulture**
  - ~ €3-4bn

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\(^1\) 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

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

<table>
<thead>
<tr>
<th>Recent Launches</th>
<th>2019-2020¹</th>
<th>2021-2022¹</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Corn</strong></td>
<td>Annual germplasm upgrades</td>
<td>Annual germplasm upgrades</td>
</tr>
<tr>
<td></td>
<td>BioRise 2 microbial seed treatment</td>
<td>Nemastrike™ Technology nematicide</td>
</tr>
<tr>
<td></td>
<td>Trecepta insect control trait</td>
<td>Vayego insecticide</td>
</tr>
<tr>
<td></td>
<td>Delaro Fungicide, U.S.A.</td>
<td></td>
</tr>
<tr>
<td><strong>Soybean</strong></td>
<td>Annual germplasm upgrades</td>
<td>Annual germplasm upgrades</td>
</tr>
<tr>
<td></td>
<td>Roundup Ready 2 Xtend soybean</td>
<td>XtendFlex soybean</td>
</tr>
<tr>
<td></td>
<td>XtendiMax Herbicide with VaporGrip Technology</td>
<td>Soybean Cyst Nematode resistance trait</td>
</tr>
<tr>
<td><strong>Horticulture</strong></td>
<td>Annual germplasm upgrades (vegetables)</td>
<td>Annual germplasm upgrades (vegetables)</td>
</tr>
<tr>
<td></td>
<td>Tivant fungicide</td>
<td>Tivant fungicide</td>
</tr>
<tr>
<td></td>
<td>Vayego insecticide</td>
<td>Vayego insecticide</td>
</tr>
<tr>
<td><strong>Cereal and Others</strong></td>
<td>Annual germplasm upgrades</td>
<td>Annual germplasm upgrades</td>
</tr>
<tr>
<td></td>
<td>Bollgard II XtendFlex cotton</td>
<td>Vayego insecticide (rice, other crops)</td>
</tr>
<tr>
<td></td>
<td>Bollgard 3 XtendFlex cotton</td>
<td>TruFlex canola weed management</td>
</tr>
<tr>
<td></td>
<td>XtendiMax Herbicide with VaporGrip Technology</td>
<td>Nemastrike™ Technology nematicide</td>
</tr>
<tr>
<td><strong>Digital Ag</strong></td>
<td>Advance Seed Scripting - corn</td>
<td>Corn Seed Advisor</td>
</tr>
<tr>
<td></td>
<td>Manuel Seed Scripting - corn</td>
<td>Expanded FieldView - EA</td>
</tr>
<tr>
<td></td>
<td>Nitrogen Management</td>
<td>FieldView - AR, PY, UY</td>
</tr>
<tr>
<td></td>
<td>Manuel Fertility Scripting for P,K, N,Lime</td>
<td>Advanced Seed Scripting - BR</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Crop Protection Risk Tool</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Crop Protection Outcome-Based Models</td>
</tr>
</tbody>
</table>

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

**Today: FieldView platform**

$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

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
- Technology
- Supply chain
- Business analytics

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1. All trademarks are the property of their respective owners.

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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

<table>
<thead>
<tr>
<th>Year</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY15</td>
<td>5m</td>
</tr>
<tr>
<td>FY16</td>
<td>15m</td>
</tr>
<tr>
<td>FY17</td>
<td>&gt;35m</td>
</tr>
<tr>
<td>FY18e</td>
<td>60m</td>
</tr>
<tr>
<td>FY19 Target</td>
<td>90m</td>
</tr>
</tbody>
</table>

#1 platform in the digital Ag space

>35 next-generation projects in the pipeline

Brand Health² (U.S.)

<table>
<thead>
<tr>
<th>Category</th>
<th>FY15</th>
<th>FY16</th>
<th>FY17</th>
<th>FY18e</th>
<th>FY19 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness</td>
<td>77%</td>
<td>65%</td>
<td>44%</td>
<td>37%</td>
<td>33%</td>
</tr>
<tr>
<td>Familiarity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consideration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have Used</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Currently Use</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

#1 brand in the digital Ag space

¹ Internal estimates
² 2018 Brand Health Monitor

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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

\[ \text{Yield} = f(g, e, p) \]

- **g = Genetics**
  - Inherent yield potential in the seed

- **e = Environment**
  - Weather and variability in soil types

- **p = Farming Practices**
  - 40 decisions made over a growing season

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**Opportunity from optimized yield equation**

- **542 bu/ac vs. 175 bu/ac national average\(^1\)**
  - 2017 NCGA Corn Yield Contest winner

- **138 bu/ac vs. 49 bu/ac national average\(^1\)**
  - 2017 Soybean Yield Contest winner

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**Our evolution to capture the opportunity**

- Leading Products
- Product Combinations
- Digitally Informed Offerings
- Tailored Solutions
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/acre\(^1\) more yield when DEKALB\(^\circledR\) hybrids used with a fungicide\(^1\)
- 15-20% of U.S.A. corn growers use a fungicide\(^2\)

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

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**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

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\(^1\) Internal R&D trials
\(^2\) USDA NASS 2016/2017 report, figure 2 and internal estimates

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Base Case Targets at Least 30% EBITDA Margin by 2022
Upside Potential in Case of Commodity Cycle Recovery

<table>
<thead>
<tr>
<th></th>
<th>2018e</th>
<th>Indicative Guidance 2019</th>
<th>Target 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales/Sales growth</td>
<td>~€19.3bn</td>
<td>~4%</td>
<td>CAGR &gt;4%</td>
</tr>
<tr>
<td>EBITDA/EBITDA margin</td>
<td>€4.5bn (~23%)</td>
<td>~25%</td>
<td>&gt;30%</td>
</tr>
</tbody>
</table>

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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

\[ \text{€19.3bn}^1 \]

- 26% Herbicides
- 25% Corn Seed & Traits
- 13% Fungicides
- 12% Soybean Seed & Traits
- 7% Insecticides
- 5% Environmental Science
- 4% Vegetable Seeds
- 8% Other

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 2020\(^2\)
- Continue penetration of Intacta RR2PRO; transition to Intacta 2 Xtend with expected launch in South America in 2021\(^2\)
- Increase crop protection sales on the >400m acre seed & trait footprint; FieldView platform an enabler
- Maximize sales synergies

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\(^2\) Pending regulatory approvals

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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 Target\(^1\): ~€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

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Sustainability Engagement to Increase with Broader Impact
Focus on Access Programs and Reducing the Ecological Footprint

<table>
<thead>
<tr>
<th>Our Engagement Highlights</th>
<th>Future Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empowering smallholder farmers(^1) to reach their full farming potential</td>
<td>Empower &gt;100 million smallholder farmers by 2030</td>
</tr>
<tr>
<td>Tools include education, partnerships and tailored solutions</td>
<td>Enhancing social innovation (e.g. with Better Life Farming) and digital transformation with FarmRaise</td>
</tr>
<tr>
<td>Reducing our environmental footprint throughout our operations by:</td>
<td></td>
</tr>
<tr>
<td>Systematic reduction of CO2 emissions</td>
<td></td>
</tr>
<tr>
<td>Water-smart agricultural initiatives</td>
<td></td>
</tr>
<tr>
<td>Maintaining biodiversity</td>
<td></td>
</tr>
<tr>
<td>Driving innovative agricultural technologies</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) With farms less than 2 hectares in size and relying mainly on family labor

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%
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
Shaping the Future of Agriculture

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Liam Condon
Head of the Crop Science Division