How modern pig breeding deals with changing market requirements

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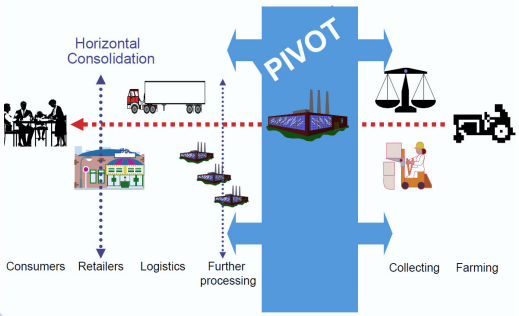
Hendrix Genetics

Hendrix Genetics, headquartered in Boxmeer, the Netherlands, is a leading multispecies breeding company, with five divisions.

Who requires what in the market?

- The Consumer
- The Retailer/Food Service
- Further Processor
- Processor (Packer)
- The Grower
- The Multiplier

The Pork Value Chain



What the consumer requires!

- Food safety:
  - Healthy (free of residues, pathogens)
  - Low fat or fat free (depending on culture)
  - Security (brands)
- (Perceived) quality *(influenced mainly by genetics, feed and processing)*
  - Color
  - Taste
  - texture
- Convenience
  - Prepacked
  - Further processed, ready to cook/eat
- Variety
  - Choice
- Sustainability of production
  - Animal welfare, emissions, carbon footprint, use of water, antibiotics

What retailers require?

- Possibility to make margins
  - Price
  - Rotation/demand
  - Exclusivity
- Variety
- Presentation
- Shelf life
- Innovation

What Foodservice requires?

- Price
- Standardization/fixed weights
- Special/tailor made cuts
- Shelf life
- Ease of handling
- Food safety

What the further processor requires ?

- Good price/quality ratio
- Yield
  - Low drip losses
  - Good texture
- Standardization/consistency of “raw material”

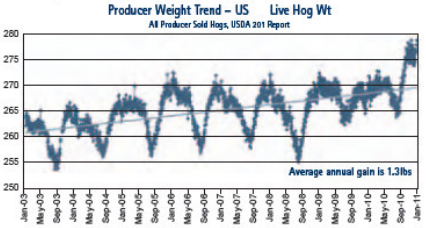
What the processor/packer requires?

- Security of supply (asset utilization)
  - In quantity
  - In quality
- Weight
  - The higher the weight the better (lower processing cost)
  - But still lean (no excessive fat)
- Yield (%lean meat)
- No defects
- Food safety

USA-trend market weight of finishing pigs

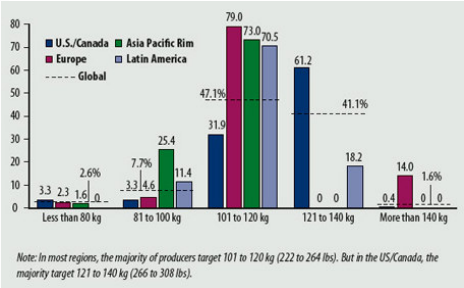
(Western Hog Journal 2011)

Figure 1: In the United States, the long-term trend is a consistent weight increase of 1.3 pounds annually



What is your target market weight?

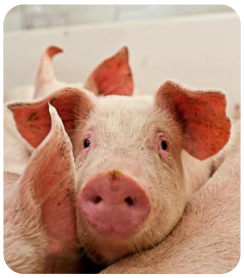
(Survey Elanco 2012, Pig Progress Vol 28)



Note: In most regions, the majority of producers target 101 to 120 kg (222 to 264 lbs). But in the US/Canada, the majority target 121 to 140 kg (266 to 308 lbs).

What the grower / fattener requires?

- Production efficiency
  - Feed Conversion
  - Growth
  - Mortality
  - Feed costs/quality
- Uniform and predictable
  - Robustness
- Not labor intensive



What the multiplier–piglet producer requires?

- Production efficiency
  - High weaned piglets per sow
  - Low feed cost per sow/piglet
  - Low mortality
- Uniform and predictable (robustness)
- Not labor intensive

Breeding goal: Producer driven versus Packer driven

Breeding goal based on both optimizing total chain and parts of chain:

Producer:
"Improving the output of kgs of pork produced per sow per year with an easy to manage robust sow focused on overall efficiency in production for the commodity pork market in integrated farms."

=> In last decade developed from technical focus on various traits to full chain "Meat per feed" efficiency

Packer:
"Increasing attention for quality requirements and standardized products; addressed in more detail."

=> Basic commodity pork towards specialized niche products

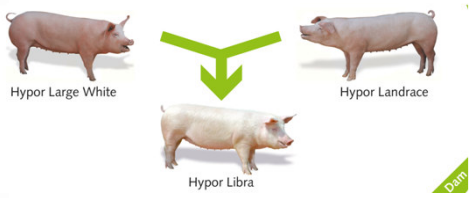
Our approach:

Product Solutions in Pork Quality Concepts

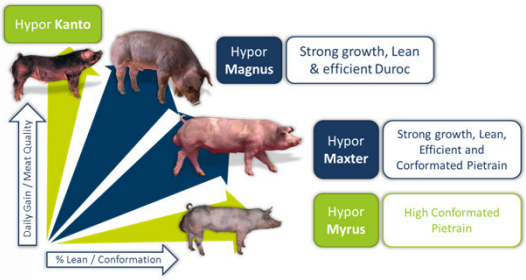
Concept	Live weight (KG)	Carcass weight (KG)	Lean % * EU/**NA	Backfat (MM)	IMF	Yield %	Loin depth (mm) * EU/**NA
Bacon	70-85	60-70	59-60*	12-14	1	82	56-58*
Fresh Pork-Extreme Lean	105-115	85-95	59-61/63-64	12-14	1.5-2	80	61-63/65-67
Cooked Ham	105-110	85-95	58-59/62-63	13-15	1	77-78	60-62/64-66
Fresh Pork - Lean	105-115	85-95	56-57/61-62	14-16	2	78-79	60-62/62-64
Cured Ham	105-115	85-95	54-55*	17-19	1.5-2	78	59-60*
Serrano Ham	112-120	90-96	53-54*	19-22	>3	77	57-60*
Parma	160-170	130-135	50-51*	20-22	2	79	61-63*
Premium Cut	112-120	90-96	52-53/61-62	17-18	>3.5	77	59-60/60-62
Japanese Premium	110-115	73-75	50-52/59-60	20-22	>3.5	66	59-61/60-63

*European Measurement
**North American Measurement

Hypor's crossbred F1 hybrid sow



Hypor global sire line portfolio



Pork: Differences of Marbelling and Color

Piétrain versus Duroc

Color, fat and water content differences

Pork: Differences of Marbelling and Color

Loin chop-Fresh Retail Market
Europa

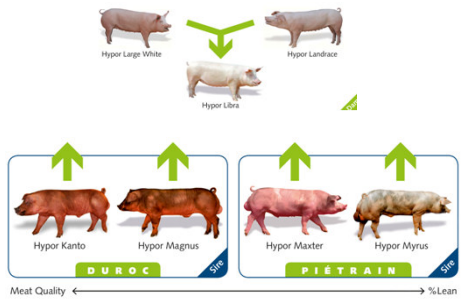
Loin chop-Fresh Meat
Japan

Pork: Differences of Marbelling and Color

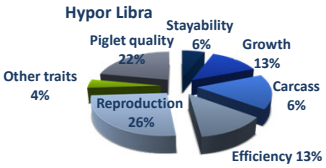
Retail Packaging In Japan:
The Perfect Presentation

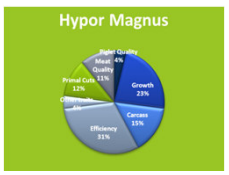
The Genetic Solution

Differentiation through specialized sire lines



Relative selection pressure in pure lines

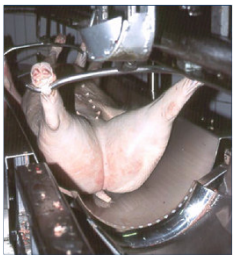




Market results

Measuring performance at market level

- Performance testing in both pure line and final product (CCPS)
- Detailed growth and carcass measurements (AutoFom)
- Direct benchmark with most actual market requirements under practical circumstances



CCPS data Canada

	Female	Male	Overall
Start Weight	46,5	47,9	47,2
End Weight	108,6	113,9	111,4
End Age	145,1	145,3	145,2
Average Daily Gain	1010,9	1077,7	1046,3
Fat Depth	13,1	16,0	14,7
Loin Depth	64,4	65,1	64,8
Total Feed Intake	153,5	175,5	168,5
FCE	2,52	2,70	2,64

CCPS Data Germany

Trait	Maxter x Libra	
	Females	Castrates
Start test (kg)	38,07	38,19
Age start test (days)	83,22	83,24
Gain till start test (gr/day)	440,1	441,2
Test end weight (kg)	118,72	119,43
Age end test (days)	173,23	170,8
Number days in test (days)	90,0	87,54
Life gain (gr/day)	679,1	693,6
Test gain (gr/day)	902,0	935,4
Fat thickness Aloka	14,59	17,47
Muscle thickness Aloka	69,76	67,13
HGP Meat% Aloka	59,48	56,91

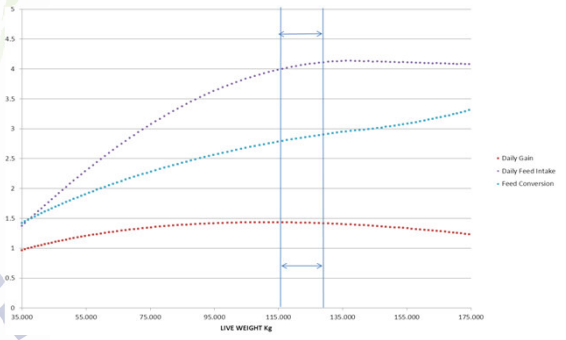
Trait	Maxter x Libra	
	Females	Castrates
Ham	17,15	16,39
Loin	6,65	6,28
Belly	13,54	13,81
Shoulder	8,40	8,06
Total parts	45,75	44,53
Total valuable parts	23,80	22,66
Total parts %	50,06	49,19
Total valuable parts %	26,05	25,05

Optimization process

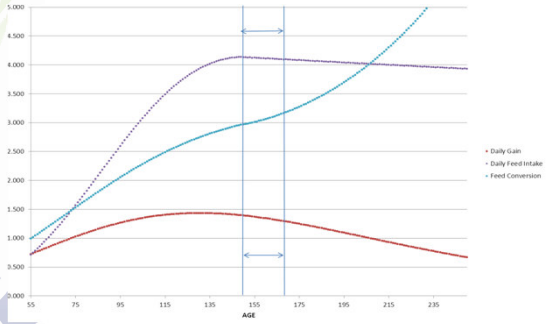
Hypor
A Hendrix Genetics Company

How can we optimize?

Precision Farming – Optimizing marginal profits vs marginal costs



Same graphs by age

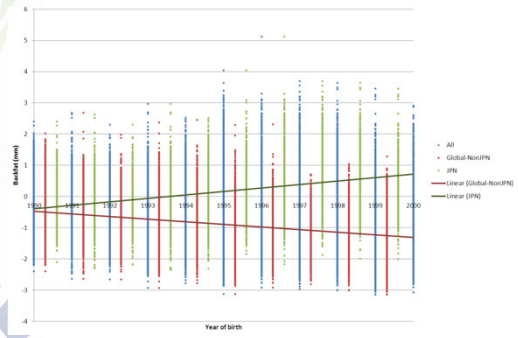


How can we prepare our products to meet market requirements?

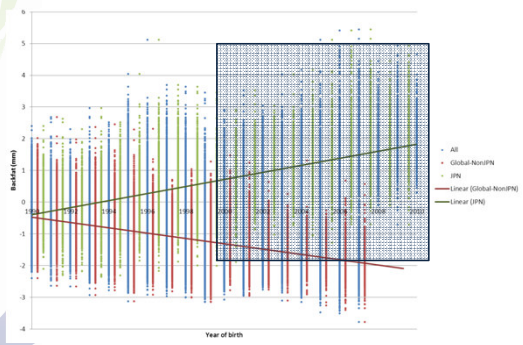
- Differentiating from existing product portfolio
- Specialized niche product solutions
- Tailoring within products (Genomic Enhanced Tailoring)

Differentiation - Backfat genetic trend

Global-Non-JP vs niche market (JP)



Specialized niche products



Genomic Enhanced Tailoring

Based on SNPs (from main QTL's towards Genome Wide coverage)

Row Labels	Column Labels 11	12
Avg Muscle Depth Pure line		
11		
12	6.76	5.91
22	6.20	5.10
Avg Muscle Depth Final Product		
11		
12	4.81	4.65
22	4.56	3.06
Avg Backfat Pure Line		
11		
12	-0.57	-1.42
22	-0.40	-1.00
Avg Backfat Final Product		
11		
12	-3.04	-4.08
22	-2.67	-3.13

Conclusions

- More measurements at market level and direct use these measurements for selection through feed back to the breeding system (CCPS)
- Increase **predictability** and **uniformity** of product performance and Final product level
- More effective steering with other management tools (**Precision Farming**)
- Better **matching market requirements**, more **profit!**

Thank you for your attention

WHAT MAKES US DIFFERENT?

technical support | respect | performance | research & development | speed | long-term thinking
training | transparent | knowledge sharing | multidisciplinary approach | decisive | efficient | dedicated

HENDRIX GENETICS

Better Breeding Today. **Brighter Life Tomorrow.**