Securing better food for the future

Syngenta Sustainable Business Report 2018



The Good Growth Plan

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Crop Protection

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Our operations

Securing the long-term viability

of our business means using

resources with ever greater efficiency in all our operations

Market-leading crop protection

products with broad coverage

across extremely diverse

Contents

We play a vital role in the food chain to safely feed the world and take care of our planet.

We will be the most collaborative and trusted team in agriculture, providing leading seeds and crop protection innovations to enhance the prosperity of farmers, wherever they are.

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Syngenta's Sustainable Business Report includes quantitative and qualitative information on policies and actions taken regarding our business and sustainability goals.

It also serves as our annual Communication on Progress (COP) for the United Nations Global Compact.

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For further information and answers to many "Questions about Syngenta",

visit our corporate website: www.syngenta.com

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Chief Executive Officer's statement

Through more than 150 listening sessions around the world with stakeholders from across the value chain, we now have a much better understanding of what society expects from us and what sustainable agriculture means to different groups.

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Our business model

We're constantly seeking new ways to better use resources, deliver value-adding products and services, and create value for our stakeholders

Resources we use

What we do

The value we provide

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The Good Growth Plan

The Good Growth Plan contributes to the sustainability of both our own business and the wider world that we serve





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Seeds

Developing and producing seed for farmers, commercial growers, retailers and small seed companies

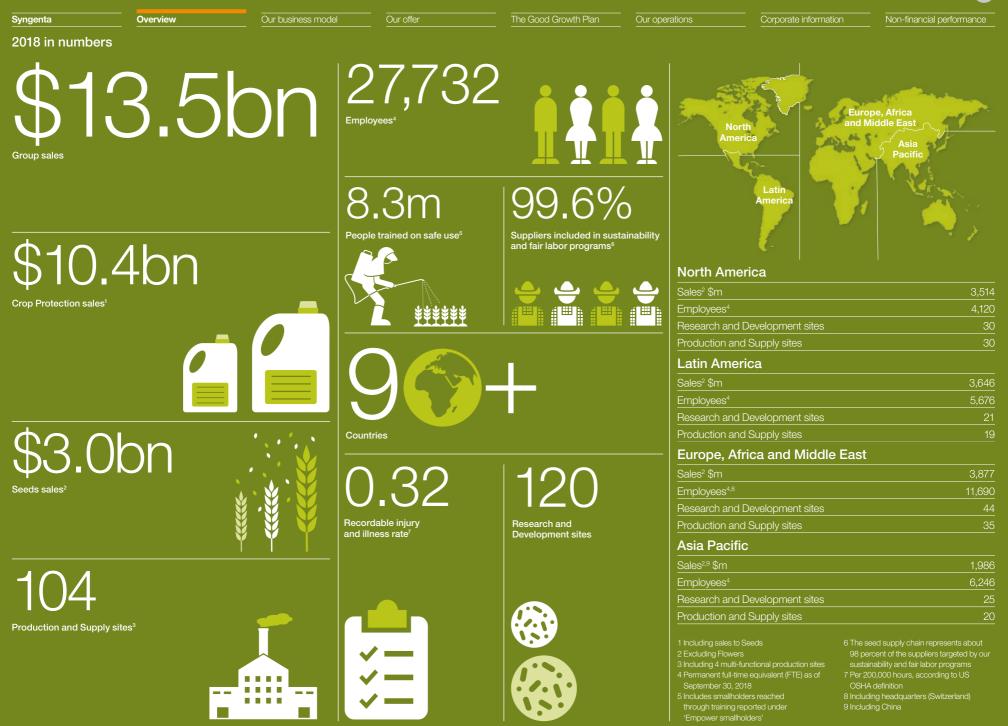


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Non-financial performance summary

The summary presents data on our progress in four areas: The Good Growth Plan, People, Sustainable operations and Business integrity





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Chief Executive Officer's statement

Overview

2018 was a landmark year for Syngenta



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Through more than 150 listening sessions around the world with stakeholders from across the value chain, we now have a much better understanding of what society expects from us and what sustainable agriculture means to different groups. It was our first full year of operations under the ownership of ChemChina, during which we acquired several new businesses, delivered strong financial growth and strengthened our position as a thought leader. We continued to make a substantial contribution to ensuring that farmers can safely feed the world today, while planning to sustainably feed future generations.

Record Free Cash Flow in 2018

Sales increased in 2018 by 7 percent to \$13.5 billion. We maintained profitability and record free cash flow of \$1.76 billion. Crop Protection sales of \$10.4 billion increased 7 percent compared to 2017, with solid recovery in Latin America and good new product sales of SDHI fungicides in North America and Europe. Seeds sales of \$3.0 billion were 6 percent higher, reflecting stronger performance in Latin America and Eastern Europe. Our Flowers business grew by 7 percent.

Continued innovation

Our broad spectrum ADEPIDYN[®] fungicide is now registered for use on more than 80 crops in the United States and - under the brand name MIRAVIS[™] – for use on canola, grapes and potatoes in Australia and New Zealand. Our new generation fungicide AMPEXIO® WG Pepite® was launched in 11 European countries. In weed control. our first post-emergent broad-spectrum herbicide, TALINOR™, was launched in the US and Australia and controls more than 45 weeds. In France, CALARIS® herbicide is now providing fast and effective broadleaf weed control in corn. MINECTO® continued its strong performance in the US, controlling insects in vegetables and specialty crops, and was introduced to growers in Spain and Columbia.

We also continued our leadership and innovation in seed treatment, where FORTENZA[™] Duo was introduced to African and Indian growers, helping them with early control of the devastating fall armyworm.

We saw double-digit growth in acres committed to our data-driven AGRIEDGE EXCELSIOR® farm management system, while offers such as AGRICLIME[™] – sharing the risk of low rainfall – and HYVIDO® Cashback Yield Guarantee have provided growers with the confidence to invest in new technology. The acquisition of FarmShots[™] in the United States and Strider® in Brazil further enhances our digital capability.

Along with the acquisition of Nidera[™] Seeds in 2018, we also purchased Abbott & Cobb[™], a vegetable seeds company. To ensure the right leadership in our Seeds business, we have brought on a number of new hires and further developed internal talent. We are also opening a major global Seeds office in Chicago in the heart of US corn and soy growing regions.

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Chief Executive Officer's statement continued

Overview







Contributing to sustainable agriculture

In my remarks last year, I highlighted our commitment to working more closely and transparently with governments, NGOs and society to collectively find the solutions we need. Through more than 150 listening sessions around the world with stakeholders from across the value chain, we now have a much better understanding of what society expects from us and what sustainable agriculture means to different groups. Our aim has been to have a more direct and inclusive conversation to help rebuild the trust between society and science. The sessions have helped us better understand our role so we can continue to build society's confidence in the farming and agricultural innovation sectors.

The Good Growth Plan: strong progress

In 2018, we made excellent progress – in some cases exceeding – the 2020 targets set down in The Good Growth Plan. Through our commitments we have also contributed significantly to the achievement of the United Nations Sustainable Development Goals. In 2018, the greenhouse gas footprints from our reference farms showed an average efficiency increase of 8.8 percent compared with the 2014 baseline. Across 1,443 reference farms we have seen a 13 percent improvement in productivity since 2014 baseline, well on the way to the target of 20 percent.

Working to actively promote conservation agriculture, we have exceeded the 2020 target of improving the fertility of 10 million hectares of land on the brink of degradation. We have also exceeded our 2020 biodiversity target by 27 percent. We are demonstrating substantial increases in smallholder yields, improving on-farm practices, with productivity across smallholder reference farms up by 21.9 percent compared to the 2014 baseline. At the same time, we were able to extend the number of smallholders reached through training across the world to 6.1 million, bringing the cumulative total of people trained in safe use to 33.8 million, some two thirds more than our original 2020 target.

Our people are at the center of all we do

None of this success would be possible without the dedication and passion of some 28,000 people of Syngenta. We depend on their knowledge, expertise and commitment to bring innovation to farmers, collaborators and partners along the value chain.

We continue to invest in capability development with the company-wide 'Pulse Survey' providing us with excellent feedback on where to focus our efforts in 2019. It is great to see that engagement is highest among the millennials in our workforce, for it is this group that represent the future of our industry.

And the future of our industry is bright. 2018 has showed us what is possible when we align as one team with one plan. Our work, in bringing sustainable agriculture solutions to millions of farmers around the world, meeting the needs and expectations of society, while protecting and enhancing the environment, matters more than ever.

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J. Erik Fyrwald Chief Executive Officer

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Our business model

Creating value now and for the long term

Overview

Syngenta plays a vital role in enabling the food chain to feed the world safely and take care of our planet. Our ambition is to be the most collaborative and trusted team in agriculture, providing leading seeds and crop protection innovations to enhance the prosperity of farmers, wherever they are. Our strategy is to grow through customerfocused innovation – not just in product research and development, but in every aspect of our business model. We seek new and better ways to use resources, to develop and deliver products and services to farmers, and to create value for our many stakeholders – including employees, the communities where they live and society at large.

All this innovation has one focus: a **passion for our customers**, the farmers who grow the world's food. To make our business work, we have to understand their needs and deliver products and services that they value. And to make our business sustainable, we have to take **the long view**: ensuring that what we do today strengthens Syngenta and the food chain for tomorrow – economically, environmentally and socially.

That's why our Good Growth Plan commitments are integral to our business strategy. They put sustainability center stage in the way we do business and align closely with the UN's Sustainable Development Goals.



That trust depends not just on what we do: the **"how" matters**, too. So transparency, ethics, safety and compliance are core to the way we work. In operating our business model, we're determined to live by the values we have set ourselves – which are emboldened in the paragraphs above.



See The Good Growth Plan on **pages 18–35**

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1. Resources we use

Overview

Financial capital

People and the intellectual property they create

Chemical, biological, genetic and computational sciences

Natural resources

Facilities and services

Local communities

Laws and regulations

Research and development	Production	Commercial
Crop protection discovery	Production of active ingredients	Product management
and innovation	and intermediate chemicals	Marketing and sales
Advanced seed breeding	Formulation, fill and pack	Distribution
Addressing insect, disease, weed	Production of seeds	
and environmental stress on crops	Production of flowers	
		Who we work with
Who we work with	Who we work with	Growers
		— Distributors
Research institutions and universities	Suppliers	— Demonstration farms
Farmers and suppliers	Toll manufacturers	Processors and the food chain
Agricultural extension services		Agronomists
NGOs		
		Agricultural extension services
		Technology providers

Supporting activities

Product registration and stewardship
Health, safety and environment management
Employee engagement
Business integrity and upholding human rights
Multi-stakeholder dialogue

Who we work with

Industry associations Government and regulatory authorities NGOs and IGOs Communities

3. What we create

Products, services & solutions				
Crop protection Seeds				
Herbicides Seeds				
Insecticides Traits				

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erbicides	Seeds
secticides	Traits
ngicides	
ed treatment	Grower
ologicals	programs
ор	Divital
hancement	Digital
	agriculture

4. The value we provide

Sustainable agriculture innovation for small- to large-scale farms Reliable availability and affordability of safe, nutritious food and feed Efficient, effective fiber and fuel Tools for grower empowerment

and stronger food systems

Sustainable production and supply practices

Economic value shared with employees, suppliers, governments and communities

Rural development and collective well-being of communities

Development of our people and partners along the value chain

Promotion of decent work and good governance

Stimulating research, sharing data and knowledge



Ou<u>r offer</u>

The Good Growth Plan

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Innovation with purpose

Overview

Society's expectations around farming technology do not stand still; neither does the technology itself. In recent years, there has been a shift in focus from feeding a growing world population to increasing debates around environmentally sustainable diets and nutrition — from 'enough food' to 'good food'.

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For many years, we have been advancing the technologies for sustainable crop protection practice. Data science and precision agriculture continue to reduce the quantities of chemicals needed for effective control, and new biocontrols are adding non-chemical solutions to the farmer's toolbox.

Overview

We're proud of the progress we're making, while recognizing that there's still a long way to go. We're eager to have a better conversation about what sustainable agriculture really means – with farmers, channel partners, food companies, food retailers, NGOs, academics and governments. Not only to explain our views, but also to equally listen and understand the expectations of all our stakeholders. We need to build greater consensus through wider discussion with stakeholders about how we can work together to create truly sustainable solutions in ways that reinforce society's confidence in farming and agricultural innovation. We strive to build constructive and open relationships with governments, regulators, and NGOs. And we continue to establish strategic partnerships and alliances with organizations such as the World Business Council for Sustainable Development, the International Rice Research Institute, The Nature Conservancy, and many scientific and academic institutions worldwide. These collaborations and partnerships have always been an important part of the way we work.

Sustainability matters increasingly to value chain companies because of the commitments they are making to consumers. We prioritize sustainability issues at every stage of our work, from the lab to the field. Our research and development processes assess the impacts of candidate compounds and techniques from the earliest possible stages. And we are integrating sustainability into our commercial offer to farmers, promoting the benefits of using our products to grow crops with lower impacts. Working more closely with downstream partners in the value chain means we can integrate innovative products and agronomic services that enable growers to deliver what

they need and meet their specifications in areas such as traceability and sustainability.

In Italy, for example, we work with pasta manufacturers including De Matteis on the Grano Armando project to establish crop protection protocols that enable growers to produce higher yields of top-quality durum wheat and secure them higher and more reliable incomes. We have now also bred a new wheat variety with tailored agronomy specifically for this project. In Argentina, we are working with soybean and peanut growers together with a local food processor – AGD – on multifunctional landscapes that enhance biodiversity and pollination. One key goal is to satisfy the developing sustainability requirements of their European export customers.

Sustainable agriculture matters increasingly to governments, too. This is encouraging them to work more closely with us, and nowhere more so than in China, where the government is driving rapid modernization of agriculture alongside a transition to a much more sustainable economy. Along with our stewardship programs, we support sustainable manufacturing and production of crop protection active ingredients and products in China. We do this through our long-term commitment to rigorous supplier selection, continuous supplier management and applying our world-class manufacturing standards.



We are committed to driving ever more sustainable agricultural practices and to working with others across society and the value chain to deliver better food for the future.

Alexandra Brand Chief Sustainability Officer





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Crop Protection

Syngenta is a world market leader in crop protection products, with broad coverage of an extremely diverse market. We develop and produce herbicides, insecticides, fungicides and seed treatments that promote strong and healthy plant growth. As well as protecting plants from insects and diseases, we provide crop enhancement products that help them tolerate environmental stresses such as heat, cold and drought. We also offer products that boost crops' nutrient uptake – increasing yields while improving sustainability by using fertilizers more efficiently.

While our principal customers are farmers and channel partners, our Syngenta Professional Solutions business adapts our agricultural technologies to serve professionals in turf, tree and landscape care, residential and commercial pest management, disease vector control, commercial flower production and consumer garden care.



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Crop Protection continued

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50-90%

As expectations evolve, sustainability is critical

Farmers must meet the needs and expectations of food processors and retailers, consumers, society and our planet. As these needs and expectations become more complex, so do the challenges for farmers. Whether they are smallholders or big corporations, they must reconcile the imperatives of running a business with their societal responsibilities as stewards of the land.

At Syngenta, we apply science and technology to help them meet those complex needs consistently, safely and sustainably. Our products enable farmers to deliver food that is abundant, nutritious and affordable - without using more land or other inputs.

We recognize our responsibility to develop products that are safe and sustainable, and to steward them carefully. Some 30 percent of our investment in developing each new active ingredient is spent on product safety. We also invest substantially in training farm workers to use our products safely: in 2013, we committed to train 20 million by 2020. In fact, we've already beaten that target by 13.8 million.

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e "Help people stay safe" pages 30-31

We diligently comply with current regulatory systems and fully support realistic, sciencebased regulation for crop protection products. For example, we actively argue the case for transnational consistency of standards, such as maximum residue levels (MRLs), so that crops which meet regulatory requirements where they are grown are not barred from sale elsewhere.

Strengthening the farmers' toolbox: innovations in 2018

In recent years, we've been working to accelerate the pace of our innovation, as we continue to design and develop breakthrough 'blockbuster' molecules for the future, along with smaller active ingredients that meet specific needs within our strategic markets. In 2018, we filed a total of 110 patent applications (2017: 111) for crop protection innovations.

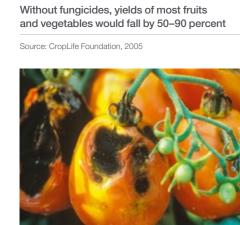
Our research and development work aims to give farmers a broader, better and more flexible toolbox. Following are some key examples from 2018.

Disease control

We continued to bring new products to market based on our broad-spectrum ADEPIDYN[®] fungicide. It delivers a longer duration of control, allowing growers to better adapt application interval to disease pressure, resulting in less application per season. In 2018, introductions included MIRAVIS™ fungicide for canola, grapes and potatoes in Australia and also for potatoes and grapes in New Zealand. ADEPIDYN[®] products are now registered for use on over 80 key crops in the US, where we also launched POSTERITY™ fungicide for use on turf.

AMPEXIO® WG PEPITE®, our new-generation fungicide for downy mildew in grapes, won the 2018 Agrow Award for Best Formulation Innovation. Launched in 11 European countries in 2018, it has a favorable environmental profile and low application rates.





Syngenta



\$100m sales

European sales of ELATUS[™] fungicide for cereals passed \$100 million in 2018, following launch in 2017

Overview



ORONDIS®, a new mode of action oxathiapiprolin fungicide for citrus fruits and vegetables, launched in Guatemala and Mexico in 2018. We continue to extend the use of ELATUS[™] based on SOLATENOL[®] fungicide across a growing range of crops and countries.

Weed control

TALINOR[™], our first post-emergent broadspectrum broadleaf weed solution in cereals. reached the market in the US and Australia. It controls more than 45 weeds, even where resistance is a problem. AVOXA®, a post-emergent cereal herbicide for grass control that also supports active resistance management, launched in Germany. And CALARIS[®] herbicide now provides French growers with fast and effective control of broad-leaved weeds and grasses in corn.

Our Integrated Weed Management (IWM) approach combines chemistry and agricultural practices to optimize yield by improving overall weed control in a sustainable way. This integrated approach helps to delay the onset of weed resistance, reduces the buildup of weed seeds in the soil, while also improving soil health and structure, resulting in reduced erosion and improved water quality.

Insect control

Insecticide launches in 2018 included: PROCLAIM® for lepidoptera and ENGEO® second-generation neonicotinoid for foliar and soil pests in Brazil; and FORCE® 6.5G for rootworm and other soil-borne pests in corn in the US, which produces less dust than older technology and has an excellent environmental profile.

MINECTO®, our new insecticide family for hard-to-control sucking pests in vegetable and specialty crops, has so far been introduced for tree nuts in the US, potatoes in Columbia, and tomatoes and peppers in Spain. With tailored formulation mixture partners, its multi-pest spectrum and long-lasting control allows growers to reduce the total number of applications; the new mode of action allows growers to better manage resistant insect species.

Seed treatment

Syngenta Seedcare announced the European debut of PLENARIS®, a powerful new fungicide for downy mildew control in sunflowers. It delivers unprecedented value for the grower as it uses a significantly lower amount of active ingredient per hectare.

FORTENZA[™] Duo insecticide made a timely entry into the African and Indian markets: this best-in-class corn seed treatment is highly effective against fall armyworm, a devastating pest that has spread across Africa in the past two years and arrived in India in 2018. VIBRANCE[™] Cinco – combining five powerful modes of action to provide the most consistent and comprehensive seed-applied disease protection available - received US registration approval for use on corn.

Biocontrols

Soybean cyst nematodes cause growers annual losses of around \$1.5 billion in the US alone. CLARIVA™, the only available biological seed treatment that controls these nematodes on contact, was launched in Brazil in 2018. Because soybean cyst nematode damage is often more severe in stress conditions, we are also offering CLARIVA™ to Brazilian growers in combination with our EPIVIO[™] Vigor biological seed treatment for abiotic stress management.

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Crop Protection continued

Overview

821m

Around the world, 821 million¹ people are currently going hungry. One way to reduce hunger is to increase food productivity. Crop protection products help farmers do that.

Source (1): Food and Agriculture Organization of the United Nations (FAO), 2018

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Other 2018 introductions included BOTRISTOP^{®2}, a plant-extract offer against botrytis, in Chile; and QUANTIS™, a nutrient-enriched by-product of sugarcane and yeast fermentation that protects yields and quality in corn and sunflowers by helping them to resist heat and drought stresses, in India, Paraguay and Romania.

Grower Program Offers

Grower Program Offers combine our world-class technology with protocols that help the grower to maximize the product, together with services that growers need. Syngenta Sustainable Solutions and its data-driven AGRIEDGE EXCELSIOR® farm management system, for example, have been operating successfully for over a decade. And where once these were niche activities, today they're mainstream. Holistic offers, such as AGRIEDGE EXCELSIOR®, Grape Quality Contract, POTATOPACK[™] and AGRICLIME[™] are expanding fast and earning exceptionally high customer loyalty rates. In Europe, the HYVIDO® Cashback Yield Guarantee adds insurance that guarantees return on investment for hybrid barley growers. In Australia, AGRICLIME[™] adds a financial guarantee against the occurrence of pre-agreed heat or drought conditions.

Inventing chemistry for the future

Our work on developing new chemistries is gaining unprecedented precision. Scientific insights generated in the field and throughout our R&D cycle inform precise product development. Increasingly, we can model and design molecules to address specific challenges such as resistance management. For some years, we have made sustainability criteria a key factor in the earliest stages of selecting and developing candidate molecules; now we are also exploring "predictive toxicology" techniques to design molecules proactively for safety.

We have a portfolio of around 70 active ingredients. We regularly revisit our portfolio of active ingredients to ensure we provide the best solutions to farmers.

Crop protection beyond chemistry: the digital revolution and new technologies

Increasingly, we're an agricultural technology business. We bring together chemistry, biology, digital technologies, new monitoring and application techniques, biologicals - and even new breeding techniques - to create novel solutions.

Our newly-formed Digital Agriculture Solutions group is collaborating with research and development, Syngenta Ventures, and our commercial, production and supply functions to create innovative new tools for growers. And, in 2018, we made two further significant tech acquisitions:

Corporate information

- → Strider^{®3}, a Brazilian company providing operational management solutions for farms, from monitoring machinery and pest control to satellite imaging of crops. It will help us to bring growers new ways to manage on-farm information.
- → FarmShots[™], a US company that processes high-resolution field images from satellites to assess plant health, helping farmers, agronomists and retailers to spot field issues such as diseases, weeds and other pests. It will accelerate our development of farm management and crop decisionmaking tools.





2 Registered trademark of Inversiones Santa Inés Limitada 3 Registered trademark of Strider Software S.A.

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Crop Protection continued

Did you know?

20m hectares

Overview

In 2018, farmers used drones to treat an estimated 20 million hectares in China alone

Source: National Agro-tech Extension and Service Center (NATESC), China, 2018



Digital technology is giving us new ways to turn data into meaningful information – and to put it into customers' hands. For example, daily access to mobile technology plays an important role in the modernization of agriculture in China, where it enables us to reach extensive retailer and grower networks across the country.

Our Retailer Hub app has the potential to service over 500,000 retailers, providing agronomy information, training and support. And our Grower Club app brings growers agronomic support as well as advice on our crop protection products and seeds, weather forecasts and pricing information; it also connects users with retailers in our network.

Precision agriculture is allowing farmers to use crop protection with unprecedented efficiency and economy. Advances in sensor technology, satellite and drone imaging, and data science provide increasingly sophisticated information to help growers manage their crops sustainably, from planting through to harvest. Combined with precision application technology and advanced product formulations, this data revolution will help growers to maximize benefits and minimize impacts from farm inputs such as fertilizer and crop protection products.

Better application technologies are further reducing the volume of product required per hectare and improving control of drift and overspray. Drone spraying is now feasible even for smallholders, and in 2018 farmers used drones to treat an estimated 20 million hectares in China alone. Where regulations limit drone use, autonomous row-walking robots could deliver similar efficiencies. For many years, we have been complementing our chemistry portfolio with biocontrol products to add modes of action that enhance resistance management. Demand growth for biocontrols is now outpacing conventional products, and by 2030 they could represent up to 10 percent of the global crop protection market. In particular, there are great opportunities for limiting conventional chemistry residues on fruit and vegetables by using chemical treatments in early growth stages and finishing with biocontrols in the later stages.

Over the past three years, our "BioAlliance" with sustainable bioscience company, DSM, has been establishing a powerful and unique biocontrols discovery platform. This continues to deliver a diversity of interesting product candidates, and we expect to bring the first products from this alliance to market around 2024.

Meanwhile, we are preparing to launch TAEGRO^{®1}, our new microbial biofungicide against diseases such as powdery mildew and botrytis, across the EU, Mexico and elsewhere in 2019.

Investments and partnerships

Partnerships and collaborations enable us to access existing technologies or jointly develop entirely new classes of chemistry. For instance, we are working with the Innovative Vector Control Consortium (IVCC) and the Bill and Melinda Gates Foundation on insecticides to help eradicate malaria by 2040. One result is a promising new active ingredient with a novel mode of action to address resistance in malaria vector control. This entered early development in 2018. Our work with the IVCC has already produced the highly successful long-lasting mosquito control product ACTELLIC® 300CS.

32m people

Our ACTELLIC[®] 300CS mosquito control product protected an estimated 32 million people in malaria endemic countries in 2018



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In-licensing also helps us fill gaps in our coverage. In 2018, we announced a global seed treatment licensing agreement for Picarbutrazox, a new fungicide from a chemical class discovered by Nippon Soda. Its novel mode of action will strengthen our Seedcare capability in corn, soybeans, canola, oilseed rape, cereals and other crops.

Overview

Our research center at Jealott's Hill celebrated its 90th birthday, illustrating our long-term commitment to scientific excellence in the UK.

We constantly invest in new facilities and resources to maintain our pace and quality of innovation. In 2018, we opened our 14th Seedcare Institute in Wagga Wagga, Australia, to support our Seedcare customers in Southeast Asia. We also committed to capital investments in increasing production capacity and efficiency. Other investments include stakes in innovative start-up companies through Syngenta Ventures, our corporate venture capital group:

- → BioPhero, which explores biological ways to make pheromones as lower-cost, sustainable insect controls
- → AgBiome^{™1}, which provides biological controls for insects and plant diseases
- → Sound Agriculture^{™2}, which develops new products to help plants perform better under stressed conditions.

Happy 90th birthday

Our largest crop protection R&D and product support site, Jealott's Hill International Research Centre in the UK, celebrated its 90th birthday in 2018. It employs over 800 people



1 Trademark of AgBiome, Inc. 2 Trademark of Sound Agriculture Company



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Seeds

Syngenta is one of the world's largest developers and producers of seed for farmers, commercial growers, retailers and small seed companies. We offer a broad portfolio of crops and have particular strength in corn, soybean, sunflower, cereals and vegetables.

Syngenta Flowers, one of the few global players, is a market leader in mass-market and value-added plants, ranking in the top two in most key market segments.





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Seeds continued



75 percent of Brussels sprouts worldwide are Syngenta varieties



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Innovating to meet market needs

The global seed market was estimated at around \$40 billion in 2018, with 3 percent forecast annual growth during the next five years. Over half its value comes from corn and soybean, and over half of sales are made in Brazil, China and North America. Growth over the next few years is expected to be driven by Brazil, China and India.

Every seed is a package of genetic material with the potential to deliver an extraordinary range of benefits and value: nutrition for people and livestock, aesthetic pleasure, energy, and income and prosperity for farmers. By applying science, our Seeds business aims to tailor this material as precisely as possible to meet the increasingly complex needs and challenges of our customers' markets, regions and growing conditions. We do this through accelerated breeding and product development and by providing expert agronomic advice. We develop products and services that enable growers to be more productive, to secure their livelihoods despite relentless pressure on commodity prices, to manage risks such as drought and disease, and to grow crops more sustainably – using less arable land, less water and fewer inputs. To do this, we strive to know and understand not only growers but also the customers they serve.

Delivering what customers need

We have a strong pipeline and ongoing programs in plant breeding and biotech innovation to help farmers meet the increasingly complex needs of their customers.

For example, we're providing corn growers with the technology they need to serve the growing demand for ethanol. In 2018, we further expanded our ENOGEN® corn offering with seven new hybrids. Already a gamechanger in the biofuel market, ENOGEN® grain makes ethanol production more efficient, earning premium prices for growers and helping to produce clean fuel closer to the point where it's used. Now ENOGEN® corn is also demonstrating major benefits as feed for dairy or beef cattle, due to its high digestibility. A 2018 study by two US universities shows that it provides an average feed efficiency uplift of 5 percent, with improved silage quality and reduced spoilage.

Our AGRISURE DURACADE® corn, offering multiple modes of action to resist 16 kinds of yield-limiting insects, has been a major success in North America, with approval for export to 15 countries including Brazil, China and Australia.

In 2018, it cleared the first hurdle towards import approval in the EU, following a 'positive scientific opinion' from the European Food Safety Authority.

We're also supporting vegetable growers to meet the needs of their entire value chain. In vegetables, we launched around 170 new varieties in 2018 across all crops to meet the needs of growers, processors and retailers. Highlights included: a red sweet pepper with outstanding yield and quality; an eyecatching black tomato with high anti-oxidant and vitamin content; a high-yielding corn especially suited to sweet corn processors' requirements; an attractive golden seedless watermelon that stays crisp when cut; and a new spinach variety for European and US baby leaf markets.



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Seeds continued

Did you know?

37% less pesticide use

Overview

On average, biotech crop adoption cuts pesticide use by 37 percent, while raising yields by 22 percent and farm profits by 68 percent

Source: Klümper, W. and Qaim, M.; 2014

Strategic acquisitions and collaborations to meet market needs

In 2018, we made several acquisitions that enhance our ability to give customers the products, innovation, advice and services they need to run successful, sustainable businesses.

The acquisition of Nidera[™] Seeds nearly doubled the size of our field crop Seeds business in Latin America. Nidera[™] is a major force in soybean with strong offers in corn and sunflower. Its products, germplasm pool and research and development complement ours, enabling us to bring more choice, innovation and value to Latin American growers.

In the US, we acquired Abbott & Cobb[™], a breeder, producer, and marketer of vegetable seeds. The company has particular strength in sweet corn, one of our core crops globally.

Digital technologies are transforming agriculture, and we are developing a growing portfolio of digital solutions and capabilities. We made two important acquisitions in 2018: FarmShots[™] in the US, an innovator in highresolution satellite imagery; and Strider^{®1} in Brazil, a digital farm management company. Both of these technologies have important roles to play in helping farmers to manage risk, select traits and germplasm that suit predicted conditions in the coming season, and deploy assets effectively.

We expanded our Flowers offering with the acquisition of Floranova[™], an established flower and home garden vegetable seeds breeder with a broad portfolio and a strong international presence in over 50 countries.

In addition to these acquisitions, we have entered into strategic partnerships and licensing agreements to expand the choice we can offer growers, while strengthening our germplasm pool.

We also hold minority positions in a growing number of digital start-ups through Syngenta Ventures.

Investing for growth in our key markets

In 2018, we announced a joint venture with Yuan Longping High-Tech Agriculture to develop and sell new corn varieties, both with and without biotech traits. Longping is the largest seeds company in China, the world's second-largest corn market.

The US is our biggest market. In 2018, we announced plans for a major global and North America Seeds office in Chicago, at the heart of the US Corn Belt which grows over 50 percent of US corn and soybean.







Seeds continued

Our business model

Our offer

We believe this represents a missed opportunity for the EU. As other parts of the world move ahead with innovations that enable breeders

Our operations

The Good Growth Plan

and farmers to do more with less water, fertilizer and pesticides, Europe's breeders and farmers will miss out – with significant negative economic and environmental consequences.

Our global lead genome-editing and biotech site is in Beijing. Farming is crucial to China's modernization, and its current five-year plan aims to achieve basic self-sufficiency in cereal grains and absolute food security. Biotech is one of the most promising paths to these objectives, and the plan envisages a significant contribution from genetically modified crops. Syngenta has an important role to play to support Chinese agricultural modernization through partnerships with key stakeholders and by bringing Chinese growers the benefits of biotechnology.

We believe we're tackling one of the biggest challenges humanity faces: to safely feed the world and look after the planet. That's not something we can do on our own – we need to engage with the best minds we can find. So we are working with leaders in many fields and disciplines, including data analytics, software and the supply chain, and sharing expertise and data with them. We believe the result of this worldwide effort will be a continuing flow of new digital tools, services and products to help the world's growers rise to the challenge – successfully and sustainably.

Overview

The move brings us closer to many US corn and soybean customers, gives us access to Chicago's world-class talent pool for digital and tech innovation and provides excellent transportation links connecting us more closely with other important markets, such as China, Brazil and Eastern Europe.

We also began work on a US\$30 million trait conversion accelerator at our Idaho R&D and seed production facility. Most of our North American corn trait conversion work will take place there, allowing us to bring new traits to market faster.

Technological innovation is at the heart of China's agricultural modernization, and we are investing in further strengthening our Beijing Innovation Center, which is driving important collaborations with Chinese institutes.

Applying transformative technologies for the future

While plant breeding has been going on for centuries, it has changed radically in the past few years. Traditional trial-and-error processes are being supplanted by collaboration between breeders and data analytics experts - integrating mathematics, genetics, breeding, physiology and agronomy to select genetics that enhance crop performance. Plant breeding is increasingly design-driven: using guality data and advanced analytics through each stage of the R&D process, we can understand challenges better, determine optimum solutions and create products to match those specifications. We can also use mathematical modeling to determine how products are likely to perform in specific environmental conditions and to place the right seeds for specific fields.

Using new technologies, we have reduced the time it takes to pair the best traits with the best genetics, so we can bring new products to market faster than ever, and we are increasing investment in breeding and hybridization. As a result, our output of new corn hybrids in 2018 was 50 percent higher than in recent years.

We've been active in genome editing for over a decade, and in 2017 we licensed CRISPR Cas9 and Cpf1 genome-editing technology for agricultural applications. We are now applying the technology to accelerate the rate of innovation in crops including corn, wheat, tomatoes, rice and sunflowers. However, commercialization of our genome-edited portfolio will depend on how regulators view genome-editing technologies; this varies around the world.

Unlike genetically modified organisms (GMOs), most forms of gene-editing do not involve inserting foreign DNA. Often, they are simply a more rapid and precise process for achieving outcomes essentially the same as those produced by conventional breeding. We believe agricultural products should be judged by their characteristics, not the process used to produce them, and that new varieties that do not contain foreign DNA should fall outside the scope of GMO legislation. We are committed to openly demonstrating the safety and efficacy of products resulting from plant breeding innovations such as gene editing, and we periodically publish data to engage with stakeholders in open dialogue.

We will wait to see how the regulatory landscape for gene-edited plant products unfolds in China, Latin America and the US. But a 2018 ruling by the European Court of Justice means that most plants developed with these methods will be subject to the EU's regular GMO legislation, which may entail prohibitive costs and political uncertainty over final market approval. Source: US Department of Agriculture (USDA), 2018

Corporate information

Compared to 30 years ago, a ton of corn can be grown using 39 percent less land

Û

Non-financial performance

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Non-financial performance

The Good Growth Plan

Overview

The Good Growth Plan is a core element of our strategies for both our Crop Protection and Seeds businesses to ensure their success and long-term viability.

It defines six commitments in areas where improvement is essential to secure the future of agriculture and our planet's ecosystems. Each commitment sets hard, stretch targets to be achieved by 2020. We report our progress against these KPIs each year and provide additional progress information online at www.data.syngenta.com.

The Good Growth Plan's principles and priorities are deeply embedded in the way we do business. We are gathering unprecedented agricultural data and insight from our reference farms, which we are sharing with partners, academics, NGOs and public institutions worldwide. The lessons we learn are enabling us to enhance our commercial offer, delivering real and measurable benefits to farmers, rural communities and the environment.

In these ways, the Plan contributes to the sustainability both of our own business, and of the wider world that we serve. So it's appropriate to view our sustainability development not only in business terms, but also in relation to the UN's 17 Sustainable Development Goals (SDGs).

In the UN's words, achieving these goals "requires the partnership of governments, private sector, civil society and citizens alike to make sure we leave a better planet for future generations"¹. We believe that Syngenta is actively contributing to many of the SDGs, and we recognize a responsibility to maintain a culture of continuous improvement against them. In the following sections – on The Good Growth Plan and our own operations – we highlight the relevant SDGs alongside our report on the progress we are making.



1 United Nations Development Programme

The Good Growth Plan

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Our six commitments help farmers meet the challenge of feeding a fast-growing world population sustainably.

Overview

		\bigcirc				
Make crops more efficient	Rescue more farmland	Help biodiversity flourish	Empower smallhold	ers	Help people stay safe	Look after every worker
2020 target						
Increase the average productivity of the world's major crops by 20 percent without using more land, water or inputs	Improve the fertility of 10 million hectares of farmland on the brink of degradation	Enhance biodiversity on 5 million hectares of farmland	Reach 20 millio smallholders a enable them to increase produ by 50 percent	nd	Train 20 million farm workers on labor safety, especially in developing countries	Strive for fair labor conditions throughout our entire supply chain network
2018 progress and key ac	hievements					
13.0% Land productivity increase ¹	10.8m Hectares of benefited farmland ²	6.4m Hectares of benefited farmland ²	21.9% Smallholder land productivity increase ³	19.5m Smallholders reached through training and sales ⁴	33.8m People trained on safe use ⁶	99.6% Suppliers included in sustainability and fair labor programs ⁶
We're still raising reference farm yields ahead of their benchmarks and taking a lead in the digital revolution that's set to transform agriculture in the coming years	We've already benefited an area about the size of Guatemala – and we're building momentum with the help of a wide range of partners	The experience and evidence base we're building demonstrates that biodiversity investment makes business sense	We're demons substantial inco smallholder yie working with p better on-farm	reases in elds and artners for	We're reaching unprecedented numbers and finding new ways to help people use our products safely	We're on track to reach our 100 percent target – and to be first in our industry with global Fair Labor Association accreditation
Read more on pages 20-22	Read more on pages 23–25	Read more on pages 26–27	Read mo		Read more on pages 30–31	Read more on pages 32–35
1 On reference farms compared to baseline 2014 4 Differences in totals may occur due to rounding 6 The seed supply chain represents about 98 percent of the suppliers targeted 2 Cumulative since baseline 2014. Differences in totals may occur due to rounding 5 Cumulative since baseline 2014. Differences in totals may occur due to rounding. 6 The seed supply chain represents about 98 percent of the suppliers targeted 3 On smallholder reference farms compared to 2014 baseline Includes smallholders reached through training reported under 'Empower smallholders' 6 The seed supply chain represents about 98 percent of the suppliers targeted						
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Make crops more efficient

ncrease the average productivity of the world's major crops by 20 percent without using more and, water or inputs

We're still raising reference farm yields ahead of their benchmarks and taking a lead in the digital revolution that's set to transform agriculture in the coming years

UN Sustainable Development Goals 2, 12, 17

Did you know?



Overview

Today, farmers feed at least 10 times more people using the same amount of land as 100 years ago

Source: International Seed Federation, 2018

Progress and key achievements

- → Further productivity increase on reference farms – while benchmark farms underperform
- → Continued to extend sustainability partnerships with growers, food chain companies and governments
- → Sponsored first US Sustainable Agronomy Conference

The world needs a step-change in crop productivity to ensure sustainable food security. We are targeting a 20 percent increase across the world's most important crops in partnership with growers who use our products and agronomic advice. We are devoting particular effort to smallholders, who have the greatest potential to increase productivity.

See "Empower smallholders" on pages 28–29

To test and measure what's possible, 1,443 reference farmers are working with our field experts to share know-how and trial new solutions for 20 crops in 39 countries.

Another 2,316 benchmark farms, many

over time.

also using Syngenta products, deepen our understanding of what drives productivity and efficiency, and help us track progress

Reference farms continue to outperform

Globally, a further rise in yields on our reference farms took the increase since the 2014 baseline to 13.0 percent. This represented continuing outperformance against the benchmark farms, where the uplift since 2014 reduced slightly to 7.0 percent.

Land productivity increase % ¹	13.0%
2020	20.0
2018	13.0
2017	10.9
2016	1.2

1 On reference farms compared to baseline 2014

Farm network

	2018	2017	2016
No. of reference farms	1,443	1,459	1,039
No. of benchmark farms	2,316	2,630	2,694

21 Sustainable Business Report 2018

Within this good overall result for the reference farms, there was significant variation among individual countries and crops. A good year for China included particularly strong gains for potato growers adopting seed treatment and locally-bred disease-resistant varieties. By contrast, in LATAM, Brazilian and Guatemalan coffee growers experienced weather challenges – mainly drought – which reduced crop yields, while maize growers were

Make crops more efficient continued

Overview

reduced crop yields, while maize growers we unable to match the record yields achieved in the previous year's exceptionally favorable weather conditions.

Deepening our understanding of farm productivity

Our reference and benchmark farm networks remained little changed in 2018. But we continue to develop and refine our systems and processes for collecting and analyzing their data. The digital tools that we are now bringing to market are creating opportunities to further improve the quality of the data we collect, and, eventually, may greatly increase the number of farms we monitor.

This direction supports an increasingly evidence-based approach, in which we use technologies such as artificial intelligence to mine data for insights that improve our product development and commercial offers, help growers connect better with the value chain, and bring demonstrable, measurable and documented benefits to society and the environment. We advise reference farms in the safe and efficient use of Syngenta products according to optimized protocols: the right product at the right time in the right amount. In 2018, reference farms' pesticide field application efficiency increased to a total of 24.7 percent (2017: 14.2 percent), compared to 2014 baseline.

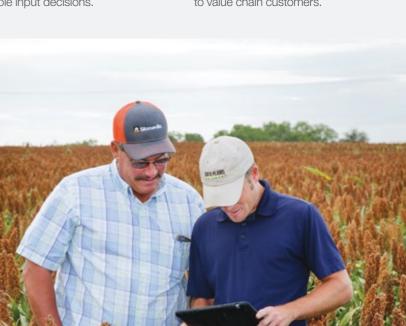
Our offer

In 2017, we began reporting greenhouse gas (GHG) footprints from our farm network. This data is increasingly important to the food industry's efforts to better understand the sustainability of its supply chains. In 2018, our reference farms showed an average 8.8 percent in GHG emission efficiency increase compared with the 2014 baseline. Comparing performance at crop level, averaged over the five years of monitoring, 69 percent of reference farms have outperformed the benchmark farms.

Case study

Sustainable Solutions: adding value for the value chain

Responding to consumer demand, food retailers take increasing account of sustainability criteria in their purchasing decisions. Syngenta Sustainable Solutions works directly with growers and partners in the US food value chain, helping farmers collect and analyze data to make more sustainable input decisions. Farmers in the program are able to assess their farm's environmental results against anonymized community benchmarks. Covering efficiency indicators such as land-, water- and nitrogen-use, as well as soil conservation and GHG emissions, this data demonstrates sustainability metrics to value chain customers.



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Make crops more efficient continued

Overview





+20% yield improvement

Yield improvement achieved with potato growers in Dingxi, northwest China

Corporate information



Already, our farm data is helping to shape a better future. By applying what we learn, we help growers and the value chain in new ways.

The development of our NUCOFFEE® Sustentia project in Brazil demonstrates the evolving benefits for growers and value chain partners. When we launched it in 2006, with UTZ as our value chain certification partner, the project was focused on crop quality. Later, we were able to help participating farmers improve their productivity and efficient use of inputs such as crop protection and nutrients. Now we're working with them to better understand the drivers of sustainability improvements such as GHG reduction. As we collect more data through The Good Growth Plan - and integrate it with other inputs such as weather data - we are seeing a step change in the spectrum of insights and benefits that we bring to growers and the value chain.

In North America, Syngenta Sustainable Solutions has been helping customers for a decade – not only to make their farms more productive and sustainable, but also to engage effectively with the value chain by documenting and supporting good environmental practice (see case study on page 21). Current programs include using data collected through AGRIEDGE EXCELSIOR® to test strategies for managing weed resistance more effectively. We are also working with farmers, food companies and universities on feeding cattle with ENOGEN® corn for more sustainable meat and milk production. One study has confirmed a 5 percent feed efficiency gain with ENOGEN®, and others are appraising its potential to cut GHG emissions.

Sharing what we learn

Syngenta is at the forefront of using and sharing data to help growers make better decisions that lead to significant productivity and efficiency improvements. As a result, we are also well placed to give food chain companies and governments insight into how best to support more sustainable agriculture.

We publish detailed Good Growth Plan progress data on our open data website at www.data.syngenta.com. By visualizing and offering data in a wider range of formats, we aim to increase accessibility and engage others with what we are doing. We continue to work with the Open Data Institute to ensure we share data in ways that can be used effectively by those who need it for their own research. In 2018, we sponsored North America's first Sustainable Agronomy Conference, organized by the American Society of Agronomy, and focused on how to move sustainable agriculture from the research field to the commercial field.

Governments at local, national and regional level are increasingly engaging our insights and expertise through partnerships to support their own agendas and goals. In China, for example, we are working with a growing number of agencies on projects that support government sustainability and agricultural modernization agendas. Examples include partnering with the Dingxi Agricultural Bureau and local government to enhance the productivity of potato and other vegetable farms in the northwest of the country. We have trained more than 500 farm workers, introduced sunflowers, vegetables and herbs as commercially-valuable cover crops, and achieved yield uplifts of around 20 percent for potatoes and 14 percent for cabbages.



Rescue more farmland

Overview

We've already benefited an area about the size of Guatemala - and we're building momentum with the help of a wide range of partners

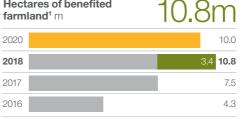
Progress and key achievements

- → 2020 target exceeded with benefited hectares up by 7 percent, as digital technologies support continuing rapid scale-up
- → Strong progress in demonstrating benefits to value chain
- → New commitment to improve 2 million hectares in China under Race to Zero initiative

Today, over 50 percent of farmland is affected by soil degradation. We're working to promote practices that help farmers maintain healthy soil, protect it from wind and rain erosion. and increase soil fertility. The solutions we offer also help them to reduce their carbon footprints and adapt to climate change.

We actively promote conservation agriculture based on minimum soil disturbance, crop rotation and permanent ground cover. It is a central element in climate-smart agriculture, helping to reduce emissions, prevent land degradation, improve food security, increase farm and community resilience, and deliver better crops to the value chain. As well as working with farmers, we are raising awareness of soil conservation among value chain partners, government institutions and academics.

Hectares of benefited farmland¹ m



1 Cumulative since baseline 2014. Differences in totals may occur due to rounding

In the fifth year of our soil health programs, we surpassed the target that we committed to reach by 2020. We aimed to improve 10 million hectares – an area about the size of Guatemala. With 197 projects implemented in 41 countries, we are already benefiting 10.8 million hectares.

This success has been driven by three key factors: integration of conservation practices into our commercial offer; digital solutions; and partnerships with governments and the value chain.

Integrating soil health into our sales offer

Integrating soil conservation practices into our crop protocols and training is helping to differentiate our commercial offer and also benefits our own seed multiplication operations. Examples include INTEGRARE™, our high-yield soybean solution combining seeds, seed treatment, crop protection and services such as water- and soil-nutrition management. Since its launch in 2015, INTEGRARE[™] acreage in Brazil passed 1.1 million hectares.

In Europe, we have developed HYVIDO® to help farmers produce better-yielding, higherquality barley. This technology brings together three barley hybrids with tailored cultivation protocols to allow higher yields and better soil conservation management.

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Rescue more farmland continued

Overview

Did you know?

It takes nature 500 years to replace 25mm of lost soil

Source: Pimental, D. and Pimental, M.; 2003



Digital solutions are making a big difference

The digital agriculture solutions we've developed are adding further impetus to soil health programs. This applies particularly in Latin America, which accounted for most of the additional acreage benefited by our initiatives in 2018.

Our strategy is increasingly linked to digitalization of agriculture through multi-stakeholder platforms with partners who provide equipment and machinery, financial solutions and educational support. This enables us to build propositions that farmers will adopt because they can see demonstrable economic and sustainability benefits.

In Brazil, for example, we worked with a digital technology company, SmartBio, to develop a pest management platform that integrates field mapping, digital monitoring, satellite imaging, weather data and specialist training. This enables sugarcane growers to map areas susceptible to different stress factors and optimize crop management and treatment accordingly.

With a further 2 million hectares added in 2018, this is now our largest soil health project worldwide.

Runoff is a major cause of land degradation. Reducing it helps to keep soils fertile and waterways clean; and good soil management practices can significantly cut runoff and erosion.

Bigger partnerships drive wider adoption

Over time, we have been able to develop larger-scale collaborations with a wide range of partners. This provides added leverage and credibility with growers, and it helps us to make the case for supportive government policies.

Syngenta has been the private-sector partner of the UN Convention to Combat Desertification (UNCCD) for five years, alongside the World Business Council for Sustainable Development (WBCSD). Together, we have organized over 30 Soil Leadership Academy workshops to raise awareness among UNCCD member nations, civil society organizations and academia. With the WBCSD, we have published a report on the business case for investment in soil health, targeting governments, value chains, farmers and land users. This was launched on World Soil Day in December 2018.

We have also joined value chain partners including Unilever, Olam, Barry Callebaut and Rabobank to launch the CSA100 initiative. This aims to unite 100 leading food value chain companies in promoting climatesmart agriculture that increases agricultural productivity and incomes sustainably, builds resilience to climate change and reduces greenhouse gas emissions.



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Rescue more farmland continued

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Other initiatives with value chain partners in 2018 included a transformative series of interventions on Vietnamese coffee plantations, see case study (right), and an ambitious national project to reboot corn cultivation in Italy. The 'Mais in Italy' program is a collaboration between Syngenta and farmers, scientists and value chain partners to make the crop more productive, efficient and sustainable by integrating the most appropriate genetics, crop protection and agronomic protocols. As part of this program, we are also promoting best practice in soil conservation.

This includes minimal machinery passes and soil disturbance, crop rotation to reduce runoff exposure and digital systems to optimize irrigation.

Helping China race to zero carbon

We promote cover crops as an aid to minimum-tillage soil conservation in most parts of the world. In 2018, the main focus of these efforts was China, where we have committed to reduce carbon emissions over the next five years through soil conservation programs on 2 million hectares of farmland. This area represents 2 percent of all farmland in China, and the initiative is part of our contribution to China's Race to Zero drive towards zerocarbon, zero-waste business practices. In Yantai and Shandong provinces, permanent ground cover projects with apple and grape growers have improved soils and shown economic benefits for employees, suppliers, governments and communities - increasing farmers' incomes by over US\$900 per hectare.

Brewing more sustainable coffee with value chain partners

In Vietnam, we are working to improve soil management on coffee plantations with two value chain partners – the Louis Dreyfus Company and Jacobs Douwe Egberts – and IDH The Sustainable Trade Initiative. Using 30 demonstration plots as well as direct action on farms, the threeyear project aims to develop and promote sustainable landscapes that reduce soil degradation, combat deforestation, conserve irrigation water and improve climate change resilience. We aim to train some 2,500 farmers and agronomists on sustainability issues, eliminating overuse and unsafe use of pesticides. We are also working with local authorities to develop a model that can be scaled up further. The next phase of the partnership will extend the model into three more Highlands provinces, benefiting a total of 5,500 farmers by 2021.

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Help biodiversity flourish

Overview

The experience and evidence base we're building demonstrates that biodiversity investment makes business sense

Progress and key achievements

- → 2020 target exceeded by over 27 percent
- → Published research to quantify the economic and social benefits of multi-functional field margins
- → Stepped up biodiversity projects with national institutions in China



In the European Union, 84 percent of crop species depend at least partly on pollination by wildlife

Source: Proceedings of the Royal Society, Klein et al, 2007

The sustainability of agriculture relies on biodiversity — for plant breeding, pollination and food diversity. We are promoting and enabling action to increase and connect habitats that support healthy and diverse wildlife populations. A key strategy is managing less-productive farmland alongside fields and waterways to reintroduce local species, provide buffers for soil and water, and provide corridors connecting wildlife habitats. These multi-functional field margins (MFFMs) support sustainable intensification on the more productive land.

Demonstrating the value of diversity

Although we surpassed our 2020 target in 2017, we continue investing in both new and existing biodiversity initiatives. We have now implemented 301 projects in 39 countries, benefiting a total of 6.4 million hectares. Benefits for farmers include reduced soil erosion and better soil nutrient cycling, crop pollination, pest control and water quality regulation. Wider social gains include enhanced genetic diversity, carbon sequestration, flood attenuation and recreation opportunities.

After an exceptional year in 2016, the pace of increase in impacted acreage has moderated. Though integrating biodiversity into commercial offers is a complex task. we have continued to develop and promote programs that emphasize biodiversity as an integral part of good agricultural practice and land stewardship.

Hectares of benefited 6.4m farmland¹ m 2020 2018 0.8 2017

1 Cumulative since baseline 2014.

2016

Differences in totals may occur due to rounding

In collaboration with Bioversity International and Arcadis, we have developed a discussion paper evaluating the value of MFFMs in the agricultural landscape. It documents 20 natural and environmental benefits, along with 15 social-capital benefits, and quantifies them financially, to help farmers see the monetary value that MFFMs create for them and for society. We are now organizing events and

roundtables with our partners, using this paper to generate interest from value chain companies and the financial sector that will drive higher investment in MFFMs.

Download the joint discussion paper on multi-functional field margins www.publications.svngenta.com

Scaling up Operation Pollinator™

5.0

6.4

5.6

4.9

We continue to promote landscape connectivity - a key factor for habitat and biodiversity conservation in agricultural landscapes. Our largest program is in Brazil, where we started work in 2008 and are still building momentum with policy makers, farmers, local communities, NGOs and value chain companies. Projects that began in municipalities now expand across whole states. In addition to this, our principal focus in 2018 has been on extending our Operation Pollinator[™] programs around the world.

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Help biodiversity flourish continued

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ase study

Bees are the keys to kiwis that please

In China, we have been working with the Institute of Apiculture Research at the Academy of Agricultural Sciences on projects to improve fruit yields and quality through better pollination. We have had significant success with bees in kiwi orchards in Sichuan province where we established field margins and put beehives on farms. We have shown how bee pollination can provide a cheaper and more efficient alternative to hand pollination, producing higher quality fruit with strong consumer appeal.



In 2018, we joined several Chinese government agricultural and research bodies in staging a Bee Conference with the theme "Bee Booming, Plant Flourishing, Green Growing". This provided an opportunity to share our experience gained through implementing our Operation Pollinator" and Hives on Farms programs on over 10,000 acres of Chinese farmland and fruit orchards, see case study (right).

Value chain companies are increasingly interested in collaborating on Operation Pollinator projects, and we began new initiatives with food companies in Argentina and Brazil in 2018. We are also looking beyond farmland: in North America we have been applying our management expertise and seed consulting services to transform a growing number of out-of-play areas on golf courses into improved habitat for bees and other pollinators.



Empower smallholders

Reach 20 million smallholders

We're demonstrating substantial increases in smallholder yields and working with partners for better on-farm practices

Progress and key achievements

- → Further land productivity increase on smallholder reference farms to 21.9 percent
- → Global reach increased and more people trained
- → Increasing involvement with value chain partners to drive smallholder improvement

Smallholders produce more than 80 percent of the food consumed in much of the developing world. Their crop productivity lags well behind that of larger producers, so closing the gap could significantly improve food security and reduce poverty.

Over half of our sales are made in growing economies where smallholder farmers. predominate. Our contact with these customers is generally indirect: they buy through local distributors and retailers.

Yields up and reach boosted by training

Our network of smallholder reference farms maintained the vield increase achieved since 2014, with a small additional increase: their overall land productivity was 21.9 percent above the 2014 baseline (2017: 21.6 percent). This was 3.5 times the increase achieved by benchmark smallholders over the same period.

Smallholder land pro

annoidei	iana	
oductivitv	increase ¹	%

2020	50.0
2018	21.9
2017	21.6
2016	8.0

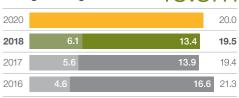
21.9%

1 On smallholder reference farms compared to baseline 2014

Very often, smallholders' vields are impaired by limited access to technology, or lack of knowledge about how to apply it effectively. For example, reference tomato growers in Africa have seen significant yield gains since we introduced them to hybrid seeds and gave them appropriate training.

In the Philippines, we found particularly poor yields among rice growers using low-quality crop protection. After training in efficient use of high-performance products such as VIRTAKO® insecticide, some of these growers have doubled their yields per hectare.

Smallholders reached 19.5m through training and sales² m



Training Sales 2 Differences in totals may occur due to rounding

Our smallholder reach is estimated by adding the numbers of smallholders reached based on sales volume data and the number of farmers reached through training. The number of smallholders reached through sales decreased slightly: from 13.9 million in 2017 to 13.4 million in 2018. We saw significant variation between regions: an increase in China thanks to higher corn prices; an increase in Africa and the Middle East due to adding new products to the smallholder offer; stable results for South Asia: and declines in ASEAN and LATAM.



Globally there's a 20-30 percent yield gap between men and women farmers in developing countries

Source: Food and Agriculture Organization of the United Nations (FAO), 2011



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Empower smallholders continued

Overview

At the same time, we were able to extend the number of smallholders reached through training across all regions to 6.1 million (see "Help people stay safe" on pages 30–31). The growing impact of our training is driven by three principal factors. Our commercial teams increasingly see training as an important part of our offer to customers. We are making better use of our customer relationship management tools to promote and record training activity, improving training data collection. And our safety training resources continue to expand as we train more trainers, particularly in APAC and LATAM.

Tailoring our offer to smallholder needs

Smallholders are necessarily very focused on price, and high-quality products like ours face strong and growing competition from low-cost generics. We are developing new commercial partnerships to better tailor our offer to smallholder needs, so that we offer attractive cost/benefit propositions.

For example, by training West African cocoa growers in safe and effective use of PERGADO® Cocoa fungicide, we have enabled them to increase yields by 40 percent or more, satisfy value chain residue requirements, and increase family incomes by US\$300 a year. We have launched PERGADO® Cocoa in Côte d'Ivoire as our first copper-free solution and expect to extend this new mandipropamid-based product across West Africa in the near future. When we bring products like this to smallholder markets, technology together with training and technical advice – supported by partners – are important elements of our offer. We want to ensure that growers use our products both safely and efficiently to get the best return on investment and improve the livelihoods of their families and communities.

Demonstrating best practice

Training for smallholders is important across our Good Growth Plan commitments. For example, in India we have joined forces with a global food and beverage producer to establish a model farm in the state of Maharashtra. We provided training and best practice demonstrations in areas such as soil conservation and biodiversity, as well as safe storage and use of chemicals. And our WeCare initiative in India, while focused on product stewardship, educates growers in protecting crops effectively to improve productivity and thus livelihoods (see case study on page 31).

Smallholders can significantly improve their incomes if their crops meet the specifications of corporate buyers. So we have a growing number of joint projects with value chain partners focused on specific crops. In addition to our work with coffee growers in Vietnam (see case study on page 25), in Mexico, we have joined several corporate partners to improve feed crops for family dairy farms, see case study (right).

Case study

Better corn keeps family dairy farms viable

The Mexican state of Jalisco may be better known for tequila, but it supports around 14,000 family dairy farms. Many of these are struggling to stay viable. Together with the local Agricultural Council and large milk purchasers, we launched an initiative to transform their economic situation through better feed production. On over 40 smallholder farms, our crop protection protocols on corn and technical support and training have cut the cost of feeding cattle by 30 percent. Also, milk quality has increased, enabling these family farms to realize better prices for their milk. By 2021, we aim to be bringing these benefits to 1,500 family farms.



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Help people stay safe

Train 20 million farm workers on labor safety, especially in developing countries

We're reaching unprecedented numbers and finding new ways to help people use our products safely

IN Sustainable Development Goals 2, 3, 17

Progress and key achievements

- → Exceeded our 2020 target by over two-thirds
- → Train-the-Trainer programs continue to increase capacity
- → Increased collaboration with companies and partners to improve safety

We share a responsibility to help improve occupational safety and health in agriculture. Ensuring that our products are used correctly is integral to our business model – to protect not only the health and safety of farm workers and the public, but also the environment. This is particularly important for smallholders, especially in developing countries, who often lack access to guidance on using crop protection efficiently, responsibly and safely.

Making training a key part of our offer

In 2018, we reached 8.3 million people (2017: 8.2 million) with safety training and safe-use awareness-raising initiatives linked to commercial activities. This brought the cumulative total since 2014 to 33.8 million, two-thirds more than the 20 million target we originally set for 2020.

Smallholders make up about 70 percent of the people we train: in 2018, we reached a further 6.1 million smallholders (2017: 5.6 million).

People trained on safe use ¹ m	33.8m
2020	20.0
2018	8.3 33.8
2017	25.5
2016	17.2

1 Cumulative since baseline 2014. Differences in totals may occur due to rounding. Includes smallholders reached through training reported under 'Empower smallholders'

Our successful Train-the-Trainer programs are greatly increasing our capacity to promote good stewardship. As well as educating our own sales teams, we have also included partners, distributors and researchers working in the field. This is helping them to impart technical knowledge – how to use our products safely and minimize environmental impacts – as well as to engage and influence people more effectively to change behaviors.

Protecting crops efficiently and safely

The benefit for customers comes not only from using our products safely, but also from using no more than is necessary, so that they minimize environmental impact and maximize their return on investment.

In China, Syngenta has long been an industry leader in safe-use training. We work with many partners including national and local government bodies, such as the National Agricultural Technology Extension and Service Center, with whom we have had joint programs in all 31 mainland provinces since 2000. Training sessions cover both safe use and new application technology, pollinator safety, resistance management and support for the government's Pesticide Zero Growth strategy, which promotes optimal application to increase effectiveness without increasing volumes.

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More than just training

Training is only one aspect of our approach to stewardship. We are also developing digital tools to help growers identify the right – and wrong – weather or groundwater conditions for using particular products. We aim to maximize the clarity of labeling, for example, to communicate effectively with illiterate users. In Bangladesh, we have introduced and monitored the success of using life-size photo posters to promote recognition and understanding of label guidance as well as pictograms on appropriate personal protective equipment.

We have also been partnering with equipment manufacturers on enhancements to product design, handling and training. For example, in LATAM we have helped aerial spraying equipment manufacturers to train pilots more effectively in optimizing speed, height and wind conditions for safer spraying. We also work with equipment manufacturers on more secure ways to transfer product from containers to application equipment.

In association with the industry association CropLife, we have also been running programs to make personal protective equipment more widely available in India.

Making the news in India

Communication of safe-use principles is challenged by low literacy levels and the remoteness of many farming communities in India. As one of many initiatives to broaden awareness, we introduced the WeCare stewardship campaign, based in five cities across five states. This included programs to teach basic hygiene and stewardship in schools, demonstrations of safe-use and good agricultural practices on Syngenta reference farms, classroom sessions for growers on application technology, and pre-season maintenance camps to help growers calibrate and repair their application equipment. The campaign reached over 5,000 young people, 2,000 growers and a broader public through extensive national media coverage.

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Strive for fair labor conditions throughout our entire supply chain network

We're on track to reach our 100 percent target – and to be first in our industry with global Fair Labor Association accreditation

UN Sustainable Development Goals 2, 8, 17

Progress and key achievements

- → On track to have 100 percent of our seed production farms included in our Fair Labor Program
- → 96 percent of flowers farms now have GLOBALG.A.P. certification, 44 percent with G.R.A.S.P. assessments
- → 94 percent of chemical suppliers covered by our Supplier Sustainability Program

2018 progress: target nearly achieved

We are committed to ensuring fair labor conditions across our supply chain, and we recognize our responsibility to ensure suppliers meet the highest ethical standards. In 2018, we made strong progress towards our targets in the seed, flowers and chemical supply chains.

Suppliers included in sustainability and fair labor $programs^1\,\%$

99.6%

2020	100.0
2018	99.6
2017	86.0
2016	82.0

1 The seed supply chain represents about 98 percent of the suppliers targeted by our sustainability and fair labor programs



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Fair labor on seed supply farms

Our seed supply chain poses particular challenges. Comprising some 36,000 farms in 32 countries, it represents about 98 percent of the suppliers targeted by our sustainability and fair labor programs. Since 2004, we have partnered with the Fair Labor Association (FLA) to develop and roll out our Fair Labor Program tailored specifically for this complex supply chain. It sets and monitors labor rights standards in areas such as job contracts and compensation, safe and just working conditions, and dignity and respect.

Fair Labor Program coverage of our seed supply farms reached 99.9 percent in 2018 (2017: 86 percent). We completed coverage in a further nine countries during the year, including Canada, France and the US. This leaves only three countries to be added – vegetable seed farms in Honduras, Guatemala and Peru – and by mid-2019 we will have full coverage of all our seed-producing countries. The acquisition of Nidera[™] Seeds in 2018 brought us additional corn and soybean seed supply farms, mostly in Brazil but also in Argentina. Integration of these into the Fair Labor Program began in 2018 and will be complete in 2019.

Seeking global recognition

In 2015, the FLA gave us accreditation in India. We were the first agricultural company to earn this status, which confirms that a company's systems and procedures have been shown to uphold fair labor standards successfully throughout its supply chain. Since then, we have been working to achieve the agricultural sector's first global accreditation. After considerable work in 2018, we hope to receive this in 2019.

Addressing challenges effectively

In India, we have been a prime mover in addressing farms' widespread noncompliance with minimum wage standards. This requires an industry-wide approach. In consultation with our major competitors, we have drawn-up safeguards, so that prices paid for crops reflect applicable minimum wage levels, and new contract and payment structures are designed to ensure that payments made to farmers actually reach farm workers. In many countries, migrant workers are especially vulnerable to exploitation on farms. We take appropriate action whenever we encounter such cases. In Thailand, there has been particular concern over the treatment of migrants from Myanmar. In 2018, we asked the FLA to help us investigate the extent of the problem in our farm network. This has enabled us to work with local NGOs on remedial action, including improving accommodation and working conditions, as well as raising awareness among employers about fair labor practices.

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Transparent, independent audits

The FLA publishes its audit findings with all remediation plans and reports on progress against them

Read more on www.fairlabor.org/affiliate/syngenta

Digitizing audits

Every year, we collect and manage data from thousands of seed supply farm audits. Over the years, different countries have developed their own procedures. We have now developed a digital tool that ensures we apply consistent processes everywhere. The new system enables us to plan and arrange farm inspection visits, collect audit data from them and collate it for each farm and crop, ensure full visibility of compliance, track our recommendations and actions, and monitor implementation of improvements. It is already adding rigor and transparency to the way we manage our Fair Labor Program, and it will enable us to see more clearly where to focus attention in future.

Flowers: Fairtrade status and a stronger G.R.A.S.P.

In our flowers business, we are aiming for all our own and third-party flowers farms to have GLOBALG.A.P. certification, covering worker well-being and production quality, with larger farms also meeting the G.R.A.S.P. standard for labor conditions. In 2018, we extended GLOBALG.A.P. certification to 96 percent of flowers farms (2017: 90 percent), with 44 percent also undergoing G.R.A.S.P. assessment (2016: 32 percent).

In June 2018, our Kenya cuttings farm achieved Fairtrade accreditation, our first accreditation under this scheme. Fairtrade recognizes decent working conditions, local sustainability and fair terms of trade, and, in addition, certified sales generate a Fairtrade Premium for workers to invest in community projects of their choice. For details, see case study on page 35.

A more rigorous view of process safety

We engage with our chemical suppliers to assess and drive improvement in their health, safety, environmental and social standards through our Supplier Sustainability Program. This consists of on-site audits by our own auditors, and audits or assessments conducted through the chemical industry's Together for Sustainability (TfS) initiative.

The program aims to assess suppliers' performance against our standards, identify potential gaps, and support suppliers in making the required improvements. We are now close to our goal of bringing all chemicals suppliers in material risk categories into the program. In 2018, we increased coverage to 94 percent of suppliers in these categories (2017: 90 percent) and broadened the program's reach to include formulation, fill and pack suppliers and packaging manufacturers.

Our focus is on helping suppliers to improve in the most critical areas, in particular process safety management. Our technology and sourcing managers visit suppliers' facilities to run on-site safety awareness training. Other initiatives, such as a three-day process safety workshop recently staged in India, help suppliers address process safety gaps in areas from risk assessment to emergency management.

Through the chemical industry's TfS initiative, we work collectively with other member companies to drive improvement in the sustainability of industry supply chains. Our membership gives us valuable access to pooled supplier data from audits and assessments covering all areas of sustainability.



See "Sustainable operations" on **pages 40–42**

Did you know?



More than one quarter of the world's working population is employed in agriculture

Source: International Labour Organization (ILO), 2018



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Case study

Fairtrade recognition for Kenya operation

Consumers are increasingly concerned about the ethics behind the products they buy. The Fairtrade program certifies that producers meet defined labor, sustainability and trading standards. We sought Fairtrade accreditation for our Kenya cuttings farm in response to growing value chain demand for cuttings and young plants with this globally recognized endorsement. As the farm already met the standards for GlobalG.A.P. certification and G.R.A.S.P. assessment, Fairtrade certification was the logical next step in supporting the local community and satisfying our customers' desire to offer the market ethical choices. As well as achieving accreditation for the cuttings farm, we also certified Syngenta Seeds in the Netherlands as a Fairtrade trader.

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Securing the long-term viability of our business means using resources with ever greater efficiency in all our operations. Greater efficiency also means actively reducing adverse impacts on climate, the environment and society.

Our Good Growth Plan defines ways in which we can help the agricultural industry increase efficiency and reduce adverse impact. We set targets and report our progress towards them; we also consider how these activities support the UN's Sustainable Development Goals (SDGs). In a similar way, we are assessing the impact of our own operations as a basis for clear progress measurement and reporting. For each focus area, we look at how we support specific SDGs as part of our contribution to leaving a better planet for future generations. The relevant SDGs are indicated in the following sections.

Our Sustainable Operations team works with colleagues in research and development and operations to ensure that sustainability considerations help to shape our future products and solutions. Examples include building lifecycle analyses, product safety and sustainability into our innovation processes.

Most of the impact of our operations comes from our supply chain, rather than the operations we own and manage ourselves. Managing Syngenta's impact effectively means working closely with our suppliers. To meet our own sustainability targets, we help them to achieve the same standards that we set for ourselves.

Our ambition to be the most collaborative and trusted team in agriculture depends on the actions and attitudes of every one of us. Our competitive strength comes from our people and their shared culture: we believe it's not just what we do that matters, but how we do it.

By fostering a culture of doing the right thing, we aim to manage risk and earn recognition as a trustworthy and collaborative partner at every level in the business chain – from suppliers and customers to NGOs, policymakers and society at large.











The Good Growth Plan

People

Our success depends on our people and the way they work together. In 2018, we made further significant progress in developing our leadership capability, employee engagement and collaborative culture.

UN Sustainable Development Goal 8

84% engaged

84 percent of our employees see themselves as highly engaged, in particular millennials

Developing our people and capabilities

Our competitive strength comes from our people, and in 2018 we introduced a new, more hands-on approach to managing their performance and development. Pause2Talk, our approach to ongoing dialogue, aims to ensure that every employee can discuss their contribution, engagement and growth with their manager throughout the year.

The renewed leadership and talent development program we launched in 2017 is investing \$30 million over five years in building the capabilities we need for the future. In 2018, we invested a total of \$6.5 million – significantly more than in 2017 (\$4.2 million), when the new program ran for less than the full year.

During 2018, we introduced our new people information platform that gives our line managers and employees greater access to their own data.

Engaging and rewarding our people

A key measure of employee engagement is our Pulse survey. A record 77 percent of employees - 21,000 people - chose to take part in 2018. The results indicated continuing high levels of engagement. Overall, 84 percent saw themselves as highly engaged, with particularly strong ratings from millennials. Nine out of 10 said they clearly understood their function's goals and objectives, and 92 percent agreed that ethics, safety and compliance are core to the way we work. We also identified areas for improvement, including encouraging more diversity, a greater focus on individual development planning and closer senior leader alignment - 'one team' to deliver the strategy.

During the year, we rolled out our refreshed cultural framework – our Backbone – setting out our values, goals and strategies. We incorporated this into employee and leadership training programs and continue to embed our values in everything we do.

Our peer-to-peer recognition program launched in September 2017, Val-You, enables people to celebrate and reward great work by colleagues. It is a global online platform that allows employees to thank colleagues at any level across the organization and award them points exchangeable for rewards. It has been well received, with 5,650 people expressing close to 38,000 recognitions in its first year. It is playing a useful part in supporting collaboration across teams and functions: 91 percent of people nominated someone outside their own team. Like many organizations, we use Yammer as an internal networking and collaboration tool. Following the largest-ever analysis of Yammer networks, Syngenta received a 2018 SWOOP Award as one of "the world's most collaborative companies". The awards were based on a study of more than 12 million interactions between over 1.4 million people worldwide.

Building diverse and successful teams

Total staff numbers remained flat at 27,732, as a 3.6 percent reduction driven by restructuring was offset by a similar increase from the acquisition of Nidera[™] Seeds. The voluntary attrition rate, excluding retirement and restructuring, rose to 5.8 percent (2017: 5.2 percent).



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People continued

Case study

Honors for women who are shaping our sustainable future

Overview

One of Syngenta's senior leaders, Tina Lawton, received the 2018 Leading Women Award from the World Business Council for Sustainable Development for her work as Regional Director in Asia Pacific. The award recognizes outstanding business leadership by women in companies working to contribute to the UN's Sustainable Development Goals. "As a female leader," she commented, "I'm proud that we've made a difference to girls and women in agriculture through training and stewardship."



Our employee survey tells us that in Syngenta male employees have higher levels of engagement than women, who constitute 30 percent of the workforce. We are working on addressing this, and on bringing more women into leadership roles. The proportion of women in senior management remained unchanged at 17 percent in 2018. However, the number of nationalities represented at these levels rose from 33 to 36, with increased representation from emerging markets.

We continue striving to increase diversity in our workforce and have appointed our first Global Head Diversity & Inclusion (D&I). The D&I team will be responsible for delivering our fiveyear D&I strategy, embedding leading-edge thinking and capabilities across Syngenta, strengthening external partnerships and raising our profile in this area. Increasing gender diversity and working to support millennials, particularly in Syngenta's emerging markets, will be priorities.

For the ninth year running, our employment policies and performance earned us external recognition in *Science* magazine's annual Top 20 Employers list. In 2018, our ranking remained unchanged at 12th.

People continued

Keeping our people safe

We aim to be an industry leader in health and safety. In 2018, we further reduced our illness and injury rate to 0.32 recordable incidents per 200,000 hours (2017: 0.37). But the number of motor vehicle incidents per million kilometers rose to 1.6 (2017: 1.3), and driving remains our principal employee risk category.

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0.32

Recordable illness and injury rate (IIR) per 200,000 hours¹

2018	0.32
2017	0.37
2016	0.39

1 According to US OSHA definition for injuries and illness

Sadly, there were three fatalities in 2018, all involving motor vehicles. Two involved directly-supervised sales contractors riding motorcycles in India and Indonesia. The third involved a Syngenta employee driving a car in Brazil. This prompted 'safety pause' events worldwide, where teams reflected on practical steps towards our Goal Zero vision of zero harm to people and zero safety incidents. We have now made safety and ethics 'pauses' an integral part of team meetings.



See "Business integrity" on **pages 43–45** We continue to implement satellite tracking telematics for our fleet vehicles, enabling proactive assessment of risks to support preventive and remedial action. The program now covers the US, four countries in LATAM, including Brazil, 10 in EAME and two in APAC, including India.

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Integration of our fleet management under one dedicated service team, begun in 2016, has also enabled development and implementation of a wider driver safety program embracing vehicle safety technology, driver training and risk management.

To improve health, safety and environmental (HSE) performance, we are empowering and equipping leaders to take ownership of HSE in their areas of responsibility, making it part of everyday business. We are backing this approach with training and new tools, including our new HSE Management System, and will complete roll out by the end of 2019.

In 2018, 126 of our production and research and development sites across all regions reported a year without a single recordable incident. This was six more than the total of incident-free sites in 2017. In APAC, our Karachi site won the Annual Environment Excellence Award organized by the National Forum for Environment & Health. And in EAME, our Turkish driving safety campaign proved so successful that it was taken up by local news media.

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In LATAM, we focused all our commercial operations on safety at the annual sales conference, launched a behavior-based safety program in our Flowers business, and undertook process risk assessments at all seeds processing and crop protection finished product processing sites. In North America, Syngenta was named by Healthiest Employers as one of the '100 healthiest workplaces in America'. And among many US sites recognized for their safety performance, our Greensboro plant and Research Triangle Park R&D center both received Safety Excellence Awards from the North Carolina Department of Labor.

Safety shares

Corporate information

Regularly sharing real-life stories helps employees take responsibility for being safer







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Sustainable operations

We are continually improving the efficiency of our operations, while always seeking to reduce any adverse impacts. Increasingly, the long-term sustainability of our business also relies on engaging our supply chain in these efforts.

UN Sustainable Development Goals 3, 6, 8, 12, 13, 17

What makes a sustainable business?

We have a vital part to play in making agriculture more sustainable. If we want to go on making that contribution over the long term, we must ensure that Syngenta is itself sustainable: that we run a viable, efficient business; that we minimize its adverse impacts and that we earn society's continuing support for our work.

In 2018, our newly-formed Sustainable Operations team worked on developing detailed sustainability KPIs and goals for our business. Although the team's primary focus is on improving our environmental performance, we know from experience to date that attention to sustainability delivers far-reaching benefits across the organization. These include greater operational efficiency, lower costs, better risk management, safer and healthier working conditions, a stronger reputation and enhanced employee engagement.

The team is helping colleagues in research and development to ensure that sustainability considerations help to shape our future products and solutions. This work includes building lifecycle analyses for product safety and sustainability into our innovation processes.

Suppliers' impact outweighs our own

In all the key areas identified by our Sustainable Operations team, most of our impact comes from our supply chain rather than the operations we own and manage ourselves. Managing our impact effectively means working closely with our suppliers. To meet our own sustainability goals, we must help them to achieve the same standards that we set for ourselves.

CO₂ from operations: production growth drives higher energy use

We're working to reduce emissions from energy use in operations, supply chains and logistics. Collaboration with our supply chain is crucial to this, as suppliers account for nearly 90 percent of our overall footprint.

CO2e emissions intensity g/\$ sales

2018	117
2017	120
2016	121

117

In 2018, increased production of both crop protection products and seeds raised total CO₂ emissions by 5 percent to 1.59 million tonnes (2017: 1.52 million tonnes). CO₂ intensity further reduced by 2 percent to 117 g/\$sales (2017: 120 g/\$sales). Energy consumption rose by 6 percent in absolute terms and improved by 1 percent in intensity. Our efforts to increase energy efficiency and reduce carbon intensity in our operations have been focused on our top 10 manufacturing sites. These account for 80 percent of our direct energy use. Energy management plans were in operation in all these plants during 2018. Key projects included custom software installed at our Research Triangle Park facility in the US to control greenhouse lighting levels, which helped to achieve 20 percent savings in 2018. We also continued to develop and implement plans at smaller sites.

In logistics, we have continued to expand our baseline assessments across different modes of transport into countries across the globe. Where overland baselines have been established, such as in North America, Europe and parts of Latin America, we have worked with our logistics providers on route optimization. We have also been promoting modes of transport with lower CO₂ impacts. such as rail in preference to road. For sea transport, we are working with our logistics providers to transition away from high sulfur-content diesel. We are also working to ensure that air transport is used only as a last resort. Restrictions on business trips drove a 41 percent reduction in emissions from travel in 2018, although the impact on overall emissions was very modest.

Water: use and intensity improved

We are working to minimize water use on production sites and farms, whether operated by us or our suppliers. This will benefit communities and the environment – particularly in water-stressed areas – as well as our own operational efficiency. We are also improving the quality of waste water and cooling water.

All sustainable operations performance indicators reported are for our own operations only.

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Over the past couple of years, we have identified the most critical Syngenta and supplier-managed sites in water-stressed areas. We have been developing and introducing water conservation programs at Syngenta sites, and co-operating with thirdparty seeds suppliers to help them do the same on their farms. As a typical example, our major seeds research and production facility In Brazil, Überlandia, cut water use by 10 percent through improved water management and a switch to sub-surface drip irrigation.

Wator	usage	inton	eitv
water	usage	inten	ISILY

liters/\$ sales

2018	2.3
2017	2.5
2016	2.5

In 2018, our water use was down by 1 percent in absolute terms – due largely to a reduction in cooling water abstraction. Water efficiency gains helped to improve intensity to 2.3 liters/\$sales (2017: 2.5 liters/\$sales).

Industrial wastewater discharges remained unchanged in absolute terms, but intensity improved to 0.67 liters/\$sales (2017: 0.72 liters/\$sales).

10% less water

Sub-surface drip irrigation helped reduce water use at our Ûberlandia site in Brazil by 10 percent

Waste: hazardous waste volumes up, but intensity reduced

In partnership with our supply chain, we aim to optimize the use of natural resources, work towards zero waste generation, and support transition to a circular economy – for example, by building on the early success of container take-back initiatives.

Hazardous waste intensity g/\$ sales

	2018	14.0
2.3	2017	14.3
	2016	15.2
2.3		

In 2018, higher production levels increased hazardous waste generation at Syngenta sites by 4 percent to 189,000 tonnes – of which about 45 percent was recycled or reused. Hazardous waste intensity improved by 2 percent to 14.0 g/\$sales (2017: 14.3 g/\$sales).

The amounts of non-hazardous waste generated in our operations also increased in 2018. Contributing factors included increased seeds production and debris created by construction and reconstruction work following hurricane damage at sites in the US.

Our strategy for continuing waste reduction is based on considering whole-lifecycle use of water and materials from the product development stage onwards. In this way, we can design efficiencies in at every possible stage. We also have an ongoing commitment to minimize packaging – where this can be done safely – and to introduce circulareconomy initiatives such as product and packaging take-back schemes. The case study (right) highlights one such scheme in Brazil – and there are other examples in Australia, Canada, France and Spain.

Case study

14.0

Circular economy: Brazil shows how it's done

Brazil's agricultural sector is a major user of modern technology to protect its crops. As a result, it has a lot of empty crop protection packaging to dispose of – around 45,000 tonnes a year, mostly plastic. But very little of that goes to waste: today, 90 percent is recycled. Syngenta is a key participant in the Campo Limpo (Clean Field) program, which collects and processes cardboard, metal and plastic containers – supported by legislation that requires farmers to return them.



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Leading by example

By introducing biodiversity and soil health initiatives in our seeds supply chain, we can demonstrate how such investments are economically justified

Air quality: slight reduction in emissions intensity

We're striving to improve air quality by reducing hazardous air emissions, including particulates and ground-level ozone, in our operations and supply chains. This includes emissions from our seeds operations and diesel use in distribution and supply chain logistics. Energy sourcing, particularly in countries such as China with a high proportion of coal-fired power generation, will be a major factor.

In 2018, air emissions (other than CO₂) totaled 900 tonnes (2017: 884 tonnes). While this was a 2 percent increase in absolute terms, intensity was down by 5 percent. The great majority of these emissions were nitrous oxides (NO_x) or non-halogenated volatile organic compounds (VOCs), and the slight absolute increase was driven by NO_x, particulates and SO₂ from increased fuel consumption. A 59 percent increase in the figure for halogenated VOCs was due to better measurement rather than increased activity.

Other air emissions intensity g/\$ sales

2018	0.067
2017	0.070
2016	0.071

Biodiversity and soil health: demonstrating the economic benefits

Our Good Growth Plan initiatives on biodiversity and soil health are building an increasingly strong evidence base to show that farmers' investment in these areas is fully iustified in economic terms as well as in the social and environmental returns.



See "Rescue more farmland" and "Help biodiversity flourish" on pages 23-27

It therefore makes sense for the farms in our seeds supply chain to invest in these areas. and we want them to be an example to all our customers of the benefits to be gained by minimizing soil erosion and enhancing biodiversity. Many of our seed supply farms have, for example, active soil conservation programs: so far, these account for about 40 percent of total acreage. We intend to publish biodiversity and soil conservation targets for our seed farms in 2019, and we will report annually on progress.

People and health, safety and environment: taking a broader, deeper view

In line with our Good Growth Plan commitment, we aim to ensure fair labor conditions - including health and safety standards - throughout our Seeds and Crop Protection supply chain networks.



We are members of Together for Sustainability, a non-profit association that aims to drive improvement in social and environmental standards within the chemical industry through global audit and training programs. In 2018, the association's achievements were recognized with an award from the Chartered Institute of Procurement & Supply, which praised its "clear results and engagement with the supply chain".

In 2018, we extended the scope of our supplier sustainability program to include formulation, fill and pack contractors and packaging manufacturers, and we have started to work with waste management contractors. This will create new opportunities to engage with them on sustainability risks and opportunities.

In China, the introduction of increasingly stringent regulations and enforcement has impacted operations at chemical plants across the country. However, the relatively limited impact on Syngenta's supply chain indicates the effectiveness of our supplier improvement and compliance programs over the past 10 vears.

In addition to our audit programs, we are now broadening our engagement with chemical suppliers to focus on improving their carbon, water and waste impacts.

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Business integrity

Integrity is crucial to growing a sustainably successful business. By fostering a culture of doing the right thing, we aim to manage risk and earn recognition as a trustworthy and collaborative partner at every level in the business chain. We strive to preserve the security and integrity of our organization, operations and products, and to engage actively with the communities in which we operate, building mutual understanding and benefit.

UN Sustainable Development Goals 1, 8, 16, 17

Building the most collaborative and trusted team in agriculture

Farmers, research bodies, governments and other organizations want to collaborate with companies whose leaders and employees have a reputation for working ethically.

We aim to be the most collaborative and trusted team in agriculture, and this depends on every one of us. Trust helps us build the long-term partnerships we need to achieve our goals. We earn trust when our leaders and employees live by our values, work transparently and hold one another accountable to keep our commitments to growers and the planet.

This culture is led from the top and underpinned by a strong compliance function. Our Ethics and Compliance Board, formed in 2018, comprises the Chief Financial Officer, Group General Counsel, Head Internal Audit and Financial Compliance, and Head Group Compliance and Risk. This Board is primarily responsible for setting policies and standards, deciding on material non-compliance issues and resolving stubborn or systemic issues. In recent years, we have been devolving compliance responsibility deeper into the organization to stimulate awareness and attention wherever ethical issues may arise. In 2018, we announced that accountability for risk, financial and ethical compliance would rest with line managers in each of our geographies at region, territory, country and site level.

As well as what we do, the way we do it is important: "How matters" is one of our values. To help line managers – and all employees – address compliance in the right way, we have supplemented our Code of Conduct with a new series of How Matters guides. These provide simple do's and don'ts for issues such as managing conflicts, giving and receiving gifts, and workplace diversity.

We are building a culture where both ethics and safety are highly and visibly valued. Our Senior Executive Team has asked managers to start all team meetings and departmental town hall sessions with a fiveminute 'pause' to reflect on a topical health, safety, environmental or ethical issue. All levels of managers are actively participating and support materials are available on our intranet. Managers throughout the organization continue to lead dedicated sessions to discuss relevant compliance topics with their teams. For these sessions in 2018, teams were asked to discuss a real-life scenario, consider the ethical or safety implications and determine the best approach to tackle compliance dilemmas. We reached deeper into the organization by adding a further layer of management to those already responsible for leading sessions with their teams. This increased the number of managers charged with leading sessions by 42 percent to 3,208 (2017: 2,263).

These regular sessions encourage employees to raise concerns to their managers or through our confidential compliance helpline. Fresh promotion for the helpline in 2018 included articles and an animation on our intranet. Together with employees' increasing confidence in the process, this prompted an increase in cases raised to 299 (2017: 215).

Compliance cases reported

299

2018	299
2017	215
2016	214





How matters

We are devolving compliance responsibility deeper into the organization to stimulate awareness and promote ethical behaviors

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Overview

Fake products

Counterfeits of our products can harm users, the public and the environment

To enable greater transparency, we developed a compliance dashboard sharing data across Syngenta, making the state of compliance visible throughout the organization. This was launched in 2018 and dashboards are now published regularly across the business.

We expect our suppliers to meet the standards set out in our Code of Conduct – as well as relevant external regulations on issues such as health and safety, the environment, fair labor practices and animal welfare – and we monitor their compliance. In 2018, as part of the appointment process, we upgraded our process of screening third-party service providers for compliance risks.

Protecting our assets: human, tangible and intangible

Our security team works to detect, deter and address criminal risks to Syngenta people, as well as our tangible and intangible assets worldwide.

The security of our people is our foremost priority. To safeguard employees traveling on business, we provide pre-departure advice. Continuous worldwide monitoring of risks such as terrorist attacks or earthquakes also means that, in an emergency, they can be quickly contacted, alerted and given assistance if necessary. There were 69 such incidents in 2018. All our sites classified as risk-relevant are covered by our Security 360° program to assess risks and take appropriate measures to protect people and assets. In 2018, this program supported 131 sites (2017: 129).

Our global Security Operation Center is making good progress in detecting potential cybercrime activities, enabling us to address identified issues swiftly and act to prevent recurrences of malicious activity. The digitalization of agriculture is presenting new opportunities for criminals to scam Syngenta customers, for example through phishing and fake apps that generate orders for counterfeit products. In 2018, we detected and took down over 80 such apps.

Counterfeits of our products can harm users, the public, and the environment – and also our reputation. Our product security program focuses on targeting criminals at the source of the largest illegal activities. This strategy is increasingly successful: in 2018, it resulted in the seizure of 1,657 tonnes (2017: 541 tonnes) of illicit crop protection products and 196 tonnes (2017: 93 tonnes) of illicit seeds product. This sharp uplift was driven largely by progress in two key areas of our strategy: engagement and enforcement. We stepped-up the engagement of Syngenta sales and advisory teams, training and encouraging them to look out for suspicious activity on farms and online. And we have continued to strengthen our relationships with law enforcement agencies: at every level from local authorities to Interpol, they are recognizing Syngenta as a valuable partner and source of intelligence, data and evidence. This strongly supports their own roles in protecting public safety and the environment, as well as fighting crime.

Earning the support of our neighbors

We recognize that we have a part to play in community life. By actively engaging with our neighbors, we can contribute to local needs and build mutual understanding and trust.

This activity takes many different forms. Common themes include contributing to livelihoods through employment or training and education, and working to improve local environments by ensuring access to safe and clean water or by improving habitats and land management. Recent examples include building sanitation facilities in an Indonesian elementary school, raising awareness about sustainable agriculture in Brazilian schools, working with United Way to help the underprivileged in our communities in the US, and sponsoring sport events and conducting educational programs in Ukraine.

We support employees' own humanitarian fundraising through local matching programs and donations. In 2018, these focused on providing natural disaster relief in Asia and the US.

onto

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Corporate community investment \$m

2018	24
2017	23
2016	24

Overview

Each year we report our total "corporate community investment". This was \$24 million in 2018 (2017: \$23 million). In addition to this financial investment, we add further value by sharing our practical skills and expertise – for example in improving farming practices, keeping communities and schools free from disease-spreading insects, and managing waste.

In 2014, we introduced a Community Engagement Policy to formalize standards and expectations globally. Our activities have continued to develop since then; we are currently conducting a review to understand common themes, future focus and standardize our approach, and take our efforts to the next level.

Syngenta Foundation for Sustainable Agriculture

The Syngenta Foundation (SFSA) improves the livelihoods of smallholders in Africa and Asia. It helps increase farmers' income by improving their harvests and links to markets. SFSA works with numerous partners across three areas: access to seed, insurance and agri-services. Syngenta provides core funding, and where appropriate is a partner in initiatives. SFSA makes technology from many sources available to smallholders. It also scales up its own innovations through commercial and other organizations.

In 2018, SFSA opened offices in Nigeria and China, and began an international program to improve soil health.

Further milestones are described in the report on www.syngentafoundation.org

Case study

Better water, better life

It's not only crops that need water. In Rajasthan, India, 90 percent of villages rely on ground water – which can be virtually undrinkable. The water in Toliysar, a community of over 3,000 people, is laden with salt, waterborne disease bacteria and hazardous concentrations of fluoride. With our local partner, Waterlife India, we've set up a filtration plant to supply safe, clean water. The result: not only better health, but also greater economic well-being – through lower medical expenses, fewer days of education missed and fewer earnings lost.



Community life

By actively engaging with our neighbors, we can contribute to local needs and build mutual understanding and trust Our business model

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Board of Directors at December 31, 2018

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Frank Ning Chairman of the Board Non-executive Director Born: 1958 Nationality: Chinese Initial appointment: 2018

Professional background

Frank Ning was appointed as Chairman of China National Chemical Corporation Limited (ChemChina) in 2018. He has also served as Chairman of the Sinochem Group Co., Ltd. since 2015. Prior to that, Frank Ning was Chairman of COFCO Corporation (COFCO) from 2004 to 2015 and Vice Chairman and President of China Resources (Holdings) Co., Ltd. from 1998 to 2004. He also worked at China Resources in top management positions for 18 years. In addition to his functions in Syngenta, Frank Ning holds the following board memberships:

- → Listed companies: Chairman of Far East Horizon Ltd., Chairman of China Jinmao Holdings Group Ltd., Chairman of Sinochem Hong Kong (Group) Co., Ltd.
- → Non-listed companies: Chairman of Sinochem Group Co., Ltd., Chairman of China National Chemical Corporation Ltd.

Frank Ning ranks among China's most influential business leaders and is Co-chair of APEC Business Advisory Council (ABAC), Chairman of APEC China Business Council, and an Executive Director of the International Chamber of Commerce (ICC).

Frank Ning earned an MBA Degree from the Business School of the University of Pittsburgh in the United States and a Bachelor's Degree in Economics from Shangdong University in China. He is a certified Senior International Business Engineer.

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Jüra Witmer

Non-executive Director and Lead Independent Director

Chairperson of the Committee of Independent Directors and member of the Compensation Committee

Born: 1948 Nationality: Swiss Initial appointment: 2006

Professional background

Jürg Witmer joined Hoffmann-La Roche in Basel in 1978 and subsequently held a number of positions including Legal Counsel, Assistant to the CEO, General Manager and China Project Manager of Roche Far East based in Hong Kong, Head of Corporate Communications and Public Affairs at Roche headquarters in Basel, Switzerland, and General Manager of Roche Austria. From 1999 to 2005, he acted as Chief Executive Officer and from 2005 to 2017 as Chairman of the Givaudan Group in Vernier/Geneva. From 2008 to 2012, he was also Chairman of Clariant AG, Basel. Apart from his functions in Syngenta, Jüra Witmer currently holds the following board membership:

→ Non-listed companies: Non-executive Director of A. Menarini IFR Florence, Italy. and Chairman of Montcaud Holding SA. Geneva, Switzerland.

He holds a Doctorate in Law from the University of Zurich, as well as a Degree in International Studies from the Graduate Institute of the University of Geneva.



Gunnar Brock

Non-executive Director and Independent Director

Chairperson of the Audit Committee and member of the Committee of Independent Directors

Born: 1950 Nationality: Swedish Initial appointment: 2012

Professional background

Gunnar Brock worked for the Tetra Pak Group for many years, with spells in Asia, Australia and Europe, returning – after a period as President and Chief Executive Officer of Alfa Laval – to become President and Chief Executive Officer of the Tetra Pak Group, headquartered in Switzerland. From 2002 to 2009, he served as President and Chief Executive Officer of the Atlas Copco Group. Apart from his functions in Syngenta, Gunnar Brock currently holds the following board memberships:

- → Listed companies: Non-executive Director of Investor AB
- → Non-listed companies: Chairman of Mölnlycke Health Care and nonexecutive Director of Patricia Industries (both 100 percent affiliates of Investor AB), and Chairman of Stena AB.

He holds an MBA from the Stockholm School of Economics.



Carl M. Casale

Non-executive Director and Independent Director

Member of the Audit Committee and the **Committee of Independent Directors**

Born: 1961 Nationality: American Initial appointment: 2018

Professional background

Carl Casale spent twenty-six years working for Monsanto Company, starting as a sales representative in 1984 and after several sales, marketing, business development, and business leadership roles concluded his tenure as Chief Financial Officer. In 2011, he left Monsanto to become CEO of CHS, Inc. which is the largest farmer owned cooperative in the United States and a Fortune 100 Company. Carl Casale is a Senior Agricultural Partner at Ospraie Management, LLC which is engaged in ag tech venture capital and private equity investing. He is also a co-owner with his wife Kim of Casale AG, LLC which is a commercial blueberry farming operation in Oregon.

He holds a Bachelor's Degree in Agricultural Economics from Oregon State University and an Executive MBA from the Olin School of Business at Washington University in Saint Louis, Missouri,



Honabo Chen

Non-executive Director

Born: 1973 Nationality: Chinese Initial appointment: 2017

Professional background

Hongbo Chen is Executive Director of China National Agrochemical Company Limited (CNAC) since 2017.

After joining CNAC in 2005, he held various senior positions, including Deputy Secretary of Communist Party of China, Assistant President and Chief Strategy Officer (2014–2017), Assistant President and Chief Strategy Officer (2011-2014), and Assistant President and Director of the Planning Department (2008-2011), Director of the Planning Department (2005-2008). From 2000 to 2005, he was Senior Engineer and Project Manager at the China National Petroleum and Chemical Planning Institute, From 1998 to 2000, he worked at the Planning Department of China National Petroleum Administration Authority. From 1994 to 1998, he worked at the Chinese Ministry of Chemical Industries, holding positions in the Planning Department and the Planning Institute.

He holds a Bachelor's Degree in Fine Chemicals and Engineering Management from Tianiin University and an MBA from Tsinghua University in China.



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Board of Directors at December 31, 2018 continued

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Olivier T. de Clermont-Tonnerre

Non-executive Director Chairperson of the Compensation Committee

Born: 1951 Nationality: French Initial appointment: 2017

Professional background

Olivier T. de Clermont-Tonnerre is Chief Strategy and Corporate Development Officer at China National Bluestar (Bluestar), a subsidiary of China National Chemical Corporation (ChemChina). Previously, he was Chief Executive Officer of Bluestar Silicones from 2007 to 2011. Before joining Bluestar, he was (2001–2007) a member of the Rhodia Executive Committee and CEO of Rhodia Silcea grouping three Rhodia Enterprises (Silicones, Silica and Rare-Earth). Most of his early professional experience has been in the Rhône-Poulenc Group, based in France or in the United States, among others as CEO Surfactant and Specialties, CEO Food Additives and member of the Rhône-Poulenc Inc. Operational and M&A Committees. Apart from his functions in Syngenta, Olivier T. de Clermont-Tonnerre currently holds the following board memberships:

- → Listed companies: Elkem (ChemChina Group's majority shareholding)
- → Non-listed companies: Member of the Board of Directors of Bluestar and its subsidiary REC Solar (ChemChina Group).

He is also a member of the Board of Directors of the Nouvel Institut Franco-Chinois de Lyon.

He holds a Degree in Chemical Engineering from Toulouse University, a License in Economics from Paris-Nanterre University and an MBA from INSEAD in Fontainebleau.



Paul Fribourg

Non-executive Director Member of the Compensation Committee Born: 1954 Nationality: American Initial appointment: 2018

Professional background

Paul Fribourg is Chairman and Chief Executive Officer of Continental Grain Company. He has held his current role at Continental Grain since 1997. Prior to that, he held senior management, commercial and commodity trading roles with the company in the United States and Europe beginning in 1976. Apart from his functions in Syngenta, Paul Fribourg currently holds the following board memberships:

- → Listed companies: The Estée Lauder Companies, Inc., Restaurant Brands International, Inc., Bunge Limited and Loews Corporation.
- → Non-listed companies: Continental Grain Company, Wayne Farms LLC and Restaurant Technologies.

He holds a Bachelor's Degree from Amherst College and is a graduate of Harvard Business School's Advanced Management Program.



J. Erik Fyrwald

Chief Executive Officer Executive Director Chairman of the Syngenta Foundation for Sustainable Agriculture Born: 1959 Nationality: American

Nationality: American Initial appointment: 2018

Professional background

J. Erik Fvrwald was previously President and Chief Executive Officer of Univar, a leading distributor of chemistry and related products and services (2012-2016); President of Ecolab, a cleaning and sanitation, water treatment, and oil and gas products and services provider (2011-2012); and Chairman, President and Chief Executive Officer of Nalco, a water treatment and oil and gas products and services company (2008-2011). He was Group Vice President of the Agriculture and Nutrition Division of the DuPont Company (2003-2008). He currently serves on the Board of Directors for CropLife International and the Swiss-American Chamber of Commerce. Apart from his functions in Syngenta, J. Erik Fyrwald currently holds the following board memberships:

→ Listed companies: Bunge Limited, Eli Lilly and Company.

He holds a Bachelor's Degree in Chemical Engineering from the University of Delaware and completed the Advanced Management Program at Harvard Business School.



Dieter Gericke Non-executive Director

Member of the Audit Committee Born: 1965

Nationality: Swiss Initial appointment: 2017

Professional background

Dieter Gericke is a partner at the law firm Homburger AG in Zurich since 2004, where he heads the Corporate/M&A practice team as well as the China Focus Group. Before joining Homburger in 2000, he worked as a foreign associate with Hale and Dorr LLP in Boston. Previously, he held positions as a law clerk at the district court of Meilen (Zurich) and in another Zurich law firm. Apart from his functions in Syngenta, Dieter Gericke currently holds the following board memberships:

→ Non-listed companies: Member of the Board of Directors of Homburger AG, Tigen Pharma SA, and Gericke Holding AG.

He is a member of the International Bar Association's Corporate/M&A and Securities Law Committees.

He obtained a Law Degree and a Doctorate from the University of Zurich and an LL.M. from Harvard Law School. He is an attorneyat-law admitted to all courts of Switzerland.



Sophie Kornowski

Non-executive Director and Independent Director

Member of the Compensation Committee and the Committee of Independent Directors

Born: 1963 Nationality: French Initial appointment: 2018

Professional background

Dr. Sophie Kornowski is currently senior Partner at Gurnet Point Capital, an investment fund based in Boston, Massachusetts, which is a wholly owned subsidiary of Waypoint Capital Group. In her role. Dr. Kornowski provides investment advisory services in the healthcare and lifescience sector. Waypoint Capital Group is the investment fund associated with the Bertarelli family. Dr. Kornowski previously served as Executive Vice President of Roche Partnering and was a member of the Roche Extended Corporate Executive Committee as well as a member of the Board of Chugai, Japan. Prior to that, she led the French affiliate of Roche in France for 5 years. Before joining Roche in 2007, she held several management positions at Merck & Co. (1996-2007), Sanofi Winthrop (1991–1996), and Abbott Diagnostics and Abbott Pharmaceutical Products (1985–1991). In addition to her functions in Syngenta, Dr. Kornowski holds the following board memberships:

→ Non-listed companies: Founder and Non-Executive Director of Même Cosmetics, France.

Dr. Kornowski is also a member of the Swiss Innovation Council and the Strategic Committee of the Genopole in France.

She holds a Doctorate in Pharmacy from the Faculty of Pharmacy Paris V, and an MBA in Marketing and Finance from the University of Chicago Booth, Graduate School of Business.

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Executive Team at December 31, 2018

Overview

J. Erik Fyrwald

Chief Executive Officer

Executive Director

Chairman of the Syngenta Foundation for Sustainable Agriculture

Born: 1959 Nationality: American Initial appointment: 2016

Professional background

J. Erik Fvrwald was previously President and Chief Executive Officer of Univar. a leading distributor of chemistry and related products and services (2012-2016); President of Ecolab. a cleaning and sanitation, water treatment, and oil and gas products and services provider (2011-2012); and Chairman. President and Chief Executive Officer of Nalco, a water treatment and oil and gas products and services company (2008-2011). He was Group Vice President of the Agriculture and Nutrition Division of the DuPont Company (2003-2008). He currently serves on the Board of Directors for CropLife International and the Swiss-American Chamber of Commerce. Apart from his functions in Syngenta, J. Erik Fyrwald currently holds the following board memberships:

→ Listed companies: Bunge Limited, Eli Lilly and Company.

He holds a Bachelor's Degree in Chemical Engineering from the University of Delaware and completed the Advanced Management Program at Harvard Business School.



Stephen Landsman Group General Counsel Born: 1959 Nationality: American Initial appointment: 2018

Professional background

Prior to his appointment as Group General Counsel, Stephen Landsman was Global Head of Mergers, Acquisitions and Integration at Syngenta (2017–2018). Before joining Syngenta, he was Executive Vice President, General Counsel and Corporate Secretary at Univar Inc. (2013–2017), and Vice President, General Counsel and Corporate Secretary at Nalco Company (2003–2013). Mr Landsman's previous positions in Nalco company were Deputy General Counsel and Division VP Mergers and Acquisitions (2000–2003), and Director of Acquisitions and Senior Attorney (1997–2000).

He holds a Juris Doctorate from the University of Illinois College of Law, an AB (Artium Baccalaureatus) Degree from the University of Illinois, and is a Certified Public Accountant.



Jonathan Parr

President Global Crop Protection and EAME, LATAM and APAC

Born: 1961 Nationality: British Initial appointment: 2015

Professional background

Prior to his current function as President Global Crop Protection and EAME. LATAM and APAC, Jonathan Parr was Chief Operating Officer (COO) EAME & Latin America (2015–2016). Before that, he was Head of Global Crops & Assets for Syngenta (2014), Regional Director for EAME (2009–2013), Head of Syngenta Flowers (2007–2008), Head of Marketing and Strategy (2004–2007), and European Manufacturing Manager (2000-2003). Before joining Syngenta, he worked for AstraZeneca as a Factory Manager (1998-2000), Global Product Manager Fundicides (1996–1998), and Supply Chain Project Manager (1994–1996). From 1987 to 1994, he held Project and Engineering Management functions at Imperial Chemical Industries (ICI). Apart from his function in Syngenta, Jonathan Parr holds no other mandates in the supreme executive bodies of listed or non-listed companies.

He is a Chartered Engineer and also holds a Bachelor's Degree with Honors in Civil Engineering from the University of Southampton as well as a Master's Degree in Management from the University of McGill, Canada, and a Diploma in International Management from the INSEAD Institute.

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Overview Executive Team at December 31, 2018 continued



Mark Patrick **Chief Financial Officer** Born: 1969 Nationality: British Initial appointment: 2016

Professional background

Prior to his appointment as Chief Financial Officer, Mark Patrick was Head Commercial Finance at Syngenta (2011–2016). Prior to that, he was Head Crop Protection Finance (2008-2011 and 2005-2006), Head Finance North America Crop Protection (2006–2008). Head Business Reporting (2003–2005), and APAC Regional Supply Finance Head Syngenta in Hong Kong. He joined AstraZeneca in 1993. Apart from his function in Syngenta, Mark Patrick holds no other mandates in the supreme executive bodies of listed or non-listed companies.

He is a Chartered Management Accountant and also holds an Honors Degree in Quantity Surveying and a Post Graduate Degree in Economics.



Laure Roberts Head Human Resources Born: 1963 Nationality: French Initial appointment: 2016

Professional background

Prior to her appointment as Head Human Resources, Laure Roberts was Head Global HR Business Partners (2013-2016) and Head Human Resources for the region EAME (2011-2013). Before joining Syngenta, she held a number of different HR leadership functions at Air Products and Chemicals. Inc., a worldwide industrial gases company where her last role was Vice President. Human Resources, Europe and Middle East (2004–2010). Laure Roberts started her career in 1988 with Valeo, a leading automotive supplier. Apart from her function in Syngenta, Laure Roberts holds no other mandates in the supreme executive bodies of listed or non-listed companies.

She holds a Master's Degree from the Ecole Supérieure de Commerce de Paris and an MBA from the University of Aston in Birmingham.



Jeff Rowe

President Global Seeds and North America and China

Born: 1973 Nationality: American Initial appointment: 2016

Professional background

Prior to his current function as President Global Seeds, North America and China, Jeff Rowe was Vice President, Strategic Services and Planning at DuPont Pioneer (2015–2016) and also sat on the company's Leadership Team (DPLT). Before, he was Regional Director for DuPont Pioneer Europe (2011–2015), Vice President Biotech Affairs and Regulatory (2008–2011), and Corporate Counsel (2001–2008). He started his career with Pioneer in 1995 in Supply Management. Apart from his function in Syngenta. Jeff Rowe holds no other mandates in the supreme executive bodies of listed or non-listed companies.

He has a Bachelor of Science in Agricultural Economics from the Iowa State University, a Juris Doctorate from Drake Law School, and a Global Executive MBA from the NYU Stern School of Business and the London School of Economics.

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Non-financial information

At Syngenta, non-financial information refers to quantitative and qualitative information on strategies, policies or activities pursued towards our business, environmental and social goals.

Sustainability

Sustainability is integral to our business. Our ambition is to play a vital role in the food chain to safely feed the world and take care of the planet. The Good Growth Plan sets specific, ambitious and measurable targets focused on boosting resource efficiency, rejuvenating ecosystems and strengthening rural communities. We are also committed to developing our people, reducing the environmental footprint of our operations and doing business responsibly.

Sustainability governance

In 2018, the appointment of the newly created role of Chief Sustainability Officer, reporting to the CEO, and the formation of the new Business Sustainability function brought a sharper focus to our sustainability work and supported our commitment to work more closely and transparently with governments, NGOs and society to find solutions we collectively need.

Stakeholder engagement

We regularly assess stakeholder concerns and expectations. In 2018, we undertook three months of consultation with stakeholders from around the world in an effort to build a shared vision for the future of sustainable agriculture. Through listening and dialogue, we aim to better understand the role we can play and the commitments needed from all sides to help make a shared vision reality.

Material topics

Our materiality analysis helps us identify where we can provide the most value, drive our strategy, allocate effort and resources and direct our external communication and reporting.



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As a consequence of the input received from the listening sessions as well as through our regular engagement channels with growers

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regular engagement channels with growers, employees, industry associations, NGOs, governments and investors, we have revised our materiality matrix.

Material topics are identified using three criteria:

- → Importance to Syngenta: Matters that present the greatest risk and opportunities for Syngenta's ability to create long-term value and achieve our ambition
- → Importance to stakeholders: Concerns and expectations frequently raised by stakeholders about our company, our industry, agriculture and food systems
- → Relevance to sustainable development: Level of significant impact on global sustainable growth determined using The Global Risks Report 2019, The Earth Security Report 2017 and the Food in the Anthropocene Report of the EAT-Lancet Commission¹

The most important issue identified in our materiality analysis is the global challenge of providing a growing population with healthy diets from sustainable food production. In particular, stakeholders want to know how Syngenta's innovations will help farmers produce safe and nutritious food, protect natural resources, such as biodiversity and soil, and mitigate and adapt to climate change.

Approach to non-financial reporting

The Non-financial performance summary on pages 52–55 presents data on our progress towards four goals:

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- → The Good Growth Plan: Help shape the future sustainability of agriculture, and deliver solutions that are better, more efficient and more beneficial to rural economies
- → People: Attract and retain talent while creating an environment that stimulates innovation and personal performance and development
- → Sustainable operations: Manage our environmental footprint and maintain the highest standards in our operations
- → Business integrity: Maintain the highest standards across our entire business and go beyond regulatory compliance, while benefiting the communities and economies wherever we operate

Our non-financial reporting covers the operations of Syngenta Group, including material interactions with selected third parties as reported in the Non-financial performance summary. Our non-financial reporting is guided by the Global Reporting Initiative principles, and the non-financial reporting period is October 1 to September 30.

Syngenta is a signatory to the United Nations Global Compact. Syngenta's Sustainable Business Report serves as our Communication on Progress (COP) in implementing the 10 principles.

Internal controls over non-financial reporting

Syngenta's internal controls over nonfinancial reporting were designed to provide assurance to Syngenta's Board of Directors and management regarding the reliability of non-financial reporting and the preparation and fair presentation of the information published in the Non-financial performance summary. All internal controls, no matter how well designed, have inherent limitations and therefore may not prevent or detect misstatements. In designing internal controls over non-financial reporting, Syngenta used the criteria established in COSO's Internal Control – Integrated Framework (2013).

Syngenta's Board of Directors and management are responsible for establishing and maintaining adequate internal controls over non-financial information. The information in the Non-financial performance summary was approved by the Board of Directors on February 14, 2019.

> Read more on www.cr.syngenta.com www.gri.syngenta.com www.questions.syngenta.com

> > 1 World Economic Forum, The Global Risks Report 2019, 14th Edition, p. 5; Earth Security Group, The Earth Security Report 2017, p. 6; The Lancet Commissions, Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems, 2019, p. 6, p. 27 and p. 33–39

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	Cumulative since			
Reporting period October 1 – September 30	baseline 2014	2018	2017	2016
Make crops more efficient ^{1,2}				
Total number of reference farms		1,443	1,459	1,039
Total number of benchmark farms		2,316	2,630	2,694
Land productivity increase on reference farms		13.0%	10.9%	1.2%
Land productivity increase on benchmark farms		7.0%	7.3%	-2.6%
Nutrient efficiency increase on reference farms		30.2%	20.3%	1.5%
Reference farms outperforming benchmark farms ³		64%	_	_
Pesticide field application efficiency increase on reference farms		24.7%	14.2%	-16.2%
Reference farms outperforming benchmark farms ³		38%	_	_
Greenhouse gas emission efficiency increase on reference farms ⁴		8.8%	14.0%	7.0%
Reference farms outperforming benchmark farms ³		69%	_	_
Rescue more farmland				
Hectares of benefited farmland (m)	10.8	3.4	3.1	1.9
Help biodiversity flourish				
Hectares of benefited farmland (m)	6.4	0.8	0.7	3.3
Empower smallholders				
Land productivity increase on smallholder		01.00/	01.00/	0.00/
reference farms ^{1,2}		21.9%	21.6%	8.0%
Land productivity increase on smallholder		0.001	E 40/	1.001
benchmark farms ^{1,2}		6.3%	5.1%	1.6%
Smallholders reached through training (m)		6.1	5.6	4.6
Smallholders reached through sales (m)		13.4	13.9	16.6

Reporting period October 1 – September 30	Cumulative since baseline 2014	2018	2017	2016
Help people stay safe				
People trained on safe use (m) ⁵	33.8	8.3	8.2	6.8
Countries with established Syngenta product toxicovigilance				
programs		100	100	100
Crop Protection sales represented		93%	94%	94%
Look after every worker				
Suppliers included in sustainability and fair labor programs ⁶		99.6%	86%	82%
Coverage of Syngenta Fair Labor Program				
Syngenta seed producing countries		91 %	68%	41%
Seed supply farms		99.9%	86%	82%
Of which: farms in Fair Labor Association (FLA)'s audit				
scope		100%	67%	62%
Of which: farms monitored ⁷		n/a	20%	18%
Coverage of Supplier Sustainability Program				
Chemical suppliers ⁸		94%	90%	67%
Formulation, fill and pack tollers ^{8,9}		86%	_	_
Packaging manufacturers ^{9,10}		50%	_	_
HSE audits at warehouse/logistics service providers		65	117	137
Commercial flowers farms with valid GlobalG.A.P. certification		96%	90%	73%
Commercial flowers farms with valid G.R.A.S.P. assessment		44%	32%	24%

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1 Reference farms were selected by Syngenta and are recommended to use Syngenta products and follow optimized protocols. Benchmark farms were randomly selected by a third-party research agency and represent grower practice. Reference and benchmark farms are grouped in clusters. A cluster presents homogeneous agro-climatic conditions and contains reference and/or benchmark farms with similar grower characteristics

2 Policy on land productivity and efficiency reporting was revised in 2017. Starting 2017, the aggregation of the farm data is aligned with harvest seasons to ensure more timely reporting of results. The latest available progress data is 2017 for clusters located in the Northern hemisphere and 2018 for clusters located in the Southern hemisphere. Evolutions are reported for clusters with an established baseline and at least one year of progress data. Figures represent global averages. Details on aggregation, calculation of evolutions and other adjustments can be found on www.data.syngenta.com

3 New KPIs introduced in 2018 to capture the performance of reference farms versus benchmark farms

4 Greenhouse gas emissions are calculated consistent with Cool Farm Tool methodology using available farm data and proxies where farm data was not available. For US farm data, calculation methodology is consistent with Field to Market: The Alliance for Sustainable Agriculture. Details on data inputs, methodology, assumptions and limitations can be found on www.data.syngenta.com

5 Includes smallholders reached through training reported under 'Empower smallholders'

6 The seed supply chain represents about 98 percent of the suppliers targeted by our sustainability and fair labor programs 7 The 2018 figure is not available due to the implementation of a new reporting tool

8 Includes only chemical suppliers or formulation, fill and pack tollers categorized as posing a high or medium sustainability risk 9 New KPIs introduced in 2018 to capture the ongoing inclusion of new types of suppliers in the Supplier Sustainability Program 10 Includes all packaging manufacturers independently of their level of sustainability risk



To find out more about our approach to open data or to access the files www.data.syngenta.com

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Reporting period October 1 – September 30	2018	2017	2016	Reporting period October 1 – September 30
Employment				Health, safety and well-being
Employees ¹	27,732	27,669	27,810	Recordable injury and illness rate (IIR
Europe, Africa and Middle East ²	11,690	12,372	12,429	Recordable injury rate per 200,000 h
North America	4,120	4,092	4,176	Europe, Africa and Middle East ²
Latin America ³	5,676	4,907	5,161	North America
Asia Pacific	6,246	6,298	6,044	Latin America
Part-time employees	912	927	919	Asia Pacific
Turnover rate ⁴	12.8%	11.3%	12.2%	Recordable occupational illness rate
of which: <35 years	33%	42%	38%	Europe, Africa and Middle East ²
35-50 years	41 %	43%	44%	North America
>50 years	26%	15%	18%	Latin America
Attrition rate⁵	5.8%	5.2%	6.0%	Asia Pacific
Senior managers	299	339	334	First aid cases
Europe, Africa and Middle East ²	55%	62%	61%	Recordable injuries
North America	24%	17%	18%	Bruise, strain, sprain and dislocat
Latin America	9%	11%	11%	Cut and abrasion
Asia Pacific	12%	10%	10%	Bone fracture
				Concussion and internal injury

Diversity			
Nationalities in senior management	36	33	34
Female employees	30%	30%	30%
Female employees in management roles	24%	23%	23%
Female employees in senior management	17%	17%	16%

Employee development			
Leadership and talent development investment (\$m)	6.5	4.2	3.7

1 Permanent full-time equivalent (FTE)

2 Includes headquarters (Switzerland)

3 The 2018 figure includes Nidera™ Seeds which was acquired in 2018

4 Includes voluntary and involuntary leavers and restructuring

5 Includes only voluntary leavers

6 According to US OSHA definition for injuries and illness

Health, safety and well-being			
Recordable injury and illness rate (IIR) per 200,000 hours ⁶	0.32	0.37	0.39
Recordable injury rate per 200,000 hours ⁶	0.29	0.34	0.33
Europe, Africa and Middle East ²	0.39	0.43	0.47
North America	0.54	0.64	0.72
Latin America	0.18	0.30	0.23
Asia Pacific	0.14	0.16	0.10
Recordable occupational illness rate per 200,000 hours ⁶	0.03	0.03	0.06
Europe, Africa and Middle East ²	0.01	0.02	0.03
North America	0.07	0.08	0.16
Latin America	0.03	0.04	0.10
Asia Pacific	0.02	0.00	0.04
First aid cases	378	382	387
Recordable injuries	123	151	152
Bruise, strain, sprain and dislocation	35%	36%	39%
Cut and abrasion	28%	25%	20%
Bone fracture	13%	15%	20%
Concussion and internal injury	5%	3%	4%
Multiple injuries	2%	6%	1%
Other	17%	15%	16%
Cases of recordable occupational illness	11	12	28
Cases of work-related stress	7	7	ç

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Reporting period October 1 – September 30

Water usage (million cubic meters)

Cooling (million cubic meters)

Water usage intensity (liters/\$sales)

Water

Our operations

Direct discharge of uncontaminated cooling water (million cubic meters)

2016

2.5

32.6

19.0

19.0

Non-financial performance

2017

2.5

31.7

19.1

2018

2.3

31.4

17.9

17.9

19.1

Non-financial performance summary continued
Sustainable operations
Departing paried October 1 Contember 20

Overview

Reporting period October 1 – September 30	2018	2017	2016
Energy			
Energy intensity (MJ/\$sales)	0.66	0.67	0.65
Energy (TJ)	8,966	8,484	8,341
Gas (TJ)	3,926	3,405	3,207
Electricity (TJ)	2,297	2,387	2,400
Steam (TJ)	1,318	1,450	1,503
Oil (TJ)	310	287	336
Other (TJ)	1,115	955	895

Greenhouse gases			
Total CO2e emissions intensity (g/\$sales)	117	120	121
Total CO2e emissions (000s tonnes)	1,585	1,515	1,551
Within direct control			
CO ₂ e emissions from own operations (000s tonnes)	521	443	445
CO ₂ emissions from company vehicles (000s tonnes)	68	70	71
Within indirect control			
CO2e emissions from purchased energy (000s tonnes)	330	353	381
CO ₂ emissions from business trips (000s tonnes)	27	46	43
CO ₂ emissions from distribution (000s tonnes)	639	603	611

Irrigation (million cubic meters)	5.3	4.9	6.5
Processing and washing (million cubic meters)	6.3	5.8	5.2
Product ingredient (million cubic meters)	0.2	0.2	0.2
Sewage and sanitary (million cubic meters)	0.9	1.0	0.9
Other (million cubic meters)	0.8	0.7	0.8
Origin of water			
Surface fresh water (million cubic meters)	19.7	21.3	22.6
Underground water (million cubic meters)	8.8	7.5	7.2
Drinking water from municipal network (million cubic meters)	2.8	2.8	2.7
Recovered rain water (million cubic meters)	0.1	0.1	0.1
Wastewater effluents			
Industrial wastewater discharge intensity (liters/\$sales)	0.67	0.72	0.79
Industrial wastewater discharge (million cubic meters)	9.1	9.1	10.1
Total organic carbon (TOC) (tonnes)	490	499	504
Chemical oxygen demand (COD) (tonnes)	1,441	1,522	1,556
Biological oxygen demand (BOD) (tonnes)	162	154	165
Total suspended solids (tonnes)	451	252	295
Soluble salts discharged (000s tonnes)	146	122	118

Other air emissions

Other air emissions intensity (g/\$sales)	0.067	0.070	0.071
Other air emissions (tonnes)	900	884	914
NO _x (tonnes)	440	410	402
Non-halogenated VOCs (tonnes)	276	322	354
Halogenated VOCs (tonnes)	27	17	17
Particulates (tonnes)	105	88	84
SO ₂ (tonnes)	38	32	42
NH ₃ (tonnes)	4	5	5
HCI (tonnes)	10	10	10

Syngenta	Overview

Non-financial performance summary continued

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Non-financial performance

Business integrity

Busiless integrity			
Reporting period October 1 – September 30	2018	2017	2016
Corporate conduct			
Compliance cases reported ¹	299	215	214
Leaders engaged in leader-led compliance sessions	3,208	2,263	1,741
Completion rate ²	22%	95%	95%
Security management			
Sites included in Syngenta Security 360° Program	131	129	122
Product Security cases	880	723	761
Suspect counterfeit Crop Protection product seized by authorities (tonnes)	1,657	541	326
Suspect counterfeit Seed product seized by authorities (tonnes)	196	93	615
Animal testing compliance			
Management system audits performed in contract laboratories	4	17	14
Management system non-compliances found	0	0	0
Biotechnology and regulatory compliance			
Employees completing field trial regulatory compliance training	1,140	1,426	1,378
Field trial locations planted under country regulatory compliance programs ³	434	299	307
Economic value shared Economic value shared (\$m)	16,298	12,095	12,350
Payments to suppliers	7,877	7,508	7,301
Employee wages and benefits	2,755	,	,
	2,755	3,099	2,801
Payments to governments (taxes) ⁴		241	400
Payments to providers of capital ⁵	4,819	593	1,263
Capital expenditure	655	631	561
Corporate community investment	24	23	24

1 Since 2018, the number of cases reported includes all cases managed by Group Compliance: cases reported through the compliance helpline, line management, directly to Group Compliance or other channels. In previous years, the value only included cases reported via the helpline

2 Period for completion was extended from 3 to 6 months and overran into 2019 reporting year

3 Represents all trial locations covered by country specific regulatory compliance programs whether they require a permit or not 4 Consists of income and other taxes paid, excluding VAT (included in Payments to suppliers) and employment-related taxes (included in Employee wages and benefits)

5 The increase in payments to providers of capital reflects the dividend paid to the ChemChina group in May 2018

Reporting period October 1 – September 30	2018	2017	2016
Waste			
Hazardous waste intensity (g/\$sales)	14.0	14.3	15.2
Hazardous waste (000s tonnes)	189	181	195
Recycled and re-used (000s tonnes)	87	85	88
Incinerated (000s tonnes)	86	81	83
Landfill (000s tonnes)	1	1	10
Other (000s tonnes)	15	14	14
Hazardous waste by type:			
Chemical	57%	58%	56%
Solvents	35%	36%	36%
Other	8%	6%	8%
Non-hazardous waste intensity (g/\$sales)	11.0	9.4	9.1
Non-hazardous waste (000s tonnes)	149	119	117
Recycled and re-used (000s tonnes)	118	87	87
Incinerated (000s tonnes)	6	4	5
Landfill (000s tonnes)	17	19	17
Other (000s tonnes)	8	9	8
Non-hazardous waste by type:			
Plant and seed waste from seed sites	68%	63%	58%
Inerts	7%	5%	9%
Packaging materials	4%	5%	5%
Household	4%	5%	5%
Other	17%	22%	23%

Environmental compliance

Significant unplanned releases¹

1 Releases that escape beyond the site boundary and cause either environmental impact and/or concern from neighbors and regulators

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For the business year 2018, Syngenta has published the Sustainable Business Report 2018 which includes information about our non-financial performance.

The Sustainable Business Report was originally published in English.

This publication is available on the Internet:

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Editorial completion: February 2019

Copywriting: KainesLang, Berwick-upon-Tweed, UK Design and production: Radley Yeldar, London, UK

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Syngenta supports the 10 principles of the United Nations Global Compact through an established commitment to sustainability and ongoing implementation of policies on human rights, fair labor, environmental protection and anti-corruption.



WE SUPPORT

Through The Good Growth Plan, Syngenta supports the United Nations Sustainable Development Goals (SDGs). Collectively, the Plan's six commitments contribute towards delivering the SDGs: all six commitments contribute directly to Goal 2 (zero hunger) and Goal 17 (partnerships for sustainability), as well as individually towards a number of other goals.

SUSTAINABLE G ALS

Read more on \mathcal{M} www.sustainabledevelopment.un.org

Bringing plant potential to life