



Sustainability Report | 2022

Working Together for a Planet of Plenty™





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Letter From the CEO

Dear Friends,

The agri-food community has the great privilege of nourishing our people, our animals and our land.

It is a significant responsibility — and yet, not a new one.

Today’s society was built on the ingenuity of our planet’s original stewards of the land — farmers, ranchers and growers. When humans began cultivating crops and raising animals for food, it changed everything. Our nomadic ancestors put down roots, built communities and produced enough food to support them.

When their crops failed or their animals didn’t thrive, our agricultural ancestors adapted and tried again. Their innovation — and grit — nourished a growing population and paved the way for advancements in science and technology.

Today, climate change threatens agriculture’s ability to feed the world’s growing population. Fortunately, the world’s best problem solvers are on the case.

We believe agriculture has the greatest potential to positively shape the future of our planet. That’s why Alltech is uniting the agri-food community in Working Together for a Planet of Plenty™. It’s not just our mission. It’s our purpose.

Through collaboration and innovation, the agri-food community can create a world where science-based solutions help ensure sustainable food production for the global population. Agriculture has already made huge strides in sustainability. Imagine what is possible when we all work toward the shared goal of creating a world of abundance for future generations.

Together, we can provide nutrition for all, revitalize local economies and replenish the planet’s natural resources.

At Alltech, we see opportunities in every challenge. We are dedicated to delivering smarter, more sustainable solutions to advance the health and performance of animals while also lowering their impact on the environment.

Alltech became a signatory to the United Nations Global Compact in 2019. We reaffirm our commitment to conducting our business in a way that meets fundamental responsibilities in the areas of human rights, labor, the environment and anti-corruption, as outlined in the U.N.’s Ten Principles.

This report demonstrates the actions we are taking to align our business with our Planet of Plenty™ purpose and our commitments to ambitious climate action

and advancing the U.N. Sustainable Development Goals. This includes our emissions reduction goals and progress toward key performance indicators, our efforts to promote sustainability in the workplace and in our communities, and the ways in which we are advancing environmental actions in the industry.

We believe that diversity, equity and inclusion cultivate creativity and drive innovation. This report details the ways in which we are promoting an inclusive work environment where each person is valued and feels inspired to contribute their best. As we seek to strengthen our culture of curiosity, we continue to set targets that will propel us into a new era of possibility.

By adopting new technologies, improving business practices and embracing innovation, the agriculture industry is working together to harness the power of human ingenuity and the sustainable science of agri-food to create a Planet of Plenty. We are honored to be part of it.



Sincerely,

Dr. Mark Lyons
President and CEO, Alltech



About Alltech: A Global Leader in the Agriculture Industry



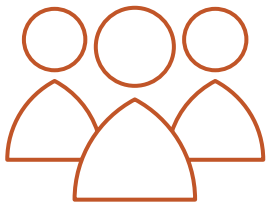
Founded in 1980 by Irish entrepreneur and scientist Dr. Pearse Lyons, Alltech delivers smarter, more sustainable solutions for agriculture. Our diverse portfolio of products and services improves the health and performance of plants and animals, resulting in better nutrition for all and a decreased environmental impact.

We are a global leader in the agriculture industry. **Our team produces specialty ingredients, premix supplements, feed and biologicals backed by science, and an unparalleled platform of services.**

Headquartered just outside of Lexington, Kentucky, USA, Alltech has a strong global presence. Strengthened by more than 40 years of scientific research, we carry forward a legacy of innovation and a unique culture that views challenges through an entrepreneurial lens. As a private, family-owned company, we adapt quickly to our customers’ needs and focus on advanced innovation.

We believe agriculture has the greatest potential to shape the future of our planet. Our more than 5,000 talented team members worldwide share in our purpose of Working Together for a Planet of Plenty™. Together, we can provide nutrition for all, revitalize local economies and replenish the planet’s natural resources.

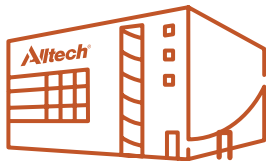
For more information, visit alltech.com, or join the conversation on [Facebook](#), [Twitter](#) and [LinkedIn](#).



5,000+
team members
in 85+ countries



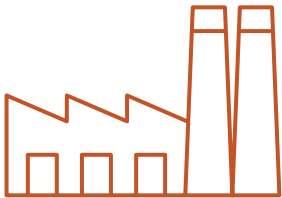
Customers in
120+ countries



5 bioscience
centers



20+ formal research
alliances, complemented
by collaborations with
100+ universities



80+ manufacturing
facilities strategically
located throughout
the world



2022 Alltech Sustainability Report Highlights

Our Commitments

This report provides an in-depth look at the actions we have taken that demonstrate our commitments to the United Nations Global Compact and the U.N. Sustainable Development Goals initiative — and to Working Together for a Planet of Plenty™.



Planet
of Plenty™

Working Together for a Planet of Plenty™

Alltech is committed to prioritizing the efficient production of nutritious food while working to minimize our carbon footprint and helping producers worldwide find and implement solutions to their sustainability challenges.



2021 Emissions

Scope 1 — 108,894 MT CO₂e

Scope 2 — 47,525 MT CO₂e

Scope 3 — Primary Categories:

Category 1, Purchased goods and services — 1,211,569 MT CO₂e

Category 11, Use of sold products — 286,538 MT CO₂e

Our Reduction Plan

Alltech has committed to the following 2030 GHG reduction targets from a 2021 base year:

Scope 1 and 2 — 42%

Scope 3 — 25%

These targets follow the reduction trajectory recommended by the Intergovernmental Panel on Climate Change.

2022 By the Numbers

\$4.5M Invested in efficiency projects

7,600 Metric tons of CO₂e reduced as a result of efficiency projects

100% Production team members trained on health and safety

52% Women in the newest class of Alltech's Mini-MBA executive management program

30 Countries supported by our climate advisory service

Sustainability Spotlights



Alltech Coppens' sustainability scoring index reflects the carbon footprint of our feed on packaging materials

Alltech Serdán reduces CO₂e by 650 tons through its photovoltaic system and use of compressed natural gas (CNG)

Sustainable packaging changes have been implemented at Alltech manufacturing facilities around the world

Alltech E-CO₂ has conducted **over 20,000 on-farm environmental assessments**

Alltech São Pedro recognized for **emissions reductions**



Alltech has completed seven product LCAs and plans to complete 40 assessments by the end of 2023



Electric vehicle charging stations and solar power in use in many regions

Alltech reaccredited by the **Pet Sustainability Coalition**

Harnessing the Power of Agriculture

The power of agriculture is undeniable.

For most of our existence, humans hunted, gathered and scavenged in the wild to feed their large, nomadic communities. However, the development of agriculture about 12,000 years ago dramatically changed the way humans lived, and it has been widely recognized as a major turning point in our evolution into fully modern humans.

Agriculture allowed our ancestors to establish permanent settlements, nourished the growth of the world's population and paved the way for advancements in science and technology. It has grown to become the world's largest industry, employing more than 1 billion people and generating over \$1.3 trillion worth of food annually.

Today, agriculture is standing at the precipice of another great milestone.

Healthy, sustainable food systems are vital to achieving the world's development goals and ensuring global economic growth — but climate change threatens these goals. It disrupts every aspect of agriculture and makes it increasingly difficult to ensure that sustainable nutrition is accessible to the growing global population.

Alltech believes that agriculture has the greatest potential to positively shape the future of our planet, just as it influenced the way humans experienced the world in the past. **That's why we are uniting the agri-food community in Working Together for a Planet of Plenty™ — a world where we can provide proper nutrition for all, revitalize local economies and replenish the planet's natural resources.**

We know that it would be impossible to create a world of abundance for future generations without addressing climate change. The demand for action provides a huge opportunity for the agriculture industry, because we have the ability to not only reduce our greenhouse gas (GHG) emissions, but to capture and sequester emissions that have been released by other industries.



Farmers have played a pivotal role throughout history and remain crucial today as they sustainably cultivate the land, nourish communities and ensure food security for the world.

The agriculture industry can also improve production efficiency while reducing its GHG emissions with the help of nutritional solutions, new technologies and optimal management practices. On-farm research and data collection can help the agriculture industry better understand the carbon cycle and accurately measure the effects of livestock production, leading to the development of refined strategies for tackling climate change.

As a leader in the global agriculture industry, Alltech is committed to prioritizing the efficient production of nutritious food while working to minimize our carbon footprint and helping producers worldwide find and implement solutions to their sustainability challenges.

Through strategic collaboration and stewardship, we can transform the future of our planet with sustainable farming and nutrition.

A Roadmap to GHG Reduction

Alltech is committed to reducing our GHG emissions as recommended by the Intergovernmental Panel on Climate Change (IPCC) to limit global warming and combat the most urgent challenges posed by climate change. IPCC has set ambitious targets that require significant transformations across all sectors of the global economy.

The world must reach net-zero GHG emissions by 2050 to limit global warming to 1.5°C and avoid the worst impacts of climate change. Any reduction target between now and 2050 should fall on that straight-line trajectory to net zero.

Alltech has committed to the following 2030 GHG reduction targets from a 2021 base year:

Scope 1 and 2 – 42%

Scope 3 – 25%

Our sustainability team worked with colleagues from Alltech's finance, operations, engineering, and health and safety departments, among others, to collect and analyze our data to create an **emissions reduction roadmap** that will help us meet our GHG goals.

We will report our progress toward our GHG goals in our annual sustainability report. This year, we will also begin disclosing our annual climate-change mitigation efforts to CDP (formerly called the Carbon Disclosure Project).

Read more about our emissions and reduction plan on page [26](#).

The U.N. Global Compact’s Ten Principles: Our Pledge to Treat All Individuals Fairly and Create an Inclusive Environment

The United Nations Global Compact’s Ten Principles

On July 12, 2019, Alltech became a signatory to the U.N. Global Compact (UNGC). The UNGC provides corporations with a value system- and principle-based approach to conducting business. We strive to operate in a way that meets fundamental responsibilities in the areas of human rights, labor, the environment and anti-corruption, and we have incorporated the Ten Principles of the U.N. Global Compact into our strategies, policies and procedures.

The Ten Principles:

HUMAN RIGHTS

- Principle 1:** Businesses should support and respect the protection of internationally proclaimed human rights
- Principle 2:** Make sure that they are not complicit in human-rights abuses

LABOR

- Principle 3:** Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining
- Principle 4:** The elimination of all forms of forced and compulsory labor
- Principle 5:** The effective abolition of child labor
- Principle 6:** The elimination of discrimination in respect to employment and occupation

ENVIRONMENT

- Principle 7:** Businesses should support a precautionary approach to environmental challenges
- Principle 8:** Undertake initiatives that promote greater environmental responsibility
- Principle 9:** Encourage the development and diffusion of environmentally friendly technologies



Alltech is committed to treating all individuals fairly and creating a diverse and inclusive work environment.

ANTI-CORRUPTION

- Principle 10:** Businesses should work against corruption in all forms, including extortion and bribery

Our Commitment to the Ten Principles

PRINCIPLES 1, 2, 3, 4, 5, 6 AND 10

Alltech’s Labor and Human Rights Policy reflects our respect for human and labor rights standards and our commitment to treating all individuals fairly and creating a diverse and inclusive environment.

We are committed to the protection and advancement of fundamental human rights and will not be complicit with human rights abuses. We do not tolerate the use of exploitative child labor, involuntary labor and/or human trafficking in our operations. Alltech expects our suppliers and contractors to uphold the same standards.



Alltech has incorporated the Ten Principles of the U.N. Global Compact into all our business procedures.

The policy also expresses Alltech’s respect for freedom of association and collective bargaining and prohibits discrimination, harassment and bullying in the workplace.

PRINCIPLES 7, 8 AND 9

Our Health, Safety and Environmental (HSE) Policy is a demonstration of our commitment to protecting the health, safety and environment of everyone who plays a part in our operations, lives in the communities in which we operate, or uses our products. We comply with all applicable HSE laws and regulations and conform to internal requirements. Our HSE policy also details the ways we are working to improve our core activities to reduce our environmental impact.

Read more about policies on page [16](#).

The U.N. Sustainable Development Goals: A Shared Blueprint for Worldwide Peace and Prosperity

Committing to the United Nations Sustainable Development Goals (SDGs), the world’s largest corporate sustainability initiative, was a natural step for Alltech because we are passionate about sustainability and making a positive impact on the planet we all share. In 2019, when Dr. Mark Lyons announced our new purpose of Working Together for a Planet of Plenty™, he called for collaboration and partnership across industries and geographies, because innovation knows no boundaries. Today, our commitment to the SDGs strengthens our mission to achieve a brighter future — together — and to inspire others in our industry to do the same.

Alltech identified nine of the U.N.’s 17 SDGs that we feel most closely align with our core business and are therefore actionable by the company:

- SDG 2:** Zero Hunger
- SDG 3:** Good Health and Well-Being
- SDG 4:** Quality Education
- SDG 5:** Gender Equality
- SDG 8:** Decent Work and Economic Growth
- SDG 13:** Climate Action
- SDG 14:** Life Below Water
- SDG 15:** Life on Land
- SDG 17:** Partnerships for the Goals

SDG Opportunities and Responsibilities

Agriculture has many opportunities to address climate change (SDG 13: Climate Action), and governments and corporations around the world are relying on farmers to deliver on the sustainability goals that they have committed to achieving within their countries and companies. This is

an enormous opportunity for Alltech, as many of our technologies and services can help farmers reduce their GHG footprint and their broader environmental impact. Read more about our products and services on pages [47-51](#).

SDG Priorities

Climate change threatens agriculture’s ability to feed the world’s growing population. It is difficult to imagine a world in which we can achieve any of the SDGs without also tackling climate change. Therefore, SDG 13 must be the highest priority for Alltech and the entire agriculture industry.

Integrating the SDGs

Alltech’s founding ACE principle requires that all of our endeavors seek the safety and well-being of the Animal, the Consumer and the Environment. Our Planet of Plenty™ purpose carries this legacy forward as we deliver smarter, more sustainable solutions for agriculture. This includes nutritional technologies that improve the health and performance of plants and animals, resulting in better nutrition for consumers and a decreased environmental impact. This mission fundamentally aligns with SDG 2 (Zero Hunger), SDG 3 (Good Health and Well-Being) and SDG 15 (Life on Land). Furthermore, when animals are more productive, it reduces their environmental footprint, which advances SDG 13 (Climate Action) and SDG 15 (Life on Land).

Expected Outcomes and Impact

Alltech has developed specific goals for each of the SDGs that are aligned with our business, and we are implementing a system for measuring and reporting our progress on these SDGs. We expect to discover more opportunities for innovation and improvement as we work to further advance these SDGs. Alltech communicates our progress toward these goals internally, periodically providing updates in our weekly company magazine as well as our weekly town hall and other communications.





Our Progress Toward the U.N. Sustainable Development Goals


SDG 2: Zero Hunger

SDG	Targets	Our Progress So Far
	Promote sustainable food production systems and support the implementation of resilient agricultural practices that increase productivity and production.	<p>We are sharing the science of sustainability with our team members and communities via educational programs and Planet of Plenty™ stories, equipping our teams to engage with the agri-food supply chain. We share environmental, social and governance (ESG) info in our company magazine and offer training in our e-Learning Hub.</p> <p>A FEW EXAMPLES</p> <p>Alltech India partners with Amul on the Nutri Milk Project, which helps improve the nutritional status of children in 11 schools. We also support infrastructure improvements and donate supplies and learning tools.</p> <p>Alltech Philippines supports a children’s home with food and other necessities.</p> <p>Alltech Australia teams up with Foodbank SA, Australia’s largest food relief organization.</p>

SDG 3: Good Health and Well-Being


SDG	Targets	Our Progress So Far
	Ensure the health and well-being of colleagues and communities .	<p>Colleagues: We promote the well-being of our workforce and provide safe work environments. The Alltech Wellness Portal fosters good health through assistance programs, health and safety data, educational tools and mentorship. All permanent team members receive health insurance. Our entire production team is trained on health and safety issues.</p> <p>Communities: We support conditions for good health in our 80+ global manufacturing facilities and promote mental health wellness in the farming community, particularly during Ag Mental Health Week.</p>

SDG 4: Quality Education

SDG	Targets	Our Progress So Far
	Invest in education and talent development to enable the next generation to build robust careers.	<p>INVEST</p> <p>Within Alltech: Over 100 colleagues have been sponsored to pursue and complete master’s and doctoral degrees. Nearly 600 team members have completed our advanced management development program. We provide a variety of role-specific training and development opportunities.</p> <p>In our communities: Alltech and the Pearse Lyons ACE Foundation have invested \$2.6 million in global educational initiatives.</p> <p>ENABLE</p> <p>Within Alltech: We support training for team members, including through our e-Learning Hub, Back 2 Basics training, Talent Development Program for sales, Atlas learning resources and virtual training opportunities.</p> <p>In our communities: Our scientists and colleagues are active in education outreach in Kentucky, Ireland, Mexico, India, China, Haiti and several universities in Europe. They visit classrooms to demonstrate scientific activities, mentor students and serve as community resources.</p>



SDG 5: Gender Equality


SDG	Targets	Our Progress So Far
	Achieve gender equality and empower all women and girls.	<p>ACHIEVING</p> <p>Within Alltech: Gender equality is essential to advancing the agri-food industry and society at large.</p> <ul style="list-style-type: none">• Percentage of team members by gender: 75% men, 25% women.• Management: 60% men, 40% women. <p>In our communities: We are a member of the 30% Club, which supports initiatives to increase the leadership gender balance throughout our industry.</p> <p>EMPOWERING</p> <p>Within Alltech: Of the 576 team members who have graduated from the Alltech Mini-MBA executive management program, 75% are men and 25% are women. The 2022 graduates were 66% men, 34% women. 48% of new students are men; 52% are women.</p> <p>In our communities: We are the sponsor of the Women in Food and Agriculture Mentorship Program. The 2022 program saw 320 industry representatives matched with mentors or mentees.</p>

SDG 8: Decent Work and Economic Growth


SDG	Targets	Our Progress So Far
	Promote inclusive and sustainable economic growth , employment and decent work for all. Sustained and inclusive economic growth can drive progress, create decent jobs for all and improve living standards.	<p>ECONOMIC GROWTH</p> <p>Within Alltech: We are achieving higher levels of economic productivity through technology and innovation. Examples include investments in new testing facilities and the creation of an innovation team to analyze the environmental impact of new projects.</p> <p>In our communities: Supporting profitable livestock production is a priority. Examples include supporting innovation through the Pearse Lyons Cultivator; chairing the Bluegrass AgTech Development Corp., which helps cultivate an agri-food innovation ecosystem in Kentucky; and supporting innovation contests.</p> <p>EMPLOYMENT</p> <p>We support productive employment for all, as well as equal pay for work of equal value.</p> <ul style="list-style-type: none">• We create jobs in rural communities.• We are committed to ensuring humane working conditions in our supply chain.• We ask third-party partners to demonstrate shared commitments by agreeing to our Business Partner Code of Conduct.• Our risk assessment and inspection program includes unannounced inspections at our locations and at third-party locations deemed high risk for child and forced labor conditions.



SDG 13: Climate Action


SDG	Targets	Our Progress So Far
	<p>Mitigate the risk of climate-related hazards through GHG reductions while also strengthening communities' resilience and ability to adapt amid natural disasters.</p>	<p>MITIGATING Within Alltech: Alltech has committed to the following 2030 GHG reduction targets from a 2021 base year: Scope 1 and 2 – 42% Scope 3 – 25%</p> <p>In our communities: Without compromising performance, we help producers reduce emissions from livestock through measurement tools, nutritional technologies proven to reduce emissions intensity from livestock, and on-farm support. Alltech E-CO₂ has conducted more than 20,000 certified environmental assessments.</p> <p>ADAPTING Within Alltech: Team members volunteer in schools, support their communities and participate in activities focused on mitigating climate change.</p> <p>In our communities: The Pearse Lyons ACE Foundation works to address the urgent needs of farmers and their communities amid natural disasters. Examples include: Texas farmers affected by Hurricane Harvey; the 2020 bushfires in Australia that ravaged more than 10 million hectares; and farmers in Eastern Kentucky who were victims of devastating floods. We respond quickly with donations and the deployment of team members to offer assistance.</p>

SDG 14: Life Below Water

SDG	Targets	Our Progress So Far
	<p>Protect our oceans by reducing pollution while also sustaining life below water.</p>	<p>PROTECTING Within Alltech: We have made changes to our packaging that resulted in the requirement of less paper and plastic. Changes to our North American packaging process have resulted in an estimated annual savings of 91 tons of paper. Alltech Coppens has moved to 100% recyclable packaging; Alltech Europe has reduced packaging burden from 2,300 grams per pallet to 500 grams per pallet.</p> <p>In our communities: Our solutions help dairy and beef producers reduce the nitrogen runoff that pollutes waterways and creates dangerous algal blooms. We address trace mineral and heavy metal contamination in soils and water. Alltech's Total Replacement Technology™ uses organic trace minerals that are more efficiently absorbed, stored and utilized by animals, resulting in less waste, less leaching and runoff, and less pollution of waterways.</p> <p>SUSTAINING Within Alltech: Alltech Coppens developed a sustainability scoring index to reflect the carbon footprint of our fish feed. We have expanded on the fish in-fish out metric to minimize the use of wild-caught fish in feed. Artificial intelligence is increasingly being used to optimize feed deployment and reduce nutrient waste.</p> <p>In our communities: Alltech Coppens uses Global Feed LCA Institute (GFLI) environmental data in our formulation software. The team plans to quantify circularity and measurement for the use of non-edible raw materials for human food. We aim to communicate this data via marketing collateral and labels.</p>



SDG 15: Life on Land

SDG	Targets	Our Progress So Far
	Responsible sourcing of raw materials and re-establishing farming's positive impact on the land and use of shared natural resources.	RESPONSIBLE Within Alltech: For every yucca tree harvested for our products, we plant three replacements using seedlings from our on-site nursery in Alltech Serdán, which has grown more than 200,000 seedlings. In our communities: We are investing in transparency by conducting life-cycle analyses (LCA) of our products. We are committed to completing 40 product LCAs in 2023.
		RE-ESTABLISHING Within Alltech: Alltech Crop Science solutions strengthen soil health to allow for greater carbon sequestration, reduced pesticide use and increased natural antioxidants. Alltech Spain has prioritized activities that promote biodiversity, including the development of Bee-Sacc™, a highly digestible protein feed that enhances beehive immunity. In our communities: Use of our technologies helps to improve resource efficiency. This is demonstrated widely in this report. See page 51 for more information.

SDG 17: Partnerships for the Goals

SDG	Targets	Our Progress So Far
	Working together to support the achievement of the Sustainable Development Goals.	<p>We are uniting the agri-food community in Working Together for a Planet of Plenty™ and establishing partnerships around the globe to mobilize and share knowledge and technologies to support the achievement of the SDGs.</p> <ul style="list-style-type: none">• We support and serve on the advisory council of the CLEAR Center at the University of California, Davis. The Center aligns with our dedication to science-based solutions for sustainable agriculture and the communication of these solutions.• Alltech Spain and Alltech E-CO₂ are working in partnership with La Cooperativa Ganadera del Valle de los Pedroches (COVAP) to minimize the impact of the cooperative's products and supply chain.• Our partnership with Noble Foods enables both companies to improve poultry performance, meet sustainability expectations and increase the profitability of the supply chain.



Working Together for a Planet of Plenty™

Alltech is Uniting the Agri-Food Community to Create a World of Abundance

Alltech is inspired by the immense challenge the world has presented us: to produce enough nutritious food for all people while also caring for our animals and sustaining our land, air and water for future generations.

The agri-food community is uniquely prepared to shoulder this responsibility. Amid the challenges of today's world, agriculture has the greatest potential to positively shape the future of our planet.

With the advent of new agricultural technologies, the adoption of improved sustainable farming practices and, above all, the ingenuity inherent in the human spirit, a world of abundance can be ours. But it cannot be achieved alone.

That's why Alltech is uniting the agri-food community in Working Together for a Planet of Plenty™. A planet where science-based solutions help ensure sustainable food production for the global population. A planet where agriculture's story is central to the development of thriving

communities and ecosystems. A planet where, through collaboration and innovation, we can create a world of abundance for future generations.

Together, we can provide nutrition for all, revitalize local economies and replenish the planet's natural resources.

Creating a future of sustainable nutrition and farming will require us to maintain a sharp focus on the three pillars of sustainability: economic, environmental and social. As ambassadors of our Planet of Plenty™ message, we want to be transparent about our sustainability goals and the progress we are making on our journey. By striving to improve the health of animals, plants and soil, maximize the value of feedstuffs, increase the efficiency of the farm and reinvest in innovation, we are sharing our purpose and highlighting the sustainable power of science in agri-food.

A Planet of Plenty™ transcends environmental sustainability. It is a vision of a more positive future, full of promise and possibility. We must take actions

that help sustain agriculture, revitalize rural communities and enable family businesses to thrive. We want to replenish the planet's natural resources so farmers can continue to nourish the growing population.

Guided By This Purpose, Alltech Is:

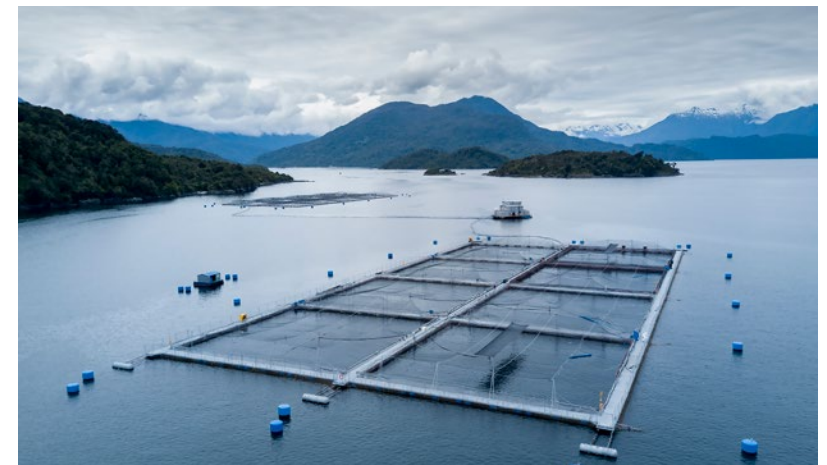
- Developing nutritional and digital technologies, improved farm management practices, and innovations in animal well-being and human health
- Partnering with like-minded companies and individuals to solve high-impact issues
- Investing in education and talent development for the next generation of agri-food leadership
- Sharing the sustainable power of science in agri-food through stories and videos on our Planet of Plenty™ website and through our social media channels



The world's farmers help provide food security, promote biodiversity and mitigate climate change through sustainable farming practices.



The agri-food industry can transform the future of our planet with sustainable farming and nutrition.



Farmers and producers nourish the world with quality meat, milk, eggs and seafood that are high in protein and crops that are grown in healthy soil.



Our Planet of Plenty™ purpose addresses humanity’s most basic requirements, as well as our aspirations for a better future.

We want to:

- Support agriculture to nourish a growing population
- Improve safety and quality within the food chain
- Add value and nutrition to fruits and vegetables, meat, milk, seafood and eggs
- Meet the demands of consumers to produce their food and beverages in a way that ensures the welfare of the animal and the environment

A Commitment to the Planet is in Our DNA

Creating a Planet of Plenty™ is at the heart of who we’ve always been. Alltech founder Dr. Pearse Lyons wanted to ensure that the company would have an impact on our industry and our planet far into the future. In 1989,



Dr. Frank Mitloehner, director of the CLEAR Center at University of California, Davis, has been a featured speaker at numerous Alltech events. The CLEAR Center helps our global community understand the environmental and human-health impacts of livestock.

he committed Alltech to our guiding ACE principle, which required all our endeavors to seek the safety and well-being of animals, consumers and the environment. He fervently believed that the well-being of each element of the ACE principle depended on maintaining harmony between all three.

Thirty years later, against a backdrop of diminishing natural resources, a changing climate and a growing population, Alltech President and CEO Dr. Mark Lyons propelled the ACE principle into the future — and into a new world of possibility — with our newly defined purpose of Working Together for a Planet of Plenty™.

A Platform for Collaboration

Alltech has established Planet of Plenty™ partnerships around the globe. Here is a look at some of them:

CLARITY AND LEADERSHIP FOR ENVIRONMENTAL AWARENESS AND RESEARCH (CLEAR) CENTER AT THE UNIVERSITY OF CALIFORNIA, DAVIS

We must gain a better understanding of agriculture’s role in nourishing our world. At the same time, we must also know where to focus our attention to foster a healthy climate and environment. That is where the Clarity and Leadership for Environmental Awareness and Research Center — or the CLEAR Center — can help.

The CLEAR Center is led by Dr. Frank Mitloehner and is based in the department of animal science in the College of Agricultural and Environmental Sciences at the University of California, Davis. The CLEAR Center uses its two cores, research and communications, to help animal agriculture operate more efficiently in order to meet the demands of a growing population and diminish its impact on the environment and the climate.

The CLEAR Center aligns with our Planet of Plenty™ purpose and our dedication to science-based solutions for sustainable agriculture and strong communication of these solutions. Through this partnership, we

Our Sustainability Journey

This report provides an in-depth look at the ways we are demonstrating our commitments to the U.N. Sustainable Development Goals and the Ten Principles of the U.N. Global Compact. We are sharing our sustainability journey through the lens of the three main objectives of Working Together for a Planet of Plenty™:

- Replenishing the planet’s natural resources
- Providing nutrition for all
- Revitalizing local economies

Through data and stories from Alltech team members across the globe, we are clearly demonstrating our commitment to aligning our business with our Planet of Plenty™ purpose.



are demonstrating the potential of the agriculture industry to have a positive impact on the planet for future generations and the proof of what is already being achieved.

We collaborate with the CLEAR Center is through animations that simplify the science behind the biogenic carbon cycle. These educational videos have been shared across social media channels. An Alltech team member serves as vice chair of their advisory council.

LA COOPERATIVA GANADERA DEL VALLE DE LOS PEDROCHES (COVAP)

Alltech Spain and Alltech E-CO₂ are working in partnership with La Cooperativa Ganadera del Valle de los Pedroches (COVAP) to minimize the environmental impact of the cooperative’s products and supply chain.



COVAP, the largest farmer cooperative in Spain, raises purebred Ibérico pigs. It is partnering with Alltech to minimize the environmental impact of its products and supply chain.

Together, Alltech and COVAP have developed a model for COVAP’s network of farms that covers 25,000 dairy cows and 20,000 beef animals, as well as Iberian pork, sheep and goats from different cooperative members.

Alltech is providing cooperative members with its on-farm auditing services, and our colleagues in Spain work closely with the Alltech E-CO₂ team to provide herd carbon footprinting and consolidate the farms into a single footprint for reporting on final products. Alltech is also helping producers identify and define opportunities for improvement. COVAP has incorporated Alltech’s recommended nutrition program to achieve these goals, including solutions such as Optigen®, Yea-Sacc®, Bioplex® and Sel-Plex®. In addition, Dr. Frank Mitloehner and the CLEAR Center at the University of California, Davis have collaborated on the project to help define the environmental impacts of the cooperative’s operations.

This project has expanded to include additional milk processing units that COVAP owns in Spain, upgrading the project from regional to national status. Alltech and COVAP are working together to help COVAP reduce its emissions and environmental impact over a five-year period, as well as to increase its efficiency and lower its costs.

NOBLE FOODS

Noble Foods is the largest egg producer in the U.K. and the third-largest egg producer in Europe. It has 7.2 million layers across 400 farms. The partnership between Alltech and Noble Foods enables both companies to simultaneously improve the performance of flocks, meet sustainability expectations and increase the profitability of the supply chain.

This Planet of Plenty™ partnership combines Alltech’s expertise in animal nutrition and ag-tech solutions with Noble Foods’ 100 years of experience in the egg industry. It was designed to strengthen and accelerate the joint missions of Noble Foods and Alltech, driving sustainable and profitable growth.

Noble Foods is working with Alltech to improve protein efficiency and animal welfare and to reduce food loss, carbon footprint, land use and mineral excretion — and establish itself as a sustainability leader in the global egg industry.

To illustrate that sustainability is not only achievable but also profitable, Noble Foods conducted a trial of Alltech nutritional technologies on the company’s 2-million-hen operation. These products have been shown to improve gut health and function, enhance nutrient uptake, replace inorganic minerals, and reduce the level of essential trace minerals using Alltech Total Replacement Technology™ (TRT), ultimately improving performance and reducing environmental impact.

After 10 weeks, Noble Foods saw improved hen-day production (HDP), egg weight, shell strength and daily egg mass; reduced trace mineral excretion into feces; and reduced mineral leaching. Enzyme activity and mineral bioavailability and absorption were also optimized. Gut health




Phil Ashton of Ashton Farms produces eggs for Noble Foods, one of Alltech’s Planet of Plenty™ partners.

improvements led to decreased mortality in laying hens. Nutrient pollution, mineral leaching and excretion were reduced, including 12 tonnes less phosphorus per year, 38% less zinc, 37% less calcium, 14% less copper and 22% less manganese.

- The trial showed that the use of Alltech nutritional technologies:**
- Improves egg production efficiency and increases edible protein output.
 - Increases the profitability of egg production and the economic livelihood of egg producers.
 - Contributes to the reduction of the carbon footprint of egg production.
 - Reduces arable land use through improved performance efficiency.
 - Reduces mineral excretion.

Alltech’s partnership with Noble Foods is anchored by a shared passion for constant learning and improvement. Alltech and Noble Foods will continue to support each other on the journey to creating a sustainable future for the egg industry through the power of science and nutrition.



Improved Performance, Reduced Carbon Footprint
Noble Foods’ trial of Alltech nutritional technologies helped illustrate that sustainability is achievable and can be profitable.

Alltech Policies Help Align Business Processes With Sustainability Goals

Alltech believes that a sustainable agri-food sector is both possible and essential. As a leader in the agriculture industry, we are working to align our business processes with our goal of creating a world of abundance for all.

Alltech has implemented policies that underscore our commitment to the U.N. Global Compact’s Ten Principles and the U.N. SDGs.

THESE POLICIES ARE FOCUSED ON:

- Anti-bribery and corruption
- Anti-money laundering
- A business partner code of conduct
- Conflicts of interest
- Fair competition
- Global health, safety and environmental standards
- Labor and human rights
- Non-discrimination and anti-harassment
- Responsible sourcing
- Workplace violence prevention

Policies at a Glance

Global Health, Safety and Environmental: Alltech is committed to protecting the health, safety and environment of everyone who plays a part in our operations, lives in the communities in which we operate, or uses our products. We comply with applicable health, safety and environmental (HSE) laws and regulations and conform to internal requirements. Wherever Alltech operates, we have pledged to conduct our business with respect and care for our team members, the local communities and both the local and global environment. We will not be satisfied until we succeed in eliminating all injuries, occupational illnesses, unsafe practices and incidents of environmental harm from our activities.

For environmental protection, Alltech is committed to working on improving the following core activities across the company:

- Energy consumption and greenhouse gases (GHGs)
- Water use
- Biodiversity protection
- Waste and pollution reduction
- Sustainable product end-of-life practices
- Advocacy for environmental services and promotion of sustainable consumption

To ensure the health and safety of our team members and the communities around us, Alltech is:

- Promoting management engagement in health and safety procedures
- Promoting ownership in health and safety procedures by our coworkers to develop a safe culture in the workforce
- Monitoring, measuring and analyzing HSE KPIs
- Developing and promoting health and safety training
- Guaranteeing customer health and safety procedures

Global Code of Conduct: This foundational document demonstrates our commitment to integrity, ethics and compliance in all aspects of our business. It highlights our promise to protect the health and safety of everyone who plays a part in our operations, lives in the communities in which we operate, or uses our products. This policy ensures that Alltech will act with respect and care for both the local and global environments and underscores our organization’s commitment to better managing our energy consumption and establishing a clear strategy to perform cost-effective actions to reduce our utility usage and improve our process equipment efficiency.

Business Partner Code of Conduct: Alltech wants to engage with suppliers who are also striving to follow industry best practices to minimize their social, economic and environmental impact. To ensure that we are partnering with responsible corporate citizens whose values are aligned with ours, we have developed and implemented our Business Partner Code of Conduct, which outlines our expectations for suppliers.

Responsible Sourcing Policy: This policy ensures that inputs to our end products are ethically sourced. We are committed to only doing business with partners whose business practices are aligned with this code, and we expect our business partners to take responsibility for sourcing their own materials and services in an ethical and environmentally sustainable manner.

Compliance Training

Alltech strives to ensure that we meet all regulatory obligations within our business. Open communication and accessible information are key to compliance.

The Alltech Global Compliance team launched a communications campaign via our company magazine to educate our teams about compliance. Topics have included:

- Managing risks from third parties (e.g., vendors, suppliers, distributors, agents, consultants, brokers, partners and customers)
- Trade compliance
- Transaction screening compliance
- Preventing bribery and exploitive labor practices

Team members also have participated in several required learning courses hosted on the Alltech e-Learning Hub, our internal digital learning platform.

Measuring Our Progress and Setting Goals for the Future

To continue advancing our purpose of Working Together for a Planet of Plenty™, Alltech has developed this set of key performance indicators (KPIs) to evaluate the sustainability of our business and stay on target to meet our goals.

Key Performance Indicators

TEAM MEMBER HEALTH AND SAFETY	OUR STATUS	FUTURE ACTION
Percentage of office-based* team members trained on health and safety issues <i>*Alltech team members who are not production team members (e.g., sales, marketing, etc.)</i>	We are developing a training plan and tracking methodology.	By the end of 2024, we aim to have a robust health and safety training plan and tracking methodology.
Percentage of production team members trained on health and safety issues	100%	We will continue training for all team members, ensuring that training is up to date and continually evolving.
Lost time injury (LTI) frequency rate* for production team members <i>*LTI frequency rate for direct workforce = total number of LTI events x 1,000,000/total hours worked companywide</i>	North America: 0.55 Latin America: 8.21 Asia-Pacific: 1.75 Europe, Middle East, Africa (EMEA): 1.15	We aim to improve our LTI frequency rate and collect and track data in new safety management software (Intelex).
Lost time injury (LTI) severity rate* for production team members <i>*LTI severity rate for direct workforce = number of days lost to injuries x 1,000/total hours worked</i>	North America: 2.36 Latin America: 28.13 Asia-Pacific: 5.64 EMEA: 0.74	We aim to improve our LTI severity rate and develop consistent tracking methodology for every region via Intelex by the end of 2023.
Safety training hours per production team members	North America: 11 Latin America: 8-10 Asia-Pacific: 6-8 EMEA: 6.13	We will increase our safety training to at least 12 hours per production team member globally by end of 2024.
WORKING CONDITIONS		
Number of standard-category team members* covered with health care <i>*Standard-category team members refers to Alltech team members who are full-time, part-time and have opted in for health care coverage. This does not include interns, temporary or seasonal staff and those who opted out of health care coverage.</i>	100% of permanent team members	We will continue to provide all permanent team members with affordable health insurance.



Number of office-based* team members engaging in role-related training and development <i>*Alltech team members who are not production team members (e.g., sales, marketing, etc.)</i>	70%	We will increase our investment in role-related development in training to ensure that 100% of office-based team members by 2024 via our e-Learning Hub.
Number of team members receiving advanced management training and development	In the 25 years since it began, the Alltech Mini-MBA executive management program has had 576 graduates (75% men and 25% women). There were 58 graduates in 2022 (66% men and 34% women). The newest class is 48% men and 52% women.	Because we believe diversity, equity and inclusion cultivate creativity and drive innovation, we will continue to strive for gender equity of new groups.
CHILD LABOR, FORCED LABOR AND HUMAN TRAFFICKING	OUR STATUS	FUTURE ACTION
Number of child or forced labor incidents at Alltech facilities	0	We are committed to zero instances of child or force labor in our facilities. We train our team and independently audit our facilities to ensure compliance.
Number of unannounced inspections per year of Alltech production facilities for child or forced labor	KPI = 2 Achieved = 3	We will have a minimum of two unannounced inspections for child or forced labor each year.
Percentage of applicable* team members trained on protecting human rights <i>*Refers to all team members who hold an alltech.com email account. Currently, this does not include production team members.</i>	95%	Human rights training is vital to meeting our goals. We aim to have 100% of team members trained by the end of 2024.
DIVERSITY, DISCRIMINATION AND HARASSMENT	OUR STATUS	FUTURE ACTION
Percentage of team members trained on discrimination or harassment issues	11.9%	100% of Alltech team members will complete discrimination and harassment training by end of 2023 via our e-Learning Hub.
WORKPLACE DIVERSITY	OUR STATUS	FUTURE ACTION
Percentage breakdown of women in management* <i>*Refers to people who serve the organization as supervisors (have direct reports), heads of countries or heads of departments and/or hold professional titles that include the words “chief,” “vice,” “head,” “director” or the equivalent. This definition will be further refined in 2023.</i>	Nearly 40% of all team members in management positions are women. Supervisor: Women, 41.7%; men, 58.3% Head of country: Women, 29.3%; men, 70.7% Head of department: Women, 43.2%; men, 56.8% Elevated title (chief, etc.): Women, 28%; men, 72%	Alltech is currently reviewing its naming conventions and framework for job titles to ensure that management titles reflect actual team leadership. This will ensure the veracity of our reporting as we aim to increase the number of women in management positions.
WORKPLACE SOCIAL	OUR STATUS	FUTURE ACTION
Number of volunteer hours	Many colleagues participate in Make a Difference Day volunteer activities at least once per year.	We aim to implement a tracking system by 2024 and establish volunteer days for team members.



<p>Worker voice*</p> <p><i>*Refers to the ability of team members to express their views, opinions, concerns and suggestions, and for these to influence decisions at work</i></p>	We explored best practices for a team member consultation program.	We aim to have a team member consultation program operating in all regions by 2025.
ENVIRONMENT	OUR STATUS	FUTURE ACTION
Percentage of the total workforce across all locations who have received training on environmental issues	A suite of training material covering ESG topics has been developed and made available to 100% of our global workforce with email access.	We will introduce Phase 2 of ESG training, which includes interactive learning with post-training assessments, with a goal of 95% completion by 2024.
Percentage of all operational sites for which an environmental risk assessment has been conducted	We have conducted environmental risk assessments on 25% of our manufacturing facilities within the past two years.	We will conduct environmental risk assessments on 100% of all manufacturing facilities globally by 2024.
Scope 1 and 2 GHG emissions for 2021	Scope 1 = 108,894 MT CO ₂ e Scope 2 = 47,525 MT CO ₂ e Total Scope 1 and 2 = 156,419 MT CO ₂ e	We have committed to the following 2030 GHG reduction targets from a 2021 base year: Scope 1 and 2 – 42%
Number of site-specific energy audits and efficiency improvement plans developed	11	We are reviewing best practices and developing a forward-thinking energy-audit and improvement plan.
Number of energy efficiency project feasibility studies completed	47	We are reviewing best practices to develop an effective plan for future energy efficiency project feasibility studies.
Energy and emissions savings from completed energy efficiency projects	Alltech invested \$4.5 million in efficiency projects in 2022. These projects reduced our emissions by 7,600 metric tons of CO ₂ e per year, which represents 82% of our annual GHG reduction target.	We will continue to generate energy and emissions savings by investing in energy efficiency projects in our facilities around the world.
Scope 3 emissions	Scope 3 = Primary Categories Category 1, Purchased Goods and Services = 1,211,569 MT CO ₂ e Category 11, Use of sold products = 286,538 MT CO ₂ e	To help combat climate change, we have committed to reducing our Scope 3 GHG emissions by 25% from a 2021 base year.
Exploration and development of a global water efficiency and recycling program	We have completed our baseline water consumption inventory for 2022 (1,183,602 m3) for our global production facilities.	By the end of 2023, we will have defined the principles and scope of our global water efficiency and recycling program. By 2025, we will develop a comprehensive global water efficiency and recycling program.
Total number of incidents of noncompliance associated with water use	0	We will remain vigilant in our water use compliance.



Exploration and development of a waste prevention program to reduce the volume of waste products we dispose of in landfills	We have reviewed waste and pollution prevention strategies.	By 2023, we will define the principles and scope of our global waste and pollution prevention program. By 2025, we will develop our global waste and pollution prevention program.
RESPONSIBLE PROCUREMENT	OUR STATUS	FUTURE ACTION
Percentage of buyers trained on social and environmental issues within the supply chain	100%	We aim to ensure that all our buyers are trained on social and environmental issues within the supply chain.
Percentage of targeted* suppliers that have gone through a CSR assessment (e.g., questionnaire) <i>*High risk and suppliers 1M+</i>	We created the Alltech Supplier Sustainability Questionnaire.	We issued the CSR assessment in early 2023 and aim to reach 100% completion by the end of 2023.
Number of on-site inspections performed at high-risk suppliers of raw material with direct production (based on product and region risk profile)	We reviewed best practices regarding on-site inspections.	We aim to conduct three on-site inspections of high-risk suppliers by 2025.
Percentage of high-risk suppliers (based on product and region) that are certified in sustainability	We reviewed best practices regarding sustainability certification for high-risk suppliers.	We will introduce a tracking system to our terms and conditions by end of 2023 and ensure that 90% of our high-risk suppliers are certified by 2030.
Percentage of high-risk suppliers (based on product and region) that are monitored via ongoing risk-management process	We reviewed best practices for risk management monitoring.	We aim to monitor 100% of our high-risk suppliers by the end of 2023.
Percentage of certified marine raw materials used for aquaculture feed	90%	100% by 2028
Achieve ACS-CFM certification	ACS-CFM is a new standard (established Jan. 14, 2023) for aqua feed production facilities.	By 2023, we aim to obtain certification and become one of the first companies worldwide to achieve this certification.
Commitment to no deforestation across our primary deforestation-linked companies with a target date of no later than Dec. 31, 2025	We explored no-deforestation commitments and how to implement them.	We aim to implement a no-deforestation commitment by 2025.
100% of relevant suppliers providing evidence of compliance to biodiversity protection standards	We studied biodiversity protection standards and compliance practices.	We aim to implement a compliance program for biodiversity protection standards of our supply chain by 2030.
Sustainable procurement objectives integrated into buyers' performance reviews	We examined sustainable procurement best practices.	We aim to implement a program to integrate sustainable procurement objectives into performance reviews by 2024.



ENVIRONMENTAL PROGRAMS	OUR STATUS	FUTURE ACTION
Product life-cycle assessments (LCAs) completed	We have completed 7 product LCAs.	We plan to complete 40 LCA assessments by the end of 2023.
Climate advisory service supporting our teams	30 countries are currently served by Alltech E-CO ₂ .	We will work with our partners to expand assessment capabilities and reach globally.
SDG tracker program	We reviewed best practices for tracking progress toward the U.N. Sustainable Development Goals.	We will publish and implement an SDG tracker program by the end of 2023.
Development of a marketing charter and an events charter that reflect Alltech's ESG ambitions. From responsible sourcing of materials to merchandise and marketing activities, the charters will guide the development of commitments to sustainability improvements. Ongoing performance will be measured through shared KPIs and assessed to ensure our ambitions can be realized.	We reviewed how to develop a marketing and events charter that reflects our ESG goals and discussed ways to measure our progress.	We will develop a marketing and events charter that reflects our ESG ambitions in 2023 and implement it by 2025.
PLANET OF PLENTY™	OUR STATUS	FUTURE ACTION
<i>Internal initiatives</i>		
Approach to innovation: Alltech integrates environmental sustainability into its innovation process by applying a sustainability filter to new innovation projects to ensure the most significant positive environmental impact. The filter considers both qualitative and quantitative information and acts as a lens through which every decision in the innovation process is made.	Informal sustainability filters are being utilized currently while the innovation process is being built out. They will be adjusted to maximize the impact of future innovation projects to meet Alltech's ESG requirements.	We will continue to pursue the innovation and adoption of smarter, more sustainable agricultural solutions.
<i>External initiatives</i>		
The Pearse Lyons Cultivator creates pathways for the implementation of innovative solutions that support Alltech's purpose of Working Together for a Planet of Plenty™. Our expanded year-round program identifies new technologies that must align with at least one of the following focus areas: renewable energy, reducing GHGs, sequestering carbon, animal welfare, reducing antibiotic and antimicrobial resistance, reducing water pollution, and producing more food with less land, water and energy.	100% of our projects are aligned with our sustainability goals.	The Pearse Lyons Cultivator will continue to focus on new technologies in our key areas and partner with startups that are concentrated on profitable production, natural immunity, environmental sustainability and foundational technologies, such as mycotoxin management, mineral management, gut health, enzyme technologies and rumen function.
Through our Planet of Plenty™ partnerships and collaborations, we build and test new concepts, models, and value creation and capture opportunities to enable more successful outcomes across the supply chain.	We developed partnership criteria and pursued collaboration with like-minded partners to further our purpose of Working Together for a Planet of Plenty™.	We will develop at least two new concepts by 2024 that create opportunities for more successful outcomes across the value chain.



Alltech Nurtures a Culture of Sustainability

In our facilities around the world, Alltech team members are nurturing a culture of sustainability, ever conscious of the impact of our actions on the world around us. We continually look for ways to be more environmentally responsible and find areas for improvement or innovation. From reducing our carbon footprint to conserving resources and streamlining business processes, Alltech team members across the globe are making small changes that add up.

Here are a few of our stories.

Seeking Global Sustainability Insights

In mid-2022, Alltech appointed our first global vice president of environmental, social and corporate governance (ESG). Tara McCarthy is working to advance our Planet of Plenty™ purpose and build networks across the supply chain.



Tara McCarthy, Alltech's first global vice president of environmental, social and corporate governance, is helping advance our Planet of Plenty™ purpose.

In addition to helping Alltech find ways to reduce emissions and elevating Alltech’s ESG goals across all locations, McCarthy and Alltech’s ESG team have been consulting with key stakeholders and thought leaders from across the value chain as part of a new global Sustainability Insights report that will help us explore how Alltech, in partnership with the wider agri-food industry, can effect change across the value chain.

“Alltech conducted its original Materiality Assessment in 2021, which involved significant engagement with both external and internal stakeholders,” McCarthy said. “As part of our 2022-2023 Alltech Sustainability Insights project, we are evaluating the issues addressed in the assessment and determining new categories and topics to make sure our efforts remain aligned to today’s challenges.”

So far, there has been strong alignment with our original Materiality Assessment topic choices, but there are additional considerations regarding targets and key performance indicators. On completion of our quantitative analysis, an internal review of the materiality assessment will be completed and shared in our 2023 Sustainability Report. A qualitative survey also allowed members of the agri-food industry to share their perspectives on the issues that matter most to the value chain. Results will be published later this year.

Exploring Solutions to Critical Challenges

Alltech is powered by more than 40 years of scientific research, and our team of scientists continues to seek solutions to key agricultural and environmental challenges.

During a recent series of internal Planet of Plenty™ workshops, our researchers explored innovative, science-based solutions related to emissions reduction and carbon sequestration, antimicrobial resistance, and soil and water health. Participants shared their expertise in these fields, discussed Alltech’s current solutions and identified new ways to address these critical issues.



Our research at Buck Island Ranch in Florida is shedding new light on GHG emissions and carbon sequestration.

Soil health: Our team discussed the role of soil health in creating healthier plants and animals — and how supporting the soil through its microbial population can help liberate nutrients and, as a result, decrease the need for fertilizer, thereby reducing runoff as well. The role of microbes is being further explored by Alltech Crop Science (ACS) and Ideagro, which was recently acquired by ACS. Ideagro’s scientists have developed beneficial organisms for soil that aid the growth of crops, reduce the impact of chemical inputs and help plants to resist biotic and abiotic stress.

Emissions reduction and carbon sequestration: Soil health also plays a role in carbon sequestration. Alltech’s research at Buck Island Ranch in Florida is shedding light on the full carbon cycle and the importance of



soil. Livestock GHG emissions are not the full story; we must also consider how the soil works as a carbon sink and how to best utilize its sequestration abilities. Farm management practices and nutrition play a role, too. Read more about our research at Buck Island on page [34](#).

Antimicrobial resistance (AMR): Much of the global focus has been on antibiotic reduction rather than resistance, which is a far more significant challenge. Several of Alltech’s products strengthen gut health, which provides animals with more resistance to pathogens. Read more about our AMR research on page [33](#).

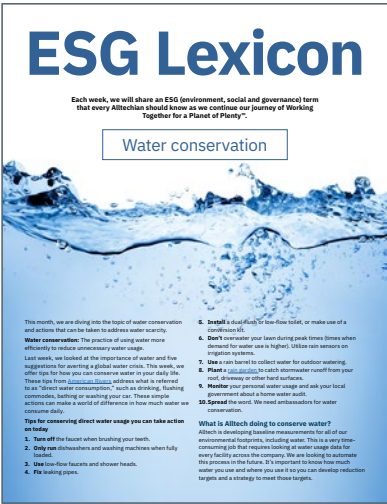
Sharing Alltech’s ESG Mission

Achieving our Planet of Plenty™ purpose requires a commitment to reaching our ESG goals, and the ESG conversation is vital to the future of our planet and its inhabitants.

We share knowledge of ESG with our team members in several ways. One of the most significant is a feature in our weekly company magazine, the Alltech Herald. The goal is to provide a better understanding of ESG concepts and commonly used terminology and to bring attention to significant dates on the ESG calendar so that our team is aware of the many opportunities to make a difference worldwide.

Focusing on Innovation

To stay on the leading edge of smarter, more sustainable agricultural solutions, Alltech formed an innovation department in late 2022. Led by Dr. Kyle McKinney, vice president of innovation, and Dr. Rebecca Delles, innovation and analytics manager, the department is charged with horizon-scanning, rigorously challenging ideas before investment and bringing new technologies to market.



Through scientific expertise and a collaborative approach to solving challenges, the innovation team aims to develop novel, sustainable solutions that can meet the needs of tomorrow’s customers.

“Ideation will be problem-centric, and by leveraging our best-in-class, talented colleagues from around the world, we will translate novel insights into validated, research-backed truths that will take Alltech to the next innovative frontier,” Dr. McKinney said.

The department collaborates with Alltech’s global sales team and customers to identify opportunities, pilot new innovations with our operations and sales teams, and launch cutting-edge technologies into the market with the support of teams throughout our organization.

The innovation team’s current growth themes are connected to proteins, prevention, partnerships, cycles, systems and sourcing. Projects include:

- Seeking solutions to reduce the environmental footprint of animal-derived food products and meet the protein needs of the world
- Investigating novel products that optimize gut health and immunity in plants, animals and people and address the growing challenge of antimicrobial resistance
- Focusing on sustainably optimizing our manufacturing capabilities, supply chain network and ingredient sourcing
- Reexamining, remeasuring and redefining the natural systems of regenerative agriculture and precision farming and their interplay in a circular agricultural economy

“Alltech has a deep understanding of the dynamic interaction of various life cycles that occur on Earth, from soil and crops to livestock and people, and the role that nutrition plays within each system. We can

leverage this knowledge and expertise to help achieve a Planet of Plenty™,” Dr. Delles said.

Celebrating Social Responsibility in Serdán

The **Alltech Serdán** manufacturing facility, located in a rural area about 120 miles southeast of Mexico City, employs 200 people and produces two main Alltech nutritional technologies: Allzyme® SSF, a natural enzyme complex that maximizes nutrient release; and De-Odorase®, which is made from yucca extract and reduces ammonia from animal waste.



Alltech Serdán shares our sustainability story during facility tours and through community events focused on environmental responsibilities, demonstrations with local schoolchildren and an internship program for university students.



Alltech Serdán has been certified by Empresa Socialmente Responsable (ESR). This prestigious endorsement is given to businesses in Mexico that are committed to policies, programs, decision-making and actions that benefit the industry and have a positive impact on people, the environment and the communities in which they operate.



Some of the factors that contributed to Alltech Serdán’s ESR certification include:

- For every yucca tree harvested for our products, Alltech plants three new trees using seedlings from the facility’s on-site nursery, which has grown more than 200,000 seedlings thus far. Read more about Alltech Serdán on page [57](#).
- Alltech Serdán strictly observes numerous regulations focused on industrial safety and occupational health and meets environmental requirements regarding emissions, wastewater, energy consumption, hazardous waste and more.
- Alltech Serdán collaborates with several universities and high schools to strengthen educational opportunities in the region. It also offers facility tours featuring environmental and community presentations and conducts an internship program that currently has seven university interns working on projects at the manufacturing plant.
- The Alltech Serdán team participates in numerous social projects that benefit local children, including ongoing support of a local primary school, a school for children with special needs, and a local orphanage, Casa Hogar.

Alltech Reaccredited by Pet Sustainability Coalition

For the third year, Alltech has been accredited by the Pet Sustainability Coalition (PSC), a nonprofit organization that accelerates sustainability in the pet



industry through education, implementation tools and collaboration. This designation means we have measured the environmental and social impact of our pet business operations, and the use of the Pet Sustainability Accredited Business badge and logo signifies our commitment to advancing the sustainability of our company and the entire pet industry.

Implementing a Digital Strategy to Streamline Processes

At Alltech, we are bringing together our products, services and data to solve agriculture’s most critical challenges. This means working to digitize the customer journey, enhancing our customer experience and improving operational efficiency to help meet business objectives and sustainability targets.

We have launched Microsoft D365 in more than 30 markets, and several more will be added throughout 2023. D365 is Microsoft’s product line of enterprise resource planning (ERP), customer relationship management and intelligent business applications.

Our digital strategy will have a ripple effect on our environmental impact as Microsoft D365 integrates with other supply chain technologies to digitize purchasing and invoicing, provide on-demand inventory availability, give us real-time visibility of our global shipments and provide actionable analytics. It will help us optimize business agility, create seamless connections through our workflow, and drive efficiencies that create less waste and reduce our carbon footprint.

Investments in innovation will also lead to better on-farm services and technology for our customers

Opening Vietnam’s First Mineral Production Facility

Alltech opened the first organic mineral production facility in Vietnam in late 2022. The state-of-the-art manufacturing plant is our eighth mineral production facility worldwide. The plant’s production capacity is 7,000



Our investment in enhancing mineral production in Asia reflects our alignment with our customers' commitment to better nutrition from farm to market, Dr. Mark Lyons said.

metric tons per year, and it is conveniently located to serve local customers and support import/export activity.

As one of the world’s largest producers of organic minerals for animal nutrition, we have committed significant resources into organic trace mineral production, quality control and research. Organic trace minerals are more bioavailable to the animal, contributing to improved animal health. Because more of the minerals are taken up by the animal, mineral excretion through manure is reduced, minimizing environmental impact on land and water.

“Our organic mineral program reflects our focus on sustainability in all aspects, from the health of the animal and the nutrition of the meat, milk and eggs produced to the economic well-being of the producer and the impact we have on our planet’s land and water,” Dr. Mark Lyons said.

The new facility utilizes the Alltech Q+™ (Quality Plus) program, a mineral quality control program unique to Bioplex® trace minerals that guarantees



Vietnam Production Facility By the numbers

80% N₂O emissions reduce by CNG (compressed natural gas) use

85% Carbon monoxide emissions reduced by CNG use

7,000 MT Annual production capacity

50% Wastewater reduced by CIP (clean-in-place) pumps

48% Thermal consumption reduced by fluidized bed drying



quality, safety and performance in every batch. Alltech Q+ sets the industry standard, enabling Alltech to offer a global quality guarantee to customers using Bioplex® trace minerals around the world. Alltech Q+™ forms an integral part of the Alltech® Quality System (AQS).

Conserving Resources and Promoting Sustainability

- Alltech partnered with the University of Nebraska-Lincoln Dairy Extension and the Iowa State University (ISU) Extension and Outreach to develop a free, online training program that is available in both English and Spanish. Utilizing this resource, farms have the potential to increase team member retention and motivation while also reducing turnover and increasing both team member efficiency and dairy profitability.
- Alltech Coppens**, a leader in aquaculture research and nutrition, is one of our most digitally advanced businesses. Our enterprise resource planning (ERP) system has helped improve internal and external logistics processes and efficiencies and eliminated the need for paper. The ERP system has helped create more efficient production lines with improved product capacity, better steering of production quantities and shorter times between production runs. It is also used to complete Alltech Coppens' supply chain planning and forecasting.

- In 2022, **Alltech Spain's** newly created sustainability committee — comprising executive leaders and members of the sustainability department — calculated the 2021 carbon footprint of Spain's facilities and work (Scopes 1, 2 and 3) and received ISO 14064 certification. We also recently initiated the installation of solar panels in the Almoguera factory, where 100% of the energy consumed will be of renewable origin through an agreement with our energy supplier, Energy Solar Tech.
- Alltech U.K.** in Stamford, England, has created a sustainability committee that promotes environmental stewardship and educates our team members and the community. We also introduced on-site composting to reduce the amount of waste the office sends to the landfill, using it in a more purposeful way: to help with plant growth on-site. The sustainability committee at Alltech U.K. also shares information on sustainability topics and special events. Our operations and distribution facility in Woolfox, about 12 miles from the Stamford office, became Alltech's first zero-waste production facility in 2019.
- Alltech Crop Science (ACS)** regularly conducts team member training on the environment, sustainability, carbon footprint and water usage. Through ACS, we prioritize recycling, using a waste management system and a controlled storage system. As part of ISO 9001, ISO 14001 and ISO 14064 certification, ACS has conducted quality, environmental and carbon footprint audits that help control the factory's energy consumption. We also implemented a digital system to reduce paper use. ACS has reduced shipping transportation by grouping orders, and it uses recycled materials in its packaging. Read more about Alltech Crop Science on page [51](#).
- At **Alltech China (Tianjin)**, team members have completed recycling activities and participated in events to clean up community roadways and surrounding areas near the facility. Alltech China also converted from diesel forklifts to electric in 2022. We have also instituted a packaging reduction and sustainable materials initiative, began using preprinted



Alltech Feed Division and Alltech HQ teams collected 8,324 pounds of garbage from a large stretch of the Ohio River near our Ridley Block Operations plant.

packaging instead of paper labels, and have created a “paperless office.” These efforts will reduce our facility's CO₂ emissions by as much as 106,137 kilograms per year, which is equivalent to the emissions of a medium-sized car traveling 551,990 kilometers.

- Alltech team members educate and inspire their communities by sharing the latest information about sustainability with local schools, community events and educational seminars, and more. For example, the **Alltech Feed Division** and **Alltech HQ** teams combined to form the CRYSTALYX® Clean Up crew, which worked with Living Land & Waters in 2022 to clean up a large stretch of the Ohio River near the Ridley Block Operations (RBO) plant in Maysville, Kentucky. The crew collected 8,324 pounds of garbage. Read more about how we share sustainability with the world on page [52](#).

Establishing Our Emissions Baseline and Creating a Roadmap to Reduction

Alltech is committed to reducing our GHG emissions according to the reduction trajectory recommended by the Intergovernmental Panel on Climate Change (IPCC) to limit global warming and combat the most urgent challenges posed by climate change. We are determined to take bold action to reduce our greenhouse gas emissions (GHG) and build a more sustainable future for all.

Our sustainability team worked with colleagues in the finance, operations, engineering, and health and safety departments, among others, to collect and analyze data from all our facilities and offices to determine our Scope 1, Scope 2 and Scope 3 GHG emissions for 2021, our baseline year.

Our GHG inventory was developed in accordance with the standards provided by the GHG Protocol, the organization that sets the most widely recognized standards for tracking and reporting GHG emissions. We are using this 2021 baseline data to identify areas where we can reduce our carbon footprint.

Alltech 2021 Emissions	
Scope 1	108,894 MT CO ₂ e
Scope 2	47,525 MT CO ₂ e
Total Scope 1 and 2	156,419 MT CO ₂ e
Scope 3 – Primary Categories	
Category 1, Purchased Goods and Services	1,211,569 MT CO ₂ e
Category 11 , Use of Sold Products	286,538 MT CO ₂ e

Scope 1 emissions are direct emissions from Alltech activities, such as the fossil fuels we burn in our facilities, offices and vehicles. Scope 2 emissions are associated with the electricity we use in our facilities. Scope 3 emissions are all other indirect emissions associated with our value chain; these are the emissions that are embedded in everything we purchase and all our activities.

Roadmap to Reduction

We have committed to the following 2030 GHG reduction targets from a 2021 base year:

- Scope 1 and 2 – 42%
- Scope 3 – 25%

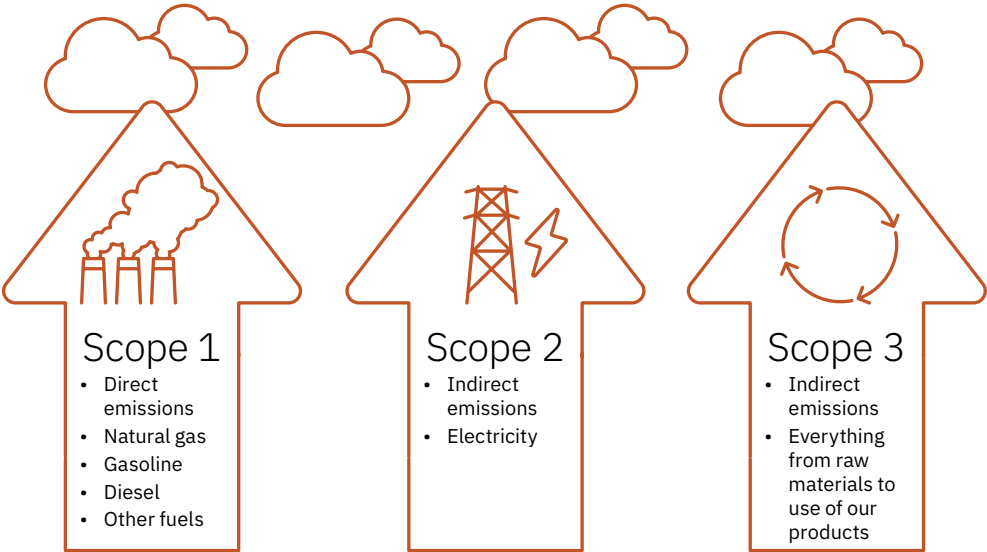
Setting and pursuing these targets demonstrates our commitment to a world of abundance for future generations.

We will report our emissions data and progress toward our targets annually in our sustainability report and to CDP (formerly called the Carbon Disclosure Project) as part of our efforts to increase transparency and accountability. This also allows us to benchmark our performance against our peers, identify areas for improvement and communicate our progress.

Alltech invested \$4.5 million in efficiency projects in 2022. These projects reduced our emissions by 7,600 metric tons CO₂e per year, which represents 82% of our necessary GHG reduction for 2023. We conducted 11 site-specific energy audits and efficiency improvement plans in 2022, and we completed 47 energy efficiency project feasibility studies.

There are many opportunities to further reduce our emissions through energy conservation practices, such as upgrading to energy-efficient equipment, process efficiencies and other innovative solutions.

We recognize the importance of reducing our reliance on fossil fuels and are exploring both on-site and off-site options for solar and wind power. Transitioning to renewable electricity sources has multiple benefits, including reducing GHG emissions, improving energy security and promoting a more sustainable energy system.



Sustainable Packaging: Balancing Product Integrity and Our Environmental Goals

Alltech explores every avenue for reducing waste and decreasing our environmental impact. We strive to not only manufacture nutritional technologies that improve animal health and performance, but to also make sure that those products are packaged in the appropriate materials. On our path to sustainable packaging, our team carefully studies the available options, fully considering the multiple ways a change in packaging could affect the environment and the nutritional technologies we offer.

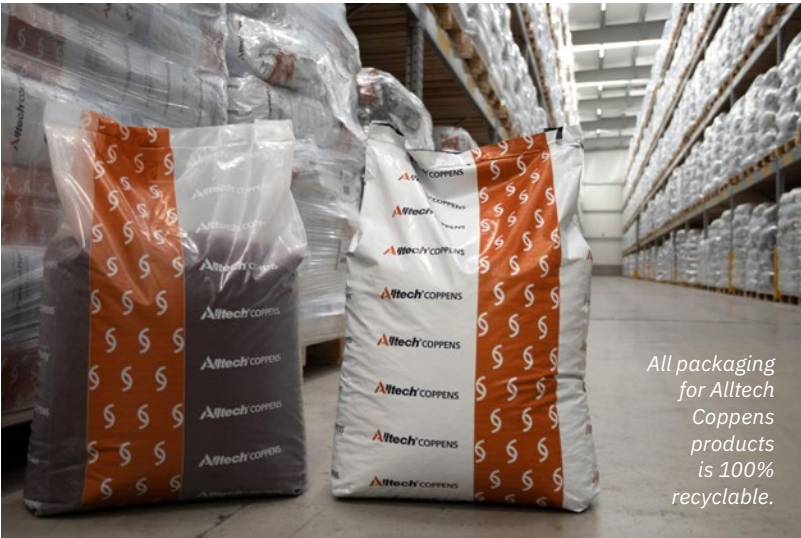
Alltech and our family of companies have implemented packaging changes for several of our solutions, and we are studying the appropriate measures we can take to reduce the impact of the other materials we use.

There are often many factors to consider when making choices related to product packaging, says Allison Welch, packaging manager at Alltech. Sustainable packaging does not simply mean recycled packaging. Other materials can produce a smaller carbon footprint than some recycled materials, and it is important to examine all of the potential solutions. The amount of water and energy required to produce packaging materials is another consideration. Additionally, evaluating the specifications of our packaging to reduce the amount of material used is an ongoing effort.

In 2020, **Alltech North America** made material changes to our packaging process, reducing our bags from three-ply paper to two-ply. This change resulted in an estimated savings of 91 tons of paper annually. We also standardized the plastic liners used inside our bags — which are required to protect the nutritional integrity of our feed — to save 3 tons of plastic each year, and we continue to evaluate sustainable plastic options.

Alltech Coppens is committed to feeding the world responsibly and to making the benefits of the circular economy for business clear. As a result, the brand has made all packaging 100% recyclable.

Alltech Coppens also decreased the variation of our standard packaging from five designs to two and altered the thickness of our wrapping foil.



Doing this drastically reduced the use of materials, saving 500 kilometers of plastic annually.

“More effective use of materials means less waste. We are driving our approach through a commitment to reshape our plastic use. Alltech Coppens’ objectives are aligned with Working Together for a Planet of Plenty™, as well as the United Nations Sustainable Development Goals,” said Ronald Faber, CEO of Alltech Coppens.

Alltech Europe is demonstrating our commitment to a Planet of Plenty™ with several packaging-focused initiatives, including sending zero waste from our Woolfox, England production facility to landfills. The team is also working on a 100%-recyclable-packaging project and has already reduced the packaging burden from 2,300 grams per pallet to 500 grams per pallet.

One sustainable game-changer for Alltech Europe has been a paper pallet wrapping system that utilizes high-value recyclable paper streams instead

of plastic shrink wrap. The paper is durable and safe for transport, and its sustainably sourced and traceable Nordic fibers support lower carbon emissions than virgin stretch film.

This change has resulted in the need to use only 1 to 1.25 kilograms of paper per pallet, versus the 2.3 kilograms of plastic wrap that was required per pallet. Additionally, sustainable 25-kilogram packaging and compostable 20–25-kilogram bags have been achieved by removing the plastic liner for hydroscopic items, leading to a reduction in waste.

Ridley Block Operations (RBO), which joined the Alltech family in June 2015, is the industry leader in self-fed supplements. RBO also provides private-label manufacturing to customers across the United States.





RBO uses three types of containers for our tub-based products and continues to heavily promote our 100%-biodegradable BioBarrel® container. Ten percent of RBO’s customers use the BioTub, which is available for private-label customers and which the RBO team continues to actively promote. Plastic tubs are used by 66% of customers, and the steel containers — which are returned and reconditioned for reuse — are used by 24% of RBO customers.

“For our poured blocks, RBO puts cardboard circles on top of cattle tubs,” Welch said. “In 2021, many of these circles had a plastic liner because the cardboard would stick to the molasses product. We aligned all of our plants to switch the plastic liner to a food-grade coating on the bottom of the circle that had the same effect but didn’t use plastic. **That resulted in eliminating 2.26 tons of plastic annually.**”

In 2020, **Hubbard Feeds** undertook a major project to update all of the brand’s product packaging through a redesign of all bags. The new bags are made of recyclable #5 plastics and offer many benefits over the previous kraft-paper bags. For instance, these bags are three times stronger than their kraft-paper predecessors, are water-resistant and can handle the environments in which they are stored. This reduces the amount of breakage and potential waste.

The Hubbard plants also switched to using a biodegradable stretch film for the wrapping of all of our finished products — but are still hoping to become even more environmentally friendly in the future.

“While we are pleased to make a step forward with our bio stretch film, we continue to push our locations to rely more on our spray adhesive technology and reduce the amount of stretch film altogether,” Welch said.

Hubbard’s manufacturing plants are all using pallets made from recycled wood rather than new ones. Additionally, the feed plant in Worthington, Minnesota, is using reusable plastic pallets with at least one large customer; these pallets can be reused up to 20 times. The Hubbard



BioBarrels save almost 1 million pounds of plastic each year.

packaging team is studying the challenges and benefits associated with expanding the use of plastic pallets to other locations.

Ridley Feed Ingredients (RFI) encourages customers to switch from packaging their products in rigid pails to utilizing flexible stand-up pouches. These pouches, which require significantly less material, water and fossil fuels to make, produce lower greenhouse gas emissions.

RFI’s Lifeforce™ horse supplements are packaged in pouches that use post-consumer recycled (PCR) materials. PCR packaging materials are also being offered as an option for RFI’s private-label packaging customers.

Acutia produces dietary supplements that enhance nutrition and support brain health, among other benefits. Acutia’s focus on sustainable wellness extends to the product’s unique packaging and refill system,

which allows Acutia and our customers to help reduce waste. Customers can choose whether they would like to receive or forgo a complimentary starter kit, which is packaged in a recyclable box made from partially recycled material certified by the Sustainable Forestry Initiative (SFI) and which includes a reusable glass storage jar and a travel container.

Acutia supplements are provided in compostable pouches that can be used to refill either the reusable glass jar included in the complimentary starter kit or the customer’s own storage container. These pouches are shipped in envelopes made of post-consumer waste. To offset emissions from shipping, Acutia partners with Nori, which rewards regenerative farming practices that sequester carbon in the soil. In 2022, Acutia supported the removal of 116.3 tonnes of CO₂ from the atmosphere.



Acutia has a unique packaging and refill system.

Supply Chain Changes Lead to Improved Efficiency and Sustainability

All companies must work diligently to help solve climate change, preserving our planet for future generations. This requires a continuous effort to reduce greenhouse gas (GHG) emissions, energy consumption, water use and waste.

As Alltech works to reduce our carbon footprint and lessen our overall environmental impact, we are making incremental improvements across all areas of our business, including our supply chain. **We are carefully analyzing our logistics procedures to shine light on areas where improvements can be made, including assessing suppliers, processes and materials used and finding ways to optimize routes, energy and fuel use.**

In Europe, we have evaluated our logistics footprint and identified areas for improvement, and we are monitoring and benchmarking our CO₂ emissions. We have implemented significant changes that have reduced fuel consumption and streamlined overall processes.

Previously, our European logistics network had multiple distribution centers and nearly 30 warehouses. We have now transitioned to a centralized system, with three major distribution hubs and significantly fewer warehouses.

We have implemented shipping procedures that only allow full trucks to leave the main distribution center, and we use alternative transport methods where possible. These changes have resulted in lower CO₂ emissions.

Alltech has partnered with C.H. Robinson to access its network of carriers and their freight services. C.H. Robinson offers a range of solutions for freight transportation that can reduce our emissions by consolidating our shipments with those of other customers.



“We are always looking for new ways to further improve our logistics operations and reduce our environmental impact, not only here in North America but across our global entities.”

—Anthony Gann, Global
Director of Operations Planning

We use C.H. Robinson’s Navisphere Optimizer tool, freight optimization software that can establish the optimal shipment plan to meet our business goals. The Optimizer tool uses proprietary algorithms and data science modeling to minimize shipments, travel time, distance and total miles while maximizing trailer utilization and savings.

Alltech’s investment in Microsoft’s suite of business intelligence applications, D365, and in purchasing software Coupa will improve our demand planning and further reduce our freight carbon footprint.

D365 demand planning is a feature of Dynamics 365 Supply Chain Management that uses machine learning to generate a statistical forecast based on historical data and external factors. This will help us improve the accuracy and reliability of our demand planning and reduce the risk of overstocking. It allows for online purchasing and it provides a supplier portal for account information and electronic invoices.

Sustainable Procurement

Alltech believes that sustainable procurement is crucial to the health of our planet. We are taking steps toward implementing sustainable practices throughout our supply chain, including updating our Business Partner Code of Conduct to ensure that our partners are aligned with our commitment to creating a more environmentally responsible future. We have provided our entire global procurement team with training courses. They have completed EcoVadis Academy modules on Sustainable Procurement Policy, Sustainable Procurement Reporting and Supplier Code of Conduct and Contract Clauses, with an average score of over 96% in their end-of-course assessments.

As part of our ongoing work to make sure we engage with the most sustainable suppliers, we developed the **Alltech Supplier Sustainability Questionnaire**, which asks about suppliers’ environmental management systems, occupational safety and hygiene, labor and human rights, and eco-certification.

We issued the survey to any entity globally that had supplied more than \$250,000 in goods or services in 2022 rather than only selecting certain risk suppliers or limiting our survey to certain purchasing categories. The questionnaire was issued in April 2023 with the goal of having 100% of targeted suppliers surveyed within 12 months. At the time of publishing this report, 21% of eligible suppliers had completed the questionnaire and shared the necessary documents as proof of their sustainability credentials.



Dr. Mark Lyons is shown in the driver’s seat of our Planet of Plenty™ truck, which Alltech freight partner Hendricks uses to transport goods between the U.K. and Belgium multiple times a week. It runs on biogas and natural gas.

Investing in Renewable Energy

Increasing Access to EV Charging Stations

In most countries, vehicles are among the largest producers of climate pollution. It is estimated that a typical passenger vehicle emits around 4.6 metric tons of carbon dioxide per year. Switching to an electric vehicle (EV) can help reduce emissions and improve air quality. According to the United Nations, by achieving a 60% share of battery-electric and plug-in hybrid vehicles on the road, more than 60 billion tons of CO₂ could be saved between now and 2050.

Alltech team members around the world are reducing their environmental impact by replacing conventional forms of transportation with EVs. In support of this transition, we have installed EV charging stations at many of our facilities. Plans to expand these installations and add stations at other Alltech locations are in the works.

Alltech locations with EV charging stations:

- | | | |
|------------------------|----------------------|-----------------------------|
| • Alltech Coppens | • Ecuador | • Spain |
| • Alltech Crop Science | • Ireland (Dunboyne) | • Taiwan |
| • Belgium | • Korea | • United Kingdom (Woolfox) |
| • Brazil | • Norway | • United Kingdom (Stamford) |
| • Bulgaria | • Peru | • United States (HQ) |
| • China (Beijing) | • Slovakia | |

Saving With Solar Panels

Alltech’s commitment to GHG reductions requires us to make significant investments in our energy efficiency and in renewable energy. Alltech has invested in solar energy at multiple locations and plans to expand these investments to additional sites.



Alltech has installed electric vehicle charging stations at many of our facilities.

A solar project is in the planning stages at **Alltech U.K.** in Stamford. **Alltech Serdán’s** photovoltaic energy system, installed in 2022, provides 46% of the Alltech Serdán plant’s energy requirements. With the new system, Alltech has seen energy cost-savings of 22% in the first year the system has been used and a reduction of 650 tons of carbon dioxide equivalent (CO₂e) emissions per year. **That reduction is equivalent to 11,000 tree seedlings growing for 10 years!**

Serdán was the perfect location for Alltech’s first renewable energy system because of its high solar irradiation levels, due to its latitude, high altitude and low rainfall levels.

The manufacturing facility also uses compressed natural gas (CNG), a more environmentally friendly fuel that emits less carbon dioxide than liquified petroleum gas, which results in an annual reduction in the production plant’s CO₂-eq emissions of 14% (or 377 fewer tons of CO₂-eq).



Alltech Spain has two photovoltaic fields, including one on the roof.

Alltech Spain’s production facility in central Spain manufactures premixes and feeds. It is equipped with modern machinery, and its industrial processes comply with strict international quality standards, as well as our own Alltech® Quality System (AQS) standard. The facility has two photovoltaic fields, one on the roof and the other on the ground. The total installation provides 80% of the electricity consumed by the factory while also mitigating emissions of carbon dioxide, nitrous oxide and sulfur dioxide.

Alltech São Pedro Recognized for Emissions Reduction

The Alltech Brazil team in São Pedro do Ivaí recently received a Paraná Climate Seal (Selo Clima Paraná) “A” certification for reducing its carbon footprint and adhering to the State Public Registry of Greenhouse Gas Emissions (GHGs).



The Paraná Climate Seal recognizes companies that voluntarily decide to measure, disclose and reduce their carbon footprint to combat climate change. This recognition is one of State of Paraná’s strategies to encourage companies to implement policies that will help Paraná continue to be known as one of the most sustainable states in Brazil. The State of Paraná recorded a 39,000-ton reduction in its CO₂ emissions in 2021, according to estimates from Paraná’s secretary of state for sustainable development and tourism (SEDEST). The Paraná Climate Seal (Selo Clima Paraná) “A” certification was presented to Alltech on behalf of SEDEST for the state of Paraná. Alltech was one of 83 organizations in 76 municipalities in Paraná that received this certification.

Strengthened by 40 Years of Scientific Research



Alltech has more than 100 scientists working in five global bioscience centers and has established research alliances with several leading institutions.

Alltech’s smarter, more sustainable solutions for agriculture are built on a strong foundation of science that began when founder Dr. Pearse Lyons first harnessed his expertise in yeast fermentation. Today, our unparalleled global presence and research foundation have powered the creation of many technologies that enhance animal health and productivity, strengthen the safety of the entire food chain and support sustainable agri-food.

From optimizing animal health to safeguarding our natural resources, the agri-food industry faces many obstacles today, particularly as it works to nourish a burgeoning world population.

“Agricultural science must rise to the challenges now, which is why we fervently believe in the synergistic power of research partnerships,” said Janna Norton, who oversees university relations and education outreach for Alltech as the company’s research business manager.

More than 100 scientists conduct research activities across five Alltech bioscience centers and five divisions: ruminant, monogastric, chemistry






and toxicology, biological sciences and life sciences. Alltech has pioneered scientific breakthroughs regarding the application of yeast and yeast-derived products, organic trace mineral nutrition, selenium’s role in animal and human health, the function of digestive enzymes in maximizing feed efficiency, nutritional strategies for performance and well-being, and more.

Alltech has also established research alliances with leading universities and institutions around the world that bring together leading experts in their respective fields and provide the necessary resources to drive industry transformation.

Alltech researchers are creating leading-edge solutions that harness the power of science to nourish people and the planet, illustrating our commitment to Working Together for a Planet of Plenty™. From reducing antibiotic use and antimicrobial resistance to lowering greenhouse gas (GHG) emissions and improving soil health and more, our teams are seeking answers to some of the biggest questions facing the agriculture industry and the world.

Alltech Research and the SDGs

In 2022, Alltech solutions were studied and published in 121 research publications – 68% directly related to one or more of the U.N. SDGs.

 2 ZERO HUNGER	Efficiency, increased production	 14 LIFE BELOW WATER	Aqua runoff, excretion, enzymes, fish health and well-being
 3 GOOD HEALTH AND WELL-BEING	Disease/pathogen load, AMR, end-product nutrient levels	 15 LIFE ON LAND	Animal health and well-being, zinc oxide replacement, feed nutrient reduction or excretion reduction via enzymes, minerals
 13 CLIMATE ACTION	Carbon footprint, methane		



We are researching pathogen-control solutions and antimicrobial resistance (AMR), an urgent public health threat. In 2019, nearly 5 million human deaths worldwide were associated with bacterial AMR.

Alltech’s Role in the Fight Against Antimicrobial Resistance (AMR)

Alltech researchers are making advancements in pathogen control and the global fight against antimicrobial resistance (AMR), one of the largest and most urgent threats to global health, food security and socioeconomic development today. In 2019, nearly 5 million human deaths worldwide were associated with bacterial AMR according to the U.S. Centers for Disease Control and Prevention. By 2050, that number could be as high as 10 million deaths per year.

Antibiotic resistance occurs naturally, but the use and misuse of antimicrobials in disease prevention and treatment in humans and in animals — and their use for improving growth rates in food-producing animals — have contributed to an accelerated development of AMR,



explained Dr. Richard Murphy, research director of the Alltech European Bioscience Centre in Dunboyne, Ireland.

There is a global movement to reduce antimicrobial use in livestock production, especially as a growth promoter. Restricting or banning the use of antibiotics, however, does not eliminate or significantly decrease AMR, Dr. Murphy said. Despite increasing levels of control and restrictions on antibiotic use, resistance remains high. The answer lies in finding strategies to reduce the prevalence of resistant organisms in our production systems and in our environment and creating ways to control multiple types of resistance without compromising food safety.

We need to think beyond antibiotic-free.

“Rather than focusing solely on antimicrobial resistance, we need to focus on the pathogens, because of the high-level prevalence of antimicrobial resistance that’s present in those pathogens,” he said.

As part of ongoing efforts to support restrictions on the non-therapeutic use of antimicrobials in the poultry and pig industries, recent research at Alltech has focused on the mechanisms surrounding antimicrobial resistance and its impacts on antimicrobial efficacy toward common pathogens, such as resistant *E. coli*.

Our research has shown that mannan-rich fraction (MRF) can enhance the sensitivity of bacteria to the effects of antibiotics.

By enhancing overall microbial diversity and balance within the gut, we can enhance the gut’s resistance to pathogen colonization.



“If you can expand the richness and the diversity of the gut microflora, that enables the GI tract to self-police. You tend to get what’s known as colonization resistance. You get greater resistance to pathogen colonization of the GI tract,” Dr. Murphy said.

Actigen® is a key technology in this space, as it participates in normalizing gut microflora and promoting microbiome diversity. When Actigen® binds to bacteria, the bacteria become stressed and more susceptible to antibiotics. Increased sensitivity helps to reduce excess antibiotic use.

The use of alternative products designed to regulate and support the gut environment and its microflora will assist in the move to antibiotic-free production, according to Dr. Jules Taylor-Pickard, director of the Alltech® Gut Health Management platform. Among these products are several nutritional solutions Alltech has pioneered: feed enzymes, organic minerals, yeast cell wall derivatives, such

as mannan-oligosaccharides (MOS) and mannose-rich fraction, and functional nutrients and probiotics.

The Alltech® Gut Health Management platform helps producers strengthen gut microflora to enable the GI tract to offer greater pathogen resistance. It offers a path to antibiotic-free production that begins with the Seed, Feed, Weed program, which supports a more diverse and favorable microbial population.

There is no “silver bullet” for reducing AMR, Dr. Murphy said. It is difficult to replace antibiotics with a single compound or nutritional additive. However, through a combination of strategies, producers can rehabilitate and accelerate the evolution of intestinal microbiota.

Buck Island Collaboration Shows Potential of Carbon-Negative Beef Production

Is carbon-negative beef production possible?

Yes! Alltech researchers have observed it at Buck Island Ranch in Lake Placid, Florida, and the potential likely extends to environments around the world.

Through a strategic research alliance with Archbold Expeditions at Buck Island, we have been given the unique opportunity over the past three years to measure the carbon emissions of beef production and evaluate the effects of pasture management, grazing strategies, mineral supplementation and other nutritional strategies. What our researchers have learned is astounding: These measures have allowed Buck Island’s beef ranch to become carbon neutral.

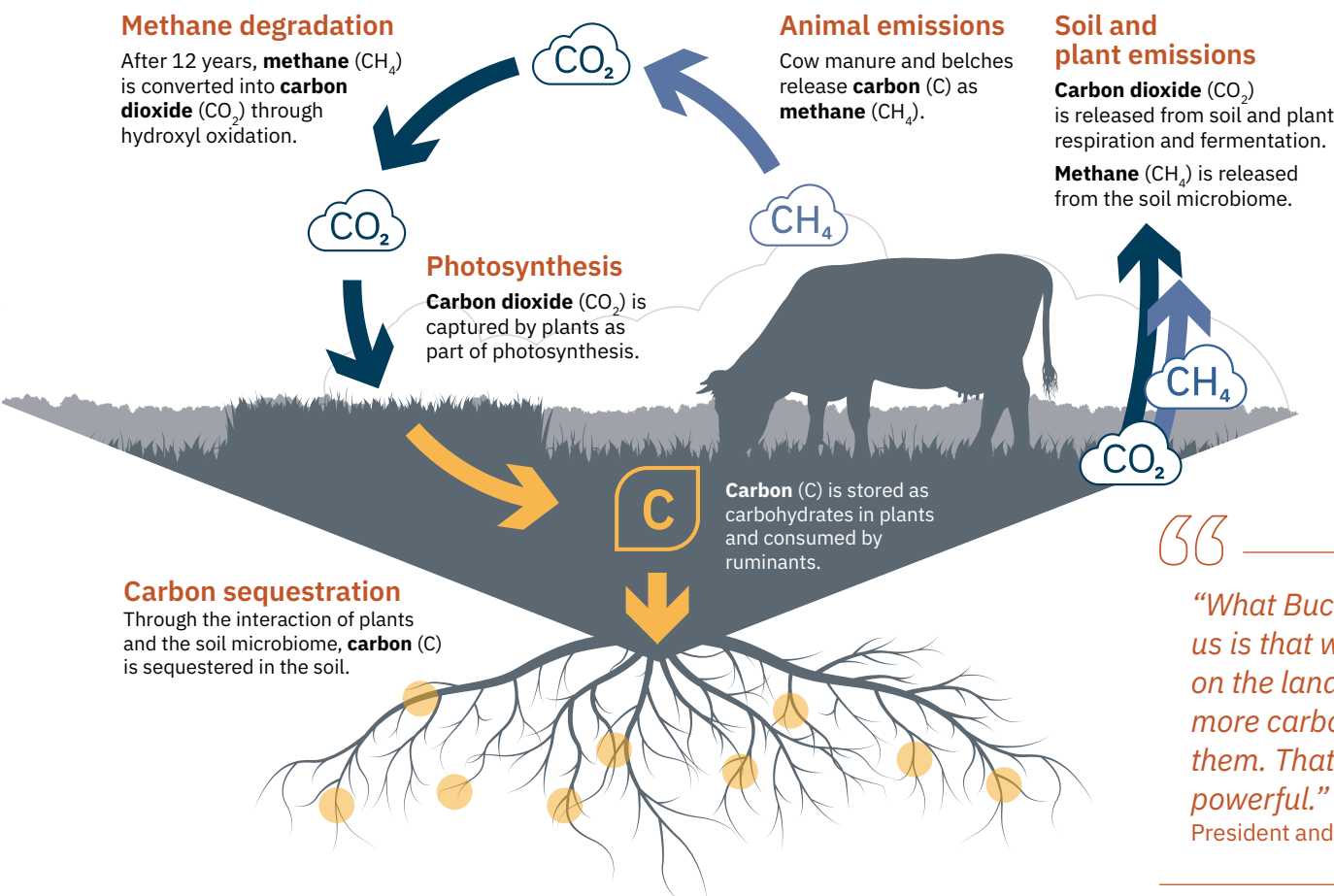
By comparing our data to Archbold’s historical records, we have demonstrated a direct connection between sustainability and improved



Photo credit: Haoyu Li / Archbold's Buck Island Ranch



The Carbon Cycle of Grazing Cattle



“What Buck Island shows us is that with animals on the land, we capture more carbon than without them. That is profoundly powerful.” —Dr. Mark Lyons, President and CEO, Alltech

cow efficiency. The project has also provided a new understanding of the full carbon cycle on a beef ranch, one that is not solely focused on greenhouse gas (GHG) emissions from the animal but also on natural GHG emissions from the land, the photosynthesis of GHGs, and the sequestration of carbon in the soil.

Animal emissions are not the full story!

Buck Island is a 10,000-acre ranch with about 3,000 cows, and it produces 2,300 calves annually. For many years, Archbold has been monitoring GHG emissions there by using eddy flux towers, collecting soil samples and keeping an annual soil sample database, and using GPS to monitor grazing. The alliance has partnered Archbold’s ecologists with Alltech’s animal scientists, creating a well-rounded team that is unlocking new knowledge of the soil microbiome and carbon sequestration, optimizing nutrition and improving production.

Because of a lack of practical tools to measure carbon flux on farms, most carbon emission models use a book value to determine the carbon footprint instead of taking measurements directly. That is not the case at Buck Island. The Buck Island research team uses eddy flux towers to take actual measurements of GHGs in the atmosphere and evaluate carbon capture by the soil.

The team can compare the historical records of cattle management and performance, pasture management, plant growth and soil biodiversity with current measurements to determine the effects of changes in nutritional and management strategies on the ecosystem of Buck Island.

Research has also shown that Buck Island’s herd performance and the sustainability of the ranch have improved since the herd started on our Blueprint® program three years ago.

Blueprint® improved the three-year average of both the pregnancy rate and weaning percentage, compared to the five-year average control from



Buck Island’s historical data set. The year-to-year variation in reproductive performance — and the ranch’s carbon footprint — were lowered.

However, only focusing on the animal misses the bigger picture. Alltech Crop Science and one of the newest members of the Alltech family, Ideagro, have a wealth of information and technologies for nourishing the soil through its microbial population. We must continue to investigate how these microbes boost soil chemistry and nutrient density, helping to sequester more carbon in the soil. By including soil in the equation, we bring the carbon sequestration cycle full-circle.

The work at Buck Island continues as our teams collaborate with Alltech E-CO₂ and others to develop precision tools to measure methane yields and intensity. The next step is the inclusion of advanced sequestering measurements that will evaluate how management and nutrition affect the carbon cycle and make it possible for beef operations to sequester carbon. A life-cycle analysis is also being conducted.

Thanks to the Buck Island project, Alltech is defining climate-smart management practices for reducing GHG emissions and promoting carbon sequestration in cattle production systems.

Carlson Farm Project: Understanding the Soil Microbiome

To better understand microbial populations, Alltech researchers carried out a pilot study of pasture lands at Carlson Farm in Missouri. The study compared three pasture management strategies: ungrazed, lightly grazed and heavily grazed.

The team used a genomic approach to assess the microbial population. This provides information on the composition of the microbiome and the relative abundance of organisms in the soil. On average, the ungrazed pasture samples had a lower carbon index (i.e., less sequestration) and greater activities in pathways associated with carbon loss (e.g., methanogenesis, respiration and fermentation).



Alltech’s Yea-Sacc® Value Test compares total mixed rations both with and without Yea-Sacc®.

Other microbial and functional differences predicted from the evaluation of pasture management practices included:

- Increased biodiversity in grazed pastures
- Improved soil quality in grazed pastures
- Decreased methanogenesis in grazed pastures
- Decreased aerobic respiration in grazed pastures
- System changes for plant nutrition
- Mineral uptake and transport
- Changes in plant hormones and stimulants

The analysis provides promising tools for measuring the potential for carbon sequestration in pasture soils. It will be used in more extensive

validation studies at Buck Island to evaluate sequestration potential and climate-safe practices.

Lab Tool Demonstrates Efficacy of Yea-Sacc® in Dairy Cows

Yeast supplementation is a common practice to improve the efficiency of feed utilization and performance in dairy cows. Supplements containing live yeast support rumen fermentation and the digestive process by stabilizing rumen pH and stimulating the growth of beneficial microbial populations.

Good rumen function ensures optimal feed intake and digestive efficiency in dairy cows, while poor rumen function can negatively impact feed intake, health and overall cow performance. Formulating the ration correctly and understanding how the individual ingredients in the ration work together helps to keep the dairy cow’s rumen and digestive system functioning properly.

In studies, yeast consistently increased energy output and rumen efficiency. Improved rumen efficiency decreases daily methane production intensity, due to a potentially higher production level at a similar feed intake.

Alltech’s Yea-Sacc® Value Test is the only yeast assessment that can compare a total mixed ration (TMR) both with and without Yea-Sacc®. Based on a small TMR sample, Alltech’s industry-leading in vitro fermentation model creates a personalized report showing the data most relevant to performance, profitability and efficiency.

This valuable tool increases the precision of yeast supplementation and illustrates how rations respond differently to Yea-Sacc®, comparing its effects on digestibility, available energy, rumen efficiency and lactic acid concentration.

The Yea-Sacc® Value Test continues to evolve as Alltech incorporates the capacity to identify key nutrients and ingredient interactions.

Building a Better Future Through Collaboration

Innovation and collaboration are required to fully harness the power of agriculture. Working with other leaders in our industry — and partnering with experts in different sectors — is essential to creating a better future for everyone.

Alltech has forged strong partnerships with many organizations and individuals, from startups to established industry players and more, to address some of the most pressing issues facing the agri-food community. By pooling resources and expertise, we work with our partners to develop solutions and bring awareness to the important role agriculture plays in nourishing our population and planet today and for many generations to come.

Alltech is proud of the partnerships we have formed and the impact we have made together.

“The world is in a position for collaboration. It is a major growth driver for the future,” said Dr. Mark Lyons, Alltech president and CEO. “When we talk about Planet of Plenty™, I would say the words in front of that are even more important: ‘Working together.’ Working together is a clear signal. We are open to work with people. We’re open to discuss ideas. Working Together for a Planet of Plenty™ is our purpose as a company.”

Collaborating to create a world of abundance is a transformational opportunity, he said.

“We can have profitable businesses while solving the world’s biggest problems,” Dr. Lyons said. “There is so much more agriculture can do.”

Here is a look at a few of our collaborative endeavors.

Alltech and DPO Partner to Elevate Dairy Industry

Alltech and the Dairy Farming Promotion Organization of Thailand (DPO) recently agreed to collaborate to create a model for nutrition innovation and sustainable dairy farming. With a presence in Thailand for over 25 years, Alltech has established deep connections within the industry,



Alltech signed an agreement with the Dairy Farming Promotion Organization of Thailand to work together to enhance production efficiency, milk quality, animal welfare and economic benefits.

utilizing global resources and experience to deliver localized solutions to farmers and producers. The collaboration will leverage our global expertise and technologies to sustainably expand and develop dairy and beef cattle production in Thailand.

“Working with DPO, we can apply our global resources and insights to the Thai market, so the future of dairy farming will deliver high-quality nutrition for the people of Thailand while enabling the country’s farming sector and land to thrive,” Dr. Lyons said.

Alltech and DPO will assist farmers in developing appropriate knowledge and utilizing relevant technologies, services and management practices

for sustainable dairy and beef cattle production, which will improve the performance of dairy cows and the quality and quantity of milk they produce.

The collaboration includes the development of management and nutrition strategies to solve challenges and improve production efficiency, the establishment of guidelines and procedures to meet project objectives, and the management of ruminant nutrition to solve production issues and promote better efficiency and quality of products.

Alltech Helping Kentucky Create Innovation Ecosystem

Building on Kentucky’s signature agriculture, food and beverage industries, a new entity was formed in 2022 to help cultivate an innovation ecosystem for entrepreneurs and startups in the agri-food sector. Kentucky Agriculture Commissioner Ryan Quarles announced



State and local officials joined Dr. Mark Lyons onstage at the 2022 Alltech ONE Conference to announce the formation of the Bluegrass AgTech Development Corp.



the launch of the Bluegrass AgTech Development Corp. during the 2022 Alltech ONE Conference in Lexington, Kentucky.

“When we think of software development, we think of Silicon Valley. When we think of advancements in healthcare, we think of Boston,” Quarles said. “We believe that Kentucky can step up to the challenges facing our agriculture communities and become the agriculture hub of technology and innovation in the United States.”

Dr. Lyons serves as chair of the board for the Bluegrass AgTech Development Corp. The board also includes representatives from the Kentucky Department of Agriculture, the City of Lexington and the University of Kentucky.

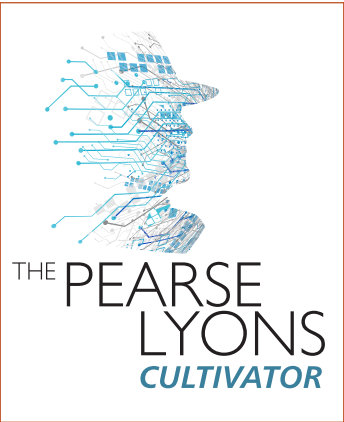
The opportunities for Kentucky to grow as a global leader in agri-food innovation are substantial.

“With the formation of the Bluegrass AgTech Development Corp., we are taking a significant step forward in creating an ecosystem for agri-food innovation that builds upon Kentucky’s best attributes,” Dr. Lyons said.

The Kentucky Agricultural Development Board approved an initial \$1 million in funding to focus on building a pipeline of opportunities focused on agriculture and food tech innovation.

PLC Nurtures Ag-Tech Collaborations That Help the Food Supply Chain Flourish

Drawing on Alltech’s unique expertise and presence in more than 120 countries, the [Pearse Lyons Cultivator \(PLC\)](#) creates pathways for the implementation of innovative solutions that support a Planet of Plenty™. Our year-round program enables ag-tech startups to establish commercial pilots with Alltech or one of our partner companies.



Startups can quickly validate the technical and commercial proposition of the pilot program and develop sales models, and bespoke startup tracks are developed based on the specific needs of each startup company. Pilot programs are closely supported by mentors who provide expert guidance and facilitate connections.

Key focus areas: The PLC focuses on new technologies in the fields of renewable energy, reducing greenhouse gases, sequestering carbon, supporting animal welfare, reducing antibiotic and antimicrobial resistance, reducing water pollution, and producing more food with less land, water and energy.

Recent partner companies: Our 2022 startups included Beta Bugs Ltd., an insects genetic company; Chordata, which has created the first integrated health microchip for livestock; Connecterra, which has created an artificial intelligence (AI) assistant for the dairy industry; Flox, which uses AI to improve bird welfare and flock performance; and Hetwin, which offers innovative stable management for the well-being of animals and humans. In 2023, we are working with three new startups: DDW, a specialist dairy data company; XFarm, a platform that assists farmers as they adopt digital farming techniques; and Aparon, which is researching bacteriophage-based technologies as novel antimicrobials.

Evolving mission: The Pearse Lyons Cultivator evolved from the Pearse Lyons Accelerator, which was created in 2016 to draw on the spirit of entrepreneurship and innovation on which Alltech was founded. The

Pearse Lyons Accelerator proved to be a successful launchpad for new technologies. That late-stage startup program provided valuable guidance for young ag-tech companies on the road to success and offered

a window into the future of agriculture. Through the PLC, we continue to support entrepreneurship, drive the adoption of powerful, innovative solutions and lead our industry into the future.

Future-focused: The Pearse Lyons Cultivator will continue to concentrate on new technologies in our key focus areas. We will partner with startups centered on profitable production, natural immunity and environmental sustainability, as well as businesses focused on Alltech’s foundational technologies — mycotoxin management, mineral management, gut health, enzyme technologies and rumen function.

Alltech China Partners With Sunner on Research and Innovation Hub

In August 2022, Alltech China participated in the establishment of the Sunner-founded Research and Innovation Hub and became its sustainability partner. Sunner is one of the biggest integrators in the Chinese white feather broiler industry. Alltech and Sunner share the same vision for sustainability via healthy and efficient poultry farming.

Alltech and Finnforel Acquire Raisioaqua

Alltech and Finnish circular-economy company Finnforel recently acquired the Raisioaqua fish feed production facility from Finnish company Raisio, which has since been renamed Alltech Fenno Aqua Oy. The company manufactures environmentally friendly feed for aquaculture and specializes in functional feeding solutions that are suitable for northern conditions. The acquisition will complete Finnforel’s sustainable circular-economy fish-farming chain while also enhancing aquaculture producers’ access to Alltech’s nutritional technologies.

Alltech demonstrates our commitment to Working Together for a Planet of Plenty™ by partnering with companies like Finnforel to deliver smarter, more sustainable solutions for aquaculture, resulting in better nutrition and a decreased environmental impact.

Assessing the Environmental Impacts of Technologies and Facilities

Alltech has committed to completing life cycle analyses (LCAs) of our core nutritional technologies across all our manufacturing sites globally.

LCAs quantify the environmental impacts associated with a product. The assessments consider all inputs including ingredients, energy, transport, packaging and all pollutants generated in the production of a product, from cradle to factory gate.

Alltech follows the LCA framework standard ISO 14067 in addition to guidance documents from the Livestock Environmental Assessment and Performance Partnership (LEAP). We also work with the Carbon Trust to ensure services provided through Alltech E-CO₂ are independently verified to be in line with the product carbon footprint standards PAS:2050 and ISO 140067.

“Completing such assessments allows us to generate more accurate metrics on the environmental impact of our business activities,” said Dr. Stephen Ross, senior sustainability specialist, Alltech E-CO₂. “Life cycle analysis requires us to look at energy consumption at the production level, revealing opportunities for process efficiency improvements, which will reduce energy consumption and greenhouse gas emissions.”

Rather than utilize an assumed value for cradle-to-grave analysis of products, our preference is to utilize cradle-to-factory-gate analysis, as through Alltech E-CO₂, we have the ability to conduct on-farm livestock carbon footprints that take into account the use phase of Alltech technologies.

In addition to product LCAs, Alltech has completed carbon footprint assessments for each of our production plants. We will update these carbon footprint scores annually. We also have begun installing monitoring equipment to capture energy consumption data on individual product lines.



Alltech has completed **7 product LCAs** and plans to complete **40 assessments** by the end of 2023.

Alltech E-CO₂ Measures and Helps Reduce Agriculture’s Environmental Impact

The E-CO₂ Project was established in 2009 to provide the agriculture industry with a tool to measure and manage environmental impact at the farm level. In the first few years of business, it pioneered the use of environmental tools and assessments to provide opportunities to benchmark and improve on-farm efficiency, thereby leading to increased profitability and sustainability.

The E-CO₂ Project joined the Alltech family of companies in February 2015 and became Alltech E-CO₂, with a goal of expanding to more locations and offering additional services. Today, Alltech E-CO₂ serves a wide range of customers, from individual farms to multinational organizations in multiple countries.

Alltech E-CO₂ has conducted more than 20,000 on-farm and remote assessments globally and has developed assessment models for crops and all major livestock species. Certified environmental assessments provide a wealth of in-depth data on animal production, health, feed, fertilizer, nitrogen balance, water, energy and resource use. The data collected is used to deliver practical on-farm and online programs, as well as benchmark reporting, with clear and concise consultancy advice to lower the producer’s carbon emissions.

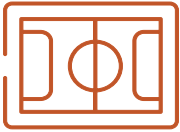
Helping Feed Manufacturers Reduce Their Footprint

Alltech E-CO₂ launched the Feeds EA™ (environmental assessment) model to help feed manufacturers and producers globally measure and lower the carbon footprint of their feed. Feeds EA™ measures the environmental impact of feed production at the feed mill level by assessing the impact of existing compounds or blends. This is determined by calculating greenhouse gas emissions from production, cultivation, processing, energy

The average assessed herd size is



215 cows
producing 8,623
liters each



The average land area per farm assessed is
170 hectares
or **238**
soccer fields



Footprinted over
17,951,808,687
quarter-pound burgers
worth of beef



Footprinted over
20,116,472,102
liters of milk, enough to fill
8,047 Olympic-sized
swimming pools

utilization and transportation in the manufacturing of the feed. Feeds EA™ can calculate emissions from a database of more than 300 ingredients, including raw materials, soya products, byproducts and additives.

“Optimizing the sustainability of feed production provides a huge opportunity for the whole supply chain,” said Ben Braou, business general manager for Alltech E-CO₂. “By utilizing Feeds EA™, feed manufacturers are provided with the means to further enhance their product range and sustainability credentials through supplying feed with a lower environmental impact.”



Alltech recently refurbished and expanded the ruminant research laboratories at our global headquarters.

Feed has the potential to influence up to 70% of a farm's carbon footprint, considering the direct emissions from production, as well as the transportation of feed and indirect emissions that arise from the impact of that feed on the animal. The Feeds EA™ model provides an opportunity to optimize a ration by demonstrating how formulation changes could reduce the carbon footprint of the feed.

"We are able to work with feed mills and producers to take those specific feed emissions and apply them at a farm level through our certified livestock assessments," Braou said. "This greatly increases the accuracy and opportunity for carbon footprint measurement and mitigation across the feed and food chain."



**Alltech IFM® labs
have analyzed over
10,000 customer
samples in the past
10 years.**

Feeds EA™ allows feed manufacturers to produce and market more sustainable feed, thereby enabling producers to choose diets with a lower environmental impact.

Alltech IFM® Evaluates Feed Digestibility, Emissions

In 2022, we celebrated the total refurbishment and expansion of our ruminant research facilities at the Alltech Farm in Nicholasville, Kentucky, which houses the Alltech IFM® laboratory, one of eight IFM labs globally that work as both research and customer support tools.

Alltech IFM® is an in vitro fermentation model for ruminant rations that simulates rumen fermentation to evaluate the energy and protein availability of feeds. The goal is to produce more from existing feedstocks or produce an acceptable amount of energy from inferior feedstocks. Collectively, these labs have analyzed over 10,000 customer samples in the past 10 years.

Producers receive a customized Alltech IFM® report assessing a ration's digestibility and offering advice for optimizing rumen function. Farmers and feed manufacturers can use it to screen individual ingredients, formulate rations and make informed decisions on the quality of feed or total mixed rations (TMR).

Nutritionists often rely on nutritional models and chemical feed characteristics to formulate diets. However, this information is static and does not provide a complete evaluation of nutrient availability. Alltech IFM® is a dynamic diagnostic tool that simulates the digestion of feed in the rumen in real time, which creates a comprehensive view of feed utilization, as opposed to a snapshot from a single point in time.

Feed samples are incubated using rumen fluid and a buffer system to mimic natural rumen fermentation in the animal.



Alltech IFM® simulates rumen fermentation to evaluate the energy and protein availability of feeds.

Feed samples can include concentrates, fresh forages, silages or TMRs. As digestion progresses, volumes of fermentation gases, such as methane and carbon dioxide, are continuously monitored using an automated system. This allows us to calculate the amount of energy lost as methane and methane emissions per animal.

Our sustainability research is further supported by the recent addition of a GreenFeed system, which allows real-time measurement of greenhouse gas production from cattle, furthering our ability to develop effective methane mitigation strategies.

Sustainability is a Catalyst for Strategic Growth and Creating a Planet of Plenty™



Alltech Coppens is an international specialist in developing, producing and marketing a complete range of antibiotic- and GMO-free fish feeds.

Alltech Coppens is a leading global specialist in developing, producing and marketing fish feed and nutritional solutions. We produce industrial feeds for the aquaculture sector and hobby feeds for the ornamental and angling sectors; all are antibiotic- and GMO-free.

We have two locations in the Netherlands — a headquarters and our research center — and we operate a feed production facility in Nettetal, Germany. Overall, we export our fish feed to more than 60 countries.

Alltech Coppens helps farmers feed the world, raise healthy aquatic animals and protect the environment through nutritional innovation.

“We believe that compliance alone is not enough,” said Alltech Coppens CEO Ronald Faber. “Sustainability is integrated within our entire business and is one of the key factors for our strategic growth.”

We are currently working to lower the carbon footprint of the Alltech Coppens production facility by reducing our energy use and waste production and improving internal and external logistics processes to increase efficiency and lower costs. By 2025, we aim for our research center to be CO₂ neutral, and we are researching how to achieve zero CO₂ emissions at our production facility in Germany by 2030.

The demand for healthy food is growing along with the world’s population, and aquaculture is the fastest-growing protein sector worldwide, according to the annual Alltech Agri-Food Outlook. Over the past three decades, aquaculture has expanded, intensified and diversified. The introduction of new species and the intensification of the aquaculture sector have contributed to adverse environmental conditions. Consumers are becoming aware of these issues and have begun to focus more on the environmental and social impacts of the aquaculture sector. Alltech Coppens’ feeds enable fish farmers to meet even the highest market and consumer demands.

Reaching Goals: Sustainable Scoring Index

The research and development program at Alltech Coppens is the cornerstone of our commitment to the production of sustainable fish feed. Every feed produced at our factory is subjected to meticulous testing at the Alltech Coppens Aqua Centre (ACAC).

The efforts and ideas of the ACAC’s dedicated team of researchers, nutritionists, biologists and technical specialists are combined to ensure that the research program is tailored to meet the requirements of the fish that it feeds while also safeguarding the aquatic environments in which those fish are farmed.

For many years, Alltech Coppens has been making progress toward several sustainability goals within the field of fish nutrition. We have developed concrete metrics by which sustainability can be measured and have then worked to make key advances in identifying and measuring those metrics before implementing them in feed formulation.



Alltech Coppens has developed a sustainability scoring index for all aquafeeds. The rankings are established via a comprehensive life-cycle assessment (LCA) using several databases.

These advances have allowed us to apply sustainability scores to our feeds, with each feed’s score tracing its foundations back through the value chain via detailed life-cycle assessments (LCAs) of all the raw materials used in every feed.

To generate the data required to make such sustainability scores applicable on-farm, Alltech Coppens conducted LCAs of our finished products in an in vivo environment to understand how the fish metabolize and utilize nutrients. We have rapidly expanded our research capacity to examine a greater number of fish species and farming environments, using established metrics to determine and define optimal fish health, nutrient cycling and on-farm performance.

Developing this sustainability scoring index demonstrates Alltech Coppens’ commitment to United Nations Sustainable Development Goal 14: Life Below Water and to reducing its dependency on marine ingredients.

With the scoring index, Alltech Coppens can rank not only one type of raw material, such as fish meal, but all types of raw materials, resulting in a sustainability score-ranking for individual feeds.

“This scoring system aims to create awareness in the market and to



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“We believe aquaculture has a key role to play in a Planet of Plenty™. Through careful management of resources, good science and partnering with our customers, we can contribute to a sustainable aquaculture industry.” —Ronald Faber, CEO of Alltech Coppens

”

enable fish farmers to improve their environmental performance,” said Dr. Philip Lyons, global manager of aquaculture research at Alltech Coppens. “The introduction of our sustainability scoring index, and the extension of this index to include all feeds in our industrial assortment, reflects our commitment to driving change within the aquaculture industry.”

The Alltech Coppens sustainability scoring index reflects the feed’s carbon footprint and its impact based on other environmental aspects, such as water use, eutrophication and marine resource sustainability. Its modeling methods are compliant with the European Union’s Product Environmental Footprint Category Rules for Feed (PEFCR).

Alongside developing the feed sustainability scoring system and working to quantify the full LCAs of our finished aquafeeds, Alltech Coppens is also supporting customers in quantifying their own environmental footprint, a critical component in supporting the sustainable growth and intensification of the aquaculture industry. This offers new possibilities for future research and feed formulation choices based on environmental impact.

The Alltech Coppens team collaborates with Stirling University, to evaluate on-farm LCA scores. We are partnering with Föhlen, a company that cultures and processes farmed catfish at its facility in the Netherlands. Föhlen uses Alltech Coppens’ feed for producing, processing

and marketing their African catfish fillets. This collaboration will measure Föhlen’s environmental impact for the consumer.

Reducing Marine Product Usage

Sustainability means taking positive action today for the success of tomorrow.

As the aquaculture industry continues to grow, the environmental impacts of the aquafeed industry will also increase unless we take preventive action. Investigating the sources of these impacts is helping Alltech Coppens develop solutions.

The use of ingredients of marine origin, such as fishmeal and fish oil, is expected to decrease because marine fish stocks cannot sustain higher



Since opening in 2017, the Alltech Coppens Aqua Centre in the Netherlands has become a leading global aquatic research facility focused on excellence in feed solutions for aqua producers.

fishing pressure. In 2022, only 20% of Alltech Coppens’ raw materials came from marine resources, with more than 75% being produced from fishery byproducts. In 2021, 24% of raw materials came from marine resources, a 4% reduction in just one year.

Further replacing fishmeal and fish oil with plant-based ingredients, such as soy protein concentrate and rapeseed oil, leads to other environmental impacts, such as an increase in land-use changes. Alltech Coppens has worked intensively on quantifying not only this land-use change effect, but many other environmental parameters. We now have accurate environmental data for more than 85% of our raw materials.

The aquaculture industry plays an important role in upscaling nonedible food byproducts into high-quality fish protein. In 2022, 46% of our raw materials were circular.

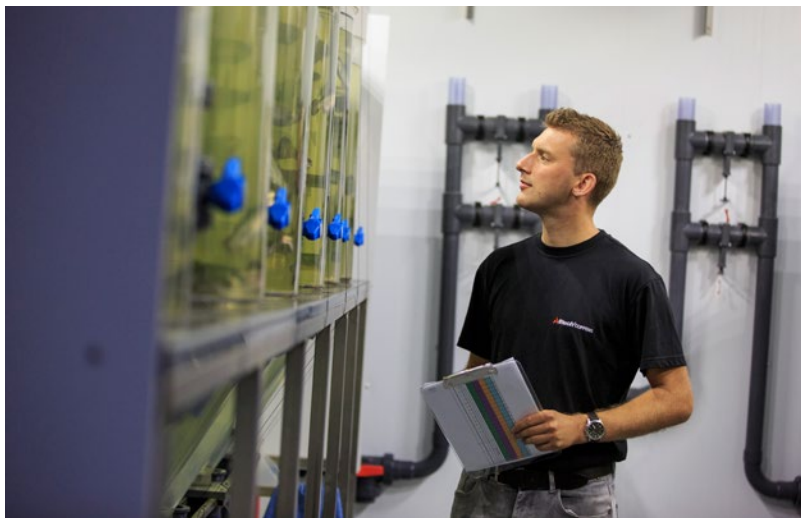
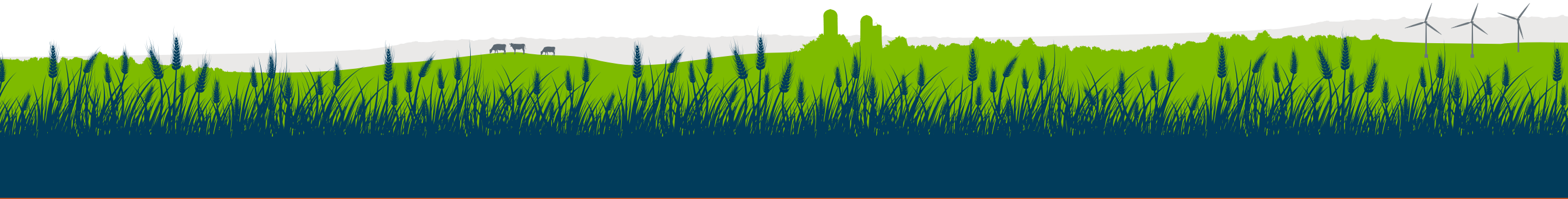
Using Biofiltration to Purify the Air

Biofiltration as an odor-reduction technology is common to many feed mills located near residential or commercial areas. At Alltech Coppens, we already use technology to clean the air around our plants, but now, our production facility in Nettetal, Germany, is boosting those efforts with a biobed installation to remove gas components from the air.

In this system, the supply of airflow from the production facility to the biobed enters via an 1,800-millimeter pipe. In the biobed technical room, the air passes through a water filter and is then transported beneath the biofilter, which serves as a solid carrier on which microorganisms



In 2022, only 20% of Alltech Coppens’ raw materials came from marine resources, with more than 75% being produced from fishery byproducts.



Alltech Coppens focuses on research and innovation to make sure our products meet the nutritional needs of aquatic animals and help minimize the impact on the ecosystem.

can live. The air-polluted substances in the exhaust gases are absorbed on the surface of the carrier material and biologically oxidized by the microorganisms, which use them as a source of nutrients and energy. This process is comparable to catalytic post-combustion.

The installation is nearly 11,000 square feet (1,000 square meters) in size and can purify 120,000 cubic meters of air per hour.

Net Energy Concept Helps to Ensure Consistent Performance

Alltech Coppens is the first aquafeed producer to consider net energy in the formulation of aquafeed. Our formulations neutralize the natural variations of the raw materials in the feed and focus on the differences in the

efficiency of the different macronutrients. This net-energy concept helps our customers boost performance and take control of their profitability.

Most aquafeed companies formulate their feed based on fixed digestible protein and energy levels, resulting in varying raw materials from batch to batch. With the net-energy concept, crude nutrients such as protein and fat might differ slightly between batches of feed, but the digestible energy on which the feed is formulated will stay the same between batches.

Also, recent research from the Alltech Coppens Aqua Centre and associated universities has shown that not all forms of digestible energy can be converted to growth with the same efficiency. By formulating feeds based on net energy, Alltech Coppens ensures consistent performance between batches of feed.

Partnerships for Positive Impact

Alltech Coppens invests in collaborations and partnerships with suppliers, clients and neighbors. In 2022, we launched our Ambassador program, which is open to customers that source at least 50% of their feed from Alltech Coppens and that have been customers for at least three years.

The Ambassador program facilitates networking and idea-sharing between our customers, supporting sustainable growth for all. It also allows Alltech Coppens to gain new insights on how we can empower our customers not only to handle sustainability challenges, but to use those solutions to develop new opportunities. This flourishing program currently has more than 1,000 members.

Our first Ambassador Day, held November 2022, brought together aquaculture producers from across the globe to learn about strategic planning, translating science into sustainable farming, harnessing the power of social media and more.

Other collaborations include:

- Alltech E-CO₂, which provides partners across the supply chain with a



Alltech Coppens hosted its first Ambassador Day in 2022, bringing together aquaculture producers from across the globe to network and share ideas.

comprehensive range of advice, tools and services to help measure and improve environmental performance.

- Partners and educational institutions to ensure the quality of our feed, including ProTerra Foundation, Roundtable on Responsible Soy, Nofima, Marine Stewardship Council (MSC), Aquaculture Stewardship Council, Marine Trust, Ghent University, University of Stirling, University of Plymouth, Wageningen University and Research, University of Glasgow and Universität Rostock.

“Sustainable growth is only achievable through collaboration,” Ronald Faber said. “We team up to work together on nutrition and feed sciences, including the improvement of aquatic feed nutrition and sustainability in aquaculture, while being socially responsible, to help carry out Alltech’s Planet of Plenty™ purpose.”

From the Ground Up: ACS Enhances Crop Health and Productivity

Alltech Crop Science (ACS) is a global leader in applying microbial fermentation and nutrigenomic research to equip farmers with solutions that respond to the increasing requests for enhanced performance, yield and quality in compliance with challenging regulations while meeting consumer demand for added value and sustainability.

By optimizing efficiency, enhancing natural processes and bridging the gap between chemicals and biologicals, ACS fosters the integration of bio-solutions and practices to enhance conventional crop production more sustainably. Its mission is to provide unique, reliable, sustainable biological solutions to combat everyday agronomic challenges that occur in the soil, in the environment and in the plant.

Solutions for Healthy Soil

The ACS team's research aids in producing solutions for healthy root development and plant growth while optimizing soil microbial populations. To keep soil healthy and thriving, ACS harnesses the powerful world of microbes. Healthy soil has plentiful nutrient content, biodiversity and a strong microbiome. As a result, it needs fewer chemical inputs, which reduces the risk of exposure to hazardous chemicals and environmental contamination.

Healthy soil represents a reliable and valuable resource for growers, their businesses and their families for years to come. Well-balanced soils that are rich in organic matter naturally supply nutritional and water requirements that would otherwise be supplemented by the grower, both reducing the environmental impact and saving the farmer money. Extreme weather events such as heat, frost, flood, drought and disease have all been worsened by climate change, straining plant resources and greatly reducing potential yields. Healthy, productive soils can offset these stresses, helping maintain optimal harvest yields and profitability for farmers.

Strengthening Plant Defenses

Nutrigenomic research reveals the close connection between plant nutrition and natural plant defenses. To help farmers achieve top yield

and quality, ACS applies nutrigenomic research to help optimize plant performance. We select and grow specific bacterial strains that are naturally found in healthy soils. In stressful situations, these strains produce metabolites to protect themselves and modify their environment. We extract these metabolites, which play a key role in the balance of the microbial ecosystem and the interaction between soil microbes and roots. By providing essential nutrients and unique microbial components, plants can better defend themselves, contributing to sustainable crop production by reducing the need for conventional pesticides.

Plants face a variety of biotic stresses that can result in diminished productivity and quality. For generations, farmers have used pesticides and other synthetic chemistries to protect their crops; however, as the demand for sustainable management practices increases, farmers have had to incorporate new technologies into their management programs to help optimize plant performance. **Science meets sustainability in our efforts to improve plant health, quality, nutritional value and yield while decreasing the need for conventional chemicals.**



How ACS Drives Sustainability:

- To **help farmers lower their environmental impact**, ACS gives farmers the ability to evaluate how to reduce CO₂ emissions as well as the carbon and water footprints of their productions.
- ACS solutions **strengthen soil health** to allow for greater carbon sequestration, reduce pesticide use and help increase natural antioxidants. Our range of technologies helps farmers improve the quality and quantity of their crops and reduce the use of fertilizers.
- We educate team members and the community through our #SoilFacts campaign, an initiative to **raise awareness of the importance of soil health** for sustainable production.
- Our ACS Iberia facilities, which opened in 2021 in Murcia, Spain, have received **two quality standard certifications** that recognize excellence in management processes and environmental requirements. These standards provide assurance that environmental impact is being measured and improved. The facilities in Murcia have allowed for an improvement in crop science production processes, resource optimization and a consistent supply for the growing demand in Europe, always ensuring the highest quality. The facilities were designed with an eye toward Alltech's commitment to sustainability, emissions reduction and the use of renewable energies — meeting 10 of the U.N. Sustainable Development Goals.
- ACS recently acquired **Ideagro**, a leader in agri-food research and development with a team of more than 20 scientists. Ideagro is committed to improving the productivity and profitability of agricultural systems, and its expertise in developing beneficial organisms for soil aids the growth of crops, reduces the impact of chemical inputs and helps plants to resist biotic and abiotic stress. Ideagro has state-of-the-art laboratories and experimental research stations and fields for carrying out trials in Spain. The company has researched more than 90 different crops and performed more than 10,000 physicochemical and biological analyses.

Alltech Spain is Leading the Way to a Future of Promise

Alltech Spain has fully embraced our purpose of Working Together for a Planet of Plenty™. Our team in Spain has enjoyed a long history of success because of its dedication to helping livestock producers improve their technical and financial efficiency, which also contributes to their sustainability efforts.

We have grown significantly over the past few years, thanks to a comprehensive portfolio of innovative nutritional solutions, modern manufacturing plants that use best practices in analysis and quality control, qualified professionals, and technical specialists who accompany farmers on their journeys to provide plentiful, safe and nutritious food.

Taking Steps to Lower GHG Emissions

Alltech Spain recently completed a study quantifying the greenhouse gas (GHG) emissions of our Spanish facilities and their corresponding carbon footprint. The results were verified by Bureau Veritas, a leader in testing, inspection and certification services. **Alltech Spain's emissions were 0.241 CO₂e per ton of product sold in 2021, 90% of which were Scope 3 emissions.**

With this step completed, Alltech Spain is launching several projects to help reduce our carbon footprint and absorb carbon dioxide as part of the General Subdirectorate of the Coordination of Actions Against Climate Change from the Spanish Ministry for the Ecological Transition and the Demographic Challenge.

Two photovoltaic fields were installed in July 2021, one on the roof and the other on the ground. The use of the solar panels will result in an estimated



Alltech Spain plays a crucial role in supporting the Spanish agricultural industry by providing innovative products, services and expertise to optimize animal health, nutrition and sustainability.

18% reduction of the factory's energy footprint, which accounted for a 5% reduction of total emissions in 2022. The total installation provides 80% of the electricity consumed by the factory, while preventing carbon dioxide, nitrogen oxide and sulfur oxide emissions.

Charging stations for electric vehicles are expected to be installed in the second half of 2023. Other measures include: reviewing our raw materials sourcing; examining the environmental and economic impact of our local or closest proximity suppliers; considering recycled packaging options; and analyzing transportation emissions.

Helping Spanish Farms Reduce Carbon Footprint

Alltech Spain was one of the first Spanish companies in the industry to launch an environmental sustainability program for livestock production and related fields. Supported by the technical resources of Alltech E-CO₂, we are conducting on-site environmental assessments and offering



Alltech Spain is partnering with Alltech E-CO₂ to help livestock farmers reduce their on-farm carbon footprint and improve the environmental and economic sustainability of their businesses.

strategies to help livestock farmers reduce their on-farm carbon footprint.

Carbon footprint assessments on livestock farms are carried out according to PAS 2050:2011 and ISO 14067:2018 standards. The goal is to control and reduce GHG emissions while reducing the use of raw materials and the costs associated with them, boosting farm productivity, accessing common agriculture policy eco-schemes for keeping farms in good agricultural and environmental conditions, and promoting new markets and business opportunities.

In 2022, 377 carbon footprint assessments were conducted, 117% more than in 2021.

Carbon Sequestration in the Dehesa

The University of Córdoba and Alltech Spain have begun a research project to measure carbon emissions from different livestock systems in



Reducing Emissions Since 2019, more than 1,158 on-farm environmental assessments of different livestock species have been conducted in Spain.



the dehesa region of Los Pedroches, Córdoba (Andalucía). The 18-month project involves conducting a life cycle analysis (LCA) of the carbon footprint in agriculture and analyzing how the soil works as a carbon sink.

This study will focus on Los Pedroches, a region whose economy is closely linked to livestock farming. This will allow the analysis of both the carbon footprint and the carbon sequestration on farms with different types of operations and management of different soils, making it possible to identify best practices to reduce the carbon footprint.

Bees for Biodiversity

In the past few years, Alltech Spain has prioritized activities that promote biodiversity. One such activity is the development Bee-Sacc™, a highly digestible protein feed that enhances beehive immunity.

Bees are vital to biodiversity; they allow plants to reproduce through pollination. Without bees, the entire food chain could collapse. Bee-Sacc™ provides a whole range of protein feeds for bee colonies at times of food shortages, especially in the winter or during droughts. It provides beekeepers with the tools to adapt and keep their farms viable. An estimated 20% of Spain’s beekeepers use the product.

The versatile Bee-Sacc™ product range is used in all stages of beekeeping operations. Bee-Sacc™ helps achieve good nutritional status, increases immunity and longevity, creates higher reproductive and survival rates, and results in better economic outcomes for beekeepers.

Queen farms using Bee-Sacc™ have seen an increase of viable royal larvae, and honey farms have achieved mortality reductions of 25%.

Embracing Innovation and Science

Alltech pioneered the introduction of slow rumen degradable nitrogen sources in the diets of ruminant animals. Optigen® and Optisync are two nutritional technologies with the highest recognition and accreditation from beef and dairy producers in Spain.

Creating a Therapeutic Solution for Honeybee Parasites

The Varroa mite, an external parasite that afflicts honeybees, is widely regarded as the most destructive pest to honeybee colonies. The Varroa mite targets both adult bees and developing larvae, posing a direct threat by feeding on their bodies. Mites also act as carriers for viruses that can be fatal to bees. These secondary infections give rise to a condition known as parasitic mite syndrome, which leads to the demise of colonies within a few months.

Conventional approaches to controlling Varroa mite populations involve the application of chemical pesticides. However, widespread use of these treatments has resulted in resistance to many commonly employed chemicals. Alternative methods for preventing and treating Varroa mite infestations have exhibited limited efficacy. It has become crucial to explore the development of alternative interventions to mitigate Varroa mite infestations in honeybee populations.

Alltech Spain is tackling the Varroa challenge by working with our Regulatory, Innovation and Commercial teams to develop a natural, therapeutic solution. This project is underway, and our team is currently identifying regulatory steps necessary for product approval.

We have helped many farms establish programs to manage and control the risks of mycotoxin contamination of their feed ingredients. The use of the most advanced analytical tests, such as Alltech 37+® and Alltech® RAPIREAD™, provides a reassuring security framework. Throughout 2022, our team carried out 741 mycotoxin analyses focused on controlling the quality of corn, hay, silage, total mixed rations and other ingredients. The results make it possible to establish risk control strategies and mitigate the negative effects of mycotoxin contamination.

Alltech Spain anticipated market needs to reduce antibiotic use in animal production and was proactive in our plan to prevent risks related to the zinc



The Spanish sustainability team attended Figan, the International Fair for Animal Production, the benchmark event for the agricultural and livestock sector in the Mediterranean region.

oxide ban in pig production. We launched four new premixes that contain a complete set of nutritional technologies that allow the generation of a good intestinal microbiome and promote intestinal health in animals.

A Brighter Future

Alltech Spain has become an active partner with many organizations that share common goals of creating a world of abundance for future generations. We have been a member of the Grupo Alimentario de Innovación y Sostenibilidad (GIS) for two years. GIS provides support to companies in the agri-food sector that are committed to innovation.

In January 2023, we joined the Climate Change Cluster of Forética, Spain’s leading business platform on climate change, which aims to promote business action toward net-zero emissions, accelerate action on climate change, facilitate networking among companies and strengthen alliances and dialogue with public administrations.

Helping Farmers Produce Nutritious Food More Sustainably

To create a world of abundance, we must do more than feed the growing population. We need to nourish it with quality meat, milk, eggs and seafood that are high in protein and crops that are grown in healthy soil, all while working to revitalize local economies and replenish the planet's natural resources.

This can be accomplished by improving the health of animals and the soil, maximizing the value of feedstuffs, increasing the efficiency of the farm and reinvesting in innovation. Alltech has been striving to meet all of these goals for more than 40 years and is the only global partner with expertise from the ground up.

Our nutritional technologies help optimize the nutrients in animal feed, thereby supporting the health and performance of livestock while also reducing the environmental impact of agriculture.

Alltech has pioneered nutritional technologies that have been proven to improve production efficiency, reduce the carbon footprint of dairy and

beef farming, improve poultry and pig production sustainability, and help rid animal diets of toxins that can harm both the animal and the environment.

A few examples:

- **Optigen®** and **Yea-Sacc®** have been shown to substantially enhance both the profitability and sustainability of dairy and beef production.
- The Carbon Trust has validated that **Actigen®** reduces greenhouse gas emissions in pigs and poultry by improving animal efficiency and performance.
- **Bio-Mos®** has been proven to increase hen-day production and livability, enhance egg quality, decrease the feed conversion ratio and lower greenhouse gas (GHG) emissions.
- **Mycosorb** has been proven to mitigate the effects of mycotoxins in feed and affect the carbon footprint of livestock operations.
- Research has shown that maximizing the nutritive value of poultry feed with multiple exogenous enzymes, such as **Allzyme® Spectrum**, leads to more efficient poultry production and results in the reduced excretion of nitrogen compounds, undigested protein and phosphorus in the manure.
- **Bioplex®** has been proven as an effective tool for reducing and replacing inorganic trace minerals in livestock diets and for decreasing the environmental impact through a significantly reduced excretion of zinc, manganese, copper and iron.

Reducing Greenhouse Gas (GHG) Emissions

Climate change threatens every environmental system and has the potential to hinder agriculture's ability to feed the world. Today's dairy and beef producers face many challenges, from market volatility to shifting consumer preferences. Being able to accurately measure and manage the carbon footprint of the operation is integral to any farm's profitability.

Alltech can help reduce the carbon footprint of milk and meat production through nutritional solutions that offer environmental benefits without compromising animal performance.

Yea-Sacc®

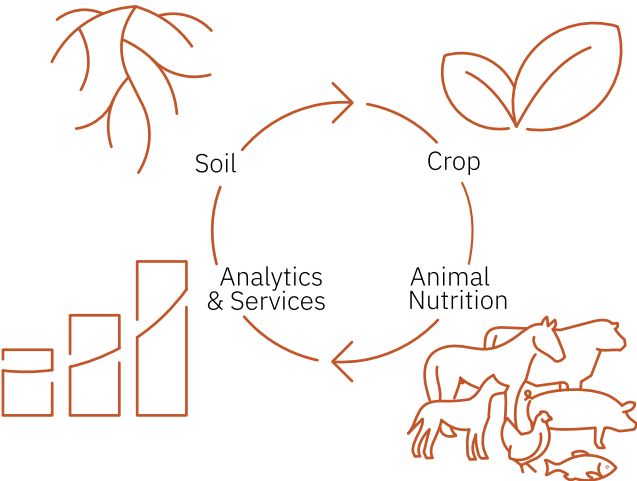
Yea-Sacc® is a yeast culture specifically selected for use in beef, dairy and equine feeds. Its unique mode of action leads to enhanced digestibility and nutrient utilization, higher milk production in dairy cows and increased average daily gains in beef cattle. By converting more feed into milk or meat with Yea-Sacc®, less methane is produced per kilo of output.

The use of Yea-Sacc® in dairy cows reduces the methane emissions intensity of the milk produced by 3%, on average, and by as much as 5.2% in optimal farm situations. It also lowers the nitrogen excretion intensity by 5.4%.

For a sense of Yea-Sacc's® impact at scale, if Yea-Sacc® was fed to Ireland's entire dairy herd (1.4 million cows), milk production there could increase by 435,000 metric tons. This would lead to savings in terms of feed, enteric methane emissions, manure output, fertilizer, land and water.



Optigen® and Yea-Sacc® have been shown to enhance both the profitability and sustainability of dairy production.





Optigen®

Optigen® is an innovative ingredient that provides a slow release of non-protein nitrogen (NPN) to the rumen over time, which imparts benefits related to microbial protein, fiber digestion and energy availability for milk and meat production. Optigen® can replace vegetable protein sources and enable producers to simultaneously improve animal performance, reduce their carbon footprint and increase profitability.

Published meta-analyses in dairy and beef cattle highlight that the use of Optigen® in dairy diets resulted in carbon savings of around 54 grams of CO₂e per kilogram of milk produced, and in beef diets, the partial replacement of vegetable protein with Optigen® was correlated with a consistent improvement in the liveweight gain (8%) and feed efficiency (8%) of beef cattle.

To look at its impact on a larger scale, if Optigen® was incorporated into the diets of the entire dairy herd of Argentina, producers could save 240,000 tons of soybean meal and keep 107,000 hectares of land from being used for soybean cultivation — that is five times the size of Buenos Aires, the largest city in Argentina (with an estimated population of 15,490,415)!

On a smaller scale, when feeding Optigen® to 1,000 beef cattle — aiming for each animal to gain 440 pounds (or 200 kilograms) — we can expect carbon savings of 111 tons of CO₂e, which is equivalent to taking 73 cars off the road.

Mycosorb

Mycosorb, Alltech’s proprietary mycotoxin binder, is proven to deliver broad-spectrum mycotoxin binding, reducing the damaging effects of these unwanted toxins on animal health and productivity. In addition to binding mycotoxins, Mycosorb also supports animal immunity and gut health in the presence of mycotoxins.

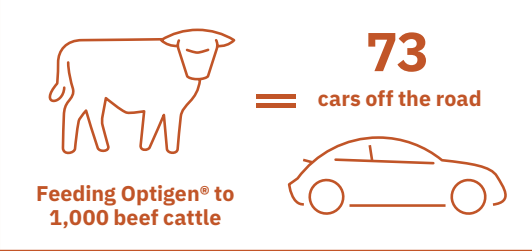
In a first-of-its-kind study, the Alltech® Mycotoxin Management team, supported by Alltech E-CO₂, measured the effects of mycotoxins on the carbon footprint of livestock production. The same study also assessed how Mycosorb can help counteract the effects of mycotoxins on GHGs. It was found that when Mycosorb was included during a mycotoxin challenge, the CO₂-eq of a 100,000-bird broiler operation was reduced by 25.41 tonnes. That’s the equivalent of 30 fewer transatlantic round-trip flights or the annual usage of 17 cars in the U.K..

**Reducing Antibiotic Usage and Antimicrobial Resistance
Alltech® Gut Health**

The establishment of a strong microbiome in a young piglet, chick or calf will impact that animal for the rest of its life.

Governments have been putting restrictions on the use of zinc oxide (ZnO) in piglet feed, which has traditionally been used to control diarrhea in weaning pigs, but it can be toxic for animals and can pollute the environment. It also increases the development of bacterial antibiotic resistance in weaned pigs. Alltech’s Seed, Feed, Weed solution, part of the Alltech® Gut Health program, can help mitigate this problem in poultry, calves and pigs.

The Alltech® Gut Health strategy focuses on three main areas of gut health: reducing antimicrobial resistance, supporting natural immunity and ensuring food safety. The Alltech® Gut Health program increases the efficiency of antibiotics to fight sickness. A healthier gut reduces the need for antibiotics on-farm, as well as antibiotic resistance among farm animals. The program uses Alltech nutritional technologies to help balance the microbial diversity in the gut and supports the animal’s natural immunity, leading to reduced antimicrobial resistance in the animal and a lower risk of foodborne illnesses.



Actigen®

Actigen® is a unique, second-generation bioactive product derived from *Saccharomyces cerevisiae*, a strain of yeast selected by Alltech and isolated to create a more effective gut health solution. Actigen® was developed to be a traceable form of yeast carbohydrate for beef cattle, dairy cows, poultry, pigs, aqua, pets and equines. It supports immune defenses, gut microbial health, and gut function and development, thereby promoting overall health and performance.

Actigen® also reduces negative environmental impacts by contributing to a reduction in food loss and improving protein output. Actigen’s efficiency decreases the amount of commodity feed needed for animal production and directly reduces arable land use as a result. In terms of animal welfare, including Actigen® in feed can benefit animals by improving gut health and helping to decrease the mortality rate of laying hens by nearly half (46%).

Through Actigen® life cycle assessments for both poultry and pigs, we



During a mycotoxin challenge, Mycosorb has been shown to reduce the carbon footprint of a 100,000-bird layer operation by 190 tons over a 63-week period.



have been able to establish that including Actigen® in feed decreased GHG emissions by an average of 5.4% in egg production systems; reduced nitrogen and phosphorus excretion in pigs; and decreased emission intensities by an average of 3.5% in pigs, among other benefits.

Producing More Food With Less Land, Water and Energy

We need to become increasingly efficient to feed the world’s growing population without converting more land to agricultural use. We must protect our remaining natural ecosystems to preserve biodiversity and maintain

carbon sinks. We need to feed livestock without driving deforestation and conversion of grasslands to crop production. Therefore, it’s important that animals make the most efficient use of the forage, crops and byproducts that they consume.

Alltech® Enzyme Management

Around 25% of the available nutrients in animal feedstuff are undigestible, leading to nutrient and caloric waste.

Alltech® Enzyme Management technologies break down fiber in feed and



The establishment of a robust microbiome in a young piglet, chick or calf will result in lasting positive benefits throughout its life.

Carbon Trust Endorses Alltech Technologies for Role in Reducing GHG Emissions

Alltech technologies have been proven to help reduce the carbon footprint of dairy and beef farming, improve poultry and pig production sustainability, and help rid animal diets of toxins that can harm both the animal and the environment. Our research team has pioneered the combined use of meta-analyses, life-cycle assessments (LCA) and simulation modeling to substantiate how the impacts of our technologies in improving production efficiency can be translated to lower environmental impacts.

The Carbon Trust recently validated several Alltech products for their role in helping to reduce greenhouse gas emissions from livestock. This validation complements our peer-reviewed research about the environmental benefits of our technologies.

Alltech’s Carbon Trust-validated claims, which are based on published results from laboratory and on-farm testing against a valid baseline, include:

Yea-Sacc® — The correct use of Yea-Sacc® within an average diet can reduce greenhouse gas emissions from cattle per kilogram of milk or meat.

Optigen® — Optigen® can reduce greenhouse gas emissions in beef and dairy cattle per kilogram of meat and of milk. When soybean meal is replaced with Optigen®, the risk of a high carbon footprint may be significantly reduced.

Mycosorb — For ruminants: Mycosorb can lead to a reduction in greenhouse gas emissions in buffalo, beef and dairy cattle per kilogram of meat and milk due to improvements in animal efficiency and performance. For monogastrics: Mycosorb can lead to a reduction in greenhouse gas emissions, in pigs per kilogram of meat, and in poultry per kilogram of meat and eggs due to improvements in animal efficiency and performance.

Actigen® — In terms of pig and poultry, Actigen® can lead to a reduction in greenhouse gas emissions per kilogram of meat and of eggs due to the improvements in animal efficiency and performance.

KEENAN — KEENAN diet feeders combined with the InTouch monitoring technology can reduce greenhouse gas emissions in beef and dairy cattle per kilogram of meat and of milk due to the improvements in animal efficiency and performance.

release nutrients that would otherwise not be available to the animal, improving nutrient utilization. This allows farmers to use alternative feed ingredients and byproducts, which means more meat, milk or eggs with less feed. Reducing the amount of feed ingredients that it takes to raise animals reduces the amount of land, water, fertilizer and energy required. This can lead to an overall lower environmental footprint and lower costs for the farmer.

The use of enzymes decreases GHG emissions and reduces the amount of nutrients excreted into the environment.

Alltech® Mineral Management

Improper mineral supply can have major consequences for animal health and productivity. The Alltech® Mineral Management program guarantees organic minerals that are better absorbed, stored and utilized by the



animal. This ensures the higher nutrient needs of modern livestock are met for growth, reproductive performance and health.

The Mineral Management team conducted a poultry meta-analysis to investigate how Alltech’s **Bioplex®** and **Sel-Plex®** technologies can positively impact the sustainability of layer farming and egg production. Bioplex® was found to consistently improve hen production and have no effect on feed intake, resulting in production of more eggs per kilogram of feed consumed. Feeding Bioplex® to a 1-million-layer flock could restore 384 tonnes of first-class eggs back into the supply chain. This number of eggs saved is equivalent to the size of 154 African elephants! Sel-Plex® saw similar improvements in egg production with less feed consumption, all while boosting selenium content in eggs.

Reducing Air and Water Pollution

Nitrogen and Ammonia Emissions: Optigen® and De-Odorase®

Ruminants excrete 75-95% of the nitrogen in their diets due to poor utilization. In Europe, every kilogram of excreted nitrogen costs €14 (roughly US\$16.50) in human health and ecological damage. A recently published meta-analysis highlighted that Optigen® improves nitrogen use efficiency by 4%, leading to a nitrogen excretion intensity reduction of 4%.

Ammonia emissions are a deadly source of air pollution and can significantly impact human health. In some countries, animal manure can account for up to 90% of ammonia emissions. Our research shows that De-Odorase® reduces atmospheric ammonia levels in pigs’ weaner and grower pens steadily throughout the growth period. Ammonia levels in the weaner houses were reduced by 46-50%, while levels in the grower pens decreased by 65%.

This initial work with De-Odorase® paved the way for intensive research for both pigs and poultry. Similarly, using De-Odorase® in broiler feed has shown a significant reduction of the ammonia concentration in sheds by 38%.

Reducing Nitrogen Runoff: Optigen® and Allzyme®

Excessive nitrogen in rivers, lakes and oceans can lead to dangerous algal blooms and dead zones. Agriculture is under increasing pressure to reduce nitrogen runoff from fertilizer and manure.

Optigen® is proven to reduce manure nitrogen excretion in dairy cows by 12-13 grams of nitrogen per cow per day. This data suggests that the use of Optigen® has the potential to reduce the annual manure nitrogen excretion from the U.S. dairy sector by an average of 51,509 tons of nitrogen, based on the annual milk output.

Allzyme® SSF is derived from a select (non-GMO) strain of *Aspergillus niger* using Alltech’s unique solid state fermentation process. Allzyme® SSF allows for flexible feed formulation through the inclusion of byproducts and

alternative raw materials and by reducing the density of the diet. It also promotes nutrient release and optimizes feed digestibility, supporting a healthy animal digestive system.

Studies have shown a reduction in nitrogen and phosphorus in manure, which lessens the environmental impact of animal waste. Allzyme® Vegpro allows the animal to better utilize protein sources in the diet while maximizing nutrient digestibility. Allzyme® Vegpro supplementation reduces the environmental impact and the cost of production, with studies showing a reduction in the nitrogen excretion ratio.

Using Allzyme® Spectrum in a 1-million-bird production system can result in a reduction of 660.3 tons of CO₂e. That’s the equivalent of 767 transatlantic flights — or taking 431 cars off the road in the U.K.

Reducing Mineral Pollution

Alltech’s Total Replacement Technology™ (TRT) focuses on feeding organic trace minerals that are better absorbed, stored and utilized by animals than traditional inorganic trace mineral supplements. Increased nutritional efficiency aids in better digestion and lower feed consumption. Alltech has proven that organic trace minerals in the form of Bioplex® and Sel-Plex® can be included at significantly lower levels while improving animal performance and reducing excretion of minerals into the environment.

A 2020 study found that reducing mineral supplementation in pigs to 80% of industry levels with Bioplex® resulted in significantly reduced fecal mineral excretion. For gestating sows, it decreased zinc excretion by 77%, iron excretion by 33% and manganese by 15%. For lactating sows, it resulted in 56% less zinc excretion, 47% less iron and 28% less manganese.

Another 2020 study of laying hens found that lower doses of trace minerals with Bioplex® reduces fecal mineral excretion — 60% less iron, 57% less copper, 52% less manganese and 44% less zinc. It also showed better performance and eggshell quality and strength.



Organic minerals are better absorbed, stored and utilized by the animal.

Alltech’s Industry-Leading Quality System Exceeds Rigorous Global Standards

AQS Continuously Ensures Quality, Safety and Service

The Alltech® Quality System (AQS) was created in 2005 when Alltech founder Dr. Pearse Lyons challenged the company’s quality team to create a global quality standard that would ensure consistency across all of the company’s manufacturing facilities.

“Dr. Lyons wanted to make sure that no matter where they came from, all Alltech products were made using the same standards,” said Taryn Pitman, Alltech’s global quality manager.

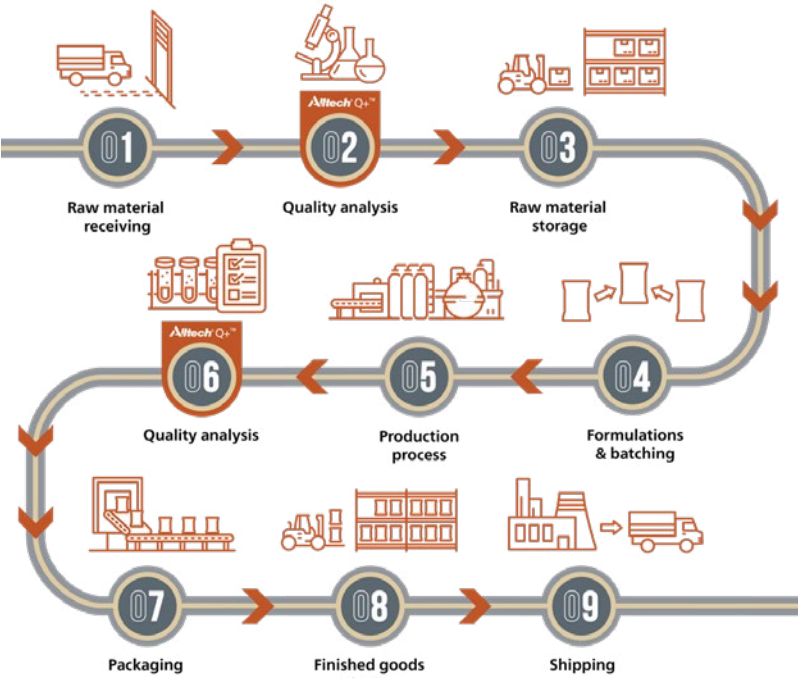
AQS works to continuously ensure or exceed customer satisfaction in the areas of biotechnology, quality, safety and service. It is designed to meet or exceed all global, regional and local regulatory requirements for food and feed, including fraud, adulteration prevention and feed defense systems. Some of our leading certifications include FCI, FAMI QS, AFIA Safe Feed/ Safe Food, ISO 22000, HACCP and AIC FEMAS. Our leading-edge quality-assurance system is used at all Alltech production facilities and warehouse sites across the globe.

Quality processes accompany each step of our operations, including supplier approval, raw material receiving, raw material storage, formulations and batching, the production process, packaging, finished goods storage and shipping. All suppliers, raw materials and finished goods are assessed using our risk-management process, and each batch is evaluated to make sure the final formulation guidelines are met. Batches are traceable from the receipt of raw materials until our products are delivered to the customer, and Alltech’s organic feed lines are kept separately from other feeds.

Our internal laboratory can verify each label guarantee and quality requirement. Wet chemistry, mineral, enzyme, microbiological and nutrient analyses are performed in each region to support purchasing and production departments. We also use sequencing and validated flushing, segregation and verification analyses.

“We have robust documentation every step of the way,” Pitman said. “This approach really sets us apart. AQS is the global standard for quality assurance. If you have AQS implemented, you will have no issues with government inspections and third-party certification bodies.”

Globally, AQS has undergone countless audits — from regulatory bodies, customers and certifying bodies — and has not failed.



Quality processes accompany each step of our operations, including supplier approval, raw material receiving, raw material storage, formulations and batching, the production process, packaging, finished goods storage and shipping.

Quality Is Our Top Priority

Alltech’s quality team uses a strict team member training process. Documentation is made available at all sites, including job descriptions, work instructions, annual training and skills matrices for all roles in the operations, quality and regulatory departments. Rigorous safety and quality standards are enforced at every Alltech site. During onboarding, trainees must observe as an approved trainer conducts all of their required job responsibilities. After they work together to perform each task, the trainee is then supervised by the trainer until the trainee is cleared to do that task alone.

In addition to AQS, new hires are trained on topics such as personal hygiene, HACCP, VACCP and TACCP regulations, general quality and more — and that training is repeated annually using video and in-person instructor-led training. The AQS manual, which was last updated in March 2022, contains measurable key performance indicators (KPIs) across Alltech’s feed division and specialty ingredients. One KPI for quality team members is the percentage of time spent per month on training.

An annual mock recall is conducted on both raw materials and finished goods to ensure full traceability throughout the system. Results of the recall testing are audited, and according to Pitman, Alltech requires a recovery of 100% ± 0.5% within four hours for the recall to be considered successful.

AQS works to identify potential health and safety impacts during the product-use phase and has implemented policies regarding the monitoring and detection of toxigenic substances.

Reducing Hidden Threats: Alltech® Mycotoxin Management Improves Feed Safety

Extreme weather patterns and changing agricultural practices, such as no-till and reduced pesticide applications, may increase the chance that molds will damage animal feed. These molds can produce mycotoxins that, when ingested by an animal, negatively impact that animal's health and performance, and the subsequent decrease in the animal's productivity leads to an increase in agriculture's environmental footprint. Feeds with particularly high mycotoxin levels are also known to lead to increased animal mortality rates.

The Feed and Agriculture Organization (FAO) of the United Nations highlights the importance of feed safety to ensure food safety and human health, as well as animal health and welfare. Through the holistic approach of the Alltech® Mycotoxin Management program, producers can become better informed about industry best practices for reducing their mycotoxin risk, from crop planting to the delivery of feed to animals, promoting feed safety and decreasing feed losses at every step.

Mycotoxin Testing

The Alltech 37+® mycotoxin analysis is the cornerstone of our mycotoxin identification capabilities. Every year, nearly 7,000 samples are tested in Alltech labs globally, with each test searching for 54 individual mycotoxins. Alltech's 37+® test results provide a realistic picture of the mycotoxin contamination in feed ingredients, forages and TMRs, thereby speeding up the process of getting a proper diagnosis, developing a mycotoxin control plan and applying effective remediation strategies.

With mycotoxin contamination patterns continually changing in response to weather conditions, various agricultural practices and global grain shipping, it is essential to continuously monitor grains and forages for the presence of these unwanted toxins. To help producers, we at Alltech are building on our in-house laboratory testing services by expanding our field-based testing programs. Since 2020, through our partnership with Neogen, we have deployed more than 160 Raptor® test devices globally, each of



which is connected to our Alltech® RAPIREAD™ platform. RAPIREAD™ connects modern testing devices with the latest mobile technology and allows producers to test, identify and analyze the results in minutes. It also provides users with 24/7 online access to mycotoxin insights and mitigation recommendations, helping producers maintain production efficiency, profitability and animal health.

Mycotoxins and Environmental Sustainability

Mycotoxins often make the biggest impact through the economic losses producers incur due to poor feedstuff quality or reduced animal health and performance. However, while those factors are significant, it is also becoming increasingly important to assess how mycotoxins affect environmental sustainability.

Mycotoxins in Aquaculture

As the aquaculture industry moves toward using more sustainable, plant-based ingredients, the mycotoxin risk in fish diets will only continue to increase. Alltech continues striving to gain a better understanding of the impact of mycotoxins in aquaculture and the role of Mycosorb in fish diets, and through our alliance with Ocean University China (OUC), we recently published two new studies on turbot. Both studies demonstrated the positive effects of Mycosorb in reducing the negative impacts of mycotoxins on turbot. Alltech Coppens is currently conducting a doctoral study in conjunction with Wageningen University to better understand the mycotoxin presence in fish diets and the impact they can subsequently have on fish health and performance.

Reducing Food Safety Challenges

Each year, Alltech completes Harvest Analysis programs across Europe, North America and Latin America. In 2022, we assessed more than 15,000 ingredient and feed samples globally. These analyses of new crop grains and forages paint a broad picture of the mycotoxin risk across each of these regions. Using this data, both feed mills and livestock producers can ensure that they are implementing the necessary mycotoxin mitigation strategies based on where they are sourcing their feed ingredients.

In Europe, we have established a collaboration with SGS, one of the world's leading testing and certification organizations, to significantly enhance both the quantity and quality of the data generated through our annual European Harvest Analysis. For the past two years, drought conditions in Central and Southeastern Europe have fostered the ideal conditions for the development of aflatoxins, a highly carcinogenic type of mycotoxin. Recognizing the potential food safety challenges attached to an aflatoxin outbreak, our teams were able to combine data provided by SGS with Alltech's mycotoxin management strategies to address the aflatoxin challenge throughout the feed and food supply chain.

Acutia: Supporting Sustainable Wellness



Acutia offers a suite of human health supplements that were developed with the support of the research conducted by Alltech Life Sciences.

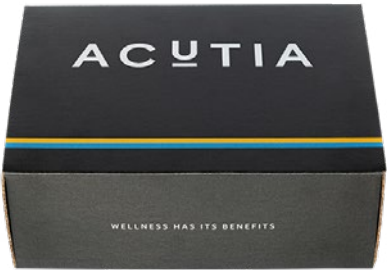
Alltech Life Sciences applies our more than 40 years of research experience and scientific expertise to human health. By conducting research on digestive health and brain health, including clinical trials related to Alzheimer’s disease, we aim to help people live their best lives. In March 2021, Acutia, a wholly owned subsidiary of Alltech, launched a suite of supplements that have been developed with the support of the research conducted by Alltech Life Sciences.

Acutia is a natural extension of our business, enabling us to directly

support people in their pursuit of sustainable wellness. The first product was Acutia Selenium, which provides immune system support, antioxidant benefits and essential nutrition, and helps maintain healthy thyroid function.

Selenium deficiency affects between 500 million and 1 billion people globally. Selenium is an essential nutrient, meaning it is required for normal body functioning but cannot be made by the body; therefore, it must be derived from food or supplements.

The selenium found in Acutia Selenium is made from a specialized strain of brewer’s yeast, formulated specifically for quality, bioavailability, safety and efficacy.



Selenium Supplements in Developing Nations

Alltech and Acutia believe that quality nutrition should be accessible to everyone, everywhere. We partner with SelCare International to extend our reach and help underserved people living with HIV/AIDS in developing nations receive the selenium supplementation that is so crucial to immune health.

Through a long-standing relationship between SelCare International and Alltech, Acutia donates raw material nutrients to SelCare for the manufacturing and distribution of supplements through their charitable networks in Zambia and Malawi, Africa. Since 2011, the partnership has resulted in the donation of more than 44,025,000 supplements annually.



Acutia Selenium provides immune system support, antioxidant benefits and essential nutrition, and it helps maintain healthy thyroid function.

Our second product, Acutia® Brain Health, supports cognitive health and brain function, and it provides antioxidant benefits and essential nutrients by combining selenium, vitamin C and plant-based omega-3 DHA. Our unique packaging and refill system empowers consumers to reduce waste and recycle. Acutia’s complimentary starter kit includes a reusable glass jar for refills and a travel container. Our bio-based refill packets are 100% compostable and mailed in envelopes made from 100% recycled materials.



Through Science and Storytelling, Alltech is Leading the Sustainability Conversation

Alltech ONE World Tour Brings Ideas and Inspiration of the Alltech ONE Conference to the World

The Alltech ONE Conference is an invaluable industry resource, with unmatched content and innovative ideas, inspiration and motivation from world-class speakers. In 2022, Alltech's flagship event hosted more than 7,700 registrants — virtually and in person — from 90-plus countries, including Alltech suppliers, partners, customers and friends from across the world. We welcomed dynamic keynote speakers and more than 100 industry leaders to the stage and to share leading-edge insights in live workshops and focus tracks, where they uncovered the latest challenges and opportunities in agriculture, business, health and wellness, and professional development.

In 2023, instead of hosting one central event at our headquarters in Central Kentucky, as we have for 38 years, Alltech is bringing the ideas and inspiration of the Alltech ONE Conference to communities throughout the world through an innovative series of international events: the Alltech ONE World Tour. Stops are planned around the world, starting in Budapest and Dublin, providing opportunities for more people than ever to experience the power of ONE. Through the Alltech ONE World Tour, we will discuss the future of agriculture with stakeholders all over the world while offering both global and local perspectives for our guests.

Planet of Plenty™ Focuses on People and Technologies That are Transforming Agriculture

Alltech's Planet of Plenty™ website provides examples of agricultural methods that can improve animal welfare and the environment, and it features the compelling stories of the people and technologies making a Planet of Plenty™ possible. From small changes on an Irish family farm to groundbreaking practices in aquaculture and everything in between, so many around the world are discovering new approaches and developing technologies that will lead us to a world of greater abundance. At Alltech,

we're continually creating resources that support the three core tenets of Planet of Plenty™: science, sustainability and storytelling.

Included here are some engaging examples we've shared recently of people and companies that are moving toward the future envisioned in Planet of Plenty™. Such stories encourage more widespread adoption of sustainable practices, but even more importantly, we hope they inspire more ingenuity and a greater collaborative spirit.

Eco-Friendly Pig Production Creates New Era Of Opportunities At Trails End Farm

Blog and social media campaign

Dale and Lori Stevermer of Trails End Farm in Minnesota are pork producers who have implemented sustainable strategies on their century-old farm.



Dale and Lori Stevermer have implemented sustainable crop cultivation and eco-friendly pig production strategies at their 100-year-old family farm in Minnesota.

The story explored Dale and Lori's willingness to embrace technology, try new ideas and make careful resource management decisions. The Stevermers view sustainability as necessary to their farm's survival, both economically and environmentally, and they're already seeing remarkable results; in fact, the farm is not only surviving, it's thriving.

Meet the Mears: 4 Simple Steps Toward Carbon-Neutral Poultry Production

Video, blog and social media campaign

The Mear family is working toward carbon-neutral, waste-free commercial poultry production at their farm in Cambridgeshire, England. Charles Mear and his wife, Jo, have established successful free-range egg production at Wood Farm, but that's not all. Through basic changes in how they operate,



The Mears are working toward carbon-neutral, waste-free commercial poultry production at their farm in England.



the family is working toward carbon-neutral, waste-free commercial poultry production. Each change contributes to a significant impact on planetary health, from the welfare of their birds and land to cleaner energy for the community.

Nourishing the World With Sustainably Farmed Salmon

Video, blog and social media campaign

This story takes an in-depth look at how the industry continues to make great progress as a sustainable source of protein. The production took our visual storytelling team to the picturesque region of Patagonia, Chile, where salmon producers are innovating with science and technology to



improve efficiency and reduce waste. The story features Ventisqueros, an Alltech customer that produces 4,500 tons of salmon every year and remains focused on creating a more sustainable fish farm. We also spoke with SalmonChile, a national industry association that is working to address the challenges facing salmon farming.

Keeping Beef Cattle On the Move and Carbon in the Soil

Video, blog and social media campaign

Andrea Stroeve-Sawa is a fourth-generation rancher who carries forward a family legacy of holistic farming at Shipwheel Cattle Feeders in Alberta, Canada. Beyond their 5,500 head of beef cattle, her family also raises



Andrea Stroeve-Sawa is a fourth-generation rancher whose herd saves fragile ecosystems and stores greenhouse gases in the soil.

chickens and keeps bees and a fruit orchard. Shipwheel’s care of the land through multi-paddock grazing and composting have resulted in a staggering productivity increase of 3,862%.

What Is Biochar?

Ag Future podcast and social media campaign

There is an increasing awareness of biochar among the agricultural community and beyond, but what is it? David Butler, head of sustainability at Alltech, joined our Ag Future podcast to discuss the history of this porous piece of carbon, its application in agriculture and how it’s now being used in products ranging from asphalt to jet fuel.



David Butler, head of sustainability at Alltech, discussed the history of biochar, its application in agriculture and how it's now being used in products.

Sharing Sustainability With Our Communities

Alltech helps build strong, resilient communities in which agriculture plays a vital role in nourishing people, restoring natural resources and stimulating local economic growth.

We believe that education is the primary catalyst for success and that progress is driven by insatiable curiosity. Throughout the world, Alltech leads multiple initiatives to inspire the next generation of changemakers. From bringing a science lesson to grade-schoolers to conducting major research about how to capture more carbon with animals on the land, Alltech is sharing the sustainable power of science in agri-food in the communities in which we live and work.

We have created more than a dozen state-of-the-art science labs in elementary schools in Kentucky and Ireland where students can explore the world around them through a scientific lens. Our scientists and colleagues often visit classrooms or appear virtually to discuss and demonstrate scientific activities, provide expertise for science fairs and other events, and serve as resources for community educators and organizations.

Our team members have adopted educational initiatives throughout the world, such as the Classroom of Hope in the Philippines, the Nutri Milk project in India, science fairs in Ireland and more. We also provide ongoing support for schools in Ireland, Mexico, China and Haiti and for several universities in Europe.

Here are some of the ways Alltech supports education and shares sustainability with our communities.

Alltech Sustainable Haiti Project

After a devastating earthquake struck the small country of Haiti in 2010, Alltech founder Dr. Pearse Lyons and others arrived on-site to assess the need and align our resources. Recognizing the vital importance of long-term support, we launched the Alltech Sustainable Haiti Project.

Drawing on our agricultural expertise, Dr. Lyons and the team revived a



Alltech and the Pearse Lyons ACE Foundation have created employment opportunities for the Haitian people and helped spark a lifelong love of learning in the region's children.

local gem: Haitian coffee beans. We began cultivating and sourcing crops to produce Alltech® Café Citadelle, which is named for the fortress that overlooks the lush mountainside where hope grows along with the coffee beans. The enterprise provides jobs and supports education, with proceeds from the sale of Café Citadelle going to local primary schools.

Because there can be no sustainability without education, Alltech co-founder Mrs. Deirdre Lyons and our Haiti team ensure the operational

Acts of Kindness

Making a difference is inherent to the DNA of every Alltech team member. When we see a colleague, customer, contact or community in need, we do everything we can to help them get back on their feet. As a truly global company, we're in an incredibly unique position to enact positive change at the local level every day. [Read our Make a Difference stories on page 62.](#)

support of two grade schools, located in Ouanaminthe and Dondon. With vital supplementary support from the Pearse Lyons ACE Foundation, the schools have ensured the education of more than 1,200 students so far.

Bringing Together Science and Agriculture

Since April 2015, the research team at Alltech Ireland in Dunboyne has inspired hundreds of primary and secondary school students to study science. Our team visits Our Lady Immaculate (OLI) Senior National School in Darndale, Dublin, throughout the academic year to conduct hands-on experiments and mentor students.

The Lyons family opened a new science room at OLI in 2015, as well as a refurbished cookery room in the senior school building. Alltech funding has also helped support the students' emotional and behavioral needs by providing a sensory room, professional development for the staff, literacy and math programs, outdoor classroom resources and more.

“We endeavor to continue Dr. Pearse Lyons’ legacy to inspire curiosity, discovery and fun in our ‘mini’ future scientists,” said Sheena Fagan,



Alltech Ireland team members visit a school in Darndale, Dublin, throughout the academic year to conduct science lessons and mentor students.



research project manager for Alltech Ireland. “They are an inspiration, and it is a hugely rewarding relationship for everyone involved.”

Our science outreach program supports teachers in the development of age-appropriate, hands-on experiments; portrays and communicates STEM in real, accessible terms that are relevant to children’s lives; and works to inspire the students to pursue careers in science, Fagan said. Alltech scientists also help the students prepare for several annual science fairs.

In 2022, during Science Week in Ireland, our team got the students involved in a science project that posed the question, “Why is Ireland green?” It required students to use different irrigation strategies to grow grass. The results of the project were later entered into a national student science competition.

We also collaborated with Agri Aware, an Irish agri-food educational organization, to bring a mobile farm to visit the students during Science Week. Because the school is in the northern part of Dublin’s inner city, the students who attend rarely get an opportunity to interact with farm animals. During the mobile farm visit, each class spent time visiting with a cow, a goat, pigs and chickens.

“The inaugural mobile farm visit was a massive success, and we hope to make it an annual event,” Fagan said. “We believe there is huge scope for a ‘Farm to Fork’ initiative in the school, focusing on food origin and sustainability. The mobile farm visit is the first step on that journey.”

Community Collaboration in Serdán

Alltech Serdán in Mexico produces two main nutritional technologies: Allzyme® SSF, a natural enzyme complex that maximizes nutrient release, and De-Odorase®, made from yucca extract, which reduces ammonia from animal waste. The state-of-the-art production facility, one of the largest of its kind in the world, has a long history of sustainable operations: For every yucca tree harvested to produce De-Odorase®, three trees are planted by local farmers with seedlings supplied by



Alltech Serdán's sustainable yucca harvesting involves nearby communities in Puebla, Tlaxcala and Veracruz, employing around 70 families who are trained in environmentally responsible cutting techniques and waste management.

Alltech — which is two more trees than is required by the Mexican government. In 2022 alone, 80,046 seeds were planted and 61,113 seedlings were reforested.

The yucca is obtained from three nearby communities: Puebla, Tlaxcala and Veracruz. About 70 families are hired to cut, transport and discharge the yucca logs. These yucca suppliers are taught how to cut the yucca to mitigate environmental impact and how to collect, store and remove waste from cutting areas.

Recently, we began composting yucca waste materials instead of sending them to the landfill. The compost is used to improve yucca seedlings growing in the nursery. Subsequently, from 2019 to 2022, we saw an 88% reduction in the amount of waste taken to the landfill.

Using yucca compost in the nursery has also helped us create yucca seedlings that are ready for reforestation after 18 months.

Alltech Serdán participates in numerous social projects to make a difference in the community. For more than 20 years, Alltech volunteers have been dedicating their time to the children living at a local orphanage, Casa Hogar, providing mentorship and sponsoring projects that improve their care.

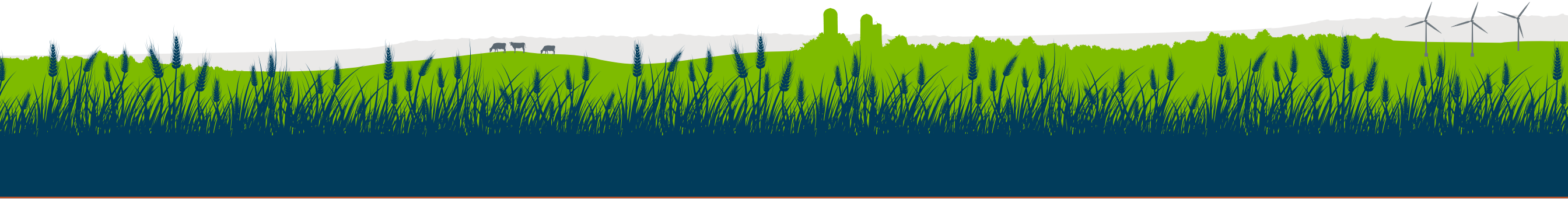
We also provide support for Centro de Atención Múltiple (CAM), a school for children with special needs; El Cerrito Primary School; and many other community organizations.

Supporting Young Leaders in Agricultural Journalism

Since 2005, the [International Federation of Agricultural Journalists \(IFAJ\)](#) and Alltech have partnered to support the Young Leaders in Agricultural Journalism Award, which recognizes the leadership potential of young members from countries belonging to IFAJ. We believe it is important to encourage and nurture those who are destined to develop in the



IFAJ and Alltech offer 10 annual scholarship opportunities for young members (under 35) of the ag journalism federation to attend the IFAJ Congress.



profession, to help IFAJ grow and to contribute positively to the global advancement of agricultural journalism and communications.

IFAJ and Alltech offer 10 annual scholarship opportunities for young members (under 35) of the federation to attend the IFAJ Congress. Recipients participate in a unique boot camp that provides expert training and feedback through on-site writing and broadcasting assignments, as well as agriculture tours, and they develop skills through formal in-class training. As part of their learning experience, these young leaders also write or record spot news during the duration of the congress.

Encouraging Change From Within

Alltech Chile brought together leaders from the agriculture industry in October 2022 to share stories of how they make a difference in their communities. The event showcased how a shift in mindset, along with the adoption of new technologies and business practices, makes it possible to positively impact the industry. Ultimately, sustainability makes producers more competitive, the speakers said.

Raúl Cabezas, Alltech Chile sales manager, told attendees that our Planet of Plenty™ purpose encourages producers to be “increasingly competitive by producing more nutritious and sufficient food for everyone while promoting development in the locations where we operate and mitigating our environmental impact.”

Some of the other ways we are sharing sustainability and sparking interest in science include:

- **Planting the Seeds** — Elena Gomez, sustainability and environmental manager of Alltech Crop Science Iberia, visited several schools in 2022 to teach children ages 4 to 9 about how to take care of the planet. She explains the three Rs — reduce, reuse, recycle — and leads various activities and games with the students to foster their love of sustainability. At the end of the sessions, the children are given a “magic seed” to take home and plant. What makes the seed magical is that,

as the plant grows, the word “Alltech” appears on it.

- **Ruminant Research** — Dr. Vaughn Holder, Alltech’s global ruminant research manager, joined a panel of experts at the 2022 Concordia Lexington Summit to present a session titled “The Journey to Net Zero” and to discuss how agriculture could work to achieve the goals of the Paris Agreement. He provided his expertise on ruminant research and explained Alltech’s efforts to reduce ruminant greenhouse gas emissions and improve carbon sequestration. Concordia is an international nonprofit, nonpartisan organization that works to create cross-sector partnerships to influence social impact across the globe.
- **Being Positive for the Planet** — In May 2022, Dr. Mark Lyons presented the annual Newman Lecture at the Notre Dame-Newman Centre at University Church on St. Stephen’s Green, Dublin. He was the first non-theologian to be invited to present this prestigious, annual lecture. His talk, “A new parable for the planet: A fact-based approach to the climate challenges before us,” focused on our responsibility to leave a better inheritance to the next generation. He shared how he arrived at his vision for a Planet of Plenty™ and what it means to be a leader in an evolving world in which the importance of leadership has never carried so much responsibility for the future of the planet. “Being sustainable — in the very essence of the word — is the status quo. This is a time that calls for much more of all of us. We must be positive for the planet,” he said.
- **Sustainable Aquaculture’s Potential** — The Alltech aquaculture team reaffirmed the importance of sustainable aquaculture for food security



Dr. Vaughn Holder joined a panel of experts to discuss climate change at the 2022 Concordia Lexington Summit.

and the environmental health of our planet at the 2022 World Aquaculture Society meeting. The event brings together top manufacturers, innovators and others to discuss the boundless potential of aquaculture for feeding the world’s growing population. Alltech’s Planet of Plenty™ purpose reinforces our commitment to bringing value to the consumer while being mindful of the need to cultivate sustainable fisheries and hatcheries as a means of food production. Alltech’s booth focused on our commitment to core nutrition, improved performance and healthier fish.

- **Green Revolution** — The Alltech Ireland team welcomed members of the Northern Ireland Guild of Agricultural Journalists to their offices in 2022. We shared a Planet of Plenty™ presentation and discussed Alltech’s role in helping the Northern Irish farmer achieve profitable and sustainable dairy production. Pat Charlton, vice president of Europe for Alltech, delivered an opening address in which he discussed the new “green revolution.” Richard Dudgeon, regional manager of Alltech Northern Ireland, discussed Alltech’s vision for a sustainable dairy industry. This was followed by a panel discussion about meeting the demand for quality, sustainable food in a profitable way.
- **Career Pathways** — Alltech Lienert participates every year in the Urrbrae career expo, in which we mentor high school students who are interested in agriculture and animal studies and showcase career pathways with Alltech Lienert. We also participate in Adelaide University’s Nutrition Day every year, which is designed to mentor students in their third year of animal or ag science programs of study.

Alltech Values: Driven by Purpose, United by Passion and Guided by Integrity

Integrity is at the heart of the core values we draw upon for decision-making — all of them expressions that our founder, Dr. Pearse Lyons, often reiterated.

These values represent our shared commitment to our customers, our colleagues and the more than 350 communities in which we live and work.

“Our values are much more than a set of guidelines for corporate behavior. They are our founding principles and are fundamental to our future,” said Dr. Mark Lyons, Alltech president and CEO.

Stay Curious

At Alltech, we believe in the pursuit of lifelong learning. We cultivate curiosity in order to elevate discovery and innovation, enabling our team to create impactful solutions led by science.

Seize the Opportunity...With Speed

“Speed, speed, speed,” Dr. Pearse Lyons would say. We share his belief that the opportunity of a lifetime exists only in the lifetime of the opportunity. Our team members move quickly to realize innovative ideas, and then they harness that momentum to continuously improve our technologies.

Tell the Story

We believe in the importance of facts and data but realize that it is only through storytelling that we can unleash the full strength of science. We are committed to advocating for science, sustainability and the stories of the agri-food sector.

Make a Friend

We prioritize building relationships, partnerships and collaborations. From our customer-first sales approach to our collaborative research projects, Alltech connects people and ideas across industries and geographies. We believe that creating a world of abundance will require all of us working together.

Do Everything With Fun, Passion and Excellence

Our team views challenges through an entrepreneurial lens. Our more than



5,000 colleagues around the world are empowered to experiment with new ideas. They combine passionate creativity with precise attention to detail to magnify our impact.

Wear the Pin

The Alltech pin is synonymous with integrity. When our team members around the world put on our pin, they are making a promise to customers and colleagues alike to uphold our values and share in our purpose of Working Together for a Planet of Plenty™.

Make a Difference

Dr. Pearse Lyons was an innovator, entrepreneur and philanthropist who believed in making a difference in the lives of others. From disaster relief to educational initiatives and support for underserved communities, Dr. Lyons’ spirit of giving continues to be reflected in every corner of the world through our team and the Pearse Lyons ACE Foundation.

Stay Curious: Alltech Invests in Learning Journeys

Dr. Mark Lyons has nurtured the culture of curiosity created by founder Dr. Pearse Lyons and summed up in Alltech’s first core value, “Stay Curious.” Alltech team members are actively encouraged to be lifelong learners, because we know that curiosity elevates innovation. Only by seeking new insights and challenging old ways of thinking can we create dynamic solutions led by science.

Alltech invests in learning journeys on which all team members can embark, using multiple platforms and programs, new ways for its people to learn and develop in the ways that work best for them. From in-person and virtual events to world travel, independent study, advanced degree programs, volunteer experiences and serving on industry boards, the range of learning opportunities literally spans the globe.

“Continuing education is important to me, and I am grateful that our company encourages lifelong learning and application through internal and external trainings. Beyond having these opportunities and doing what I love, what I treasure most at Alltech is the sense of being in a family,” said Tien Le, Alltech’s editorial content manager.

Alltech e-Learning Hub

Launched in 2022, the Alltech e-Learning Hub is an internal digital platform that allows team members to complete online courses to grow their skills and knowledge. It offers optional and self-guided learning as well as required courses that bring our policies to life through practical training. Team members can explore courses at any time by accessing the hub on a computer, tablet or mobile device. Additional content is frequently planned and added, including new team member onboarding information and sustainability courses.

Back 2 Basics

Back 2 Basics is Alltech’s introduction to the company: our business divisions, solutions, commitment to sustainability and unique culture. This



virtual class offers interactive sessions with company leaders and experts from different departments. Alltech believes in investing in its people at the start of their learning journey and fostering curiosity from day one. It's all part of the fun and passion at the heart of our company culture.

Be Curious and Stay Curious

The Be Curious Seminar Series, launched in May 2022, is offered in person at Alltech's HQ and livestreamed on Microsoft Teams. Its purpose is to demystify scientific topics with explanations from members of our research and development team.

Many topics are explored, including genetically modified organisms and their impact on food, medicine and the environment; the history of our food safety system, misconceptions about it, and prevention of food quality issues; dairy farming across the U.S.; challenges and transitions in the industry; and building successful equine athletes.

Our weekly Stay Curious email from Dr. Mark Lyons also offers a peek at interesting new research or ideas that challenge the status quo.

Global Call and the Alltech Herald

Curiosity reigns supreme at Alltech, and we explore it through ongoing communication and connection. Our robust internal communications strategy is one of the main ways Alltech shares knowledge and insights with our global team.

Every week, Dr. Mark Lyons connects with team members around the world during a livestreamed Global Call. It features special guests, including experts on industry topics, and offers a glimpse at recent company endeavors and success stories.

The Global Call is complemented by coverage in the Alltech Herald, our weekly company magazine. The Herald helps team members stay informed about vital company news, new research and technology, and agriculture industry events. It also celebrates Alltech's culture and values, spotlighting the ways our teams embody our company's values.

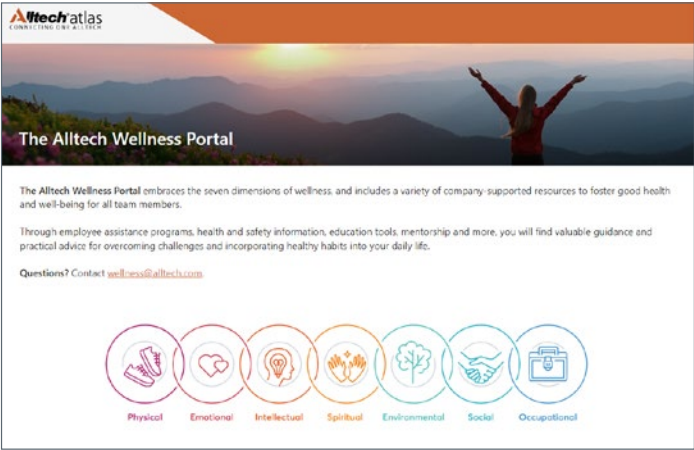


Each week, the Herald team turns complex topics into digestible information that helps team members better understand issues that affect our industry. The magazine also serves as a vehicle for important learning objectives such as our weekly ESG Lexicon, professional development, and health and wellness.

Mini-MBA

The Alltech Mini-MBA is an advanced management development program conducted in partnership with the University College Dublin Michael Smurfit Graduate Business School in Ireland. Top professors from the school and leading professionals from a broad range of industries offer instruction in each course.

The program includes general instruction in modern business skills and knowledge, field visits to local businesses, case study readings and discussion, and group projects that emphasize and reinforce the power of teamwork. It takes place over four years and includes a brief residency period in Ireland each year. So far, 576 Alltech team members have completed the Mini-MBA program.



Alltech Wellness Portal

The Alltech Wellness Portal embraces the seven dimensions of wellness — physical, emotional, intellectual, spiritual, environmental, social and occupational — and includes a variety of company-supported resources to foster good health and well-being for all team members.

Through team member assistance programs, health and safety information, education tools, mentorship and more, the Wellness Portal offers valuable, practical guidance for overcoming challenges and incorporating healthy habits into their daily lives.

Alltech Coppens Academy

Alltech Coppens offers on-site and online courses through our Alltech Coppens Academy about a variety of topics, from information technology to business skills such as leadership, production and machinery processes, and language learning. All are designed to provide valuable experience and insight into different aspects of the industry and are delivered by experienced instructors and colleagues who know what it takes to succeed in today's competitive marketplace.

Making a Difference...Every Day



Nearly 200 students have pursued their musical dreams thanks to the Alltech Vocal Scholarship Competition.



Alltech supports GreenHouse17, a program for survivors of intimate partner abuse.



The Danish team conducted a certified first-aid refresher class in 2022.



The Alltech Indonesia team partnered to donate dog and cat food to an animal shelter in Bogor that houses about 160 dogs.



Alltech India donated supplies to Rainbow Home, which empowers vulnerable girls in the community by giving them access to safety, education, nutrition and health care.

Alltech founder Dr. Pearse Lyons believed in living each day to the fullest and making a difference in the lives of others. His legacy lives on through the Pearse Lyons ACE Foundation, a nonprofit organization that supports the philanthropic endeavors of Alltech and the Lyons family. These include programs that support underserved families and vulnerable populations, disaster relief efforts, educational programming and other community improvement efforts.

Some of our ACE activities include:

- In **Serdán, Mexico**, our volunteers dedicate their time to the children living at a local orphanage, providing mentorship and sponsoring projects that improve their care.
- We continue to support two primary schools in **Haiti**, a relationship

established following the devastating earthquake of 2010.

- In the **Philippines**, we rebuilt an elementary school where more than 900 students have access to computers and science equipment.
- In **Kentucky**, we support GreenHouse17, an organization that provides resources to survivors of intimate partner abuse in an effort to build a more sustainable revenue source for them through the sale of handmade goods.
- We have built more than a dozen state-of-the-art science laboratories at primary schools in **Kentucky** and **Ireland**.
- The **Alltech Vocal Scholarship Competition** provides vocal students the opportunity to attend the University of Kentucky and join the U.K. Opera Theatre. Since it began, this program has allowed nearly 200

students to overcome the financial barriers to pursuing their dreams.

- In recent years, we have been able to aid the global agriculture community in its recovery from several **natural disasters**, including flood relief in Eastern Kentucky, tornado relief in Western Kentucky, the Australia Farming Relief Fund, the Iowa Derecho Devastation Relief Fund, Hope After Harvey hurricane relief in Texas and more.
- Alltech team members graciously opened their homes and hearts in 2022 to help our **Ukrainian** teammates and their families. Alltech also established a relief fund through the Pearse Lyons ACE Foundation, which has issued more than \$40,000 to the effort so far. The support from their global colleagues — from helping them work through supply chain challenges and increasing costs to simply checking on everyone's safety — has helped the Ukrainian team move forward amid uncertainty.



Alltech Ecuador supported Fundación Caminitos de Luz, which operates a school with limited resources.



Alltech Italy team members collected plastic waste on the beach, in car parks, on roadsides and elsewhere.



Alltech Norway donated two sewing machines to Ukrainian refugees.



Alltech Turkey drew attention to the decreasing number and diversity of fish in the seas, as well as the importance of producing enough protein to feed a growing global population.



Alltech U.K. competed in a fundraising race with the Alltech Ireland team, cycling and rowing the distance between the two offices on exercise equipment.

Guided By a Sense of Purpose

The spirit of giving is ingrained in Alltech's culture and is reflected worldwide through our team members, who adopt local causes that are close to home, giving each endeavor personal attention.

To honor the legacy of Dr. Pearse Lyons, Alltech team members celebrate his birthday, Aug. 3, through social and environmental initiatives spearheaded by our more than 90 local offices throughout the world. In conjunction with wider global initiatives, each office determines its own Make a Difference Day activity and reports back on the results. From supplies and food donations to schools, to tree planting and trash pickup, our team members make a difference across all regions on this special day.

Make a Difference Day is a special time of reflection, unity and generosity.

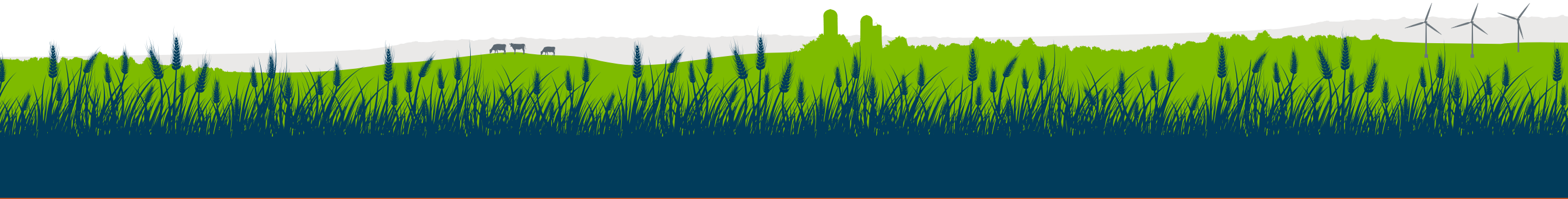
However, our positive impact is not limited to this moment. Alltech makes a difference year-round. Here's a look at some of our activities.

Alltech Team Members in Action

- Since 2020, **Alltech China** has been supporting a program for children with autism, donating milk, meat, eggs and other protein sources to ensure that the children in the program are well-nourished and physically healthy.
- **Alltech U.K.** has donated to St. George's Church of England Primary School and the Ian Locke—Holly Locke Brain Tumor Charity; supported in the Santa Fun Run and the Stamford Rugby Club; sent Unit 14 Scouts to the 25th World Scout Jamboree in Korea; and more. Alltech U.K. also raised money for Make a Difference Day by competing in a virtual race with the Alltech Ireland team, cycling and rowing the distance between

the two offices — 235 miles cycling and 73 miles rowing — on exercise equipment.

- In 2022, **Alltech Indonesia** partnered with Nestlé to distribute free medication to Indonesian cattle farmers whose herds were struggling with the highly contagious foot and mouth disease (FMD).
- **Alltech Turkey** drew attention to the decreasing number and diversity of fish in the seas, as well as the importance of producing enough protein to feed a growing global population. Our team released juvenile fish (sea bream) into the sea and collected garbage from the seaside, and we partnered with local government representatives and a key aquaculture customer to host a special event during which we led conversations about nutrition, health and the environment in aquaculture production.
- The team at **Masterfeeds** in Picture Butte, Alberta, Canada, contributed



Members of the Alltech Ireland sales teams participated in a cross-channel challenge for Make a Difference Day.



Alltech Lienert donated 125 kilograms of food, enough to create 250 meals.



Masterfeeds team members in Canada participated in a cleanup at Picture Butte Reservoir.

- to a cleanup at the local Picture Butte Reservoir, donated clothing and toys to residents in Brandon who were displaced due to forest fires, and supported Vagabonds Animal Rescue in Brandon to help stray cats found around the mill. The Masterfeeds Grunthal, Winnipeg and Winnipeg Livestock locations donated pet food to an animal rescue center.
- The summer of 2022 brought strong heat waves that triggered numerous fires throughout the Iberian region, burning hundreds of thousands of hectares and threatening agriculture operations. The region's beekeepers lost many hives. It will take a few years for their bees to find vegetation to obtain nectar and pollen with which to produce honey. To assist them, **Alltech Spain** and **Alltech Portugal** donated Bee-Sacc™, a protein food for bees manufactured by Alltech Spain.
 - In **Alltech Brazil**, each business unit adopted one of the U.N. Sustainable Development Goals to which Alltech has committed and carried out different actions related to those SDGs. The initiatives involved donating hygiene kits to a homeless shelter; donating cooking oil to make soap; gathering the team for a morning walk; planting fruit tree seedlings at a public school; and donating food, children's books

and cleaning items to charities.

- **Alltech Hungary** collaborated with one of the largest aid organizations in Hungary to donate and deliver flour, sugar, pasta, oil, canned food, hygiene products and cleaning supplies. A representative of the charity said the donation was delivered to the city of Berehove, just across the border in Ukraine, where they supported refugee families.
- **Alltech Ecuador** supported Fundación Caminitos de Luz, which operates a school with limited resources for 160 children ages 4 to 12 years old. The team cleaned and organized all the classrooms, donated cleaning supplies and nonperishable food for the children's snacks, and planted four lemon trees and two orange trees.
- The **Danish team** conducted a certified first-aid refresher class that taught vital first aid and basic life support techniques, including CPR and using an AED. By completing this course every two years, the team is better equipped to help others should something happen at the office or while visiting customers or on-farm.
- The **Alltech South Dakota** team donated locally produced beef to the

Feeding South Dakota Food Bank, which works with a network of 350 non-profit partners across the state to get food into all 66 counties in South Dakota.

- In the **Missouri** region, team members and their families donated food and provided financial support to an alternative high school where many of the students are homeless and donated to a furniture bank that helps to rebuild the lives of families and veterans who encounter disasters or personal tragedy.
- **Alltech Lienert** teamed up with Foodbank SA to run a food drive. Foodbank is Australia's largest food relief organization, providing more than 70% of the food rescued for food relief organizations nationwide. In total, the team donated a massive 125 kilograms of food this year, which equates to 250 meals for those in need.
- **Alltech Norway** donated two sewing machines to Ukrainian refugees who arrived in Askøy outside of Bergen. The Ukrainians our colleagues spoke with were incredibly happy that they now can come together to sew and socialize over a cup of coffee.

Diversity Empowers Alltech and the Agri-Food Industry



Alltech’s co-founder and first female leader was Mrs. Deirdre Lyons (center). She is shown here with Orla McAleer (left), chief culture officer, and Jana Joseph (right), global director of corporate hospitality. Nearly 40% of team members in management positions are women.

Alltech is proud to have a diverse global workforce. Our inclusion of varied geographies, genders, educational backgrounds and work experiences empowers our more than 5,000 team members to grow robust careers. Diversity cultivates creativity and drives innovation — and it empowers the agri-food industry.

Alltech’s co-founder and first female leader, Mrs. Deirdre Lyons, pioneered the path for women to champion all areas of the business. Since the company’s founding in 1980, women have led departments, teams and strategic initiatives in research, manufacturing, marketing, administration, IT, ESG, product innovation, finance, quality, regulatory,



25% of team members worldwide are women, and nearly **40%** of all team members in management positions are women.

hospitality, customer service and sales. Alltech continues to proactively grow the presence of women in leadership roles around the world, and today, **25% of our team members are women.**

At Alltech, we encourage all our team members to stay curious and continue their educations, and many women hold at least one and often multiple advanced degrees, including:

- 21 doctors of veterinary medicine (veterinarians)
- 4 non-science Ph.D.s
- 42 science Ph.D.s
- 98 non-science master’s degrees
- 106 science master’s degrees

Women have also been well represented in our advanced management development program, the Alltech Mini-MBA. Since it began over 20 years ago, 25% of graduates have been women. More women than ever are participating in and graduating from the Alltech Mini-MBA program: 34% of the 2022 graduating class were women, and the starting class for 2023 is 53% women. The Alltech Mini-MBA continues to recognize and support women in leadership across the organization.

Nearly 40% of team members in Alltech management positions are women. These positions include supervisors, heads of countries or departments, and executive leaders. (Supervisors are identified as having one or more direct reports. Heads of countries are the leaders or general



Many women at Alltech hold at least one and often multiple advanced degrees. Over 100 have science master’s degrees and 43 have science Ph.D.s.

managers of a specific country location in which we operate, while heads of departments are leaders of specific departments or key functional groups within larger departments. Executives are defined as senior leaders with v designations such as “chief,” “vice,” “director” or an equivalent title.)

Supervisors	Heads of countries	Heads of departments	Executives
41.8% women	28.3% women	43% women	28% women
58.2% men	71.78% men	57% men	72% men



Advancing Gender Equality

Alltech believes gender equality is not only a fundamental human right, but that it is also essential to advancing society and the global agri-food industry. In 2019, we selected U.N. Sustainable Development Goal 5 — Gender Equality as one of the nine SDGs to which we are committed to advancing, and we remain dedicated to the goal of eliminating discrimination and empowering women and girls.



Among the 835 people currently identified in these roles, 39.5% are women and 60.4% are men. The strongest female presence is among supervisors and heads of departments, with an emerging presence of women among heads of countries and executives.

Alltech celebrates a diverse workforce with skills and expertise that support our business around the world. We believe in fair compensation for all roles and functions across the business in every country in which we operate. We recognize the challenges of gender pay equity and embrace the opportunity and responsibility to take action. We are at the start of a journey to better understand our talent, assess how women and men are supported in the same roles and functions, and make meaningful changes.

Alltech recognizes the importance of equitable compensation among our workforce in all of the countries in which we operate. We are committed to establishing a mindful plan inclusive of strategies and actions toward achieving pay equity.

Partnership Helps Women Develop Meaningful Connections in the Agriculture Industry

Mentorship programs for women can help address the gender gap in



Alltech team members attended Women in Food and Agriculture's two-day summit in Frankfurt, Germany, in 2022. Alltech sponsors the WFA Mentorship Program, which offers opportunities for women in food and agriculture to develop meaningful industry connections.

leadership and promote gender diversity in the agri-food industry. Having access to a mentor provides women with guidance, support and the resources to advance their careers.

In late 2022, Alltech renewed its partnership with the Women in Food and Agriculture (WFA) Mentorship Program, which matches applicants with mentors and offers opportunities for women in food and agriculture to develop meaningful industry connections. The program was created in response to survey data and feedback from women in the industry who reported that a lack of mentorship opportunities was a barrier to their success.

In partnership with Alltech, the initiative grew in 2022 to include

320 industry representatives matched across two cohorts. The WFA Mentorship Program is free of charge and open for applicants year-round, to empower more women in food and agriculture to progress their careers through mentorship.

“A commitment to the growth and development of another person unleashes energy, inspires ideas and empowers both individuals to have a greater impact,” said Dr. Mark Lyons, president and CEO of Alltech. “We view our involvement in the Women in Food and Agriculture Mentorship Program as an investment not only in the lives of women but in the future of agriculture, as the industry most integral to the nourishment and vitality of our planet.”

Disclaimer

This report includes statements about expected steps and actions for our sustainability program. Statements in this report are based on our expectations for the future. When we have used words like “plan,” “expect,” “estimate,” “believe,” “anticipate,” “target” or “goals,” this represents our current view as of June 2023 and could change due to a variety of reasons. Statements included in this report are meant to inform others about our current understanding of material sustainability issues. Results or outcomes may differ from what we expect and have communicated in this report.