

How poultry and pig breeding continue to contribute to realizing the climate ambition

Johan van Arendonk

Chief Innovation & Technology Officer

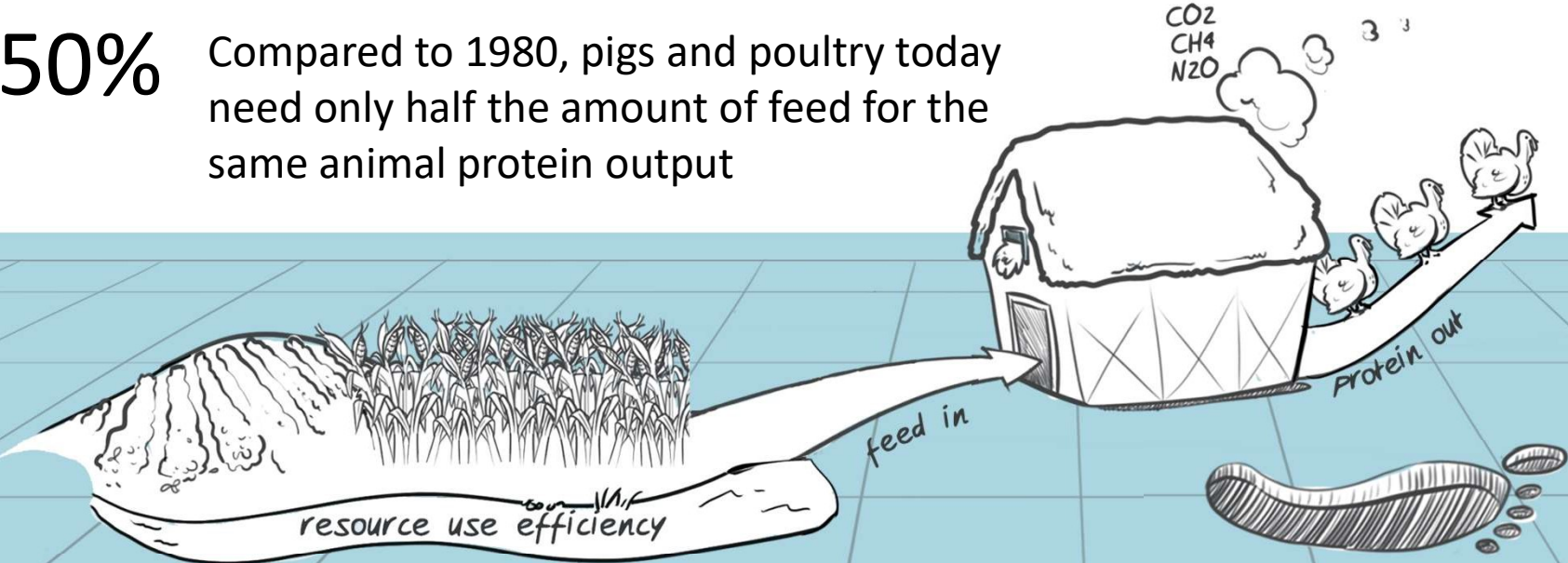


My message

- Pig and poultry breeding will continue to contribute to improving sustainability of animal protein production.
- Balanced breeding programs are aimed at reducing the ecological food print, improving the robustness of animals to handle environmental challenges and improving animal welfare.
- Innovations to accelerate the contribution of animal breeding:
 - Tools for precision phenotyping
 - Genomic prediction models to identify superior animals
 - Transparent value chains with fair sharing of rewards

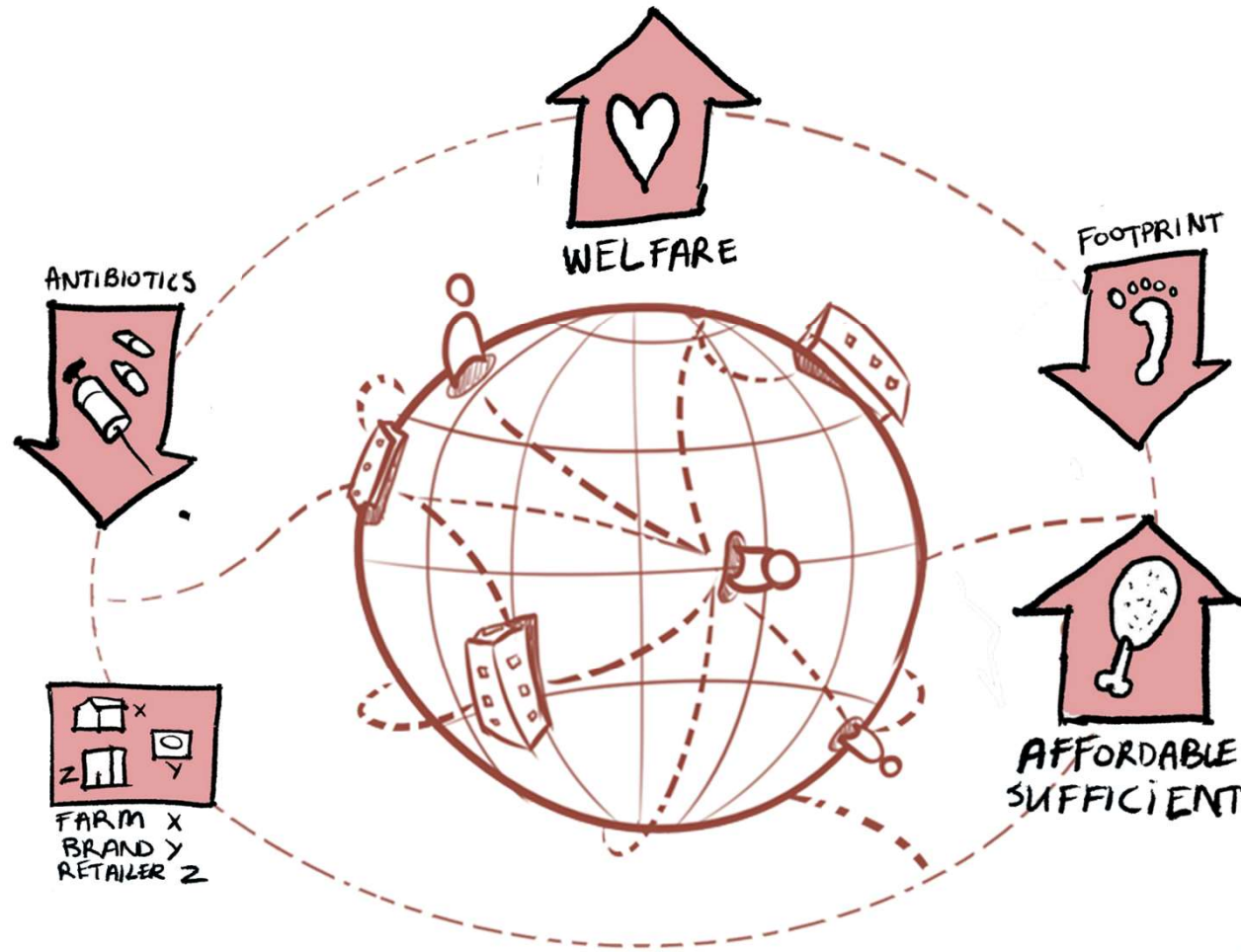
Pig and poultry breeding has contributed to lower ecological footprint

-50% Compared to 1980, pigs and poultry today need only half the amount of feed for the same animal protein output



..and will continue to do so and more!

Sustainability develops along different axes



Adapting our balanced breeding program to better meet challenges

Impact on breeding goal

Balanced breeding: adjusting the balance to meet the new demands



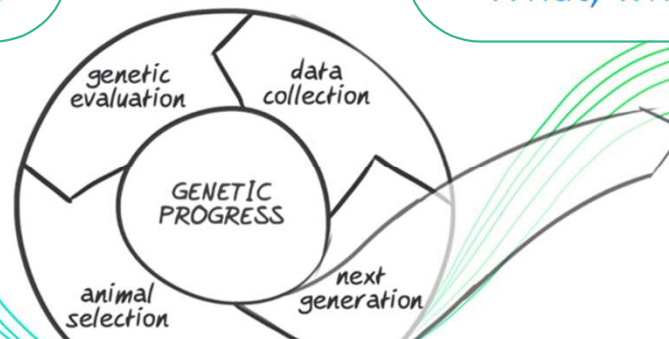
What changes are needed?

Impact on data collection

- R&D farms for Pure Lines
 - ✓ High bio-security – FAPP, Treated feed
 - ✓ many Pure Lines in unique gene pool
 - ✓ Testing and selection of new generations PL
- Field tests farms
 - ✓ Disease resistance
 - ✓ Robustness
 - ✓ Ensuring genetic potential is achieved under field conditions
- Novel traits
 - ✓ Robustness (NABs)
 - ✓ Social interactions and behaviour
 - ✓ Feather cover



What, where and how?



Using genomic selection and data science to best exploit the collected data to realize genetic improvement for all breeding goal traits

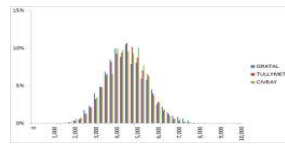
Phenotypes lay the foundation for our breeding program



Day 0
Weight
ID ear tag
DNA sample



Day 14
Weight



Day 90
Weight



Start Test
Weight



Feed Intake

ADG
ADFI
F:G
RFI



Off test
Weight
Ultrasound
- Back Fat
- Loin



Physical Selection

piglets
Born alive
Weaned
Small piglets
Variation in birth weight
Genetic defects
Survival

...

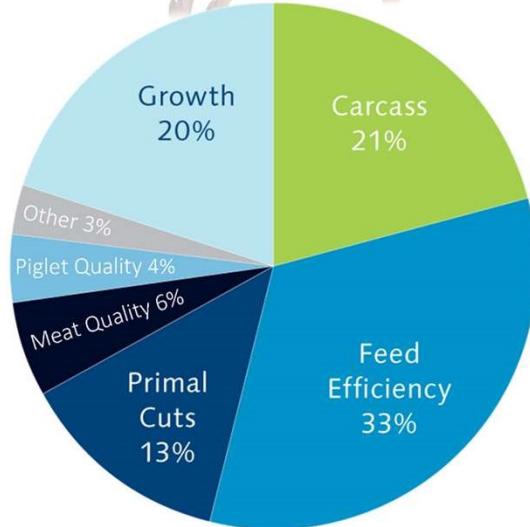
Daily Gain
Daily Feed Intake
Feed Conversion
Residual Feed Intake
Survival
Meat quality
Carcass quality

...

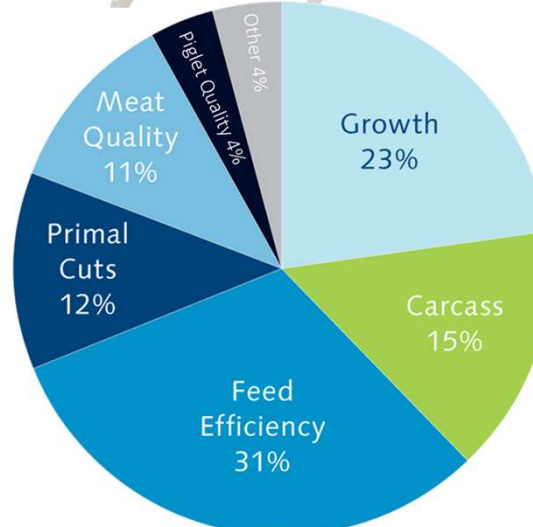
ID	Sex	Weight (kg)	ADG (g)	ADFI (g)	F:G	RFI	Back Fat (mm)	Loin (mm)
100001	M	100	1.2	1.5	1.25	0.1	10	15
100002	F	95	1.1	1.4	1.27	0.12	12	14
100003	M	105	1.3	1.6	1.23	0.08	8	16
100004	F	90	1.0	1.3	1.30	0.15	15	13
100005	M	110	1.4	1.7	1.21	0.05	5	17
100006	F	85	0.9	1.2	1.33	0.18	18	12
100007	M	115	1.5	1.8	1.19	0.02	2	18
100008	F	80	0.8	1.1	1.38	0.22	22	11
100009	M	120	1.6	1.9	1.17	0.01	1	19
100010	F	75	0.7	1.0	1.43	0.25	25	10

Different boars for different markets

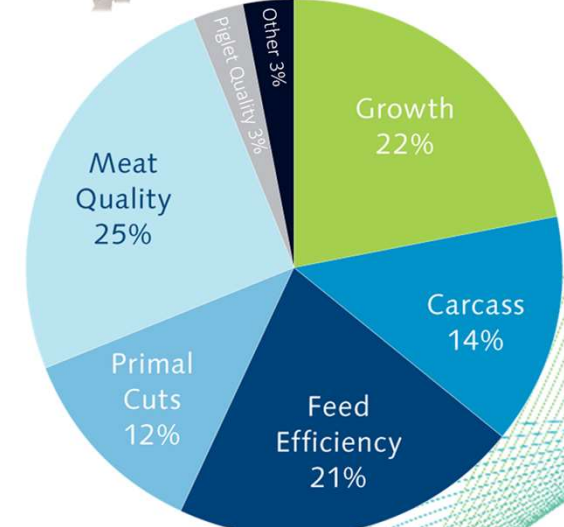
Hypor Maxter



Hypor Magnus



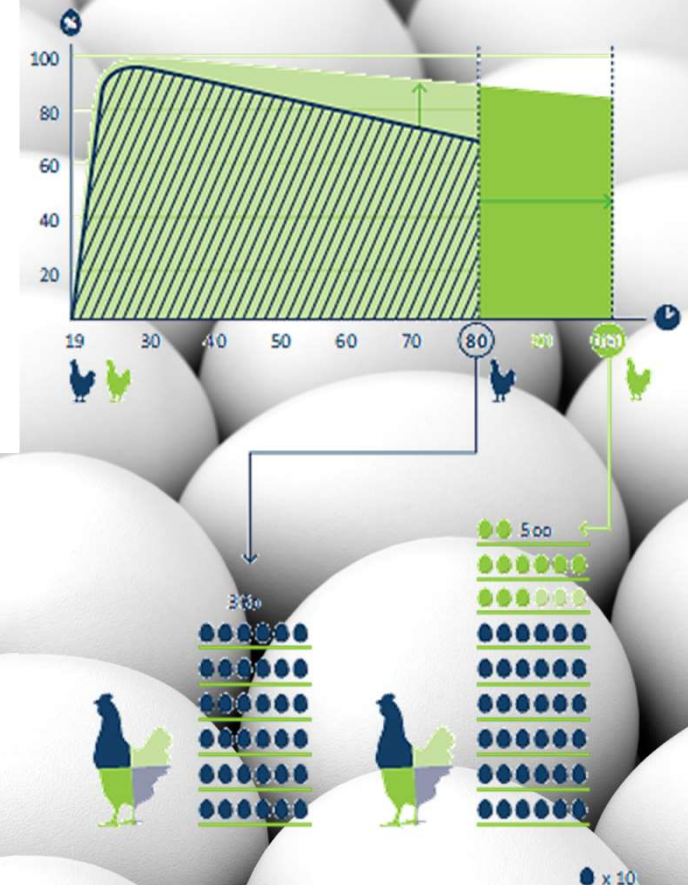
Hypor Kanto



Breeding for 500 1st quality eggs started in 2008

Towards more sustainable egg production

- By prolonged life
- Through increased egg quality
- With lower ecological footprint



First commercial flocks reached 500-egg-milestone in 2017



Published on Oct. 1, 2018

Dakota Layers achieves the "500 egg" milestone





How do you reach unprecedented egg laying performance? Jason Ramsdell from Dakota Layers chalks it up to good products, the right environment, a great team, and a love for your work.

How do you reach unprecedented egg laying performance? Jason Ramsdell from Dakota Layers chalks it up to good products, the right environment, a great team, and a love for your work.

Dakota Layers is the first producer in North America to reach a production level of 500 eggs per hen housed over a period of 100 weeks!



The power of selection

			
Pure line 	1	1	1
Grand Parents	85	40	15
Parent stock	7,500	1,600	300
Commercial animals	750,000	128,000	22,500
Output	300,000,000 eggs	1,750,000 kg meat	2,137,500 kg pork

Based on lifetime production

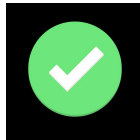
Contribution to climate action: breeding goal

More emphasis on

- Efficient use of feed resources
- Survival rates and quality of products
- Robustness to handle different qualities of feed and fluctuations in environmental conditions

Tools to accelerate improvement

- Recurrent testing



- Precision phenotyping

- Improved genomic selection tools



More can be realized through ...

- (Inter)national collaboration



- Transparent value chains in which innovations are rewarded

- Motivated people



My message

- Pig and poultry breeding will continue to contribute to improving sustainability of animal protein production.
- Balanced breeding programs are aimed at reducing the ecological food print, improving the robustness of animals to handle environmental challenges and improving animal welfare.
- Innovations to accelerate the contribution of animal breeding:
 - Tools for precision phenotyping
 - Genomic prediction models to identify superior animals
 - Transparent value chains with fair sharing of rewards

Thank you very much

Better Breeding Today. Brighter Life Tomorrow.

