Knowledge grows

Sustainable Business

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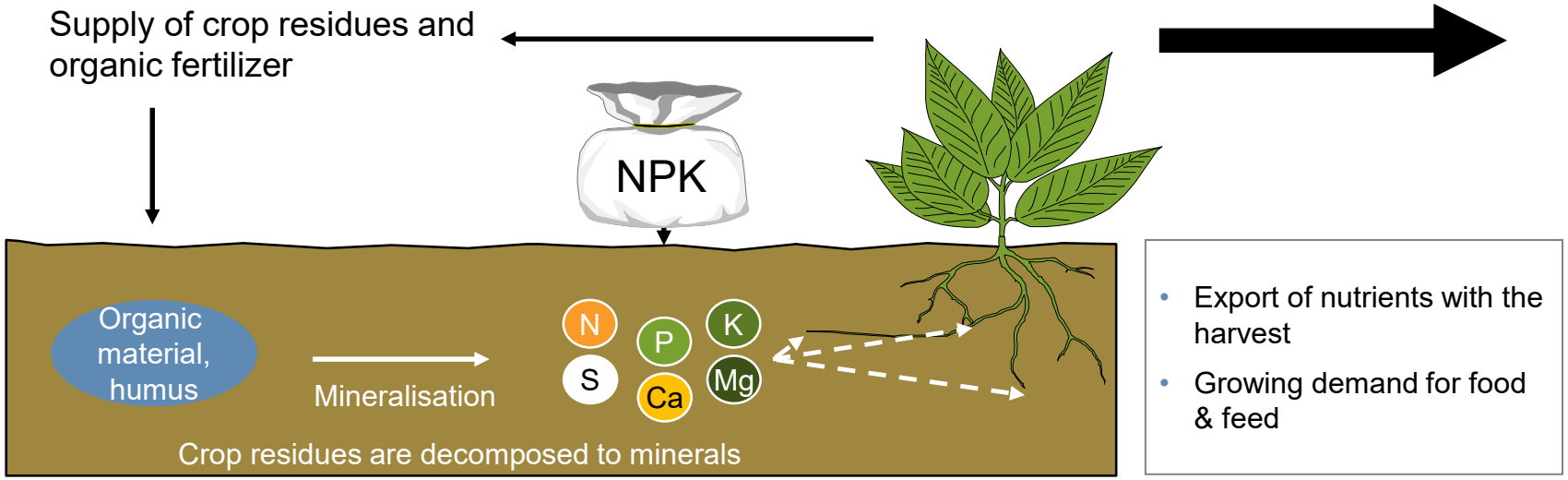
Introduction

Mineral fertilizers replace nutrients removed with the harvest

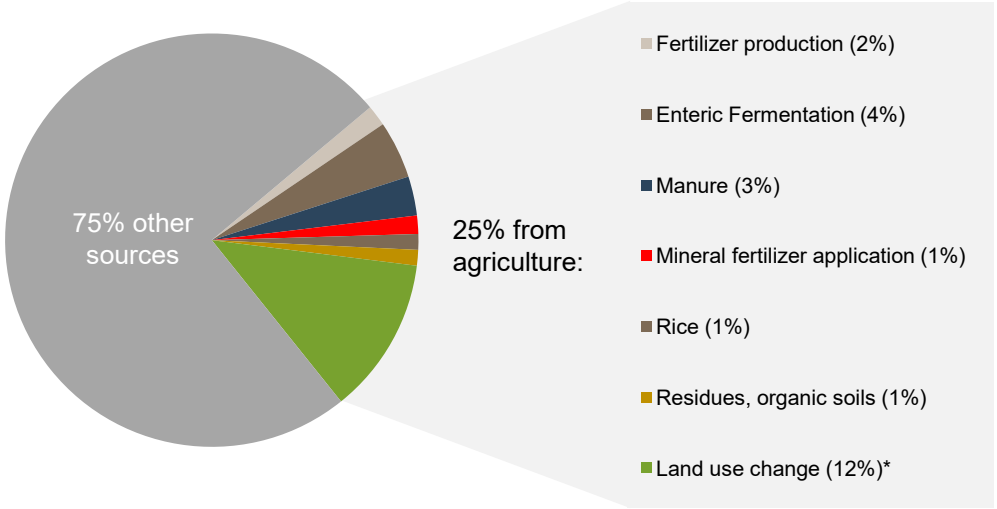


- Export of nutrients with the harvest
- Growing demand for food & feed

Mineral fertilizers are necessary to replace those nutrients that have been removed from the field

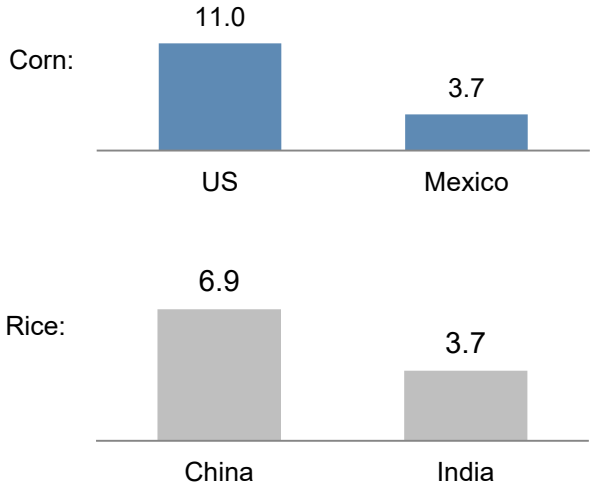
Improving crop nutrition efficiency and sustainability from factory to field is core to Yara and crucial for the planet

Ag sector represents 25% of global GHG emissions



Significant improvement potential

Tonnes output per hectare



* Emissions only, no sinks such as re-forestation considered

Fertilizer reduces the carbon footprint of farming

Fertilizer - an efficient solar energy catalyst

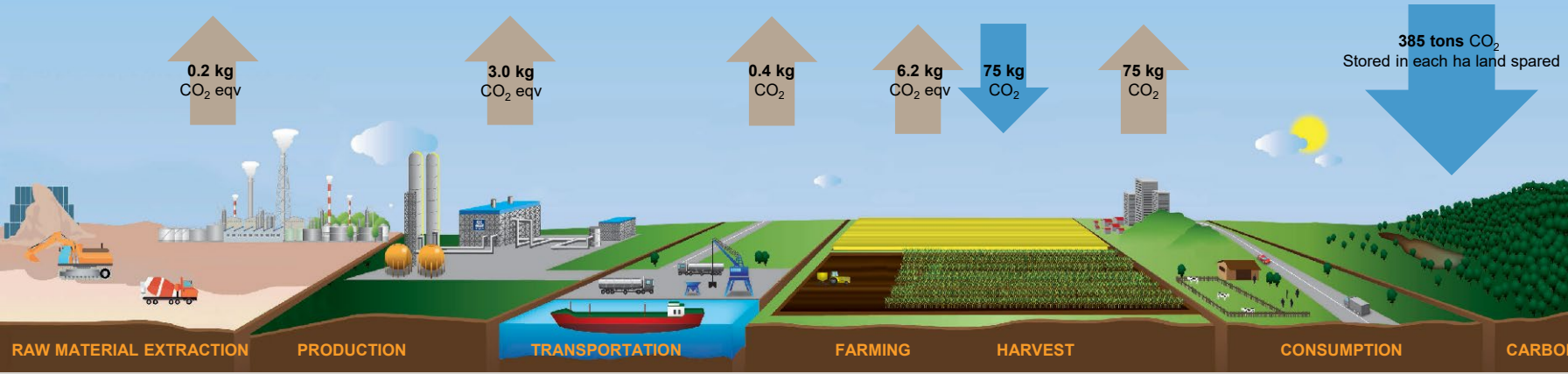
- Production is a marginal part of the carbon footprint; efficient application is more important
- Huge positive effects of fertilizer use, since higher yields enable lower land area use

Production

- Yara's production is more energy-efficient than competitor average

Application

- Higher efficiency with nitrates
- Precision farming tools



Numbers show emissions as CO2eqv per kg Nitrogen in fertilizer product

Yara's ambition is to become climate neutral by 2050

Yara's total greenhouse gas emissions halved by almost eliminating N_2O
- Equal to 15 million tonnes CO_2 every year

Past 15 years

Further improving on world leading performance by CO_2 reduction target:
-10% reduction of CO_2 per tonne of N by 2023

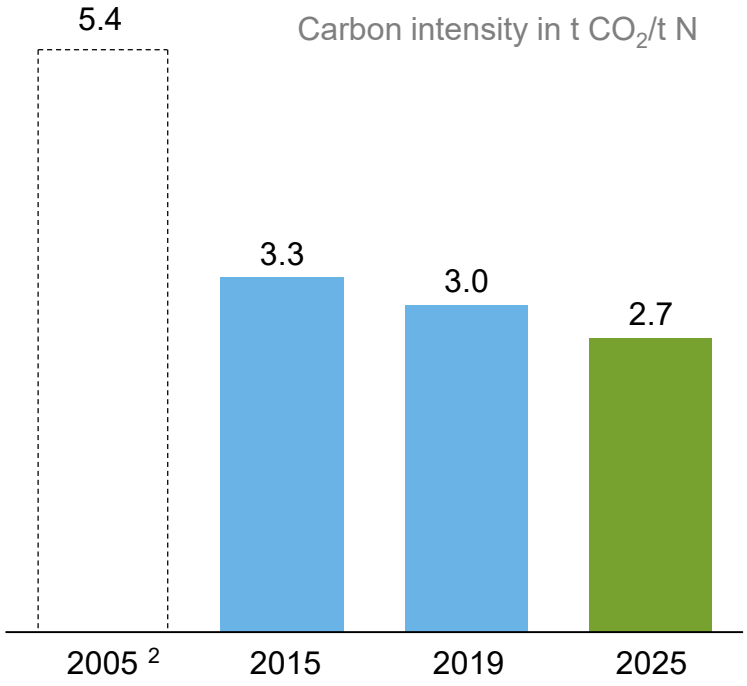
Present

Ambition to become climate neutral by 2050, including:
- Green hydrogen/low carbon fertilizer production
- Reduce in-field emissions

Future

Production

Yara is improving an already world leading performance with CO_2 intensity reduction target: 10% reduction by 2025



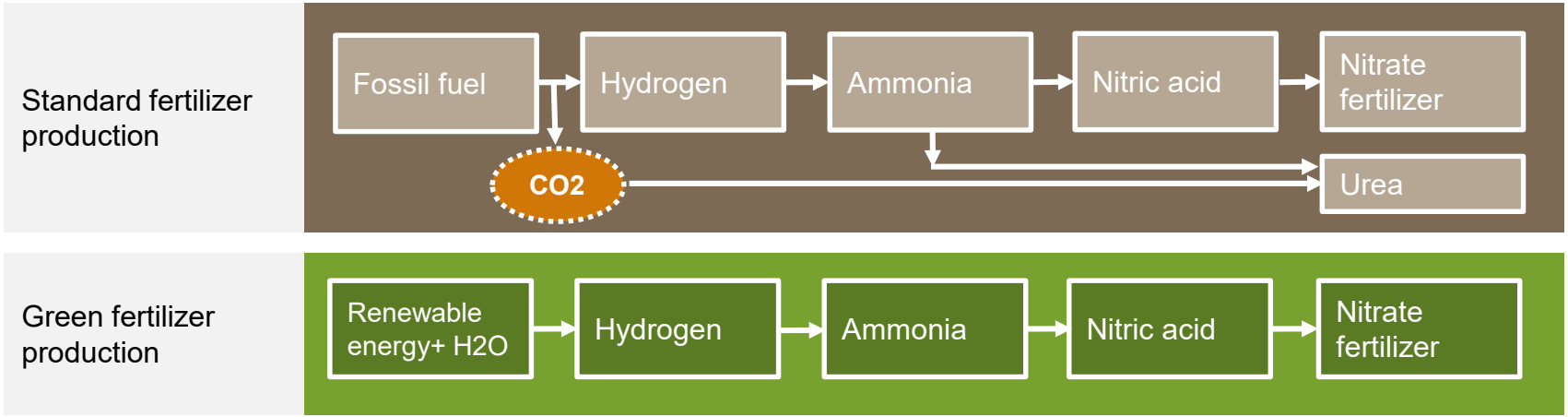
Our ambition:

10% reduction[1] in CO_2eq intensity by 2025

- 2025 target reflects GHG emissions already considerably reduced from 2005
- Lower emissions improve our cost position
- Positive business cases; 200-450 MUSD capex required
- Supports our ambition to become climate neutral by 2050

1) From 2018 base
2) Estimated based on historical data

The next step change requires green ammonia production



Main challenges

- Major gap is capex and opex (not technology)
- Ammonia plants linked to nitrate production most suitable
- Value chain premium initially key success factor

Yara responses:

- Decarbonize – pilots
- Food / value chain initiatives

Decarbonize Yara: exploring climate neutral solutions through innovative partnerships

What

- Reduce Yara's direct GHG emissions
- Produce zero-carbon nitrogen
- Solutions to reduce in-field agricultural GHG emissions
- Contribute to green energy carrier solutions and green food value chains

Example – "Green ammonia" in Australia

Feasibility study with ENGIE to produce zero-emission ammonia

Designing a green hydrogen plant integrated with Yara's existing ammonia plant in Pilbara

Circular Economy – create new business models through recycling nutrients in food and agriculture production chains

Circular Economy

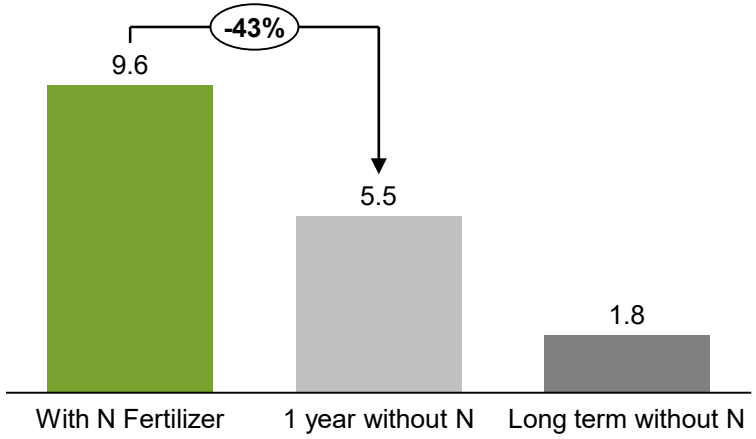
What	Value drivers	Example
• Solutions to use recovered materials as sources for N, P and K • Shape new business and value creation models in circular agriculture • Alternative sustainable raw material sourcing to production plants	• Strengthen competitive advantage; respond to consumer and regulatory trends • Create new business models/revenue streams • Increased resource use efficiency • Secure alternative resource supply and lower cost	**Yara-Veolia partnership** **What?** Develop the circular economy in Europe's food and agriculture value chains **How?** By recycling nutrients and promote cooperation across the value chain (e.g. Nutrient Upcycle Alliance) **Why?** Secure access to nutrients, position Yara in circular value chain

Application

Annual nitrogen application is required in order to maintain yields

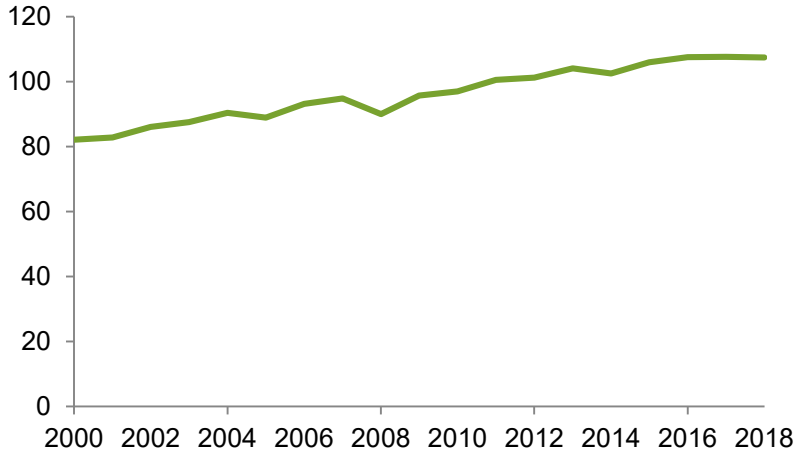
Annual N-application is critical for yield

Grain yield from Nitrogen fertilizer
Ton per hectar



Stable global nitrogen consumption pattern

Million tonnes nitrogen

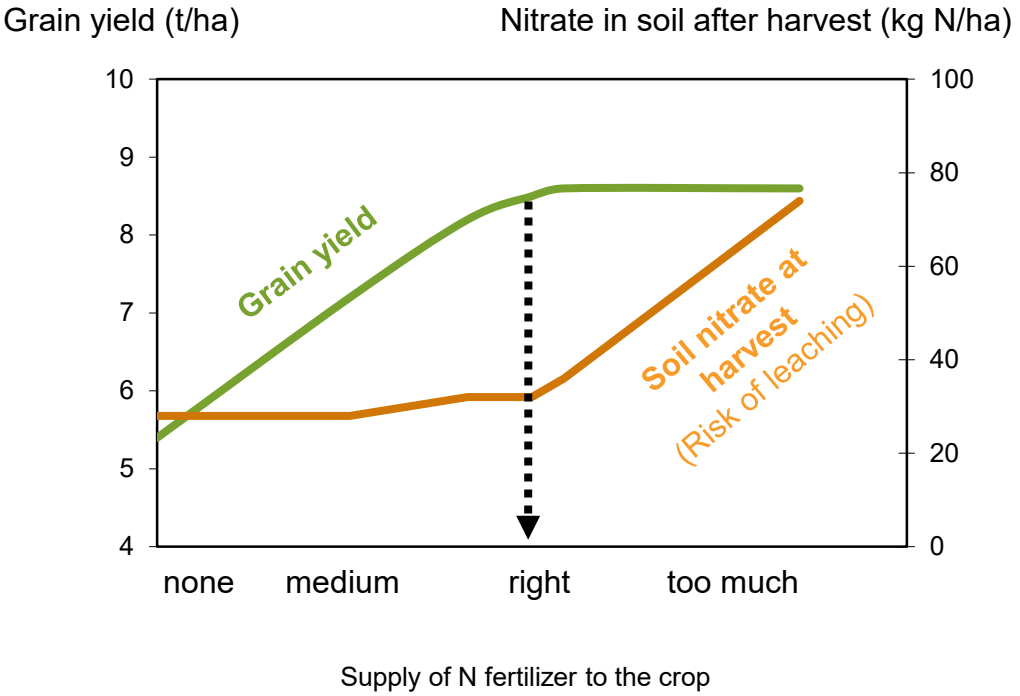


Source: Broadbalk long term trial Rothamsted UK

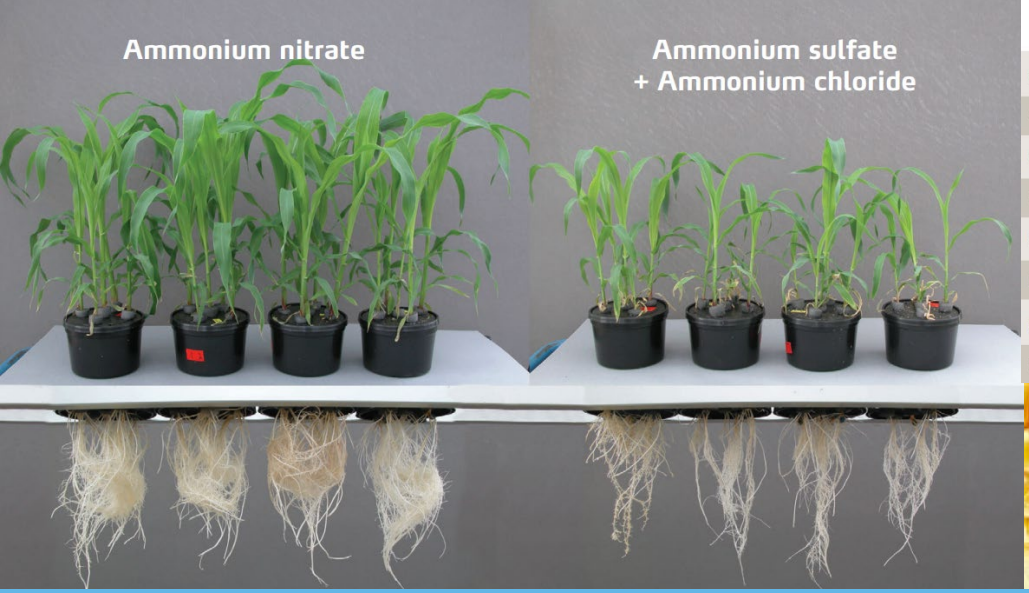
Source: IFA, June 2019

The right nitrogen fertilizer rate is key to avoid nitrate leaching

- Leaching of nitrate into groundwater affects water quality and contributes to eutrophication[1]
- The main driver for nitrate leaching is over-application of organic and mineral nitrogen fertilizer
- Optimum fertilizer application and high grain yields achievable with low levels of nitrate leaching



1) Eutrophication is when a body of water becomes overly enriched with minerals and nutrients which induce excessive growth of algae

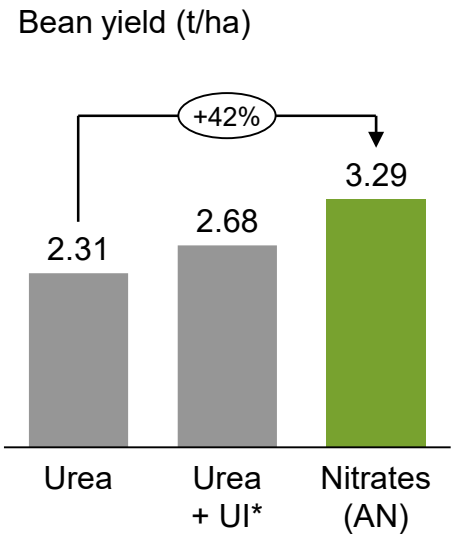


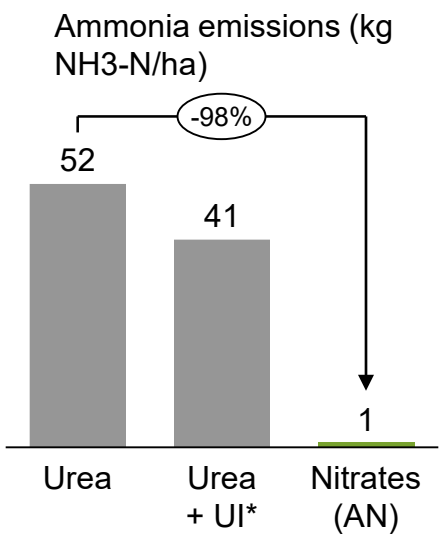
	N	P	K	Ca	Mg	S	B	Cu	Fe	Mn	Mo	Zn
Grain Weight/Size	∧	∧	∧									
Grain Set/Number	∧	∧	∧				∧					
Grain Yield	∧	∧	∧	∧	∧	∧	∧	∧	∧	∧	∧	∧
Grain Protein	∧	∧	∧			∧						∧
Forage Maize Yield	∧	∧	∧	∧	∧	∧	∧	∧	∧	∧	∧	∧
Forage Maize Energy							∧					
Resistance to Lodging	∨		∧									
Resistance to Frost			∧									

Knowledge and research underpin our advice and services provided to customers

Yara drives sustainable agriculture with the right nitrogen fertilizer products and precision farming tools

Premium products give higher output per hectare and lower in-field emissions (coffee field trial, Brazil 2018/2019)



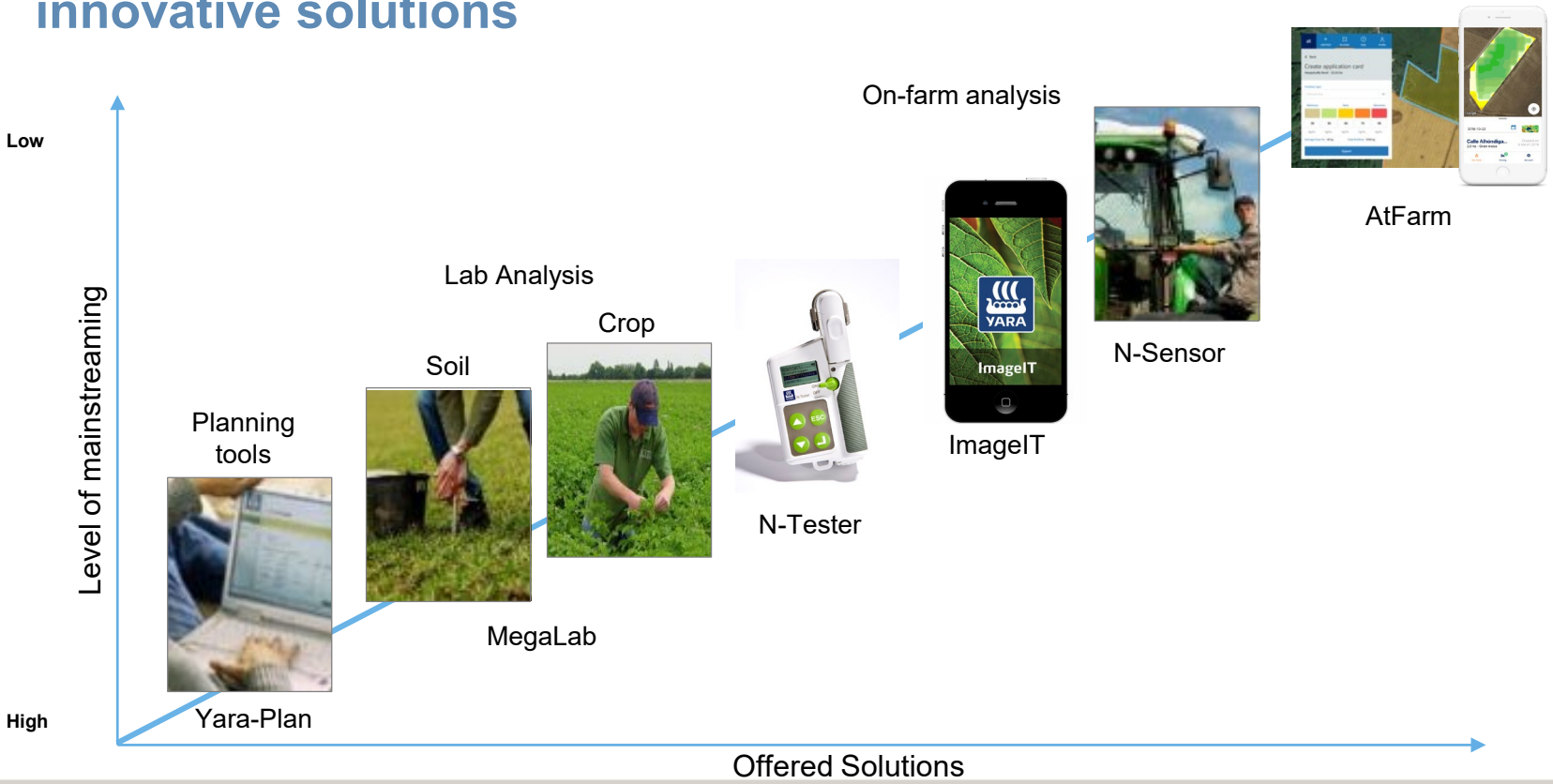


Precision farming tools promote sustainable farming

- Precision farming promotes best agricultural practices
- Yara's digital tools help optimize application rates
- Yara's solutions help farmers reduce environmental footprint while supporting their competitiveness

* UI = Urease Inhibitor
Source: trial 2018/2019 - Lavras University, Minas Gerais, Brazil & Yara Research

Precision Farming requires tools as enablers – Yara provides innovative solutions



Results using Yara solutions: Wheat example from France

21,000 French farmers used the N-Tester to measure the nitrogen status of 710,000 hectares of wheat

€19 million additional income

310,000 additional people fed

71,000 tonnes CO_2 reduction

YARA

Knowledge grows

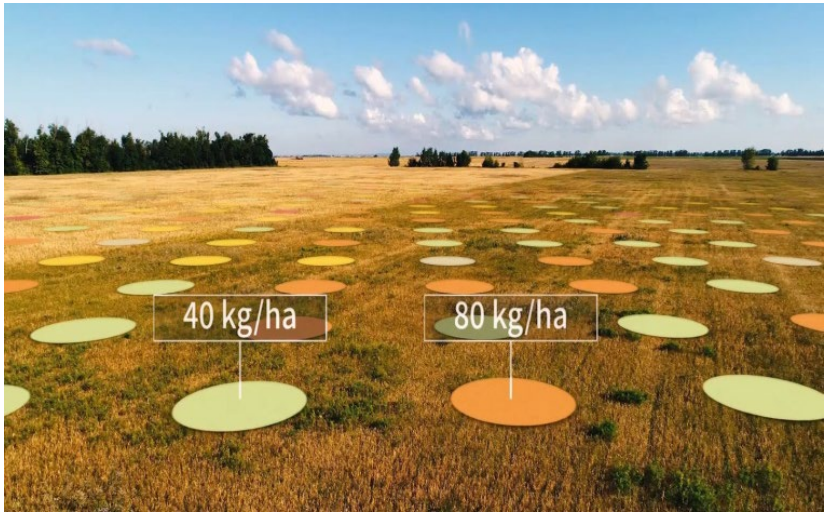
Results using Yara solutions: Coffee example from Vietnam

- Improved ripening
- Farmer income: ca. **+ 500 USD** / ha
- Reduced losses
- Yields: **+10%**
- GHG emissions: **-15–20%**
- Bigger berries

Industry-shaping partnerships

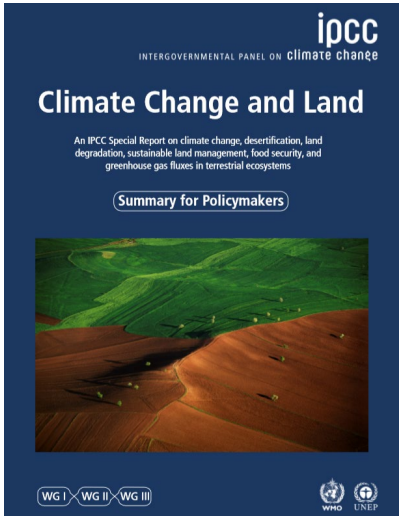
Yara and IBM partner to transform the future of farming

- **Combining world-leading capabilities**
- Building the globally leading **Digital Farming data and services platform**
- **Joint innovation teams** across Digital Hubs
- **Bold ambition**: reaching 100 million ha incl. millions of smallholder farmers



Yara Food Chain initiatives address key global challenges

The environmental footprint of agriculture is at the top of the political agenda



Yara's food chain initiatives create connections from production to end consumers

- Yara is strengthening its Food Chain Collaboration activities to grow both **value** and **reach**
- Yara and Nel collaborating to produce clean hydrogen for low-carbon fertilizer production
- Cooperation with Lantmännen aims to eliminate fossil fuels throughout the supply chain to reduce the carbon footprint of Lantmännen's end-products

Partnering to promote carbon footprint measurement

COOL FARM ALLIANCE

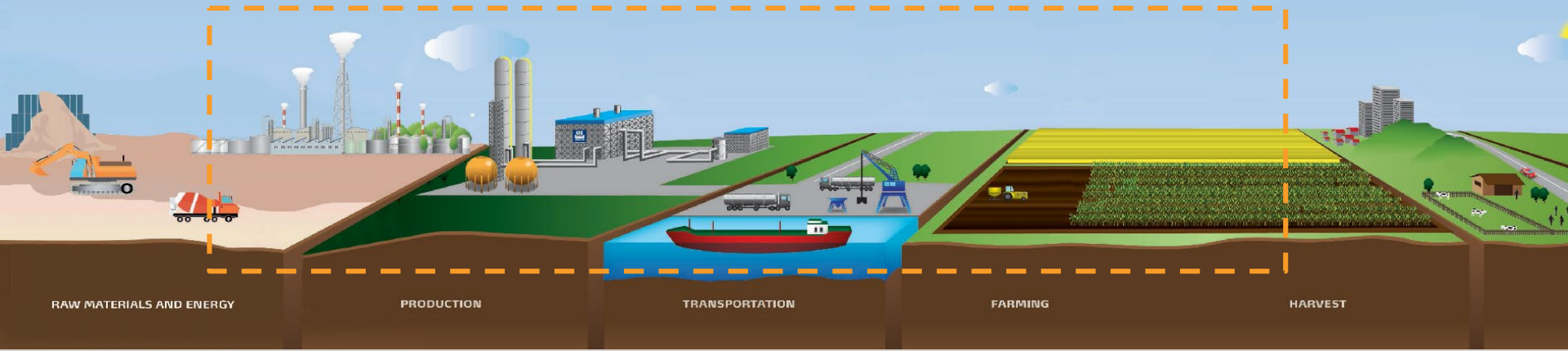
+ 10 more

Production:

- Catalyst technology halves the emissions

Use:

- Best practice application



Closing remarks

Sustainability is integrated in our strategy

- Yara's strategy is to become the **Crop Nutrition Company for the Future**, delivering sustainable crop nutrition solutions to farmers and industry, while delivering superior return on capital

- Crop nutrition solutions include products, knowledge and services including digital farming tools that enable farmers to optimize crop yield, resource efficiency and financial return