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Corteva Research and Development Innovation Update

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Research and Development Innovation Update

Presentation

Operator:

Good day, and welcome to the Corteva 2023 R&D Innovation Webcast. Today's conference is being recorded. At this time, I would like to turn the conference over to Kim Booth. Please go ahead, ma'am.

Kimberly Booth, Vice President, Investor Relations:

Hello, and welcome to Corteva's 2023 R&D innovation update. I'm Kim Booth, Head of Investor Relations for Corteva. We have prepared presentation slides to supplement our remarks during this call, which are posted on the Investor Relations section of the Corteva website and through the link to our webcast. We'll open this morning hearing from Chuck Magro, Chief Executive Officer; and Sam Eathington, Executive Vice President, Chief Technology and Digital Officer, and wrap up with a financial update from Dave Anderson, Executive Vice President and Chief Financial Officer, before proceeding to a joint Q&A session.

During this call, we will make forward-looking statements, including, but not limited to, our expectations about future financial and growth targets, product development pipelines and our strategic and capital allocation plans and strategy. These statements regarding our expectations about the future are based on current assumptions and expectations that are subject to various

risks and uncertainties. Our actual results could materially differ from these statements due to these risks and uncertainties, including but not limited to, those discussed at this event and in the Risk Factors section of our reports filed with the SEC. We do not undertake any duty to update any forward-looking statement. Please note, in today's presentation, we'll be making references to certain non-GAAP financial measures. Reconciliations of the non-GAAP measures can be found at the end of this presentation, along with our supplemental financial summary slide deck available on our investor relations website.

And with that, let me turn it over to Chuck.

Chuck Magro, Chief Executive Officer:

Thanks, Kim. Hello, everyone, and thanks for joining us. The purpose of bringing us all together today is to pick up where we left off in Iowa at September's Investor Day event, and provide you with not only the next level of detail on our $24 billion R&D pipeline, but to also peek under the hood at some exciting new opportunities that we're investing in, that will create value for the next decade or more.

Starting on Slide 6. Let me provide you with a summary of what we're going to cover today. I'll kick things off with a progress update on the execution of our value creation plan in a minute, but at a high level, I'd like to emphasize that the portfolio simplification strategy that we launched last year is working, and it is already translating in the margin expansion, including our first significant reduction in royalties.

We believe this plan provides us with a clear path to our 2025 financial targets, while giving us the flexibility to increase our R&D investment that will enable growth well over the next decade and beyond. The rationale behind our decisions to allocate our R&D investment dollars a certain way is where we'll spend most of the time today. Sam will dive deeper into the details, but let me first say that we are an agscience and technology company where the focus continues to be centered around providing sustainably advantaged and differentiated solutions for farmers.

We have a world-class R&D machine with an industry-leading return on investment, creating the science and technology to help solve some of the world's greatest challenges, including food security, climate change and the energy transition. It's also becoming clearer that the role of agriculture must change, and our future beyond 2025 is better and even more exciting. Sam will provide some examples and trends we believe will shape agriculture in the next decade, including recent breakthroughs in each of our three frontier markets, which as a reminder, are biologicals, biofuels, and specialty oils and proteins.

Let's shift gears to our value creation framework on Slide 7. In September, we announced a new financial objective to deliver $4.4 billion of EBITDA on $20 billion of revenue by 2025. We're going to focus on four value catalysts going forward, which will help us accelerate EBITDA growth and margin expansion over time. The results this organization has accomplished over the last eight months, since we met in Iowa are truly impressive.

So, let me quickly recap. In our path to royalty neutrality by the end of the decade, we're starting with a significant reduction in royalties driven by Enlist, but over time becoming a significant licensor of technology, not just for soybeans, but other crops as well, including corn and canola.

And on product mix improvement, we are growing our portfolio of sustainably advantaged and differentiated products. We expect Spinosyn to cross a $1 billion in sales this year, and we've just launched Adavelt, the second of our product family of three naturally inspired fungicides that we expect to reach a $1 billion in combined peak sales. This framework is expected to result in low double-digit annual compounded EBITDA growth, and that would take us to between 21% and 23% EBITDA margins by 2025. This is a significant increase from where we started just a few years ago, and it factors in a sizable increase in R&D investment.

I'm pleased to say we remain on track and confident in our ability to achieve these targets by 2025. What's exciting to understand is that when we get to the 2025 goals, our portfolio will be significantly different than our 2020 portfolio with the overall quality of our business improving. On the crop

protection side, about two thirds of our portfolio will be differentiated, driven by new technology we are bringing to the market, along with the decision to exit more commodity type products. While on the seed side, we are focusing on proprietary trade technology, an area where we have traditionally lagged, but now feel very confident in our position. Over the period of 2020 to 2025, royalty expenses will be reduced by over 40%, while royalty income will almost triple.

It's also important to note that we don't need to discover or invent new innovations to deliver our 2025 targets. That's already happened. As we speak, our R&D team is driving innovation with a focus on delivering value creation in the second half of the decade and beyond. We'll give you a few examples of key enablers of the 2025 targets, but today's primary focus will be starting with the $24 billion pipeline that gets us out to 2035.

So, let's get into the R&D engine that makes this happen on Slide 8. We believe our pipeline is worth approximately $24 billion of revenue at peak when looking out to 2035. And if you assume a 45% accretion rate, which is consistent with what we've seen in our existing portfolio over time, that would suggest meaningful growth for Corteva well past 2025. Our focus also goes well beyond yield to include nutrition, and of course, sustainability with 100% of our seed and CP pipelines meeting our sustainability criteria.

The $24 billion pipeline is a starting point for what's to come, and there are several new opportunities we are working on in tandem that are not yet included in this 2035 number. For example, our frontier markets.

We have built a strong platform to jumpstart our biological business that we expect to grow to $2 billion by 2035, providing a new set of differentiated tools to farmers at attractive margins for Corteva. There is an accelerated appetite for energy transition and renewable fuels, the significant need for agriculture technology, and we are moving with a sense of urgency by entering into the right collaborations now. We are also taking our breeding techniques to the specialty protein market, where billions of dollars are spent each year on adding synthetics.

The future of agriculture also relies on the next big innovation. The last

major step change in productivity was the introduction of biotechnology some 25 years ago. We believe the next step change is gene editing, which we're referring to as an emerging technology. Why is it so groundbreaking? It takes the breeding process that the industry has become very reliant on, and it accelerates it. It's a faster and more cost-effective way to accelerate the breeding we know today with no foreign DNA.

Our R&D organization is leading the way by ramping up our investment in this area over the next few years, while also doing what we can to influence the global regulatory framework and collaborate with key contributors in the industry. Now, circling back to the $24 billion, the innovation you will hear about today reflects our journey in becoming the premier ag technology company that delivers best-in-class solutions for customers around the world.

In corn, we are developing leading above and below ground insect control traits with multiple modes of action, including the enlist weed control system, providing high yield potential for farmers. They also unlock additional licensing opportunities as we look to expand our presence in the multi-billion dollar out licensing market.

In soybeans, we are working on the next-generation E3 products, while also taking the success we have seen in the U.S. soybean market to Brazil. Sam will be walking you through our pathway to become a leading player in this market, which involves not only the opportunities we see with Conkesta, but building out a market-leading plant breeding program and a line of new traits behind Conkesta, which puts us on track to having a $1 billion soybean business in Brazil. And in CP, we are focused on development of new sustainable differentiated products. We plan to launch nine new AIs by 2035, and we're on track to have $1 billion franchises in all three of our product families, insecticides, fungicides and herbicides, that all have favorable environmental profiles.

This leads to a portfolio by 2035 that is even more impressive than 2025. In seeds, we will go from the target of being royalty neutral to net positive by next decade. In crop protection, our differentiated portfolio percentage will grow even beyond the expected two-thirds target we set for 2025. So, where

does that put us in comparison to our peers?

Well, you can see from the chart on Slide 9 that we believe Corteva is where you'll get the highest return on R&D. In other words, $20 of forecasted sales per dollar invested, which is essentially double that of our peers. We have the most disciplined and productive R&D organization in the industry, and we intend to keep it that way. We're looking to capitalize on the strengths of our technology solutions in the areas of greatest opportunity on a risk-adjusted basis as long as those opportunities align with our core strategy.

So, we've set a target to invest approximately 8% in R&D and innovation by 2025, which translates into $400 million of additional investment. These refinements we believe will accelerate our performance and our growth. Before turning it over to Sam, on Slide 10, let me touch on the strategies and advancements we have made in the frontier markets introduced back in September. Again, none of this is included in our core $24 billion pipeline figure. Starting with biologicals, which is expected to be the fastest growing CP segment in the industry, driven by its favorable environmental profile and growing effectiveness.

In the first quarter, we successfully acquired two transformative biologicals companies, Stoller and Symborg. These acquisitions when combined with our internal biologicals capabilities, now positions us as one of the largest biologicals companies in the industry. With a market that is expected to grow to $30 billion by 2035, we are accelerating and rapidly building out innovative solutions that will lead to an approximate $2 billion business for us by early next decade, driven by complementary, sustainably advantaged options for farmers. Renewable energy is another very attractive growth market, expected to play a critical long-term role in the global energy transition. It is anticipated that the market for biofuels will grow beyond what we see today in the ethanol space.

In the U.S. alone, we are expecting demand for renewable diesel and sustainable aviation fuel to grow to 7 billion to 9 billion gallons in the next decade, which at today's fuel prices reflects an approximate $32 billion

market opportunity. To put that into context, it has been estimated that we would need about 100 million acres of soybeans to meet this demand. Now, soybeans clearly won't be the only crop solution needed to satisfy this growing market, but it underscores the huge scale of this opportunity for ag. Sam will discuss our recently announced collaboration with Bunge and Chevron involving a new double cropping system, which we believe has the potential to be on 10 million acres. We plan to launch the program this year on about 8,000 acres.

And finally, specialty oils and proteins are anticipated to increase as consumer preferences evolve and change. Simply put, people want healthy, nutritious, sustainable food choices, and we believe elite germplasm and gene editing technologies provide the potential to accelerate much needed advancements in this area. Stepping back, these three frontier markets represent future multi-billion dollar opportunities, but science and technology will be needed to unlock that potential. So, we plan to continue to redirect and invest R&D dollars and explore strategic collaborations in all three of these areas.

On Slide 11, let me close by saying we feel that we have a very unique position in the marketplace. We are a leader in ag science and technology, and we are investing to win. So, I'll leave you with four key messages.

First, we remain on track to deliver our 2025 targets through the value creation framework we have built. We are a technology growth company with a pipeline of innovation that will enable $24 billion of peak net trade revenue by 2035, but several strategic programs are currently not included, such as the value to be created by our three frontier markets, all the gene editing opportunities, and reduced stature corn. Third, we have one of the best R&D organizations in the business with the highest forecasted return on R&D investments. And finally, we see the next decade, 2035, to be even more compelling than 2025.

So, with that, I'll turn it over to Sam to provide an update on a few of our more significant pipeline programs. Over to you, Sam.

Sam Eathington, Executive Vice President, Chief Technology and Digital Officer:

Thank you, Chuck, and good morning, everybody. I'm excited to share today a brief update on our R&D program. Our focus is delivering sustainable innovation to solve global food production challenges, while continuing our value creation journey. We have made significant strategic choices in our business and have aligned our R&D value creation to these choices.

I'd also like to take a brief moment to reflect on the significant changes that have occurred in Corteva's R&D program over the last two years. We are focused on turning science into solutions that solve farmer challenges and create value for farmers, society and Corteva. We are expanding our effort to bring in external innovation to supplement and accelerate our product pipeline. At this year's World Agri-Tech Conference, we announced the expansion of our external innovation investment program, so we can quickly identify valuable external innovation.

We are moving faster on new opportunities and helping lead the discussion on the global direction of agriculture in areas like gene editing. And finally, we are identifying new business opportunities driven by innovation and shifts in market conditions. Slide 13 frames the investment strategy that we introduced at our 2022 Innovation Showcase we held in Johnson, Iowa last September. Our three investment pillars are; first, continue to enable our leadership position in the global seed and crop protection market, and deliver products that our customers around the world expect from us; second, to increase our product lineup containing our proprietary biotech traits, which puts us on a path for trait royalty neutrality by 2030.

In 2023, we expect to decrease trait royalty payments by approximately $100 million. In addition, we are focused on increasing our patented and differentiated crop protection products with new product sales increasing by approximately $300 million in 2023. Finally, we are increasing our R&D investment from approximately 7% of revenue to 8% of revenue over the next few years to ensure we can capitalize on new growth areas for both seed and crop protection along with the new frontier markets that Chuck talked about.

Our value proposition to farmers is simple. We all win by creating more yield potential and protecting that yield potential. We share in this increased value through price and volume growth in our business. We continue to look at both internal and external innovation to deliver value to our customers, and we continue to evaluate this balance with our journey towards biotech trait royalty neutrality, while also exploring new external innovation to bring into our pipeline.

As Corteva, we have a strong history of delivering innovation to farmers and our advancements in our pipeline in 2022 was another great year. In our seed business, we launched two new biotech traits and advanced seven more product concepts in our pipeline. In crop protection, we advanced nine new actives in our pipeline and launched over 180 new products, representing new formulations on new crops in new countries. This was all enabled by our world-class regulatory program that delivered key approvals in 2022.

On Slide 14, you can see that our current R&D pipeline projects and recent launches join the peak net trade revenue out to 2035 of up to $24 billion. Through our innovation management process, where we annually review over 3,000 projects, we align R&D investment to the value creation opportunity.

We are using M&A along with collaborations to expand business opportunities and bring external innovation into our products and pipeline. The recent acquisitions of Stoller and Symborg are accelerators of our biologic strategy and research pipeline, while also making Corteva one of the largest biologics companies in the world. To maximize our R&D return on investment, we are investing to deliver the products needed to achieve our 2025 financial targets, while investing in both research and development to enable the continual shift to proprietary and differentiated products to deliver our 2035 pipeline opportunity. With our increased investment in R&D, we have expanded our investment into new opportunities and frontier markets, and we plan to increase this spend over the next few years as we achieve key milestones and identify additional growth opportunities.

On Slide 15, sustainable innovation is a key philosophy in our R&D program. Our Corteva scientists and colleagues are passionate about creating products

that make a difference to farmers and the environment. One goal, which we have highlighted in our annual sustainability report, is that by 2025, every product concept in our seed and crop protection pipeline will meet our sustainability criteria. We aligned our sustainability criteria with the UN Sustainable Development Goals and created specific targets.

Example; in our crop protection discovery program is a requirement for new actives to have low use rates. These product concept requirements are embedded in our R&D programs and result in products that improve food production, food resiliency, and minimize the impact on the environment, and in many cases, result in significant greenhouse gas avoidance. As part of our accelerated strategic choices, I'm excited to announce that both our seed and crop protection pipelines are now 100% aligned with our sustainability criteria. This is three years ahead of our original goal, showing our commitment to sustainable innovation.

One simple example of this is our new naturally derived fungicide Inatreq active, which was recently launched to help control key diseases in cereals and other critical food crops like bananas. The use rate of Inatreq is extremely low and you can see it degrades rapidly. Its degradation into inert natural carbon compounds takes just under two days and is 100x faster than other products.

Inatreq active represents the type of products the world needs to produce food and minimize the impact on the environment. On Slide 16, now let's get into some specific product and pipeline highlights so you can understand our confidence in achieving our 2025 financial targets, along with the growth opportunities. Today will only be a sample of projects and not our full pipeline.

However, I believe these examples will give you a feel for our strategy along with the breadth and depth of our pipeline. To achieve our 2025 financial targets, it's important to understand that we have already invented the products we need to achieve our goals. We have industry changing corn and soybean technologies that are delivering the next set of products to our commercial teams. We have growing crop protection product families in both

the insecticide and fungicide markets that are expanding registrations to expand growth opportunities.

For our 2035 opportunity, I will highlight six key projects in our pipeline that drive our proprietary biotech trait and differentiated crop protection strategy. With this strategy, we have a clear biotech trait pathway for the next decade that unlocks meaningful value and market opportunities. We continue to build on the strength of our differentiated insecticides and expand our herbicide opportunities with today's brand launch at Bexoveld, a new cereal herbicide. I'll also highlight an example of using synthetic crop protection and a biological to create broad and durable nematode control. Finally, I will highlight some new opportunities we are investing in for additional meaningful revenue growth. We are using the combination of M&A, unique value sharing collaborations, external innovation and internal R&D capabilities to create new business opportunities and transform production agriculture. We have confidence in achieving our 2025 financial targets.

Today, I want to share just a few additional comments about our seed and crop protection products.

On Slide 18, it is clear that Corteva has superior soybean and corn products that are delivering more value to farmers. This has resulted in pioneer sales agents having the highest confidence in product performance in the 21st century. Our A-series E3 soybeans have a significant yield advantage over other products, and in 2023, 75% of our products will be our proprietary genetics. With over 100 years of hybrid corn breeding, we have built generational strength in our germplasm performance that in 2022 enabled both market share and pricing growth. The strength in our product performance is across diverse growing conditions, spanning drought stress and disease and insect problem areas.

Our Qrome, insect-controlled corn product has delivered consistent yield advantage over competitor products. This yield advantage will continue with our launch of Vorceed Enlist this year, while adding an additional mode of action for below-ground insect control that enhances root protection. And we are bringing additional weed control options with the ability to use Enlist

chemistry.

Moving to Slide 19. In addition to our Enlist chemistry advantage for weed control, we have a $1 billion product families for insect and disease control. In our Spinosyn insecticide product family, we continue to expand and registration of these products, and today, farmers in 130 countries can use this favorable chemistry on over 250 crops to control over 120 crop pests. These products are based on green chemistry principles, utilize our proprietary manufacturing system and are core elements of integrated pest management programs around the world.

For the fungicide market, our naturally derived and inspired products represent another $1 billion product concept family. Inatreq active is now joined by Adavelt active, which is launching this year and enables disease control in more fruits and vegetables.

Field results from Brazil indicate Haviza active is providing excellent control of Asian soybean rust through a novel mode of action for the soybean market. In 2022, Haviza advanced in our pipeline, and key regulatory submissions have been completed. Therefore, we remain on track for our target launch date. All these products represent unique new mode of action with low use rates and favorable environmental fate, all while helping the food security.

Now, let's shift to the 2035 timeframe, and I'll highlight a few pipeline products that are key to our revenue growth opportunities.

Moving to Slide 21. Let's start with insect control in corn. We are setting a new standard in corn insect control options with the launch of PowerCore Enlist Refuged Advanced, and Vorceed Enlist this year in North America. These products and our next generation of pipeline products create new trait stacking and out licensing opportunities. PowerCore Enlist RA and PowerCore Ultra Enlist give farmers additional above-ground insect control options and the opportunity to use Enlist chemistry in corn to help control difficult weeds.

In our R&D pipeline, we have third and fourth generation above-ground insect control technology showing excellent control of fall armyworm. Our next

generation of products are based on novel insect control genes that represent new modes of action. These proteins were discovered from non-Bt species like ferns and have unique sequence composition. Corteva has a first mover advantage in IP position in the fern-based insecticide protein space.

Building off our Vorceed Enlist launch, we again have a novel set of proteins with new mode of action. In our R&D pipeline, we have third and fourth generation below-ground insect control technology showing excellent control of corn rootworm. In 2022, we advanced two of these insecticide protein concepts in our pipeline. These Corteva insect control traits continue to support a position of trait royalty neutrality and expand our out-licensing options.

Moving to Slide 22. Corteva has a meaningful growth in Brazil, driven by our proprietary biotech insect control strategy and Enlist wheat control platform. We believe the market shift can be as dramatic as the shift to E3 soybeans in North America. And we're off to a great start with the successful launch of Conkesta E3 soybeans, which we believe can drive to about 35% market share by 2030. In addition to insect control options, farmers can use Enlist chemistry over the top of Conkesta E3 and E3 soybeans to control difficult weeds. To broaden our product offering, we have expanded and upgraded our soybean plant breeding effort and are already seeing a new wave of exciting Conkesta E3 products in the pipeline. This expanded breadth and depth of product offering will give farmers across Brazil more choices.

In our R&D pipeline is our second generation insect control trait that has a new mode of action based on a non-Bt protein. This concept advanced in our 2022 pipeline based on field testing results, and this additional proprietary trait expands our market opportunity and margin in the Brazil market. With the successful launch of Conkesta E3 soybeans, our enhanced breeding program and a pipeline of insect control traits combined with over-the-top Enlist herbicide options, you can see why we're excited about our future growth in Brazil.

Moving to Slide 23. We are complementing our Spinosyn insecticide success with three new differentiated insecticides, positioned to expand our

opportunity in the insect control market. These novel broad spectrum products will control key sap feeding and chewing pests across many crops. Our field testing continues to show additional pest expansion opportunities. Currently both foliar and seed-applied applications are in scope and will expand our proprietary seed treatment offerings.

The first new product based on these new actives will launch late this decade with additional projects launching early next decade. In 2022, two of these three new insecticides advanced in our pipeline. With low use rates and favorable environmental profiles, these insecticides have a sustainability advantage compared to alternative products on the market.

Moving to Slide 24. We are excited about the novel class of auxin herbicides that we are bringing to the market. These products interact with auxin receptors in a unique way, providing weed resistance management and differentiated attributes.

Arylex and Rinskor are on track to be a $1 billion product family by later this decade, with both controlling difficult weeds. We continue to expand into new crops and market opportunities with both products. Rinskor is a designated reduced risk pesticide based on its favorable environmental profile. And today, we are announcing the addition of Bexoveld active to this family. Bexoveld has demonstrated outstanding control of broadleaf and resistant weeds in cereal crops, providing excellent post-convergence control of broadleaf weeds at low use rates. These new herbicides have favorable human health and environmental profiles and meet our sustainable innovation criteria.

Moving to Slide 25. Nematodes are a global pest that impact many crops and reduce global yields by about 12%, costing billions of dollars of lost production. In September, I talked to you about Reklemel, which is a synthetic crop protection active that is favorable to beneficial soil organisms and designated as a reduced risk pesticide. With this new mode of action to control problem nematodes, it will become a key product in the nematicide market. Now, we have added onto Reklemel by adding a bacillus biological to provide broad spectrum nematode control. This is possible

because Reklemel doesn't impact favorable biologics.

The different modes of action provide holistic nematode control across a broad range of crops. Approvals for both products continue to progress and expand our market opportunities. This combination of synthetic crop protection and biologics to solve farmer problems is a core part of our crop protection and biologics strategy going forward.

Now, let's shift and talk about a few new opportunities in emerging technology that represent additional meaningful revenue growth opportunities.

Moving to Slide 27. Let's start with a significant growth opportunity for Corteva with our proprietary reduced-statute corn. The change in plant architecture expands options for farmers to manage their planting density and yield potential without increasing standability risks. It also removes aerial application bottlenecks for fertility, crop protection and biologics in season application, expanding agronomic management options. These changes in crop management enables farmers to produce more per acre than our growth opportunities for Corteva.

Our 2022 testing, again demonstrated great yield performance and standability in our products. We see broad acre fit given the plant characteristics of our proprietary system, we are expanding our 2023 trials, agronomic studies, and enabling more agronomists and farmers to experience our products.

Norman Borlaug, who was an Iowa farm kid, was the father of the green revolution in wheat. If Norman was alive today, I believe he would be impressed by our product and encourage us to take it to the farmer, which was one of his favorite sayings. And take it to the farmer is what we plan to do.

We continue to progress towards a mid-decade launch with a full complement of biotech traits across the germplasm diversity of Corteva.

Moving to Slide 28. Gene editing is a major enabler of new innovation in the plant genetic space and could be more transformative than biotechnology. Corteva has a leadership position in gene editing and we are focused on creating new value from this platform. By removing evolutionary constraints, gene editing simplifies the breeding and creation of improved products. To effectively deliver products from gene editing, it takes more than just a

CRISPR-Cas enzyme to make a product.

It is necessary to have elite germplasm, high throughput elite line transformation, deep genomics knowledge powered by artificial intelligence algorithms, high capacity field testing and advantage route to market.

Corteva has all of these components along with our own proprietary CRISPR platform and strong intellectual property position. Through our strategic choices, we have aligned on where we will play and how we will win in this space. With our recent biologics acquisitions, we see gene editing having a significant role in the enhancement of microbial products.

Strategically, we are expanding product concepts and accelerating innovation, and increasing our investment in our gene editing platform as global regulatory policy continues to take shape. Just last week, China approved for cultivation, the first gene edited soybean and we continue to see favorable regulatory policy taking shape around the world.

We are actively engaged in the global regulatory discussion and recently worked with other companies to align on a licensing platform in Europe to ensure small plant breeding companies have access to this technology. We are actively out-licensing joint and proprietary IP and utilize external innovation and collaborations to expand our platform capabilities and scope. Corteva is well-positioned to lead in the gene editing space.

Moving to Slide 29, I want to highlight just a few collaboration projects in the gene editing space that demonstrate the breadth and scope of our research capability. In most of these examples, Corteva is doing the gene editing technical work and collaborated on field testing and evaluations. In the disease resistance space, we have enhanced local germplasm in Africa to be resistant to maize leaf necrosis, which is a virus that can wipe out maize production.

To combat Striga, a parasitic weed without the use of herbicides, we have helped create sorghum that is resistant to Striga. In some parts of the world, pearl millet flour is an important food staple. We have improved the quality and longevity of pearl millet flour by reducing the rancidity in the flour. Finally, we are collaborating to bring gene-edited soybeans to Europe

to expand their plant-based protein production. These projects demonstrate the technical capability of our platform while also helping shape the global regulatory conversation about gene editing.

Moving to Slide 30. I want to highlight how Corteva is using gene editing to transform the development of disease-resistant plants. Production loss in U.S. corn and soybeans due to disease problems is annually over $7.5 billion. Globally, across all crops, the production loss is much greater. We believe gene editing crops can significantly change this. Using corn as a pilot, we have identified a pipeline of native genes to target major disease problems. We have successfully enhanced these genes to improve the level of disease resistance.

Finally, we have consolidated these genes into a single super locus that greatly simplifies the breeding and development of products with disease resistance. In 2022, we demonstrated this concept works in corn for Northern corn leaf blight and are advancing this concept for additional diseases. You can see by the pictures, the dramatic improvement in disease resistance we achieved within an elite corn line. Nothing else changed in this line, which is the power of this technology.

We can quickly make improvements without negatively impacting other characteristics. Reducing yield loss from disease, using this non-GMO approach is conceptually aligned with the European farm-to-fork principles of using natural solutions to reduce the use of fungicides. Now, let's shift and talk about a few new opportunities in the Frontier Markets that represent additional meaningful revenue growth.

Moving to Slide 32, let's talk about biological research at Corteva. We have built a unique system that enables multiple product outcomes that range from live microbial products to completely synthesized chemistry. It all starts with the appropriate biological material. We have a large collection of biological material and now have supplemented it with our recent acquisitions of Symborg and Stoller. We use a mixture of genomic and bioactivity screening techniques to identify lead organisms and molecules. Then, through a range of different development routes, we can create products that operate in the

biologics market of the live microbe or a natural product like Chalcova to synthetic products like Adavelt Active fungicide.

Moving to Slide 33, the acquisition of Stoller and Symborg were key accelerators to our biologic strategy and catalyst to expand our R&D program. Farmers need new solutions to meet the changing food production demands, and we believe biologics will be a significant part of that solution, and represent the $30 billion market by 2035. Stoller and Symborg are operating businesses and they jump-started our R&D programs.

We are now accelerating our development of biocontrol and biosimilar products by expanding our R&D, testing and regulatory capacity, so we can bring additional sustainable solutions and systems that complement synthetic chemistry to the market.

We believe our expertise in genetic improvements and chemistry formulations enhances our biologic R&D efforts. Biocontrol options are needed to help protect yield potential, while biostimulants can help improve yield potential. The use of biostimulants in agriculture continues to expand, and we expect sales of nutrition in to provide meaningful growth opportunities over the next decade in the fruit and vegetable market and in Europe as nitrogen regulations create additional opportunities.

Moving to Slide 34, collaborations in the Frontier Markets with unique value-sharing business models expand our growth opportunities. As previously announced, we are collaborating in the renewable fuel space with Bunge and Chevron to bring winter canola to farmers, while providing significantly lower carbon energy. Carbon energy.

Winter canola is grown in a double cropping system. There is another cash crop option for farmers. Through this collaboration, we have a value sharing model that incentivizes the entire value chain. Our field trials have shown viability of our winter canola concept, and we are launching this year to expand testing and farmer experience. With sustained renewable fuel value, this concept has the potential to be on over 10 million acres.

In another Frontier Market opportunity, we again have utilized the unique collaboration with fungi to play in the specialty protein market for animal

feed. Synthetic amino acids for animal feed is $10 billion market that can be addressed with an enhanced soybean meal with increased protein and an improved amino acid profile. The unique value sharing model creates enough incentive for the entire value chain.

With a closed loop system, we can use all potential tools, including plant breeding and our gene editing platform to create elite-performing products. Our research shows we can make the necessary component improvements that unlock this value and we are undergoing robust field testing, evaluations and selection to bring this product to market.

So, to close, I hope the examples I've shared today will give you a feel for the breadth and depth of our R&D pipeline and value creation. We are well-positioned to achieve our winning aspiration of leading an innovative, sustainable solutions and becoming the world's most valuable agriculture solutions company. We have confidence in our ability to achieve our 2025 targets, since the products we need have already been invented.

We have clarity on our value creation journey from proprietary and differentiated for the next 10 years, giving us confidence in our strategy and future pipeline value. Finally, we see additional value creation options and are increasing investment into emerging technology to transform agriculture production and into new Frontier Markets worth over $70 billion.

Thank you for your time. Let me hand it off to Dave, who will walk through additional financial details.

Dave Anderson, Executive Vice President, Chief Financial Officer:

Thanks, Sam, and good morning and welcome, everyone. I'm excited to be part of the program today.

Let's turn to Slide 37, you'll see our checklist for performance through 2025. Now, the checklist should be familiar to many of you from last September's Investor Day event. Today, I'd like to focus quickly on three elements. First, revenue growth; second, earnings growth and margin expansion; and finally, summarize our capital allocation strategy, and how M&A and collaborations fit into our growth formula.

With that, let's go to Slide 38 and go through revenue. As you can see, we're forecasting 4% to 5% revenue growth rate out to 2025. Now, in the absence of the product and geoexits related to our portfolio simplification strategy that we launched and announced last year that growth rate is forecast to be approximately 6%. Now, as part of our portfolio simplification, we're going to exit roughly 20% of our AIs as well as several non-strategic geographies. These exits translate to roughly $800 million in revenue and we're well on our way with an expected $600 million impact in 2023.

On the right side of the chart, you can see the impact of these exits, and of course, this impact will be more than offset by price and volume gains in our strong core portfolio. So, let's look at some of the other key growth drivers. First and very importantly is the continuous improvements in yield advantage technology and seed that will drive price and gains. And the other key component is significant growth in differentiated crop protection product sales, including several of the products that Sam discussed, such as Spinosyn insecticides, Adavelt and Inatreq fungicides, which will drive volume growth during the planned period.

Now, if you go to Slide 39, you can see the growth targets, which represent our 2025 operating EBITDA forecast and target of $4.4 billion, or a 22% margin at the midpoint. The slide has been updated since last September. It now reflects our actual 2022 performance and our recently raised guidance for '23, which includes 100 basis points of operating EBITDA expansion in 2023. So, a margin of 19.5% at the midpoint of that '23 guidance.

Execution on our strategic decisions, including focusing on core crops and markets, pricing for value being disciplined in our costs, that's what's driving the margin expansion while also enabling increased R&D investment. Our performance in 2022 was a major installment on the path to our '25 financial targets and coupled with our guidance for 2023, we're confident that we're on track to deliver those targets.

Let's go now to Slide 40, I want to come back to a topic that Sam covered earlier, how we allocate our R&D investment. And importantly, both Chuck and Sam stated, we don't need to discover new innovation to achieve our '25

targets. Our investment in R&D to support 2025 is focused on registrations and product delivery, ramping up differentiated technologies, including for our new crop protection products like the recently announced Adevil fungicide, and making significant progress on our path to royalty neutrality with $250 million in incremental EBITDA by 2025.

We're also investing in our 2035 pipeline valuation with a focus on enhancing our diverse portfolio across both seed and crop protection. As is evident, we have the strongest pipeline of innovation in the industry and we intend to maintain that position. We're also building a pipeline that supports our ability to increase out-licensing opportunities of our proprietary technology, which will further support our revenue growth objectives. We're also investing in new opportunities that we expect to generate meaningful revenue growth above our pipeline valuation. We've heard Sam talk about several of these opportunities, including reduced stature corn and gene editing, which we refer to as emerging technologies as well as our three Frontier Markets.

So, turning to Slide 41, I want to provide a few comments, additional comments on capital allocation and M&A. We're clearly committed to a disciplined capital allocation strategy, balancing investing for growth and returning cash to shareholders. So, M&A and collaborations will obviously be a consideration in our growth strategy, where we identify product or technology gaps and where we can accelerate speed to market. Think of those as bolt-ons to our current strong base.

Of course, it's critical to our M&A strategy that any target fit with our financial criteria, including above-market growth, the ability to achieve attractive EBITDA margins and returns that exceed the company's internal hurdle rate. We believe that Symborg and Stoller acquisitions are great examples of this strategy in practice.

And finally, moving to Slide 42, let's take a conceptual view of how we see our revenue growth up to 2035. This slide represents a directional picture of this growth outlook. Earlier, I shared the drivers of the $20 billion revenue target for 2025, which translates to 5% compound average growth rate from

2022. We've shared highlights from the $24 billion R&D pipeline, including several next generation products and technologies that will extend this growth through 2035. Emerging technologies, including reduced stature corn and gene editing will enable additional growth and new revenue streams. In combination with the core business and emerging technologies, Frontier Markets will also be contributors to this growth.

Driven by innovation and our industry-leading platform, we expect to grow at a rate of 1% to 3% above the market from 2025 to 2035, continuing to transform our portfolio into more differentiated sustainable solutions and increasing yield and productivity on the farm. To summarize, we have significant growth opportunities and the strategic decisions that we're making today about the allocation of R&D investment and capital spend will translate into meaningful top line and margin expansion potential.

With that, this concludes the prepared remarks for today. We've hoped you've gained meaningful insights in terms of the company's growth and we're hope that you're as excited as we are about those prospects. We're confident that we have a plan that will deliver value and accelerate growth, and that Corteva is well-positioned to execute against this plan.

And with that, let me turn it over to Kim for Q&A.

Kimberly Booth, Vice President, Investor Relations:

Thanks, Dave. Now, let's move on to your questions. I would like to remind you that our cautions on forward-looking statements and non-GAAP measures apply to both our prepared remarks and the following Q&A.

Operator, please provide the Q&A instructions.

Questions And Answers

Operator:

(Question And Answer)

Operator:

Thank you. (Operator Instructions) To ask a question via web, please locate the Q&A option from the top menu bar in the console, type in your question and then click ask to get your message to our Q&A panel. We'll take your first question from Vincent Andrews, Morgan Stanley.

Vincent Andrews:

Thank you and good morning, everyone. I wanted to get some further thoughts on reduced stature corn and the growth opportunity you see there from a revenue perspective. Just looking at your slide, it seems like it's a bit more of a insurance-based product, meaning preventing damage rather than increasing yield. And so, I wanted to get a sense of how you planned on monetizing that and charging it. Will this just be something you will sort of mix into your standard germplasm refresh and that will drive price mix that way? Or do you think this is something you're going to be able to charge an incremental or have an incremental upcharge for?

Chuck Magro, Chief Executive Officer:

Yes. Good morning, Vincent. So, let me start with a few high-level comments on reduced stature corn and then I'll pass it over to Sam to give you a bit of specifics.

Now, we may not be able to get to the final details of your question in terms of commercial pricing and how we're going to value it. But, let me just start by saying, we're pretty excited about the opportunity here. Sam and I were just in Puerto Rico earlier this year, we were looking at both reduced stature corn and our next-gen enlist, both of those crops look really good. But, the key here is that, we think that we've got a really important system that will drive yield. To answer your first question, we do believe that reduced stature corn will be a yield driver. It could be quite substantial, because it's going to be dependent on the planting density of the reduced stature corn and Sam will get into the details. Most importantly, we're not seeing any new problems for farmers, as we continue to develop it. As you know, we've said this, we've been working on reduced stature corn for quite a

few years. It will be ready mid-decade, so it's coming along really nicely. And I think that the important thing to understand here is that this is not just a new product, this is going to be a relatively new cropping system and farmers are going to need assistance as they learn the full potential and we help them drive not only protection of the crop, which there are benefits, but also to drive yields. And I think there is no one better position, given how we go to market than Corteva.

Sam, do you want to talk a little bit about the specifics?

Sam Eathington, Executive Vice President, Chief Technology and Digital Officer:

Yeah, sure. Well, and good morning, Vincent. Thank you for the question. The way I think about it, if you look at the history in corn, especially in let's just use North America, but it's true around most of the growing conditions in the world, really what drives yield is really plants per acre. The actual year size in corn hasn't really changed in the last 60, 70 years. What we do is we put more plants out there per acre. And what that creates in a lot of cases is risk about that crop not standing, especially if you get some heavy wind storms.

And so, what we see with our reduced stature corn is we take that standability risk greatly down, which allows a farmer now to think about managing their crop differently and they can manage it two different ways. One is increasing the number of plants they put out there per acre which would drive up the yield potential, and also with better access in season. You can think about what additional applications of fertility or biologics or optimal timing say of a fungicide that also delivers more yield from the yield potential that's in that crop. So, we definitely see it as a yield enhancing and increasing platform going forward.

Operator:

We'll hear next from Kevin McCarthy from Vertical Research Partners.

Kevin McCarthy:

Yes, good morning. My question relates to gene editing. It's clear that there's a primary benefit in terms of accelerating the speed of development in the seed pipeline. My question would be, did you also see any benefit from a regulatory perspective either with regard to the scope of countries that would be more open to gene edited biotech trades or the speed of approval within the regulatory regime for individual countries? Any color along those lines would be helpful.

Chuck Magro, Chief Executive Officer:

Okay. Hi, Kevin. So, let me give you our perspective at a high level, and then Sam has the regulatory function for the company. It's highly integrated into the R&D organization, and he can kind of walk you around the world. But look, as you can tell from our prepared remarks, as a science-based company, we get pretty excited when we see something as powerful as gene editing. And the global food system needs these new tools and techniques. It's very clear that we're facing just more challenges when it comes to producing food. And you rightly called out. So, we see some benefits to gene editing, the techniques I think will allow us to go speed to market a lot faster, most likely going to be very cost competitive, and we'll be able to bring new and needed solutions to farmers. So, that's why we like the setup for gene editing.

What we can see on a regulatory front is that there are a lot of export crop countries that are very supportive of gene editing. We just recently saw the UK. India, obviously, is supporting it. North America is supporting it, and so is Brazil. So, we think that the regulatory framework is going in the right direction. We do need clarity on that, before we can sort of take all the breaks off the work that we're doing and go full motion into the investment in gene editing. But Sam, maybe you can give a little bit of color, where you think we will be a year or two from now.

Sam Eathington, Executive Vice President, Chief Technology and Digital

Officer:

Yes, I can do. And good morning, Kevin. You know Chuck I think highlighted it nicely that we've seen a lot of really positive movement even in the last year in a lot of countries, UK, China just recently, some position, Canada last week had some very favorable positive movements in their policy. What we're still watching is what happens in Europe, and Europe has shifted a lot from really in 2017 '18, almost banning the technology to today, having a lot of meaningful conversation about what this technology could do from achieving sustainability targets and Europe would like in their food production system, plus also driving food production globally.

We expect that the European timeline is somewhere in this 2024 or 2025 to get more clarity about what their view and how the policy would shake out. We think by then a lot of other countries will have shaken out. And so that seems to be the timeline that we think becomes very interesting about how technology can be used, and therefore, grain that's derived from that technology is moved around the world.

And to your point with what we've seen to date in countries, the regulatory speed would be much quicker than what we've seen with biotechnology. And we think that's very important, because it allows a lot of other new technology to come to the market at a faster pace.

Operator:

And at this time, I would like to turn the call over to Kim for a virtual question.

Kimberly Booth, Vice President, Investor Relations:

Thank you. So, one of the webcast questions we received was, what are the main reasons why our R&D return is double that of our industry peers? So, Chuck, I'll let you start on that one.

Chuck Magro, Chief Executive Officer:

Okay. Thanks. And we'll get Sam's perspective on this one as well, Kim. So,

first, we're very pleased with the overall R&D return on investment. And we did put up a new metric today for you all to see. It is an industry-accepted metric around sales per R&D investment. And you can see that we lead the field and we tend to keep it that way. What we don't often talk a lot about is sort of how we're structured at Corteva. Sam is the Chief Technology Officer, so he has the entire R&D and innovation organization. But he's also the Chief Digital Officer. So, we're now highly integrating our data and our data science capability into our R&D and innovation process. It's one organization, one leadership team, and I think that's very important.

I think the other nuance that we have inside of Corteva is the innovation organization is highly integrated into both our strategy function and our corporate organizations -- our commercial organization. So, our innovation and our R&D scientists are actually at the same table with our customer-facing organization. And so, they're hearing what our customers need, the challenges they have and the opportunities that they would like to see. So, I think it ultimately comes down to how we're structured. I think there's a cultural component as well, we don't often talk about culture. But, I've been in the -- industry a very long time I've never seen an organization that is relentlessly focused on just helping farmers succeed. And I think the R&D organization, many of our leadership team actually come off of farms. And I think that is very unique.

Sam, any other thoughts?

Sam Eathington, Executive Vice President, Chief Technology and Digital Officer:

Yeah, maybe what I'd just add on to what Chuck said there is, and I mentioned it a little bit in one of my slides, is we run an annual innovation management process, which is really a joint program between our commercial strategy and R&D organization to take a hard look at every project that we are spending money on and investing in to say, is it still the right priority, what do we think the investment level should be. And every year, we do that to make sure that how we spend the money is optimal for what our

commercial returns could look like and opportunities.
So as Chuck said that, that alignment with the commercial team that complete integration overall at the table really helps us with that discipline in how we prioritize and invest the money.

Operator:
At this time, we'll move to a phone question from Christopher Parkinson from Mizuho.

Christopher Parkinson:
Great. Thank you so much. In terms of your pathway to net neutrality on the seed license fees, can you potentially just offer a little bit more color on how you're thinking about things in the balance of the decade? I mean when I look at some products, even very successful ones such as Chrome, it seems like there's still a lot of licensing activity on that. You've obviously been very proactive about discussing the contest opportunity in Latin America. So, can you just help us kind of bridge the gap on how we're all thinking about it now '23 through '25, and the expiry of the buyer agreement from about 10 years ago versus how we're thinking about the next five years after that? Any color would be very helpful. Thank you so much.

Chuck Magro, Chief Executive Officer:
Good morning, Chris. Yes. So, let me start, and then we'll have Sam comment again on the specifics. So, you're right. We love the path that we're on to reach royalty neutrality. And that's what we've spent a lot of the last couple of years focused on. There's been a significant effort in the organization and we've been out there communicating that path. And it's pretty significant, right. So, we're going to have a 100 million of EBITDA this year from net royalty reduction that will grow to $250 million by 2025. And that's nothing new, we've communicated that I think quite consistently over the last couple of years. But then, once we achieve, let's call it royalty neutrality around the end of the decade, the beginning of the

following decade, so into the 2030s, we're going to be able to now start to out license. And it will be in the major crops that we're focused on, it'll be in our core crops, right. Soybeans, corn, canola, and the trade technology that we're developing is pretty exciting. And so that's why Sam referred to 4C and PowerCore elements. So, that will be very, very important. And maybe Sam, I'll just let you take it to the next level in the discussion.

Sam Eathington, Executive Vice President, Chief Technology and Digital Officer:

Yeah, we can do it, and Christopher, thank you. Really, what we're at is in a transition. If you think about phases of how our technology is evolving from what used to be 100% sort of in-license biotech trades to we're really in this transition phase today where there's proprietary material, there's still some in-license, there's even some co-development stuff. And those are important as Chuck said, they really start moving our royalty reductions and our margin improvement.

As we get out to the later part of the decade, this really becomes 100% of our proprietary technology that we then have the opportunity to out-license or look at stacking and in-licensing with different combinations that make sense for us in the marketplace. So, we're on this journey of transitioning from a wholly in-licensing to a company that has their own proprietary platform and can turn that into out-licensing and other stacking opportunities.

Operator:

We'll move next to Joel Jackson from BMO Capital Market.

Joel Jackson:

Good morning. Two questions maybe following up on some of the licensing. Chuck and team, what opportunity is there to push more of the germplasm into some of the private label offerings, some of your retail customers, like a Dyna-Gro would offer? I also noticed that the word provide doesn't appear in

this presentation at all appears 5x in your September deck. And my last question would be, what is new from the September deck? Like you said in your prepared opening remarks, a lot of this you draw into more detail when you present to us in Iowa in September. And you can highlight that's new and incremental since we last got together in September. Thanks.

Chuck Magro, Chief Executive Officer:

Yeah, so several questions there, Joel. Let's start with what's new. So, look this was feedback we received after the investor day where, generally speaking, I think we were told that it was a very good introduction to the pipeline, but there's just so much just interest in understanding what's next for Corteva.

And in September, we sort of introduced the Frontier Markets, and we laid out sort of the $24 billion of peak revenue. And today, what we wanted to do is just give you a little bit more substance behind the $24 billion, which I think Sam did a tremendous job of kind of sharing with you some of the major journeys in terms of what's happening in our insecticide portfolio, what's happening in our fungicide portfolio and our herbicide portfolio.

But, I think the other thing that is new is that the Frontier Markets, the market opportunity and then what we called emerging markets, which is new today around gene editing, reduced stature corn that, that is not -- those buckets are not included in the $24 billion. And we'll move, over time, we'll continue to update the market and as we get comfort with the value creation of those different technologies, we'll move those into the net peak revenue.

So, that's sort of the outline of today's session. Brevant, what I would say, is the technology that Sam has referred to can go into multiple brands. And Brevant today is probably more important to us and to our customer base than ever before. And it is one of the technologies that we're seeing, certainly in the medium term through 2025 and out to the end of the decade, we'll continue to grow, in terms of value to the retail channel, to farmers, and of course to Corteva. So, we certainly didn't mean to not include it, but I think today's message was really around the fundamental technology that can

be branded in Pioneer, it can be branded in Brevont. So, that's sort of how we're thinking about it. Today was really the technology, not really the market or go-to-market discussion.

Your last question on germplasm licensing opportunities with our channel partners. The out-licensing opportunity we believe is very significant. It's a multi-billion dollar market opportunity and Corteva really didn't play in that in any big way for some time. Today, we're focused on Enlist and on the value creation that we have with royalty reduction as we just talked about with Chris' question.

But certainly, all options are on the table today. If there are channel partners that are interested in licensing our germplasm, our trait packages and putting them into different branded packaging and their brands, we would be certainly open to have that conversation. In fact, even going around the world, that's most likely what will happen. We don't have a purely branded strategy around the world. We're quite comfortable working in other brands and getting value for the underlying technology.

So, that's where the future is pretty exciting for us is now that we're working through all the freedom to operate issues, as Sam has said very clearly, we'll going to be in a really nice position towards the end of this decade to have some pretty exciting, I think value creation discussions with the channel around the world.

Operator:

Steve Byrne with Bank of America, your line is open.

Steve Byrne:

Yes, thank you. For the enlist soybeans this year, roughly, we estimate 50 million acres, perhaps 25 million of it in a Pioneer bag and maybe another five in a Stein bag. The question really is on that other $20 million, roughly speaking, that's in third-party seed companies or independent seed companies, what fraction of that would be your germplasm versus MS Tech? And as this grows from here year, do you share in that royalty for the Enlist

trait that is expanding into that independent seed company platform?

Chuck Magro, Chief Executive Officer:

Good morning, Steve. So, it's a pretty detailed question. Let me see if I can at least get close to answering it for you. First, at the highest level, we continue to be very pleased with the market and the farmer acceptance of Enlist. To be on over 50% of the U.S. soybean acres this year is a very significant milestone for us. And it's truly a testament of the importance and value of this technology is bringing on the farm.

Now, you're right. So, we do have licensing arrangements with over actually 100 organizations across the marketplace. And we are entitled to certain royalties as a codeveloper of that technology, but we're not going to give the splits or the mixes. And each commercial relationship is proprietary and it does vary to some degree. But what we can tell you, and we'll just go back to what we've communicated is that there's 100 million of net royalty reductions really driven by Enlist today in 2023 that grows to 250 million by 2025. And then through the other technologies that Sam mentioned just a few minutes ago, we get to royalty neutral by 2030.

All of that, the relationship, the royalties are all factored into that overall strategic journey, which I think is pretty exciting because there is a significant margin opportunity here for Corteva.

Operator:

At this time, I would like to turn the call back over to Kim for a virtual question.

Kimberly Booth, Vice President, Investor Relations:

Thank you. The next web question is that, as it pertains to some of the new partnerships announced for the Frontier Market opportunities, can you explain how you plan on sharing the economics along the value chain? Chuck, I'll turn it to you.

Chuck Magro, Chief Executive Officer:

Okay. Thanks, Kim. So, again, the primary reason that we are entering these partnerships, and it is pretty clear when we are talking about specialty oils and proteins or even biofuels that the reason that some of these have had some resistance in the past is that no one company can do it alone, right. We need to work with the entire value chain. And if you just take the double cropping Canola system that we are going to roll out for southern U.S. farmers with Bunge and Chevron, it is the perfect example, right.

So, there's real significant value on the farm. Farmers will be able to produce two highly profitable crops in one season or in 1-year and that will allow them to grow their overall income. There's also a benefit to the climate, because the carbon intensity is significantly different for producing two crops than one. And so, how we share that value, first we want the farmer to really understand this and to be very successful in moving to these regenerative agriculture double cropping systems. Then, obviously, we want the entire value chain to see that there's benefit in this.

And certainly, when you have two stand-up companies like Chevron and Bunge, who see the value in this, we couldn't ask for better partners. There will be an opportunity I think for the entire value chain to then have a sufficient return. I'm not going to give you specifics of the agreement, because I don't think that that's appropriate, but it starts with the overall value creation on the farm and making sure that farmers feel comfortable and are successful in moving to a double cropping system with our Canola seed.

And so maybe I'll just leave it there to say that, I think that what we're going to show over time is that these new systems are good economically and you'll eventually be able to see that in all three of the companies, but most importantly I think they're good for the environment and they're good for farming.

Operator:

Our next phone question will come from Frank Mitsch from Fermium Research. Please go ahead.

Frank Mitsch:

Great, thank you. And actually, if I could follow up on that the renewable fuels opportunity certainly seems like a big one for you and you laid out some trip projections for 2030. I'm curious about the visibility to get there. How does this ramp up, what should we be expecting on these initiatives by 2025, '27, '30? How should we think about that opportunity? Because as I said, it does seem pretty compelling.

Chuck Magro, Chief Executive Officer:

Yeah. So, Frank, Sam's very close to this. He was key and instrumental to the arrangement that we just, the collaboration with Bunge and Chevron. So, maybe I'll turn it over to Sam to give his perspective.

Sam Eathington, Executive Vice President, Chief Technology and Digital Officer:

Yeah. Thanks, Frank for that. On the -- specific one here on the double cropping with winter Canola, the joint collaborations we have, what it really lets us drive is we bring the technology, we bring the agronomics. You have to be able to manage this crop. You have to know how to, say control the weeds, how to fertilize it, et cetera. Bunge really brings that ability to buy the grain and do the crushing and of course Chevron downstream using the renewable energy from that oil.

The plans we have in place is we have a ramp-up plan over the next couple of years. We're launching it this year on, like you said, about 8,000 acres with a number of farmers to really expand their exposure to it and an opportunity to learn from it. We've been testing this now the last two to three seasons and so we have a good feel for how the product would perform.

If we can achieve our targets and we've laid out that, somewhere in that, let's call it 45 bushels or more, becomes very attractive for the farmer and the crushed downstream value situation. We've been able to achieve that today, as we continue on these launch these launch acres to prove that out.

We have laid out with Bunge, over the next couple of years of what this could look like. And so, we think as the renewable energy value continues, this could play on about 10 million acres and we have a path to lay out, what that could look like with this collaboration.

Sam Eathington, Executive Vice President, Chief Technology and Digital Officer:

Yeah, Frank, so then if you take that, and I know your question was sort of higher order, bigger picture. Look, biodiesel, sustainable aviation fuels, there's so many government policies under development now to make driving towards incentives around this. We think that this is a global phenomenon, it's not just a North American phenomenon. And the key will be I think for us to bring the science and technology to design crops that have the maximum, for example oil content, that's required for these fuel sources and really help farmers then with just understanding the differences in the crop and the agronomy.

And of course, working with other channel partners around the world to ensure that there's just strong momentum here, because I think that this is a really important set of tools that we're bringing to the marketplace now to drive, I think the energy transition and it won't be one thing or the other, we're going to have to bring a lot of different choices here. So, soybeans could be used in some markets. This one is Canola, even corn oil will most likely be used. So that's the work that we have to do is we're looking at all of this from a science and R&D perspective what's the best way how to optimize that oil content. And that requires good collaboration through the channel.

Operator:

We'll hear next from Kristen Owen from Oppenheimer.

Kristen Owen:

Great. Thank you for the question. A bit of a follow-up to I think one of the web-based questions. But, when I'm thinking about these emerging

opportunities, there's, of course, the science aspect. But then as you're thinking about the range of targets on the CP side or multiplex gene editing on the seed side, this really just becomes a big data challenge. So, Sam, I was wondering if you could talk a little bit about the IT infrastructure you have in place to support this new wave of technology discovery and how much of the R&D spend is actually going towards supporting some of the automation or tools that are needed to accelerate cycle times? Thank you.

Chuck Magro, Chief Executive Officer:
Go ahead, Sam.

Sam Eathington, Executive Vice President, Chief Technology and Digital Officer:
Great. Thanks, Christine for the question. And you spot on that, if you're going to do a lot of multiplexing gene editing or you're going to do discovery of new microbial actives in a very large space of potential. The IT data to do that is very critical. In my organization, I have a separate function. Their entire job is working across our seed and our crop discovery and development programs to really deliver and focus on those IT tools that make it possible.
We do spend a fair amount on this and rightfully, so because we have in place a lot of automation to scale up the size of our programs. We run a lot of predictive algorithms inside of our development opportunities. We utilize a lot of artificial intelligence capabilities. We have a number of collaborations, both also working internal, but also external of really expanding that tool and capability to help optimize our discount program. So, it's a big part, and I think Chuck mentioned early on a little bit about our structure, with my role also across the company, it's the opportunity to say, how do you extend this decision science, not only in your R&D program to better product development, but also all the way out to your customer, to make sure they're getting the optimal value from that product. So, it's a big part of what we do and it's critical for these platforms in the emerging

area.

Operator:
We do have time for one final question. That will come from Richard Garchitorena from Wells Fargo. Please go ahead.

Richard Garchitorena:
Great. Thanks for taking my question. Just wanted to follow-up on the Stoller and Symborg acquisitions, you've owned them for 2-months now. Anything you can sort of give us in terms of how the integration is going, looking at R&D? You talked about it, nutrition I guess is one opportunity, but maybe others that may be there. And then how does the growth there fit into your R&D budget in terms of maybe it looks like you shifted a little more into crop protection in 2023 and going forward? Thank you.

Chuck Magro, Chief Executive Officer:
Yeah, Richard. So, let me give you the high level and then Sam can talk about what he's seeing from technology and how he's integrating it. So, with those two acquisitions, we feel we have now a global biologicals platform. And selling biologicals is a little different, right. It's all about plant physiology, and Stoller and Simborg clearly are experts in that area.
What we're seeing through the integration in early days, just at a high level, is we like everything that we're seeing now. It's good growth, good margin opportunity. They have core strengths in Latin America, which we have known. And there's a great opportunity I think to move those products deeper into the EU, given where their policy is around biologicals and with our regulatory skill set that should be very, very helpful.
And we think that there's just significant upside, over time, it's not going to happen overnight in the North American market. And that wasn't even built into our business case. So, it's a little too early to get specific except to say that, so far what we see with the integration and the business performance, we like. And Sam's been spending a lot of time making sure that

their technology development, their product lines are fitting in with our R&D efforts. And maybe, Sam, you can quickly comment on that.

Sam Eathington, Executive Vice President, Chief Technology and Digital Officer:

Yeah, thank you, Richard. And Chuck said, we've been working a lot on the integration, we continue to see a lot of a lot of positives. I'd also say the cultural fit, the excitement by the employees in Stoller and Symborg on the R&D side, especially, has been extremely positive. We've been really happy with the alignment in our philosophies and how we do stuff.

Key short-term sort of things, some of our formulation capacity and capability is, we think immediately useful for some of their products, our regulatory capacity and ability to get stuff approved around the world is quite beneficial their expertise, especially some of the microbial space is really a catalyst and jump-starting, how we think about our R&D activity and programs. And we're actively working right now to fully integrate all the product concepts into the pipeline prioritization and evaluation process, so that we're fully aligned in our discovery and field testing programs going forward in 2024.

Operator:

That does conclude the Q&A portion of today's conference. I'd like to turn the conference back over to Kim for any additional or closing comments.

Kimberly Booth, Vice President, Investor Relations:

Great. We thank you all for joining and for your interest in Corteva. We hope you have a safe and wonderful day.

Operator:

That does conclude today's teleconference. We thank you all for your participation. You may now disconnect.