R&D Pipeline Update

The Beginning of

What’s Next

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Capital Markets Day
March 10-11, 2021

Bob Reiter
Head of R&D, Crop Science Division
Cautionary Statements Regarding Forward-Looking Information

This presentation may contain forward-looking statements based on current assumptions and forecasts made by Bayer management.

Various known and unknown risks, uncertainties and other factors could lead to material differences between the actual future results, financial situation, development or performance of the company and the estimates given here. These factors include those discussed in Bayer’s public reports which are available on the Bayer website at http://www.bayer.com/.

The company assumes no liability whatsoever to update these forward-looking statements or to conform them to future events or developments.
R&D Strategic Priorities

Delivering World Class Innovation

1. Pursuing sustainable innovation to shape the future of agriculture

2. Delivering the leading R&D pipeline in scale, productivity and value

3. Leading the development of next-generation biotech traits

4. Optimizing large and diverse germplasm library with advanced breeding technologies

5. Advancing new approaches in small molecule and biologicals

6. Unlocking opportunities for new business models, powered by data science
Unmatched R&D Investment Powers Industry-Leading Portfolio

Shaping the Future of Agriculture with Sector’s Most Productive Innovation Platform

Ag R&D Investment (€bn)³

- **Bayer Crop Science**: 2.0
- **Syngenta + Adama¹**: 1.2
- **Corteva**: 1.0
- **BASF Ag**: 0.8

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¹ Represents the legacy Syngenta results plus Adama. Excludes non-agro business sales of ADAMA (nutritional supplements, aromatic products, industrial products). Syngenta Group formal reporting did not begin until H1 2020.

² Includes permanent and temporary employees

>100 Technology Agreements Fuel Open Innovation Model

From LEAPS to Licensing, Partnerships Power the Ability to Drive Disruptive and Iterative Innovation

Partner of choice, with >100 technology collaborations, customer-sponsored research initiatives, venture capital agreements and crowdsourcing powering our open innovation model

**Sustainable Protein Supply**

**Sustainable Ag Services and Inputs**

**Solutions to Help Farmers Control Crop Threats**

**Breakthrough Biology and Next Generation Genomics**

**Transformational Technology/AI Unlocking New Research and Business Models**
### Breadth and Depth of Five Core R&D Platforms Power Innovation

Convergence of Leading R&D Platforms to Unlock Next Layer of Value Creation in Agriculture

#### BEST-POSITIONED TO DISCOVER, COMBINE AND TAILOR SOLUTIONS FOR GROWERS

<table>
<thead>
<tr>
<th>SEEDS &amp; TRAITS</th>
<th>CROP PROTECTION</th>
<th>DIGITAL AG</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Breeding</strong></td>
<td><strong>Chemistry</strong></td>
<td><strong>#1</strong> database of grower and field trial seed performance data in the industry</td>
</tr>
<tr>
<td><strong>Biotech</strong></td>
<td><strong>Biologials</strong></td>
<td>&gt;69bn data points of product performance under real-world farmer management practices</td>
</tr>
</tbody>
</table>

**SEEDS & TRAITS**

- **Leading germplasm libraries**
  - Advanced breeding and data science technology application

- 1.7P calculations in cloud-based algorithms

- >3,200 unique field testing locations

- >430 deployments annually in corn, soybeans, vegetables

**Breeding**

- Extensive protein libraries and leaders in protein optimization technology
- First to combine RNAi technology with biotech
- >1.5bn datapoints generated by Precision Genomics team to deliver biotech traits and accelerate genetic gain
- >20 new and next-gen. traits in development
- Reach >350m acres annually

**Biotech**

- Strong discovery platform for molecules with new modes-of-action and differentiated profiles
- 2x new small molecule candidates in discovery since 2015
- 30-60 molecules selected for field trials a year
- Expect ~100 new formulations to launch in the next decade

**CROP PROTECTION**

- 270,000 microbes in collection
- >100,000 strains characterized every year with in silico, in vitro and in planta assays
- >1,400 trials in 38 countries in 2020
- ~80m acres of commercial products in row crops annually

**DIGITAL AG**

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

- >69bn data points of product performance under real-world farmer management practices

- >150m subscribed acres across 23 countries
Meaningful Advancement of Most Valuable R&D Pipeline in Ag in 2020

Converting Industry Leading Investment into New Products for Farmers

Value of Up to €30bn in Peak Sales¹

~50% Incremental

1 Represents non-risk adjusted estimated peak sales for the combined breeding, biotech, crop protection and environmental science pipelines, as well as new business models and new value areas.
### Unmatched Innovation Pipeline is Set to Drive Growth

Total Pipeline Peak Sales Potential Up to €30bn\(^2\); ~50% Incremental

<table>
<thead>
<tr>
<th>Peak Sales Potential</th>
<th>Expected Ongoing Refreshment</th>
<th>Select Planned Product Launches</th>
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</thead>
<tbody>
<tr>
<td>Corn S&amp;T ~€10-11bn</td>
<td>150+ New Hybrids Commercialized Annually</td>
<td>2021 – 2024</td>
</tr>
<tr>
<td>Soybean S&amp;T ~€4-5bn</td>
<td>150+ New Varieties Commercialized Annually</td>
<td>SmartStaxXpro VTPro4</td>
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<tr>
<td>Herbicides ~€3bn</td>
<td>35+ New Formulation Launches in the next Decade</td>
<td>Short Stature Corn Hybrids</td>
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<tr>
<td>Fungicides ~€3bn</td>
<td>20+ New Formulation Launches in the next Decade</td>
<td>Soybean Herbicide Trait Stack with Five-Tolerances</td>
</tr>
<tr>
<td>Insecticides ~€2bn</td>
<td>20+ New Formulation Launches in the next Decade</td>
<td>New Non-Selective PPO Herbicide(^1)</td>
</tr>
<tr>
<td>Other, Vegetables, Environmental Science ~€5-6bn</td>
<td>~130 Vegetable Hybrids/Varieties Commercialized Annually</td>
<td>2025 – 2030</td>
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<td></td>
<td>20+ New Formulation Launches in the next Decade</td>
<td>Decis Phoenix</td>
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<td>Novel Mite Solution</td>
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**Note:** Subject to regulatory approvals and pending registrations. Represents a subset of the pipeline. Launches are all approximate.

1. In collaboration with Sumitomo  
2. Company estimate  
3. Products not registered in all jurisdictions

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next-generation
biotech
traits
Scale and Expertise in Biotech Crop Development Lead the Industry
Developing World-Class Biotech Traits and Crops

Trait Development Process (12-15 years)

Phase 0
Gene/Trait Identification
Genomics and High-Throughput Protein Screening to Identify Desired Characteristics

Competitive Advantage
Industry-leading genomics capabilities and germplasm libraries
Best-in-class screening capabilities

Phase 1
Proof of Concept
Gene Optimization and State-of-the-Art Genome Editing Capabilities Drive Product Concept Demonstrations In-Crop

Competitive Advantage
Best-in-class genome editing and gene expression toolkits drive precision in gene to phenotype optimization
Ability to rapidly test many gene combinations to evaluate stacks

Phase 2
Early Development
Large-Scale Transformation, Commercial Candidate Selection, Pre-Regulatory Data Generation

Competitive Advantage
Knowledge of optimal genome locations
Largest global field-testing footprint diversifies geographic data insights

Phase 3
Advanced Development
Trait Integration, Regulatory Data Generation

Competitive Advantage
New traits are introgressed into the most elite germplasm, and stacked with the industry’s leading traits

Phase 4
Pre-Launch
Regulatory Submissions & Approvals, Seed Bulk-Up, System Testing and Pre-Marketing

Competitive Advantage
Unrivaled global regulatory experience
Identification of optimal agronomic systems (trait, germplasm, chemistry) for product deployment & customer recommendations
Next-Gen Soy Traits to Offer Greatest Weed Control Flexibility

Technologies Provide Solutions to Address Farmer Needs, Herbicide Resistance Challenges

Fourth-Gen Phase 3

5 herbicide tolerances
- Glyphosate
- Dicamba
- Glufosinate
- HPPD
- 2,4-D

Control Soybean HT4

2020 Demo Plot in Monmouth, Illinois
(First treatment is dicamba and Enlist @ V3 followed by Liberty and Callisto @ R1)

Fifth-Gen Phase 2

6 herbicide tolerances
- Glyphosate
- Dicamba
- Glufosinate
- HPPD
- 2,4-D
- PPO1

Control Soybean HT5

2020 Demo Plot in Monmouth, Illinois
(3X rate PPO herbicide @ V3 & R1)

1 In collaboration with Sumitomo

Enables continued use of conservation tillage and no-till systems which improve carbon sequestration and soil health
Third-Gen Intacta Further Enhances Insect Control Spectrum

Intacta 2 Xtend launches in 2021; Next-Generation Currently in Phase 3

- Builds on the Intacta franchise technologies by delivering multiple modes-of-action for insect control
- Phase 3
- Acre opportunity focused on Brazil market

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1 Pending regulatory approvals
Always read and follow label instructions. Products not registered in all jurisdictions.
First Biotech Trait to Launch for Piercing and Sucking Insects

NEW: USDA Deregulation of Trait Paves Way for 2021 U.S. Stewarded Ground Breakers Program

- Protein design and optimization resulted in a protein that controls targeted piercing/sucking insect pests through expression in the plant tissues they attack
- Built-in technology will help protect cotton and may help reduce insecticide applications for tarnished plant bugs and thrips species\(^1\), providing more management flexibility

\(^1\) ThryvOn™ Technology has proven protection against tobacco thrips (Frankliniella fusca); Western flower thrips (Frankliniella occidentalis); tarnished plant bug (Lygus hesperus); and the Western Tarnished Plant bug (Lygus lineolaris). Scouting is critical to determine which and how many insecticide applications are recommended when economic thresholds are met.

Glendora, Mississippi, U.S.A.
Planting date May 13, 2020; Picture taken Nov. 4, 2020
Next-Gen Insect Control Traits in Corn Launching Near-Term

Below- and Above-Ground Insect Control Refresh with Broader Spectrum, Better Efficacy

Aug. 9, 2019 Demo Plot Root Dig in Waterloo, Iowa, U.S.

- **ADVANCING TO LAUNCH:** Recent China import approval paves way for planned commercial launch in 2021-2022 for Corn Rootworm 3, i.e. SmartStax PRO and VTPRO4
- Includes novel RNAi MOA introduced through CRW3
- Acre opportunity of >75m

2018-2019 Season at V5-V6 in Sorriso, MT, Brazil

- **NEW:** Recent full cultivation approval in Brazil represents a critical milestone for planned commercial launch in 2025
- First 2 new MOA in Brazil for fall armyworm in more than a decade

Root and leaf protection ensures optimum use of fertilizers and sunlight for maximum yield potential.
Game-Changing Short Stature Corn Shows Improved Standability

High Wind Events in Bayer Field Trials Consistently Demonstrate a Reduction in Severity of Damage

Three Approaches to Short Stature Corn To Provide Market Access Flexibility

Breeding: Phase 3
- Advanced breeding used to introgress naturally occurring short stature characteristic into elite germplasm

Biotechnology: Phase 3
- In collaboration with BASF, uses transgene to shorten internodes; enables applicability across wide-array of germplasm

Genome Editing: Discovery
- Multiple, elegant approaches to generate short-stature corn, creating potential for opportunities in multiple markets

• In this photograph from Iowa in summer 2020, Short Stature Corn plots (surrounded in red) are still standing, compared to wind damaged taller corn that borders it.
advanced
breeding
technologies
Annual Germplasm Upgrade Drives Growth and Attracts Partners

Global Germplasm Libraries and Advanced Breeding Tools Deliver High-Performing Seeds

Corn
- Deployed >200 new hybrids in 2020; offer >1,350 hybrids globally
- >7 bu/acre U.S.A. yield advantage with leading hybrids1 in like-for-like trait package hybrid comparisons

Soybeans
- Deployed >200 new varieties in 2020; offer >850 varieties in the Americas
- Top volume XtendFlex Soybeans have a 4+ bu/ac advantage vs. Enlist E3 in germplasm trials2
- Deployed >10 varieties in 2020; offer >25 varieties in the U.S.
- U.S. lint/acre yield advantage with leading varieties; 2020 was 88 lbs./ac advantage for Deltapine vs. top-planted competitor varieties

Cotton
- Deploy ~130 varieties annually; focus in tomatoes and peppers; sell over 21,000 vegetable hybrids and varieties in 22 crops annually
- Focus on disease resistance and yield with new launches

Vegetables
- Deployed >200 new varieties in 2020; offer >1,350 hybrids globally
- >7 bu/acre U.S.A. yield advantage with leading hybrids1 in like-for-like trait package hybrid comparisons

Protect performance with seed-applied solutions
Provides for annual price mix gains as growers trade up to higher-performing seeds
Digital Ag becomes proof point for performance advantage

1 Bayer estimates – Annual yield advantage calculated each year by comparing 3 leading DEKALB products within each state having a minimum of 100 comparisons to national competitor products containing similar crop protection traits as of February 2021. All comparisons are head-to-head using +- 2RMs and weighted average calculated using 15% moisture. 2 Data as of October 22, 2020. 2020 Bayer Commercial Germplasm Trials (94 locations in 2020 reporting data located in IL, IN, IA, KS, MD, MI, MN, MO, NE, OH, SD, TN, and WI) Bayer Commercial Germplasm Trials = 9 of the top 10 volume forecasted XtendFlex products.

// Bayer Capital Markets Day /// The Beginning of What’s Next /// March 10-11, 2021
Scale and Leading Technology Drives New Seed Development

Optimizing Extensive Germplasm Library to Develop New Capabilities for Better Customer Solutions

8–10 Year Product Development Timeline

Vast Library of Germplasm
Includes hundreds of thousands of unique sets of genetic information. Represents breeding in 120+ locations/25+ countries

Every seed genotyped
Proprietary chipping technology for DNA genotyping preserves seed for subsequent protected culture and field testing

Grow Selections in Protected Culture
7 acre, automated greenhouse in AZ will allow 3 planting cycles a year, speeding time to market

Prescribed Field Experiments
Time savings in the lab enables 2 years of germplasm/trait combination testing in the field

Imaging at scale
Collected >45 million data points through our field imaging capabilities

New Generation of Products
Advanced analytics applied to every decision. Partnership with Climate Corp. to enable next-gen product development

Competitive Advantage
Allows us to precisely create new genetic lines needed every year from a proprietary library

Competitive Advantage
Pipelines for corn & soybean are 4X & 6X larger than 2012 due to genotyping in the lab saving 1 year of testing

Competitive Advantage
Enabling faster development of new products in a protected greenhouse environment

Competitive Advantage
Improving customer recommendations, better match products to specific environments

Competitive Advantage
Data accuracy and analytics throughout the pipeline to enhance decision making at every stage

Competitive Advantage
AI driven, globally connected pipeline is unlocking new potential fueled by data and insights
Precision Breeding: Moving from Selecting the Best with Breeding 3.0 to Designing the Best Seeds for Farmers

Uses Advanced Genetic Models and Selection, Environmental Modeling and Predictive Analytics

- Powered by customer needs and insights, our data scientists generate digital product concepts and requirements.

- Using our vast germplasm library and cutting-edge genomic selection model, AI models – supervised by scientists – design germplasm to meet concepts.

- New breeding and selection methods and our automated greenhouse facilities quadruple the rate of product improvement.

- Prescriptive field testing operations evaluate potential new products across diverse growing environments/farming practices to advance best product concepts for customers.
Nearly 200 Target Identified in Several Technically Challenging Focus Areas

Gene Editing Pipeline Targets Across Crops
Collaboration with Pairwise Included

- Crop productivity - Corn
- Crop productivity - canola
- Disease - Corn
- Disease - Wheat
- Crop productivity - soy
- Crop productivity - wheat
- Disease - Soybean

• Corn crop productivity editing target results in increased kernel rows

• Corn crop productivity editing target results in short stature corn phenotype

Controls

| 16 | 16 |

Edited

| 20 | 24 |
new approaches in crop protection
Small Molecule Candidates in Discovery Phase Double
Driven by Continued Strategic Enhancements to Identify and Optimize Candidates

Drivers
Weed, Insect and Fungal Resistance
Regulatory Pressure on Old Chemistries
Increasing Regulatory Hurdles for New Products
Strong Reliance on a Few Modes of Action

Redefining Our Approach
Supported by Data Science Approaches

Biological Screening
increased automation and data science

Phenotyping
finds new starting points missed with conventional screening

Target-based Screening
direct focus on new Modes of Action

Early Safety Testing
drives optimization toward registrable compounds

>70%
New/unknown MoAs of all running Discovery projects (all Indications).

2x
New Small Molecules Candidates in Discovery since 2015
Well Positioned to Maintain Track Record of Success in Small Molecules

Bayer Has Launched At Least One New Active Ingredient (AI) Per Year Since 2007

**Industry Leading Performance in CP Development**
- Across all indications, the company has consistently – and significantly – outperformed all other players in Crop Protection
- 15 new AIs launched since 2007; ~10 AI in the current development pipeline

**Early Safety Testing Focuses Efforts on Registrable Compounds**
- Increasing regulatory standards globally make it more challenging – and expensive – to bring CP innovation to market
- However, Bayer expects to maintain high innovation output, increasing the proportion of novel MoA in the second half of the decade

**Industry Leading In-House Innovation Engine Supplemented by Strategic Technology Development Agreements**
- Development capability and capacity to enable key innovation from other ag companies to addresses critical key grower needs not covered by in-house innovation; doing consistently, with 6 co-developments from 2010-2025
- Highly trusted partner to smaller ag players, enabling them to bring their innovative solutions to a broader community of growers.

**A Promising Project Pipeline: Active Ingredients in Development Phase of Pipeline (Phases 2-4)**

**Herbicides**
- Novel PPO Herbicide\(^1\) Phase 3
- New Herbicide MOA Phase 3

**Fungicides**
- iblon Advancing to Launch
- Fox Supra\(^1\) Phase 4
- Xivana Phase 4
- New Fungicide Phase 2

**Insecticides**
- Plenexos Phase 3
- Novel Mite Solution Phase 3

\(^1\) In collaboration with Sumitomo
Multi-Dimensional Approach to Small Molecule Lifecycle Management

NEW!: Example: Fluopyram Expands to Eight Markets Across Two Application Methods Driving 8x Sales in Eight Years; Potential to Double in Next Decade

Enablers of Unique Life Cycle Management in Crop Protection

Active Ingredient Stewardship

- Sustainable and consistent resistance management
- Responsible maximum soil loading guidelines

Grower Convenience

- Differentiated formulations for the application methods
- Ready mixture solutions for built-in resistance management and broader spectrum of activity
- Compatibility for tank mix and rotation in the program of treatment, especially with biologicals
NEW: First ketoenol insecticide expected to offer both foliar and soil uses

Plenexos will enhance ketoenol insecticides by offering:

- High plant mobility, which ensures high efficacy against key sucking pests (aphids, white flies) at low dose rates for foliar and soil uses
- Will feature a broad crop scope, as the ketoenol Spidoxamat is suitable for application in arable and horticulture crops (soybeans, cotton, fruits and vegetables)
- Regulatory submissions in key markets planned in 2022, approvals expected starting in 2024
- Targeted markets: LATAM, NA, APAC and TAMECIS

Developed under the guidelines of Bayer’s new Sustainability Development Policy, to meet regulatory requirements of today and tomorrow.

Increases productivity per acre through improved insect control

Always read and follow label instructions. Products not registered in all jurisdictions. 1 TAMECIS stands for Turkey, Africa, Middle East, Commonwealth of Independent States 2 Commercialization is dependent on multiple factors, including successful conclusion of the regulatory process. The information presented herein is provided for educational purposes only and is not and shall not be construed as an offer to sell, or a recommendation to use, any unregistered pesticide for any purpose whatsoever. It is a violation of federal law to promote or offer to sell an unregistered pesticide.
New Herbicide Molecule Unlocks Greater Flexibility
First New Mode of Action for Post Emergence Weed Control in 30 Years Advances to Phase 3

Potential to build on #1 position in global herbicides\(^1\)

- **NEW**: Project advances to Phase 3, following Phase 2 advancement last year
- Allows use in various market segments, beyond traditional nonselective use
- Opens new opportunities for herbicide tolerance trait systems in major crops; discovery program launched

\(^1\) Internal estimates
Fox Supra Fungicide Upgrades Fox Franchise in Brazil

New technology to control Asian Soybean Rust; >€500m Peak Sales Potential Opportunity

- Long-lasting solution to offer unrivaled control of Asian Soybean Rust, the most difficult to control and commercially most relevant disease for soybean growers in Brazil
- Indiflin®, a new technology which is exceptionally strong in Asian Rust control, is an innovative AI that will be the new technological backbone of the Fox family
- Fox Supra combines the next-generation technology Indiflin®, with Prothioconazole, another leading soy fungicide with a different mode of action, both helping to reduce the development of resistance and to broaden the spectrum of efficacy to other relevant diseases
- The outstanding and long-lasting disease control provided by Fox Supra will enable growers to increase yield

Builds on #1 position in soybean fungicides¹

¹ Internal estimates ² In collaboration with Sumitomo.
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Exploring New Product Concepts Drives Future Growth for Biologics

Open Innovation approach broadens product offerings with exceptional product development and support

4-6 Year Product Development Timeline

Partner of choice for developing biological products including new concepts

**Discovery**
- Vast library of diverse microbes for new generation of microbials and biochemicals

**Research Optimization**
- Core competencies in fermentation and formulation optimization of microbial products for agriculture

**Field Development**
- World wide network of field testing capabilities for early screening and development of spray programs

**Grower Support**
- Dedicated resources to understand compatibility, rainfastness and stability of biologicals in jug and on seed

**Industry leading portfolio**
- Sustaining today’s leading lineup and pioneering next generation of biologicals

- **Competitive Advantage**
  - In depth understanding of genomes and modes of action results in novel products

- **Competitive Advantage**
  - Market leading end use products with ease of handling for customer and good shelf life for distribution

- **Competitive Advantage**
  - Understanding of geographic product range with precise guidance on practical use

- **Competitive Advantage**
  - Exceptional customer support with market leading biological products

- **Competitive Advantage**
  - Ability to address untapped markets and work within challenging regulatory constraints worldwide
Serenade®: Delivering Biologic Growth in Expanding Markets

Accelerated growth in emerging soil and expanding foliar bacterial markets across fruit & vegetable

NEW – Serenade Soil Activ propels growth of Serenade brands >€150M peak net sales in next 10 years

Serenade “lighthouse” brand and unique Bacillus amyloliquefaciens strain QST 713 delivers sustainable solutions in emerging soil and expanding bacterial disease markets via Tailored Solutions

- Serenade ASO brand offers unique MOA components to control foliar bacterial and fungal diseases, while reducing resistance risk and reducing residues
- Serenade Soil Activ provides farmers handling efficiency with low use rates and higher concentration of spores for fast root colonization, generating increased marketable yields with improved quality and nutrient density
- Serenade Soil Activ launching in the U.S. and Australia in 2021, in Turkey in 2023 and broader global uses to follow
- Targeted markets: NA, EMEA, APAC and LATAM

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powered by
data
science
Data is Digital Currency to Build a Global Integrated Platform

Continuous Circle of Value Creation from Richer Data Sets, Leading to Smarter Digital Tools

- Gather and Organize Data
- Diagnose, recommend and prescribe
- Compare and Benchmark
- Visualize and Tabulate

Digital R&D

- Drive customer satisfaction and loyalty, attract more data
- Develop better seed and chemistry products
- Align R&D Testing to Reflect Farmer Practices
- Digitize the Pipeline
- Data Driven Algorithms for Improved Discovery and Product Development
- Advancement and Deployment of new germplasm, traits, and molecules

Transformative Technologies
Digital Insights Unlock Opportunity to Farm in New & Different Ways
Quantitative Comparisons and Analysis Can Further Optimize Performance, Improve Ag Practices

**EXAMPLE 1:** Seed Advisor Models Improve Productivity Per Acre With Better Seed Placement Recommendations

- Models powered by >6.9m data points from >8,600 hybrids and >70,000 fields
- 2017-2020 testing demonstrates 6 bu/ac yield lift using recommendations
- Product enhancements using FieldView data improve placement accuracy

**EXAMPLE 2:** Showing Growers the Value of Fungicide Applications Through Their Own Data

- Delaro Performance Showcase highlighted benefits of timely fungicide application with an untreated strip between two Delaro fungicide treated strips
- Planting and Delaro application data captured in FieldView
- Bayer data demonstrate that 74% of the time, farmers see a positive response from fungicide application
Key Takeaways
Delivering World Class Innovation

1. Pursuing sustainable innovation to shape the future of agriculture
2. Delivering the leading R&D pipeline in scale, productivity and value
3. Leading the development of next-generation biotech traits
4. Optimizing large and diverse germplasm library with advanced breeding technologies
5. Advancing new approaches in small molecules and biologicals
6. Unlocking opportunities for new business models, powered by data science
March 2021 Pipeline

Strategic Business Entity R&D Pipeline
### Corn R&D Pipeline – Peak Sales Potential: €10-11bn

<table>
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<th>R&amp;D Target</th>
<th>Technology</th>
<th>Phase*</th>
<th>Enhancement**</th>
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<tr>
<td><strong>YIELD &amp; ABIOTIC STRESS</strong></td>
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<tr>
<td>Annual germplasm upgrades</td>
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<td>2</td>
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<tr>
<td>Short Stature Corn</td>
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<td>Short Stature Corn</td>
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<td>Seed Placement</td>
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<td>North America</td>
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<td>Seed Density</td>
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<td><strong>PEST MANAGEMENT</strong></td>
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<td>Chewing Pests</td>
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<td>Above Ground (Lepidoptera)</td>
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<td>4th generation Lepidoptera protection</td>
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<td>5th generation Lepidoptera protection</td>
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<td>Below Ground (Coleoptera)</td>
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<td>Corn Rootworm 3 (i.e. SmartStaxPRO and VTPROX)</td>
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<td>4th generation Coleoptera protection</td>
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<td><strong>DISEASE MANAGEMENT</strong></td>
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<td>Plant Health Systems</td>
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<td>Corn Disease Shield - Annual upgrades</td>
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<td>Digital Disease Management</td>
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<td><strong>WEED MANAGEMENT</strong></td>
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<td>Herbicide tolerance</td>
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<tr>
<td>4th generation weed management system</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5th generation weed management system</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RHS2 = Second Generation Roundup Hybridization System 1 In collaboration with BASF 2 Ongoing upgrades to both commercialized and next-generation capabilities

---

**R&D Phases:**
1 – Research, 2 – Early Development, 3 – Late Development, 4 – Registrations Filed

**Product enhancement:** (Life Cycle Management activities)
Dev. – Under development; Subm. – Submitted for Registration

- **BR**: Breeding – incl. native traits and molecular breeding
- **PB**: Plant Biotech – biotechnology traits
- **Dg**: Digital – models and algorithms that enable digital agricultural tools

Progress achieved Phases 1 through 4
Status indication for Life Cycle Management Items
Strategic collaborations
Represents annual advancements and upgrades
Pipeline status highlighting significant development, progress or advancement in R&D Pipeline (pink) and Key Life Cycle Management (blue) work.
# Soybean R&D Pipeline – Peak Sales Potential: €4-5bn

<table>
<thead>
<tr>
<th>R&amp;D Target</th>
<th>Technology</th>
<th>Phase*</th>
<th>Enhancement**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>YIELD &amp; ABIOTIC STRESS</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Annual germplasm upgrades</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td>High Yielding Soy*</td>
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<td>✔️</td>
<td>✔️</td>
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<tr>
<td>Seed Placement</td>
<td>North America</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td><strong>PEST MANAGEMENT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insect Protection</td>
<td></td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>2nd generation insect protection</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>3rd generation insect protection</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Nematodes</td>
<td></td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Plant health systems</td>
<td></td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>2nd generation Soy Cyst Nematode resistance</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td><strong>DISEASE MANAGEMENT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soy Native Resistance – Annual Upgrades</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td>Digital Disease Management</td>
<td>North America</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td><strong>WEED MANAGEMENT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Herbicide tolerance</td>
<td></td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>4th generation weed management system</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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<tr>
<td>5th generation weed management system</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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* R&D Phases:
  1 – Research, 2 – Early Development, 3 – Late Development, 4 – Registrations Filed

**Product enhancement:** (Life Cycle Management activities)
Dev. – Under development; Subm. – Submitted for Registration

- **B** Breeding – incl. native traits and molecular breeding
- **PBt** Plant Biotech – biotechnology traits
- **Dig** Digital – models and algorithms that enable digital agricultural tools

1 In collaboration with BASF

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**Progress achieved Phases 1 through 4**
- Status indication for Life Cycle Management Items
- Strategic collaborations
- Represents annual advancements and upgrades
- Pipeline status highlighting significant development, progress or advancement in R&D Pipeline (pink) and Key Life Cycle Management (blue) work.
**Other R&D Pipeline – Peak Sales Potential: ~€5-6bn**

### Cereals
- **YIELD & ABIOTIC STRESS**
  - Annual germplasm upgrades
  - Disease package annual upgrade
  - Digital disease mgmt (EMEA)

### OSR
- **YIELD & ABIOTIC STRESS**
  - Annual germplasm upgrades (including podshatter)
- **DISEASE MANAGEMENT**
  - Dicamba-Tolerant Canola
- **WEED MANAGEMENT**
  - Digital disease mgmt (NA)

### Sugarbeets
- **DISEASE MANAGEMENT**
  - Digital disease mgmt system

### Cotton
- **YIELD & ABIOTIC STRESS**
  - Annual germplasm upgrades
  - 4th Generation Herbicide Tolerance
  - 4th Generation Bollgard
  - ThryvOn Technology
  - 4th Generation Bollgard
- **PEST MANAGEMENT**
  - Chewing Pests
  - Sucking Pests
- **WEED MANAGEMENT**
  - Dicamba-Tolerant Canola
- **YIELD & ABIOTIC STRESS**
  - Annual germplasm upgrades
  - Annual hybrid production

### Rice
- **YIELD & ABIOTIC STRESS**
  - Annual germplasm upgrades
  - Annual hybrid production
- **DISEASE MANAGEMENT**
  - New Fungicidal Seed Treatment
  - Redigo FS 25
- **WEED MANAGEMENT**
  - 2nd gen weed management system
- **SEED GROWTH**
  - Early Pipeline
  - New Biological

---

**R&D Phases**
- 1 – Research, 2 – Early Development, 3 – Late Development, 4 – Registrations Filed

**Product enhancement**
- (Life Cycle Management activities)
  - Dev. – Under development
  - Subm. – Submitted for Registration

---

*In collaboration with KWS*
Herbicides R&D Pipeline – Peak Sales Potential: ~€3bn

<table>
<thead>
<tr>
<th>R&amp;D Target</th>
<th>Crop</th>
<th>Phase*</th>
<th>Enhancement**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Corn</td>
<td>Soy</td>
<td>Other</td>
</tr>
<tr>
<td>New A1 Development</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>// Novel PPO Herbicide^1</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>// New Herbicide MOA</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>// New Herbicide MOA</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>// New Herbicide MOA</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>LCM Non-Selective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>// Improved Dicamba formulations</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>// Improved Dicamba &amp; Glyphosate Premix</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>// Alion LCM</td>
<td>✔</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>LCM Selective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>// Balance Flexx LCM</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>// Merlin Flexx / Adengo LCM</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>// New Soybean selective herbicide 3-way mixture</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>// New Soybean selective herbicide 2-way mixture</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>// Warrant LCM</td>
<td>✔</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>// Mateno Complete</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>// Pyrasulfotole LCM</td>
<td>✔</td>
<td></td>
<td></td>
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<tr>
<td>// Council Star</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>// Incelo</td>
<td>✔</td>
<td></td>
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</tr>
<tr>
<td>// Betanal LCM</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>// Herbicide Formulation for UAV</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| R&D Phases:                             |          |        |      | |
| 1 – Research, 2 – Early Development, 3 – Late Development, 4 – Registrations Filed |

**Product enhancement: (Life Cycle Management activities)
Dev. – Under development; Subm. – Submitted for Registration

<table>
<thead>
<tr>
<th>*R&amp;D Phases:</th>
<th>Corn</th>
<th>Soy</th>
<th>Other</th>
<th>F/V</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – Research, 2 – Early Development, 3 – Late Development, 4 – Registrations Filed</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Product enhancement: (Life Cycle Management activities)
Dev. – Under development; Subm. – Submitted for Registration

1 In collaboration with Sumitomo

Progress achieved Phases 1 through 4
Status indication for Life Cycle Management Items
Strategic collaborations
Represents annual advancements and upgrades
Pipeline status highlighting significant development, progress or advancement in R&D Pipeline (pink) and Key Life Cycle Management (blue) work.
Insecticides R&D Pipeline – Peak Sales Potential: ~€2bn

<table>
<thead>
<tr>
<th>R&amp;D Target</th>
<th>Technology</th>
<th>Phase*</th>
<th>Enhancement**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chewing Pests</td>
<td>Corn, Soy, Other, F/V</td>
<td>1, 2, 3, 4</td>
<td>Dev., Subm.</td>
</tr>
<tr>
<td>Belt Smart</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>Sucking Pests</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rice Planthopper Insecticide</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Biological Insecticide</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Plenexos</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Novel Mite Solution</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Chewing &amp; Sucking Pests</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Decis Phoenix</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

**R&D Phases:**
1 – Research, 2 – Early Development, 3 – Late Development, 4 – Registrations Filed

**Product enhancement:** (Life Cycle Management activities)
Dev. – Under development; Subm. – Submitted for Registration

<table>
<thead>
<tr>
<th>Corn</th>
<th>Soy</th>
<th>Other</th>
<th>F/V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Com: Corn
Soy: Soybeans
Other: Crops including cereals, oilseed rape, sugarbeets, cotton or rice
F/V: Fruits and vegetables

Progress achieved Phases 1 through 4
Status indication for Life Cycle Management Items
Strategic collaborations
Represents annual advancements and upgrades
Pipeline status highlighting significant development, progress or advancement in R&D Pipeline (pink) and Key Life Cycle Management (blue) work.
Fungicides R&D Pipeline – Peak Sales Potential: ~€3bn

<table>
<thead>
<tr>
<th>R&amp;D Target</th>
<th>Technology</th>
<th>Phase*</th>
<th>Enhancement**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delaro Complete</td>
<td>Corn, Soy</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Minuet / Serenade Soil Activ</td>
<td>Corn, Soy</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Early Pipeline</td>
<td></td>
<td>3</td>
<td>Dev.</td>
</tr>
<tr>
<td>New Biological Fungicide</td>
<td></td>
<td>4</td>
<td>Subm.</td>
</tr>
<tr>
<td>New Fungicide</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian Soybean Rust</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fox Supra (Indiflin®)</td>
<td>Corn, Soy</td>
<td></td>
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</tr>
<tr>
<td>New Fungicide</td>
<td></td>
<td></td>
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<tr>
<td>New AI Development</td>
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<tr>
<td>Iblon</td>
<td>Corn, Soy</td>
<td></td>
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<tr>
<td>Xivana</td>
<td>Corn, Soy</td>
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<tr>
<td>New Biological Fungicide</td>
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<td>New AI Development</td>
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<tr>
<td>Cayunis</td>
<td>Corn, Soy</td>
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<tr>
<td>Delaro forte</td>
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<tr>
<td>Prosaro Pro</td>
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</tr>
<tr>
<td>Super Nativo</td>
<td>Corn, Soy</td>
<td></td>
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</tr>
</tbody>
</table>

**R&D Phases:**
1 – Research, 2 – Early Development, 3 – Late Development, 4 – Registrations Filed

**Product enhancement:** (Life Cycle Management activities)
Dev. – Under development; Subm. – Submitted for Registration

<table>
<thead>
<tr>
<th>Corn</th>
<th>Soy</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>F/V</td>
</tr>
<tr>
<td>Moy</td>
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<tr>
<td>Minuet / Serenade Soil Activ</td>
<td>Corn, Soy</td>
<td>2</td>
<td></td>
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<tr>
<td>Early Pipeline</td>
<td></td>
<td>3</td>
<td>Dev.</td>
</tr>
<tr>
<td>New Biological Fungicide</td>
<td></td>
<td>4</td>
<td>Subm.</td>
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**Enhancement**
- Dev. – Under development
- Subm. – Submitted for Registration

*Product enhancement: (Life Cycle Management activities)
- Corn: Corn
- Soy: Soybeans
- Other: Crops including cereals, oilseed rape, sugarbeets, cotton or rice
- F/V: Fruits and vegetables

Progress achieved Phases 1 through 4
Status indication for Life Cycle Management Items
Strategic collaborations
Pipeline status highlighting significant development, progress or advancement in R&D Pipeline (pink) and Key Life Cycle Management (blue) work.