We preserve nature's gifts

Farm to Fork: a Sustainability Strategy in Action

Professor Philippe Haspeslagh, Chairman Ardo

ARDO SUSTAINABILITY • PLANET • PEOPLE • PRODUCT •

ARDO in a nutshell

- European leader in freshfrozen vegetables (18% M/S) and number two in freshfrozen herbs (35% M/S) for retail , industry and foodservice.
- Resulting from the 2014 merger of two Belgian companies with agro roots, founded by separate branches of the Haspeslagh family.
- 2019/2020 turnover: Euro 1.2 billion (of which 200 in North America)
- 21 sites from Denmark to Portugal, 4000 employees.
- Working with 4000 farmers and producer organisations through farm protocols and agronomist support
- Combining family entrepreneurship and professional management

MIMOSA

Minimum Impact, Maximum Output
Sustainable Agriculture - Ardo

The GOAL

- MINIMUM IMPACT
  - No detectible chemical residues in ALL our final product !
  - Reducing the use of pesticides, fertilizer and fungicides
  - Protecting/improving soil structure
  - Optimising the use of water
- MAXIMUM OUTPUT
  - Improving regularity &productivity of crops and hence provide stable income for our farmers
  - Improving the quality of our products
  - Increasing the trust in Ardo's products among our clients
  - Protecting the safety and health of our farmers and employees

Big Opportunity

Big Challenge

Preventive actions

Prevent rather than correct the problems

Every crop in the right time and place – Good farmers – Best technics (Soil – Seed – Varieties – Sowing)

Every crop in the right time and place

Agro-climatological conditions

- 17 growing zones
- Open air, full field
- Seasonality
- Risk spread

Crop Rotation

- Best growers
- Soils adapted to crop needs
- Ex. Peas: minimum crop rotation of 1 in 6 years

Soil structure

- Damage of today will have impact many years to come
- New harvesters on tracks
- Analysing and improving the regularity of soil

Seeds and sowing

Increased Precision

Quality control

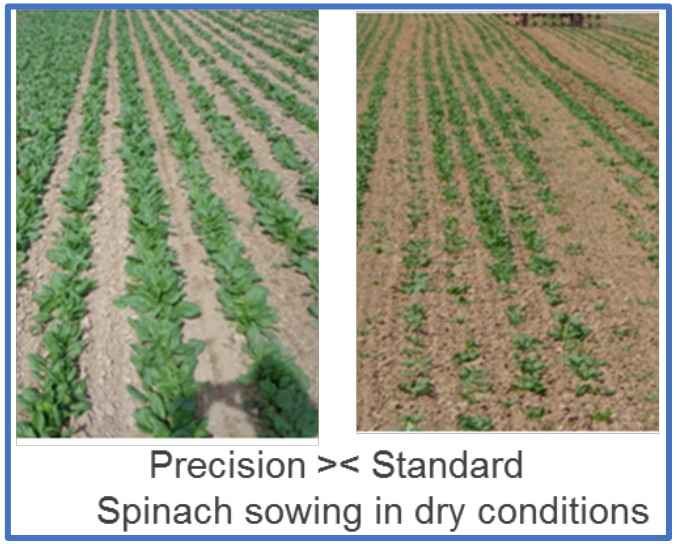
- Germination
- Vigour
- Coating
- 100% non GMO
- Testing 250 varieties

Precision Sowing

- Homogene fields
- Better germination

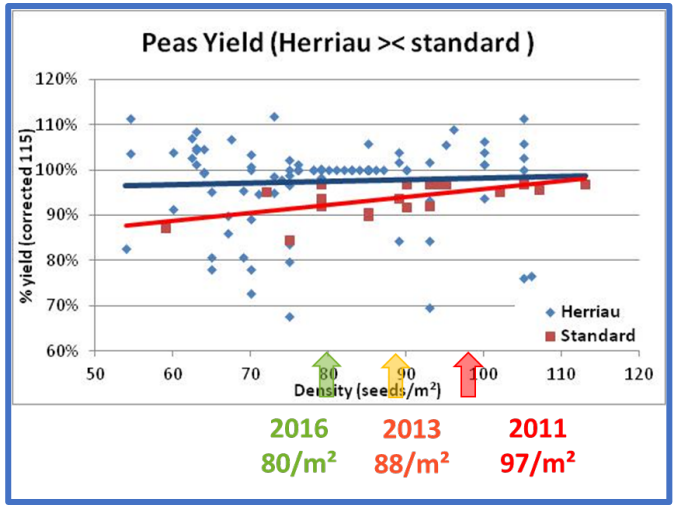
GPS

- Reduce overlap



Reduce sowing density

- Possible with precision sowing
- Less plants = less diseases
- And higher yield



Corrective actions

Crop protection
Fertilization
Irrigation

Minimal impact on the environment – High precision

Active field management

“Nip in the bud”

- 60 local agronomists assisting the farmers
- Early identification of the risks
- Rapid intervention
- Improved efficiency of corrective actions

    - Weeds
    - Pests & Diseases
    - Foreign materials
    - ...

Spraying technique

Increased Precision

- Anticipate
- Best equipment (nozzles, gps, section steering)
- Correct products
- Effect of additives

Benefits:

✓Increased efficiency

✓Reduce losses to environm

✓Lower doses

✓Higher yield and quality

0,1 mL water + additive

1 mL water

R&D

Example: fungicide trial in green beans

T0 Boutons Verts T1 - 8 jours		T1 1ère fleur		T2 - 1ère gousse à 1 cm T1 + 4 jours		T3 1er filet à 3-4 cm T1 + 11 Jours T2 + 7 jours		IFT
Produit	Dose/ ha	Produit	Dose/ ha	Produit	Dose/ ha	Produit	Dose/ ha	Number of Full doses/ha
-	-	SWITCH + TOPSIN	0,8 kg 1,6 l	-	-	PICTOR + TOPSIN	1 kg 1,6 l	3.8
-	-	PICTOR + TOPSIN	1 kg 1,6 l	-	-	SWITCH + TOPSIN	0,8 kg 1,6 l	3.8
-	-	PICTOR + TOPSIN *	0,5 kg 0,8 l	PICTOR + TOPSIN *	0,5 kg 0,8 l	SWITCH + TOPSIN *	0,5 kg 0,8 l	3
-	-	SWITCH + TOPSIN *	0,5 kg 0,8 l	PICTOR + TOPSIN *	0,5 kg 0,8 l	PICTOR + TOPSIN *	0,5 kg 0,8 l	3
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SWITCH + TOPSIN *	0,5 kg 0,8 l	PICTOR + TOPSIN *	0,5 kg 0,8 l	SWITCH + TOPSIN *	0,5 kg 0,8 l	-	-	3
PICTOR + TOPSIN *	0,5 kg 0,8 l	SWITCH + TOPSIN *	0,5 kg 0,8 l	-	-	-	-	2
TÉMOIN	-	-	-	-	-	-	-	0

-25% fungicide applied: equal level of protection!

Equal level of protection

Insufficient

Not harvestable

Fertilizer application

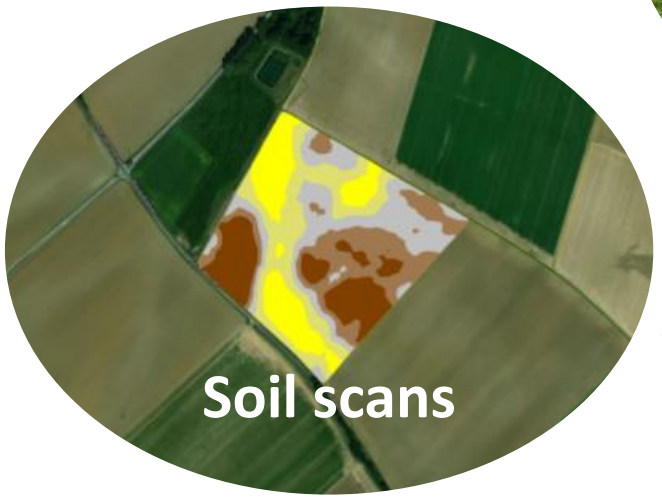
Increased Precision

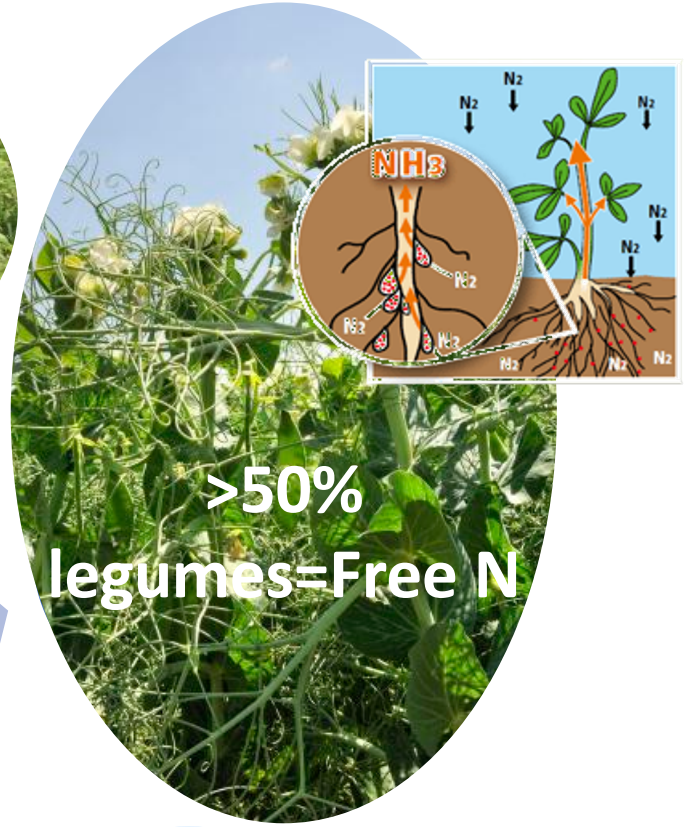
Only when necessary - Based on soil sampling

	Before (Units N)	Now (Units N)
Winter Spinach	220	160-220
Spring Spinach	180	120-180
Autumn Spinach	160	80-160
Beans (first crop)	60	0-60
Broad Beans	60	0-40
Carrots	80	0-60
Brussels Sprouts	220	120-220

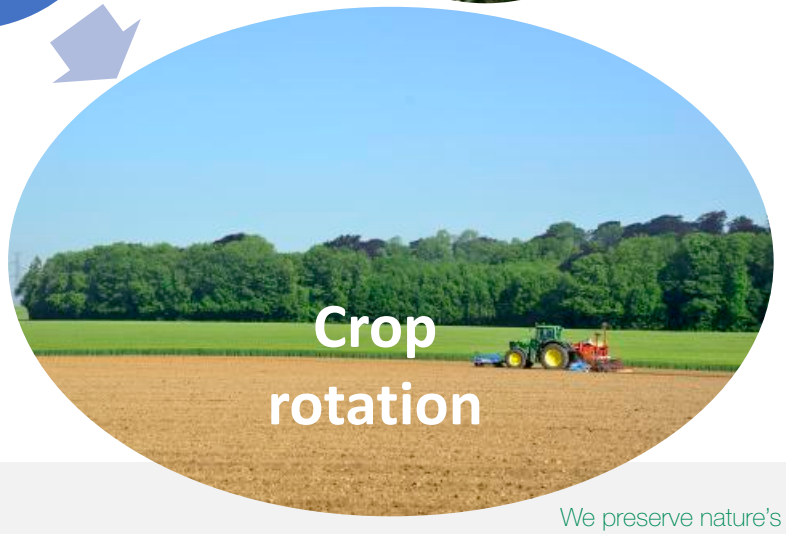
Year after year,
More yield
with Less fertilizer

Healthy soils





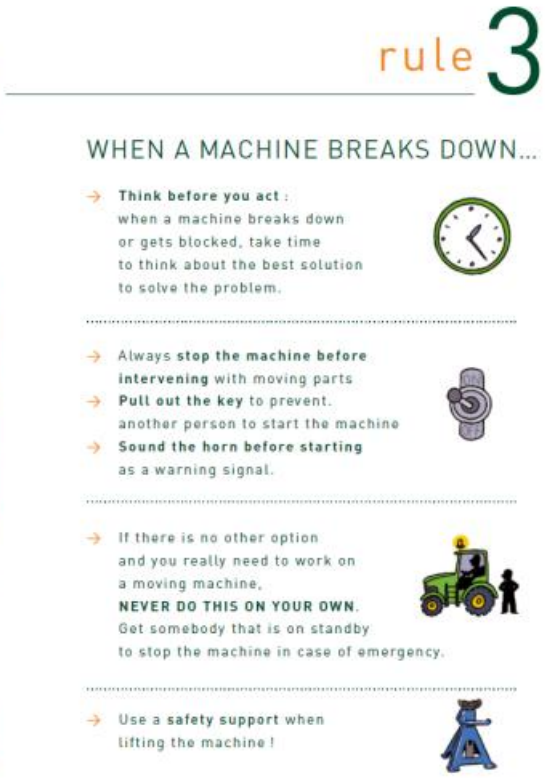
Soil health



Safety

Raise awareness to work in a safer way!

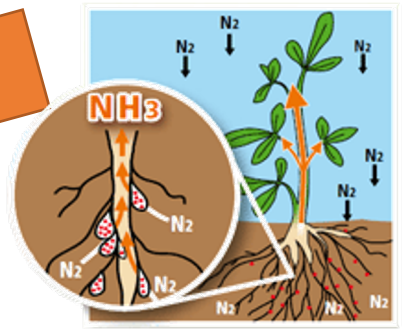
- Brochures with rules
- Visible clothing
- Safety audit also in the field

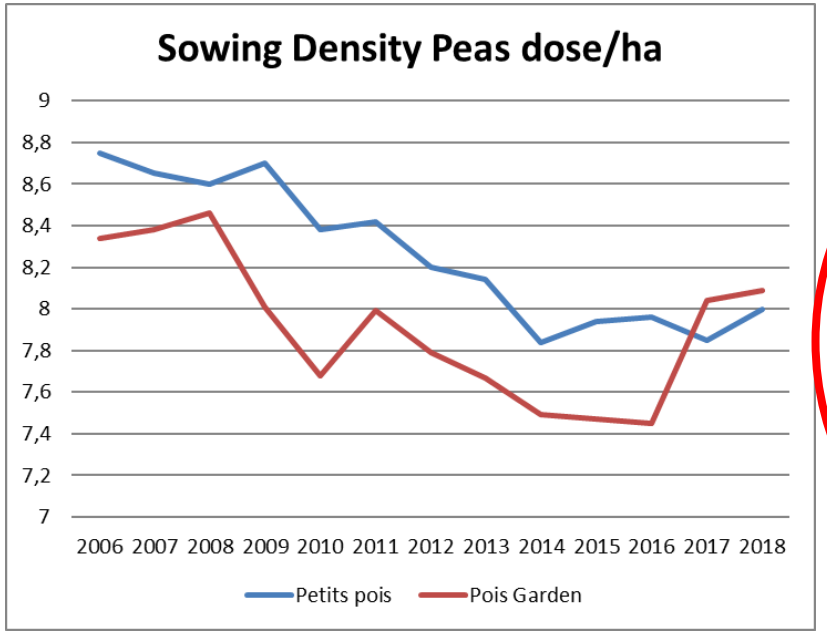


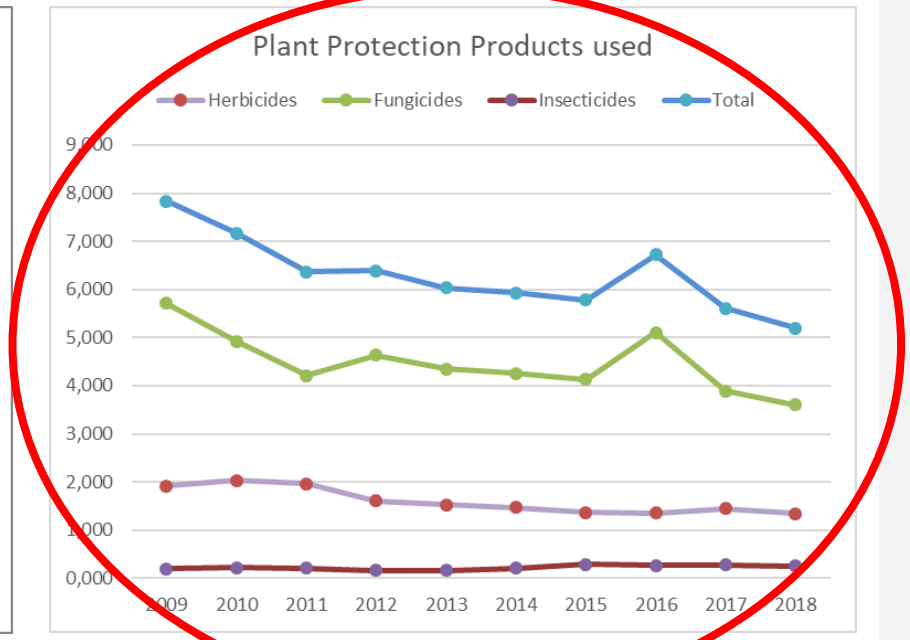
Minimum impact, maximum output, but what are the results?

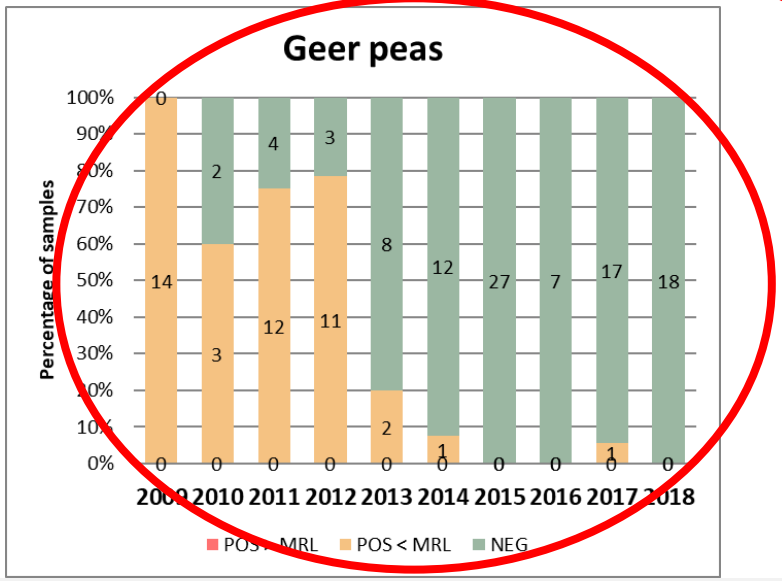
Less is more...

0 nitrogen!





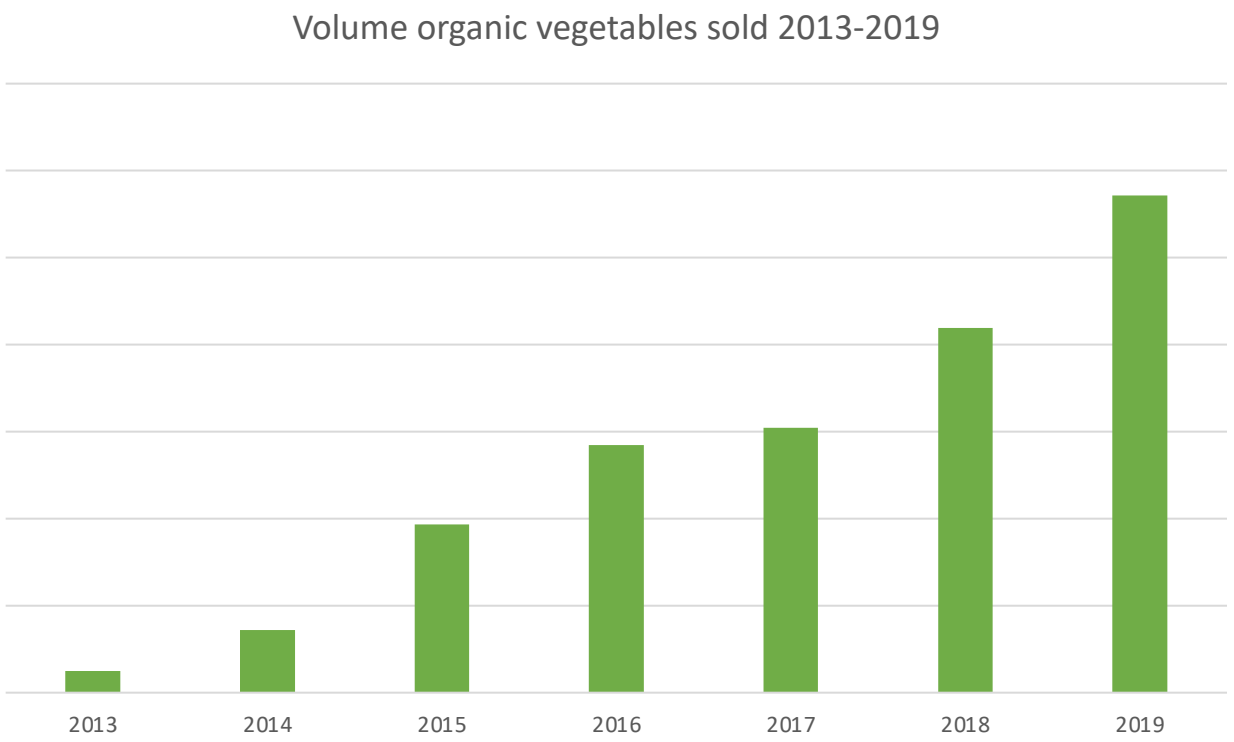


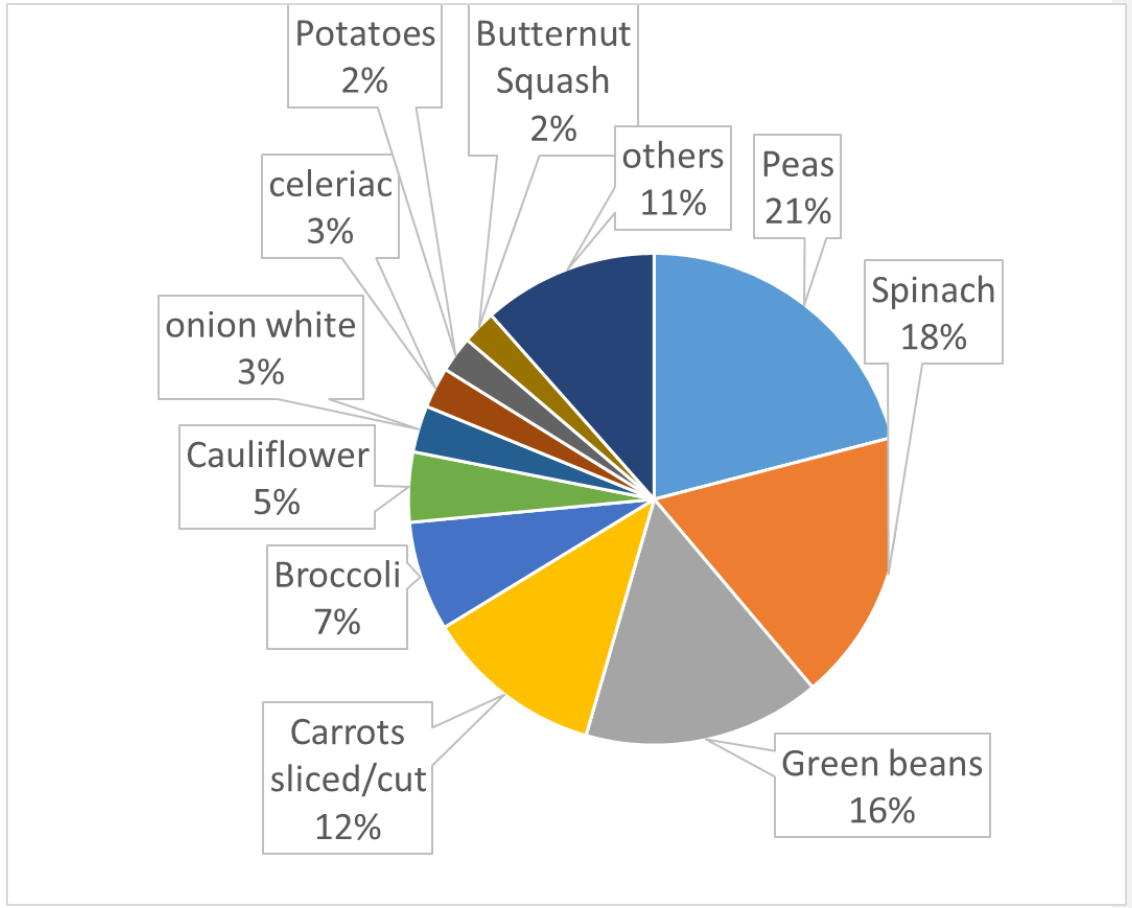


GUARANTEED RESIDUE FREE
2019: 74%
2020: 80% est

MIMOSA Peas

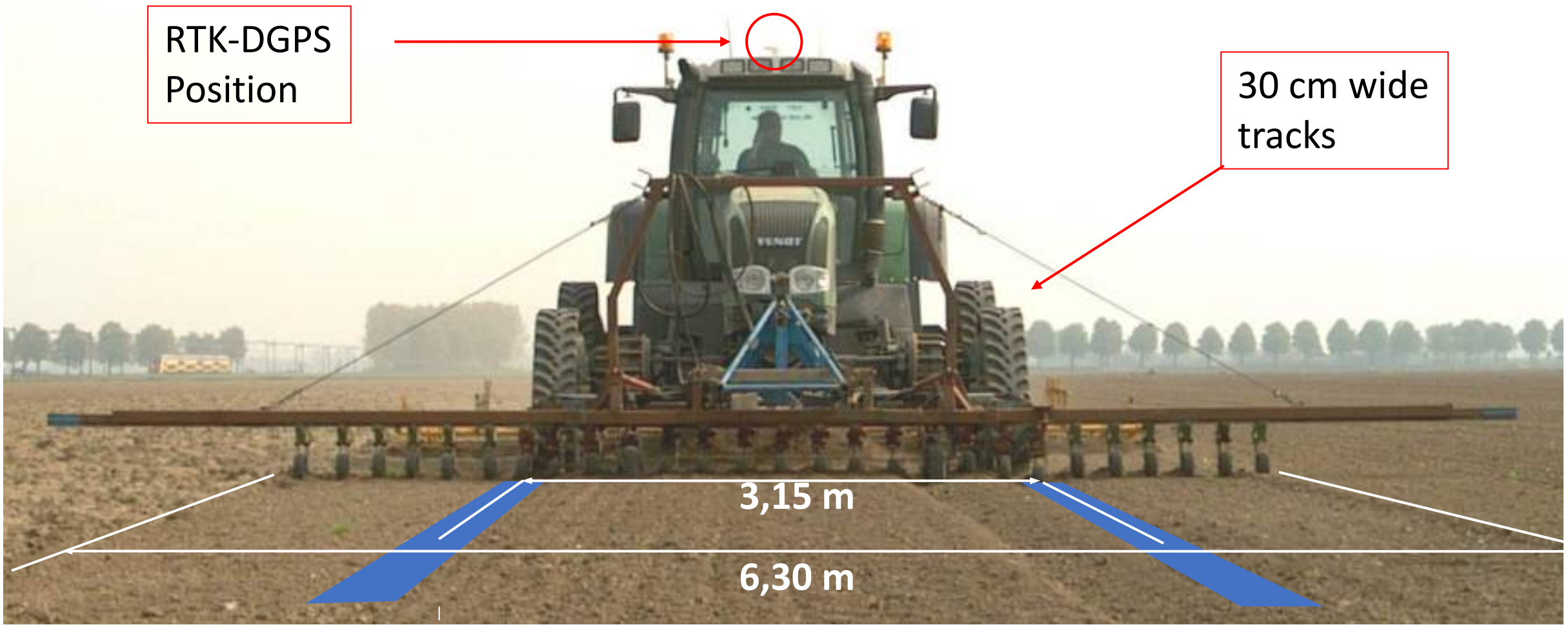
Taking the lead in Organic: 10% of ha





High tech organic farming

Flevopolder (NL)

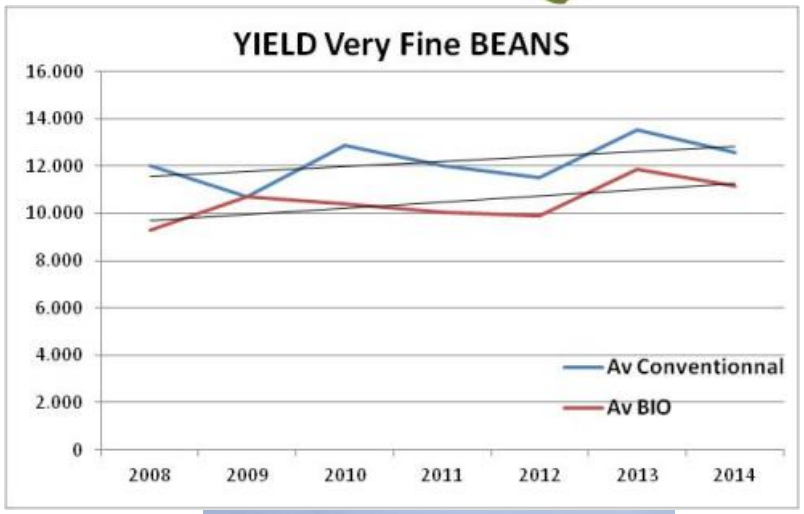


Results

On average organic crops yield 20% less than conventional

Technology is key to:

- Reduce manual labour
- Close the gap between organic and conventional



- Weed control (GPS, image analysis, ...)
- New varieties
- Organic Plant Protection Products
- …

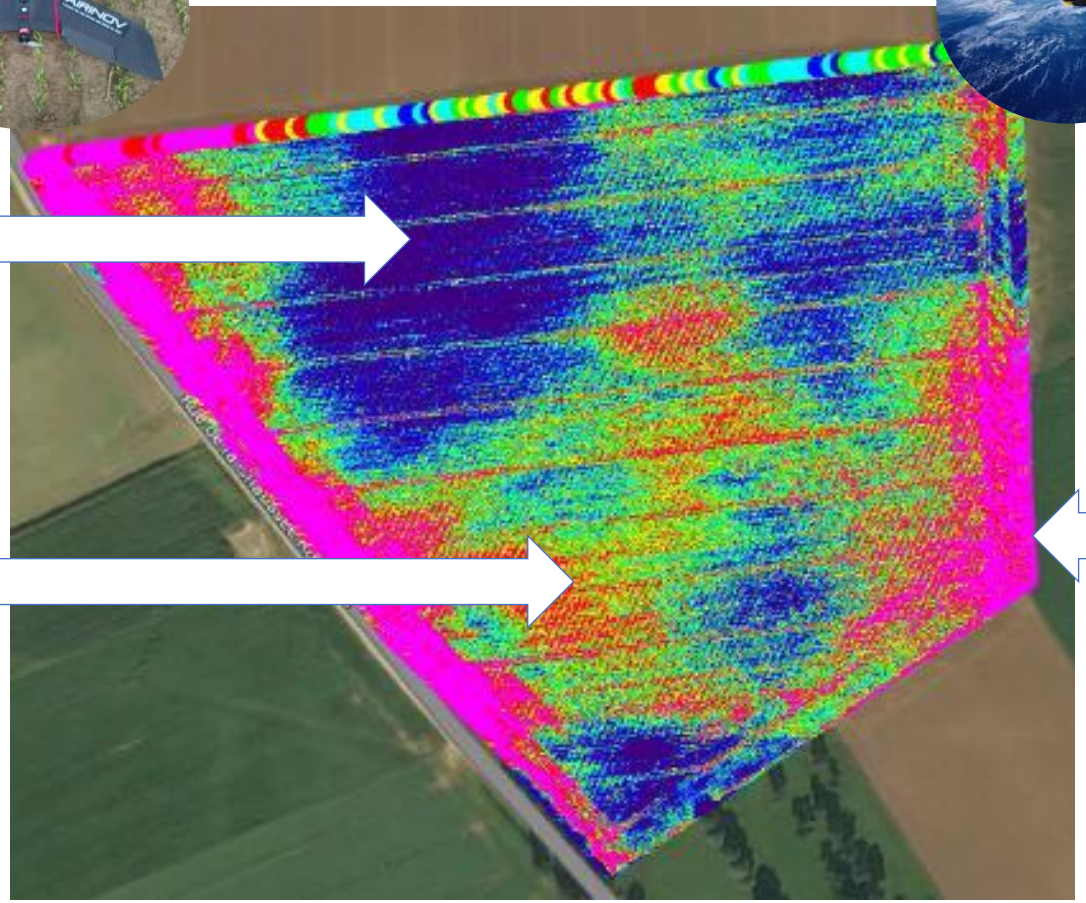
Innovation: anticipate the future agriculture

4 fields of application:

- Sowing
- Nitrogen fertilization
- Fungicide
- Lime

3 Basis of information:

- Veris soil scanner (Electroconductivity – pH – Organic matter)
- Drone (Vegetation index NDVI)
- Satellite (Vegetation index)



0,870 - 0,954	59035 pts.	
0,828 - 0,869	59499 pts.	
0,786 - 0,827	58935 pts.	
0,737 - 0,785	58415 pts.	
0,673 - 0,736	58758 pts.	
0,569 - 0,672	58895 pts.	
0,128 - 0,568	58724 pts.	

SPOT SPRAYING – through the use of Robots

Sustainable Agriculture for Ardo is part of a wider sustainability commitment

Circular Economy

Fresh Vegetables

Frozen vegetables

Cold

Heat

Clean water Irrigation Network

Re-use water

ardo

Used water

Water treatment

Steam

Electricity

Vegetable Residues

Cogeneration

Digestate

Biodiversity

Nature areas

- Hollogne-sur-Geer

- Zundert

Bees

- Flower borders, bee hives, insect hotel

Other actions

- Raise awareness
- Birds of prey, field birds

What our agronomists asked me to tell:

- They applaud the Farm to Fork efforts by the Commission, but:
- The difference in application of directives across member states makes their job very difficult.
- The current deadlines for implementation of treatment elimination decisions may be ok for the fresh market but not for the freshfrozen business which has a 1 ½ year business cycle.
- Elimination of many seed treatments results in more chemical treatments in the field, and worse overall impact.
- Still lacking clarity how things will be measured:
  - How will one measure the 50% pesticide reduction: active ingredient or total product?
  - What standard measurement of the carbon footprint of agricultural production?

Overall they are excited however to lead the way in our sector !

Thank you