



Bayer Driving Agricultural Innovation and Sustainability with Industry-Leading Pipeline and Investment

- New herbicide molecule in early development announced; first new post-emergence mode of action for broad acre weed control in 30 years
- Bayer unveils a third pathway to breakthrough short stature corn through gene editing; two prior concepts advance to Phase 3
- Three generations of herbicide-tolerance traits in soybeans advance phases, representing the industry's most robust pipeline of weed control biotechnology for soy
- Largest agricultural industry R&D investment of more than 2.3 billion euros annually

Leverkusen, Germany, February 13, 2020 – Bayer announced today pipeline project advancements and newly unveiled research in a dedicated research and development (R&D) pipeline update for the Crop Science Division. In 2019, Bayer's pipeline delivered 55 key project and formulation advancements while providing farmers around the world with more than 450 newly commercialized hybrids and varieties of corn, soybeans, cotton and vegetables. Bayer's annual investment of 2.3 billion euros in crop science R&D powers the most productive pipeline in the industry. With an estimated peak sales value of up to 30 billion euros, Bayer continually converts its R&D investment into innovative products that match the complexities farmers, consumers and the planet are anticipated to face.

“At Bayer, we are driven to help solve some of the world's toughest challenges. In agriculture, this means helping feed the world without starving our planet. Farmers with operations of all sizes need innovation not only to grow enough nutritious food, but also to do this in a sustainable manner that respects our planetary boundaries,” said Liam Condon, member of the Bayer Board of Management and president of the Crop Science Division. “Our employees are united around this goal, and our unrivaled pipeline is delivering against it.”

Bayer's leadership is built on an innovation strategy that balances both incremental and disruptive approaches to R&D. With unmatched expertise across seeds and traits, crop protection and digital agriculture, Bayer invests in improving high-performing products customers already benefit from today, while also imagining new ways to farm.

Novel advancements

Bayer announced [a new herbicide molecule](#): the first new post-emergence mode of action for broad acre weed control in 30 years. Multiple MOAs for weed control are important for managing herbicide resistance and enabling practices that help to sequester greenhouse gases, like no-till farming. Discovering new herbicide MOAs has been a challenge for the industry, but Bayer's continued investment, leading compound library and advanced screening capabilities have enabled a breakthrough. Bayer announced a molecule in Phase 2 of early development which has demonstrated effective control of key resistant grasses in early research. The work demonstrates progress toward [Bayer's long-term commitment](#) to investing approximately 5 billion euros in additional methods to combat weeds over the next decade. Discovery of this molecule is being complemented by a discovery-phase program to identify and develop a corresponding biotechnology trait to convey herbicide tolerance and initial approaches are under evaluation.

Bayer's [short stature corn](#) is expected to provide environmental sustainability benefits through a transformational shift in crop management flexibility. Because it is several feet shorter than today's hybrid field corn, the product concept allows farmers to have better in-season crop access for precision applications of inputs, such as nitrogen, which can be made when the plant needs them most. Some short stature corn hybrids can also be planted closer together, enabling the production of more corn on the same amount of land and potentially reducing requirements for land and water. Shorter stature will also help improve standability, including better green snap and stalk lodging tolerance, helping reduce crop loss from challenging environmental conditions such as high winds from extreme weather. Bayer announced that both the breeding and biotechnology approaches to create short stature corn are advancing to Phase 3 and also unveiled a third pathway to short stature corn, a Discovery Phase project that has achieved proof of concept through [gene editing](#).

Making best-in-class, better

XtendFlex[®] soybeans, the next generation of weed control for soybeans, is advancing to launch phase this spring in the U.S., pending regulatory approvals. This product builds on the foundation of Roundup Ready 2 Xtend[®] soybeans and adds tolerance to another herbicide, glufosinate. Beyond XtendFlex[®], Bayer advanced both fourth- and fifth-generation soy herbicide tolerant traits, leading the industry with tolerances to six herbicide classes expected to be launched by 2030.

Converting R&D into tailored, value-added solutions for farmers

There's no one-size-fits-all when it comes to farming. Every combination of products must be tailored to meet the needs of each customer's field. Digital tools deepen understanding of those needs, accelerating Bayer's ability to help farmers with individualized challenges.

The Climate FieldView[™] digital agriculture platform, now available in more than 20 countries, continues to lead the industry with its comprehensive, connected suite of tools that help farmers make data-driven decisions to increase their productivity. Adoption of the platform has quickly accelerated due to the value farmers around the globe find in the technology, and FieldView's[™] innovation in turning data into actionable insights has led farmers to connect more than 95 million acres globally of their farm data to the platform, making it the leader in data connectivity.

The first offering of its kind, [Seed Advisor](#) enables better decision making with a predictive model that combines the industry's largest proprietary seed genetics library with regional seed performance data to help predict the best performing hybrids for each of a farmer's fields. Performance testing from 2017-2019 demonstrated a consistent 6-9 bushel per acre yield advantage in farmer field trials. Planned pre-commercial expansions for 2021 include an additional three states vastly growing the number of U.S. corn acres.

In South America, Advanced Seed Prescriptions are unlocking yield potential using a farmer's historical field data or field health imagery, combined with Bayer proprietary field-testing results, to provide variable rate corn density planting prescriptions tailored to their unique yield or profitability goals. Recent trials have demonstrated an average yield benefit of 3.2 bushels per acre across Brazil and Argentina.

Bayer's breeding advantage is the product of sophisticated breeding techniques, data science, and digital analytics platforms in concert with the world's largest germplasm library. Novel applications of [machine learning and artificial intelligence](#) continue to improve the speed and scale at which we can arrive at the best products to meet each grower's needs. Identifying the best possible products earlier in the pipeline enables more extensive field testing in diverse conditions and more valuable product insights collected over the course of product development. This data supports the success of the new hybrids and varieties we deliver to farmers each year. In corn, this has translated to Bayer's leading position in five of the six key corn geographies worldwide.

Bayer views investment in innovation as investment in more sustainable agriculture for the next generation

Bayer innovation focuses on producing more on each acre, reducing the environmental impact of farming, and enabling better-informed decisions through data. The company's commitment to sustainability also includes making innovation available and applicable to farmers with operations of all sizes, all over the world.

Bayer's ThryvOn™ Technology, a trait for lygus and thrips control in cotton, is expected to launch in 2021, pending regulatory approval. [ThryvOn™ Technology](#) is predicted to provide immense value to farmers by supporting healthy plant growth and helping protect yield potential against pests that, until now, couldn't be managed through a biotech trait. Advancements in insect-protection traits reduce the need for foliar insecticide applications and improve productivity per acre.

Today's crop protection solutions include safer and more effective chemistries through Bayer's decades-long commitment to evolving the company's portfolio – including advanced formulations, stricter safety standards and greater efficacy. An example is [iblon™](#) technology, a novel new fungicide for cereals. Wheat treated with [iblon™](#) exceeded market standards by on average 2.2 percent higher yields, allowing farmers to be more efficient and sustainable at all levels of their business.

"We are converting R&D into solutions for farmers that enhance productivity, create new value and reduce the use of inputs necessary to produce a crop," said Bob Reiter, head of R&D for the Crop Science Division. "Thanks to our leading positions across technology

platforms, Bayer is best positioned to discover, combine and tailor solutions – serving unmet needs and imagining new ways to farm – and that’s a win for farmers, consumers and our planet.”

About Bayer

Bayer is a global enterprise with core competencies in the life science fields of health care and nutrition. Its products and services are designed to benefit people by supporting efforts to overcome the major challenges presented by a growing and aging global population. At the same time, the Group aims to increase its earning power and create value through innovation and growth. Bayer is committed to the principles of sustainable development, and the Bayer brand stands for trust, reliability and quality throughout the world. In fiscal 2018, the Group employed around 117,000 people and had sales of 39.6 billion euros. Capital expenditures amounted to 2.6 billion euros, R&D expenses to 5.2 billion euros. For more information, go to www.bayer.com.

Notes to editors:

To hear Bayer leaders discuss 2020 R&D Pipeline highlights, join an investor webcast on February 13, 2020 at approx. 8:00 a.m. EST / 1:00 p.m. UTC / 2:00 p.m. CET at www.investor.bayer.com followed by a dedicated media Q&A session for journalists at approx. 9:30 a.m. EST / 2:30 p.m. / 3:30 p.m. CET / via [webcast](#).

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Forward-Looking Statements

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