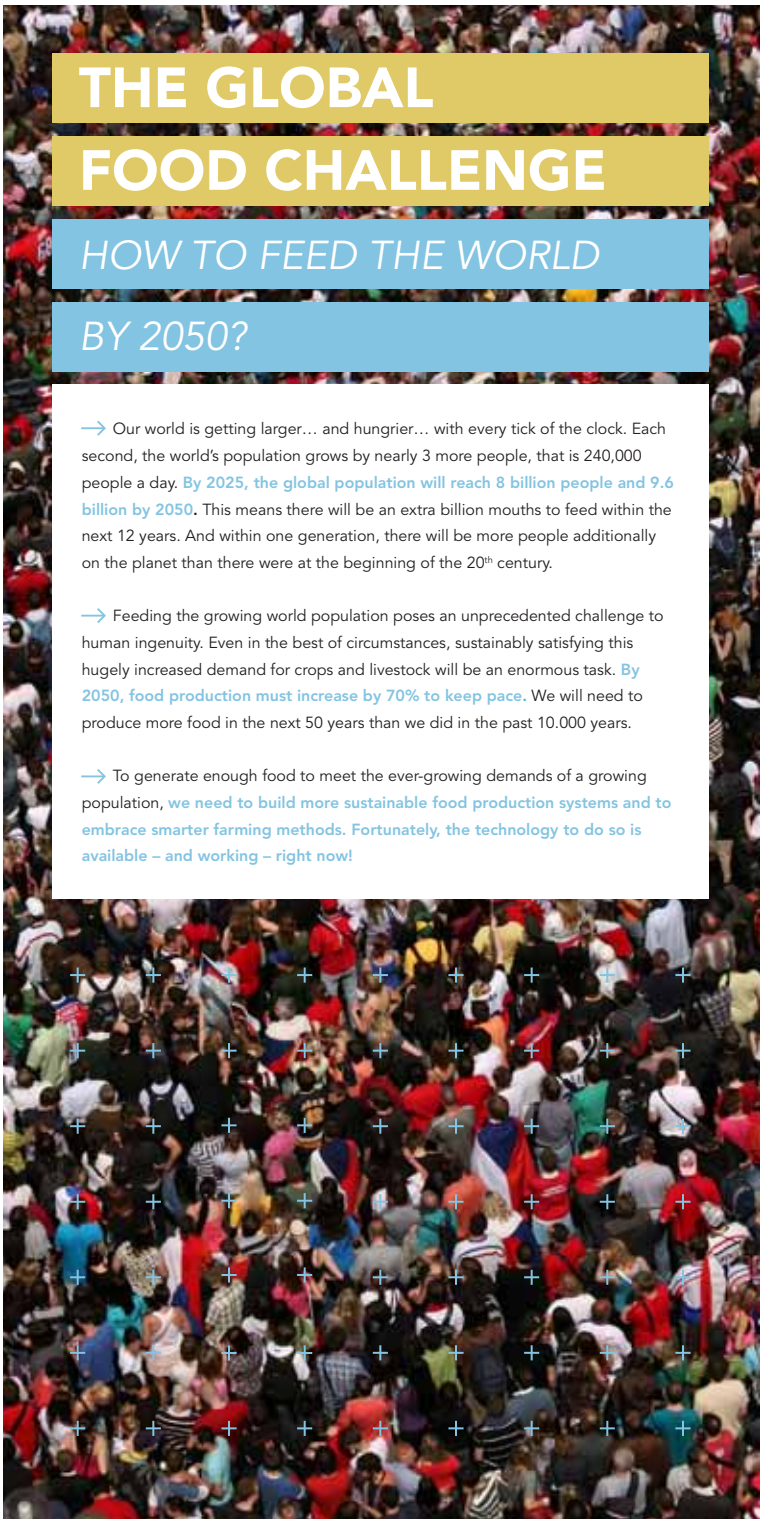


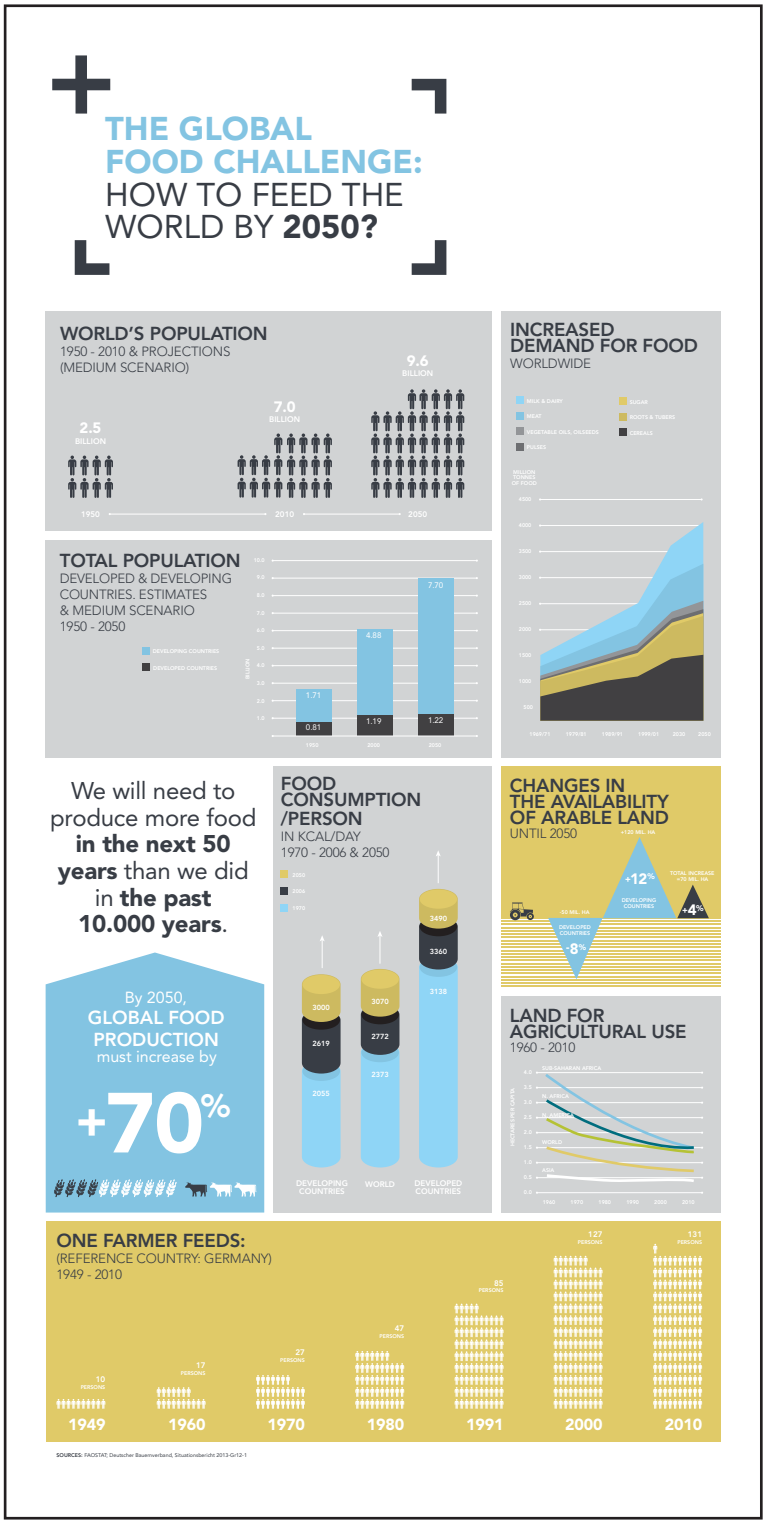
THE GLOBAL FOOD CHALLENGE

HOW TO FEED THE WORLD BY 2050?

→ Our world is getting larger… and hungrier… with every tick of the clock. Each second, the world's population grows by nearly 3 more people, that is 240,000 people a day. **By 2025, the global population will reach 8 billion people and 9.6 billion by 2050.** This means there will be an extra billion mouths to feed within the next 12 years. And within one generation, there will be more people additionally on the planet than there were at the beginning of the 20th century.

→ Feeding the growing world population poses an unprecedented challenge to human ingenuity. Even in the best of circumstances, sustainably satisfying this hugely increased demand for crops and livestock will be an enormous task. **By 2050, food production must increase by 70% to keep pace.** We will need to produce more food in the next 50 years than we did in the past 10.000 years.

→ To generate enough food to meet the ever-growing demands of a growing population, **we need to build more sustainable food production systems and to embrace smarter farming methods. Fortunately, the technology to do so is available – and working – right now!**

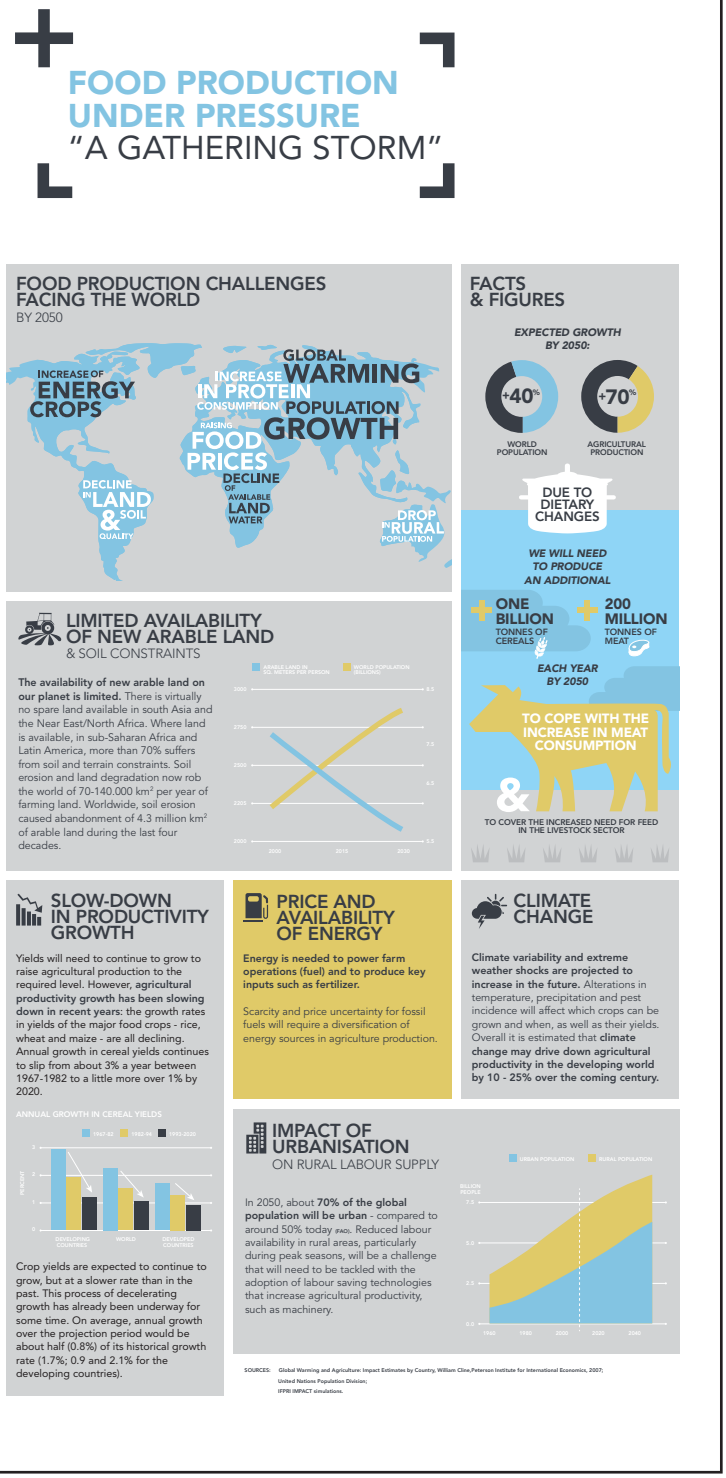


FOOD PRODUCTION UNDER PRESSURE: "A GATHERING STORM"

→ Achieving the level of agricultural productivity necessary to meet the immensely risen world demand for food, fibre and fuel by 2050 will be a tremendous challenge. Meeting this challenge is made even more daunting by a number of stringent constraints - the combined effect of which the Food and Agricultural Organisation of the United Nations (FAO) has termed "a gathering storm". Key constraints that global agriculture is facing:

- Slow-down in productivity growth
- Limited availability of new arable land
- Climate change
- Price and availability of energy
- Impact of urbanisation on rural labour supply

→ In light of the above challenges to our food supply and to the environment, the FAO has declared Sustainable Crop Production Intensification (or SCPI) as their first strategic objective. Sustainable intensification has been defined as producing more from the same area of land while reducing negative environmental impacts. What is therefore needed are innovative tools and techniques that empower farmers to do just that!



PRECISION FARMING

THE NEW AGRICULTURAL REVOLUTION

For more than 10,000 years people have cultivated crops using trial and error, received wisdom and how the soil feels when they rub it between their fingers. Only recently in history, mechanisation revolutionised the countryside with machinery and replaced horses with tractors. Nowadays, we're witnessing a new farming revolution triggered by the adoption of staggering new technologies: satellites, high precision positioning systems, smart sensors and a range of IT applications combined with high-tech engineering.

Next time you see a field of grain and a picture of pastoral harmony crops up in your mind, think again - and imagine yourself as a farmer: riding along in your air-conditioned combine harvester you push a button to turn on its hyper-specific satellite navigation monitor, which pinpoints your exact location to within 2 cm.

Touching another button, you activate the autopilot system. Thanks to a number of intelligent sensors the system keeps the machine perfectly on track and also remembers where it has been. The yield monitor starts telling you about the grain flow and moisture content while your data management software uploads a colour-coded map that allows you to assess the yield of the harvested portions of the field.

You lift your hands from the steering wheel, sit back and enjoy the ride, saving time and money, as the machine does most of the work. Sounds like a fantasy story? **Welcome to Precision Farming!**

WHAT IS PRECISION FARMING ALL ABOUT?

Precision Farming is about taking **the 4 Rs** *in agriculture from a km² to a m² level: doing the* **right thing**, *in the* **right place**, *the* **right way**, *at the* **right time**.

All aspects of the environment – soil, weather, vegetation, water – vary from place to place. And all these factors determine crop growth and farming success. Farmers have always been aware of this, but they lacked the tools to measure, map and manage these variations precisely.

Precision Farming is about just that: managing variations in the field accurately to grow more food using fewer resources and reducing production costs. Thus, precision farming can make a difference to food production facing the challenge of a rising world population.

PRECISION FARMING HELPS FARMERS TO ACHIEVE:

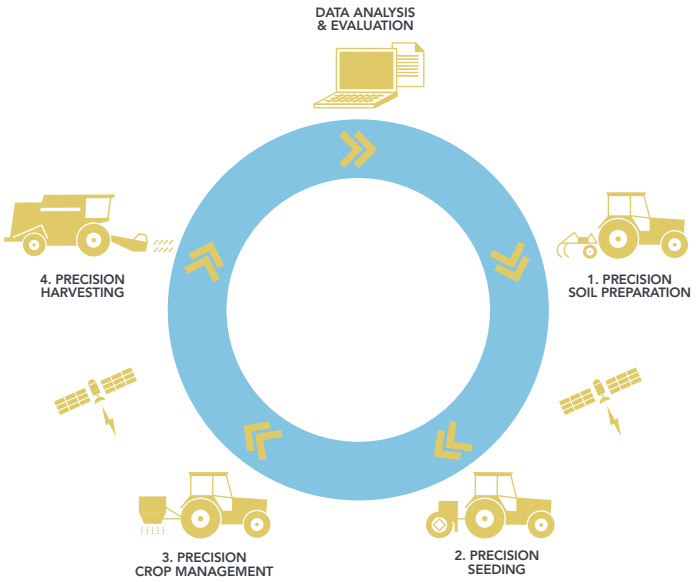
- GREATER SUSTAINABILITY & ENVIRONMENTAL PROTECTION
- HIGHER PRODUCTIVITY
- ECONOMIC BENEFITS

WHAT IS PRECISION FARMING ALL ABOUT?

In the past 10 years, Precision Farming has moved from good science to good practice - and has witnessed unprecedented growth around the globe: 70 to 80% of new farm equipment sold today has some form of Precision Farming component inside.

Thanks to cost-effective monitors and controllers and the integration into single data management systems, Precision Farming is becoming more seamless, cost-effective and easier for farmers to install and use.

This exhibition showcases some of the most prominent Precision Farming innovations in the 4 steps of the crop growth cycle:



THE PRECISION FARMING AND CROP GROWTH CYCLE

PRECISION FARMING

KEY TERMS & CONCEPTS

HIGH PRECISION POSITIONING SYSTEMS

(like GPS) **are the key technology to achieve accuracy when driving in the field, providing navigation and positioning capability anywhere on earth, anytime under any all conditions.** The systems record the position of the field using geographic coordinates (latitude and longitude) and locate and navigate agricultural vehicles within a field with 2cm accuracy.

AUTOMATED STEERING SYSTEMS

enable to take over specific driving tasks like auto-steering, overhead turning, following field edges and overlapping of rows. These technologies reduce human error and are the key to effective site management:

ASSISTED STEERING SYSTEMS show drivers the way to follow in the field with the help of satellite navigation systems such as GPS. This allows more accurate driving but the farmer still needs to steer the wheel.

AUTOMATED STEERING SYSTEMS take full control of the steering wheel allowing the driver to take the hands off the wheel during trips down the row and the ability to keep an eye on the planter, sprayer or other equipment.

INTELLIGENT GUIDANCE SYSTEMS provide different steering patterns (guidance patterns) depending on the shape of the field and can be used in combination with above systems.

GEOMAPPING

is used to produce maps including soil type, nutrients levels etc. in layers and to assign that information to the particular field location.

SENSORS AND REMOTE SENSING

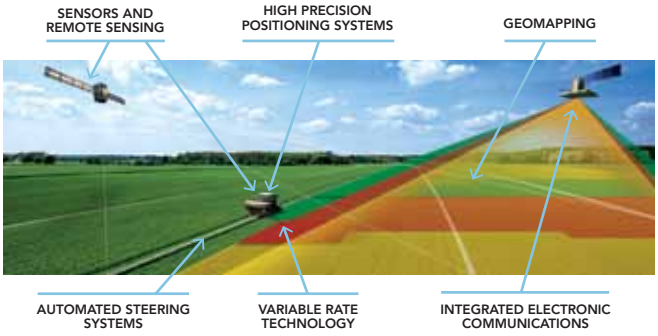
are used to collect data from a distance to evaluating soil and crop health (moisture, nutrients, compaction, crop diseases). Data sensors can be mounted on moving machines.

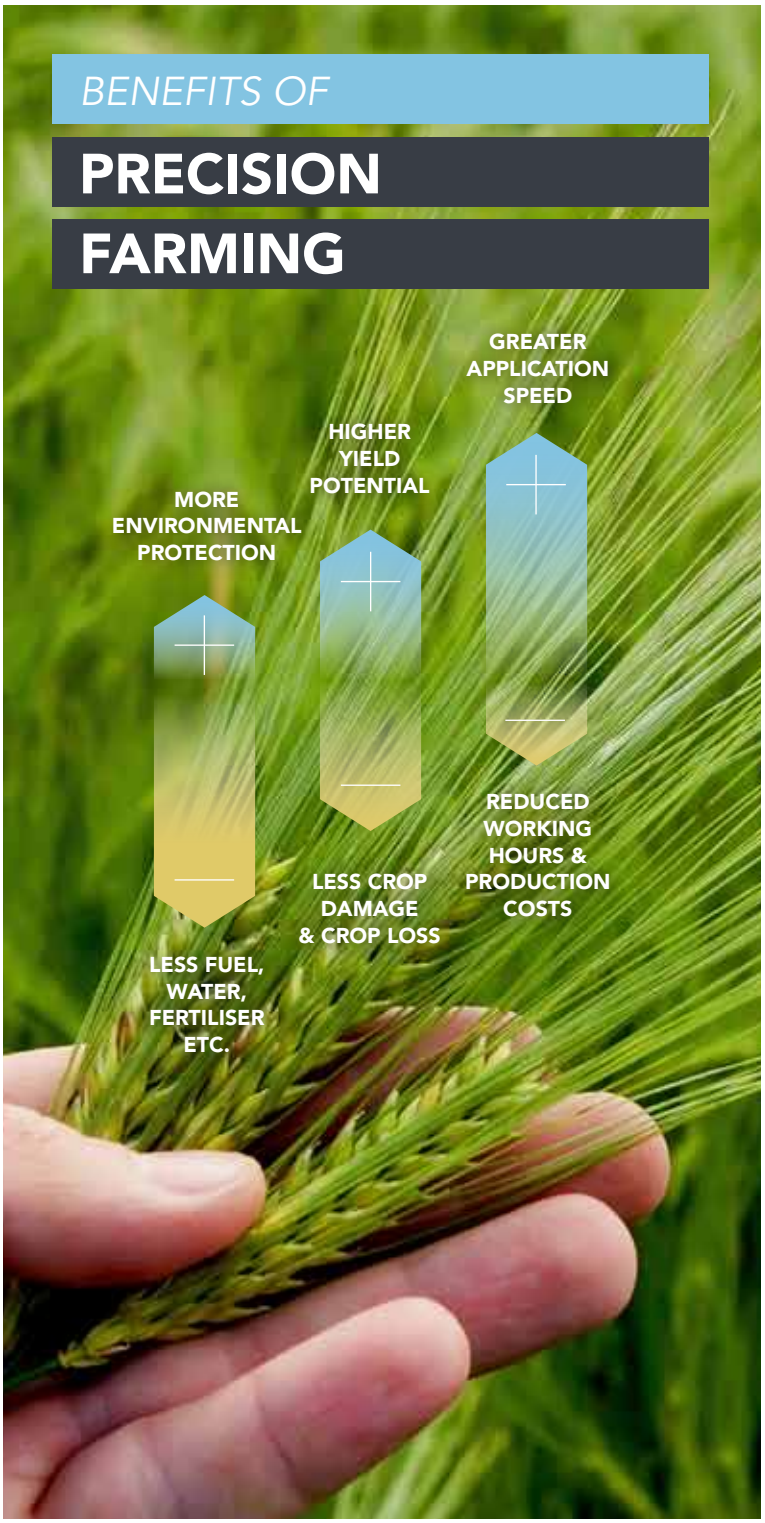
INTEGRATED ELECTRONIC COMMUNICATIONS

are made between components in a system. For example, between tractor and farm office, tractor and dealer or spray can and sprayer.

VARIABLE RATE TECHNOLOGY (VRT)

is the ability to adapt parameters on a machine to apply, for instance, seed or fertiliser according to the exact variations in plant growth, or soil nutrients and type.




BENEFITS OF
PRECISION
FARMING
GREATER APPLICATION SPEED
HIGHER YIELD POTENTIAL
MORE ENVIRONMENTAL PROTECTION
REDUCED WORKING HOURS & PRODUCTION COSTS
LESS CROP DAMAGE & CROP LOSS
LESS FUEL, WATER, FERTILISER ETC.