

# Product quality assurance in pig supply chains in the Netherlands

Meeting with Changrong, 15 April 2021

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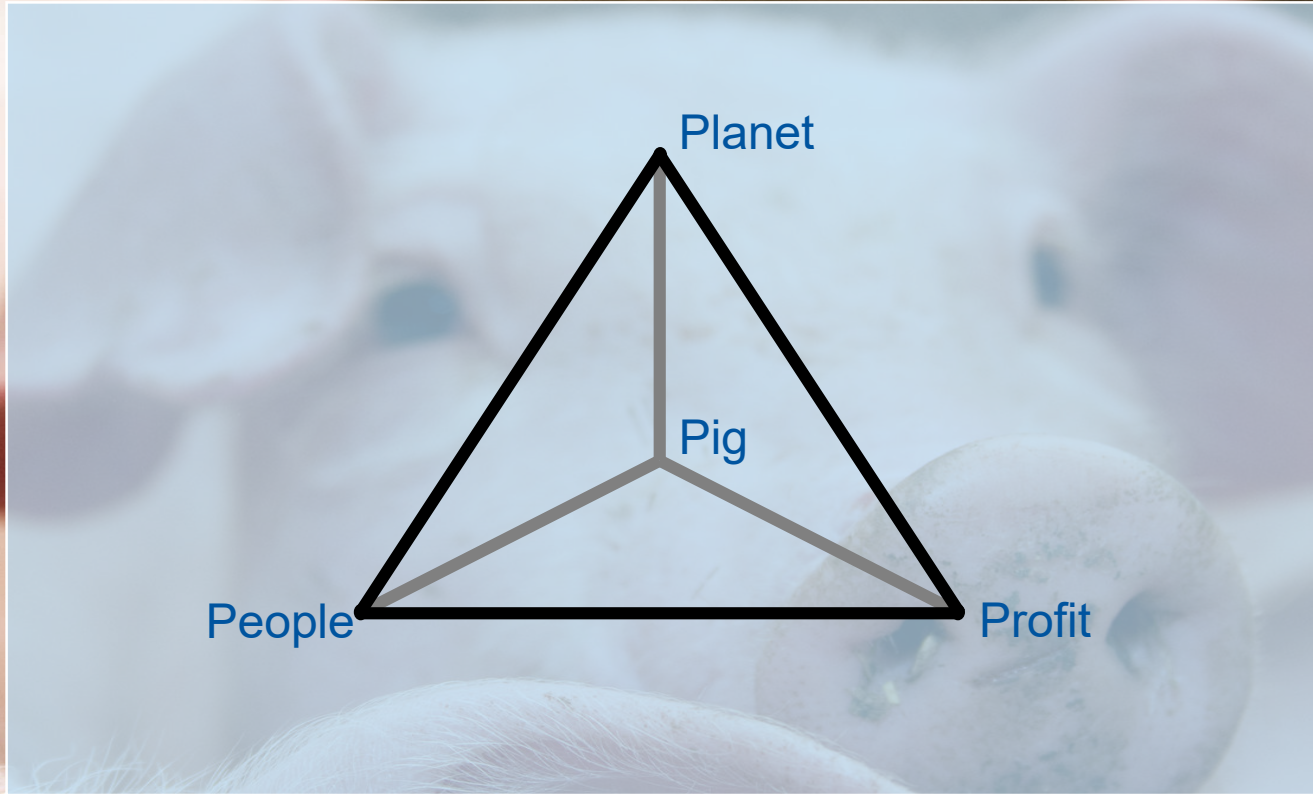


# Agenda

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- Societal demands (4P)
- Legislation and regulations
- Headaches
- Market programs
- Dutch pig farm

# Societal demands in agricultural production



# 1. People

- Concerned employees and skilled managers
  - Lack of workers – increase efficiency, automation
    - Smart farming, only for smart farmers
  - Product safety – integrated supply chain control
  - Societal acceptance
- ➔ Unlock human skills: awareness, responsibility, drive



Photo: Pluimveeweb Agrio

## 2. Pig

- Animal health & biosecurity
- Animal welfare
- Zootechnical performance

➔ Focus on animals



# 3. Planet

- Environmental footprint (emissions, soils, feed efficiency)
- Protein demand – insects, processed animal proteins, etc.
- Lowering food losses
- Consumer shift towards chicken

➔ Transfer the Earth to the next generation

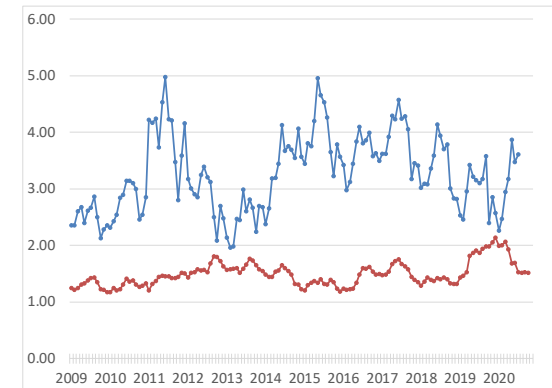




# 4. Profit

- Profit is a precondition
- Cost approach vs added value
- Fluctuating prices
- Risk management
- Supply chain management

➔ Balance the challenges and opportunities



## Legislation and regulations





# Requirements' pyramid



# EU Legislation (some examples)

- General Food Law: Council Regulation (EC) No 178/2002 laying down the general principles and requirements of food law
- N Directive: Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources
- National Emission Ceilings Directive: Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants
- Pig Husbandry Directive: Council Directive 2008/120/EC of 18 December 2008 laying down minimum standards for the protection of pigs
- Transport Regulation: Council Regulation (EC) 1/2005 on the protection of animals during transport and related operations
- Slaughter Regulation: Council Regulation (EC) 1099/2009 on the protection of animals at the time of killing

# Legislation of EU applied by Member States

- Regulations are directly binding; Directives are goal-oriented and are to be transferred into practice in Member States. E.g.:
  - General Food Law – directly applicable
  - Animal welfare requirements: EU Directive plus national measures on top
  - National Emission Ceilings Directive: political decision how to implement; specific measures for e.g. pig industry

# Dutch legislation – animal welfare (main points)

- EU legislation + National legislation
- Space allowances (2.25m<sup>2</sup>/pregnant sow; 0.8m<sup>2</sup> finisher)
- Group housing pregnant sows (as of 4 days after insemination)
- Isolation of sick animals
- Mutilations only if really necessary
- Transport (e.g. truck loading density) and slaughtering



# Dutch legislation – environment (main points)

- Manure storage capacity on farm 7 month
- Mineral balance on every farm
- Maximum manure application on land
- Ammonia emission reduction ~50-90% (e.g. air scrubbers)
- Odour reduction
- Production rights (max. number of animals)



# Industry standards

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- Feed production: GMP+
- Supply chain: IKB →; Holland Varken; GlobalGAP, QS
- Meat industry: BRC, IFS, ..
- Market programs →



# IKB – Integrated Chain Control



## Highlights van 35 jaar IKB in Nederland

- 1985** Eerste IKB-pilot in de varkenssector
- 1988** PVV-IKB Varkens gaat van start
- 1993** IKB uitgebreid met module Japanwaardig
- 1997** Start kolomcertificering van Skovar
- 2003** Skovar geïntegreerd in IKB
- 2002** Oprichting nieuwe IKB door NVV
- 2003** Start uitvoering IKB 2004 door De Groene Belangenbehartiger, Producent certificeert
- 2007** Raad van Accreditatie voor onafhankelijke inspectie en certificering NEN-ISO's
- 2009** Antibioticaverantwoording en -registratie
- 2009** Geborgde dierenarts opgenomen
- 2012** PVV-IKB gaat over naar private stichting: IKB Varken. CBD is regelinghouder, Kiwa Verin certificeert
- 2012** IKB 2004 wordt IKB Nederland Varkens (IKBNV)
- 2018** Begin gemaakt met Holland Varken, ook als modules van IKB's.
- 2019** IKB's aangemeld voor ketenborging; IKBNV al geaccepteerd
- 2020** IKB Varken heeft 2.700 deelnemers; IKB Nederland varkens circa 1.500

# What is IKB (Integrated Chain Control)

- Control system for entire pig supply chain
  - Pig farmers, traders, transporters, abattoir, processors, distribution
- Aim: guarantees on quality and origin of meat and the way of production throughout the supply chain
- Trust building
- Independent expert committee decides on requirements
- Independent auditing and certification for full compliance

# IKB Development

- Initiative started 1985; officially founded 1992 by Product Board
- Demand for product guarantees and trust building
- 2 private systems (IKB Varken & IKB Nederland)
- Continuous extension and fine-tuning
  - GMP+ (feed stuffs), I&R (identification & registration), HACCP, GlobalGAP; monitoring of forbidden substances; Salmonella monitoring; Antibiotics registration; Holland Varken; welzijnscheck
- Digitization

# IKB Requirements (examples)

- Safety risk analysis
- Record of animal numbers
- Hygiene measures - paved roads, sluice/shower, truck cleaning, fallen stock, pest control, cleaning, ..
- Feed - separate feed bins, identifiable, dry, GMP+; annual water quality check
- Annual check of electric devices
- Housing - legal requirements, sick pen, all-in all-out system per department
- Veterinary - contract, medicament storage, shelf life control, registration of medication
- Registration - visitors, used disinfectants, pest control, feed delivery, calamities, antibiotics
- Plan - farm health plan, ..

# IKB Current application

- Voluntary, still generally applied system (almost 100%)
- Extension to Holland Varken, for export branding
- Integrated Chain Control approach now applied in many countries
- IKB systems also in other animal production sectors

# Export requirements

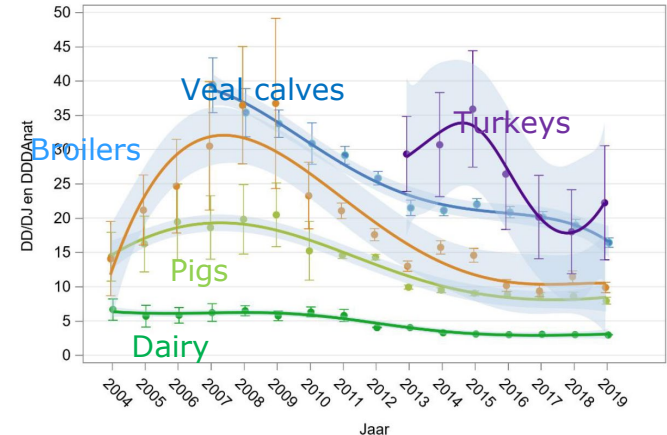
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- Receiving nations have own demands and audits
- Differs per country
- E.g. China: G2G agreement, followed by company audits



# Dutch regulation on antibiotics reduction

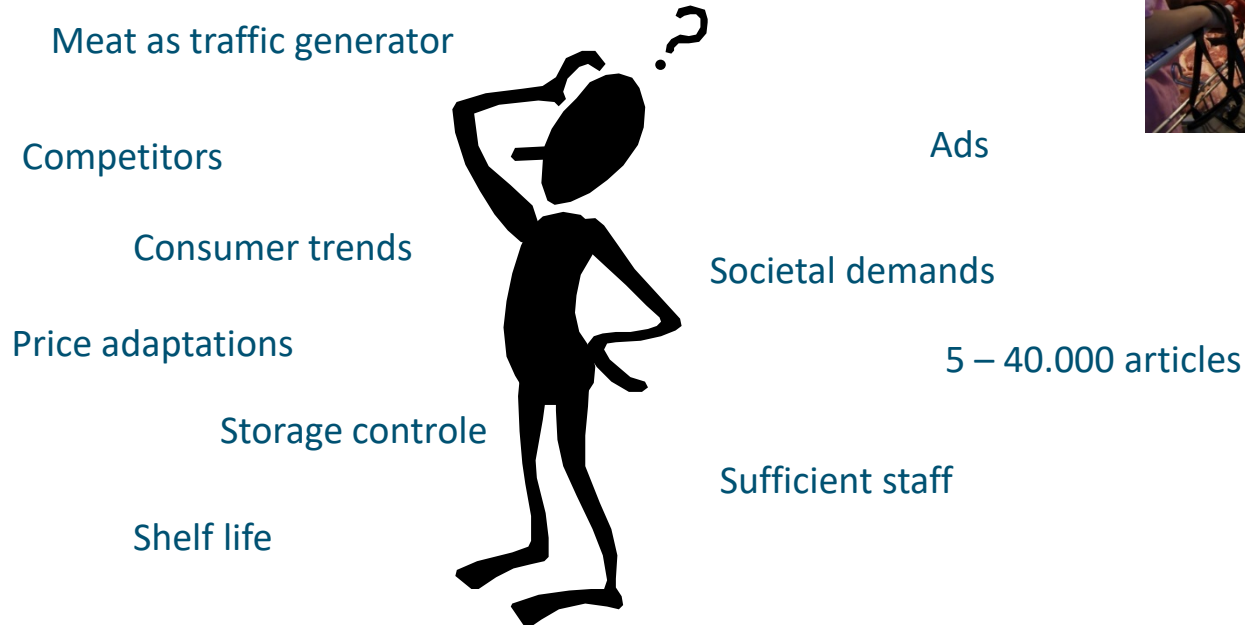
- Antibiotics as growth promotor prohibited as of 2006
- Reduction goal set by Dutch government in 2009
  - -20% in 2011; -50% in 2013
- Only exceptionally use 3<sup>rd</sup>/4<sup>th</sup> generation cephalosporines
- Voluntary reduction of antibiotics use
- Quantification, benchmarking, awareness among farmers and vets



A high-angle, wide shot of a large industrial pig farming facility. The room is filled with rows of metal cages, each containing several piglets. The cages are arranged in long aisles, and the floor is covered with a blue plastic liner. The walls are made of concrete, and there are various signs and posters on the left wall, including one for 'VPO' and another for 'BM'. The lighting is bright and even, illuminating the entire space. The overall atmosphere is one of a large-scale, industrialized agricultural operation.

# Headaches of supply chain players

# Headaches supermarket entrepreneur



→ Need for flexible suppliers

# Headaches meat processor



Carcass valorisation

Logistics

Purchase of animals

Drip loss

Audits

Origin labelling

Capacity control

Weight variation

Weekly price changes

Trade agreements

ASF risks



→ Need for optimal valorisation and capacity use

# Headaches pig farmer



Health of the pigs

Pig price

Piglet price

Sales: number and weight

Rather small player

Feed price

Liquidity

Feed conversion ratio

Mortality

Permits

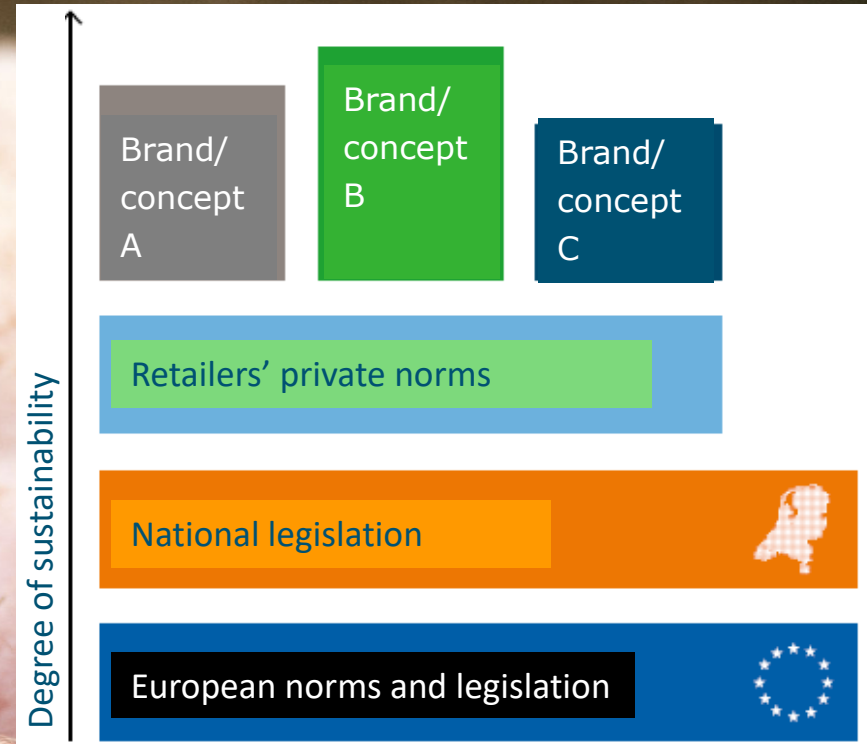
Neighbourhood



→ Need for good price and sales security



## Market programs





# Market programs 1)



- Government: support implementation of improved production standards
- 2000: Organic production – goal 5% market – expensive
  - Strong cooperation in supply chain
  - Fixed market price for pigs, based on cost calculation
  - Profit sharing farm - meat company - retailer
  - Still slow increase of market share
  - Organic is societally and B2B recognized and accepted
  - Finding: Lower standards for wider application, more affordable

# Market programs 2)



- 2007: Animal welfare organisation Dierenbescherming introduced Beter Leven hallmark
  - Focus animal welfare
  - Recognition of independent organisation
  - Consumer oriented
  - Market share ~25% pigs
  - NW-European movement towards added value programs

# Market programs 3)

- 2015: Farmers and industry introduced Varken van Morgen
  - Welfare requirements ~ Beter Leven + antibiotic reduction + some environmental issues
  - Business to business – no consumer hallmark
  - Accepted by all Dutch retailers – 100% fresh pig meat in super markets

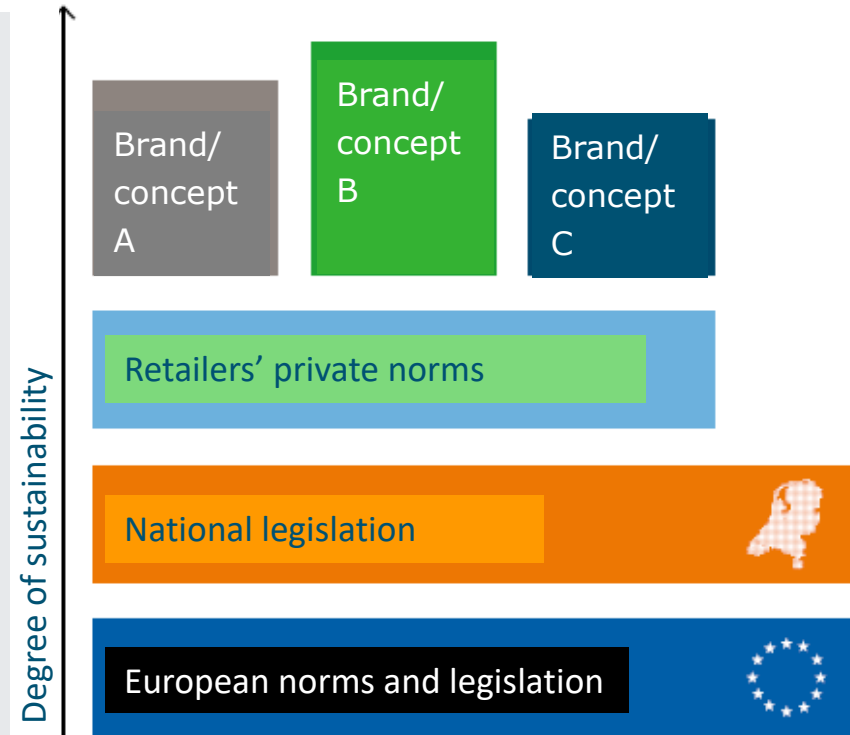
# History of development of market programs

- Different focus: animal welfare (Beter Leven, Wroet, scharrel), low/no antibiotics (KDV+), environmental protection (Milieukeur), no soy (Hamletz), taste (Frievar), local (Livar), etc.
- Meanwhile often a combination of items
- Most of them not successful – most important: lacking market demand, economy-of-scale

# Overview of main market programs (2019)

Good Farming Star  
Keten Duurzaam varkensvlees  
De Hoevenaer  
De Heydehoeve  
Pork Best  
Frievar  
Krull  
Lievar  
Wroetvarken  
Scharrelvarkens  
Pipaporc  
Hamletz  
Beemsterlant's Varken  
ValleiVarken  
Edelbrons  
Ruyghveen  
Vair buitengewone varkens  
Biologisch

Estimated market share in  
the Netherlands 25%



Source: Reinders et al., 2013

# Success factors for added-value market program

- Demand-driven
- Combination of focus elements
- Scale – either small (butcher) or large (retailer)
- Carcass valorisation
- Balance between Limited additional costs, Adaptation flexibility and Distinctive value for retail
- Supply chain cooperation



# Carcass valorisation

- Consumer preferences
- Not all parts of carcass equally preferred
- Price gap between program and common market
- Assume 50% of carcass sold under program
  - Additional costs borne by those 50%



# Additional costs multiplication

- Additional costs on farm multiplied towards the shelf
- Leverage factor 3-5
  - Part of carcass is edible (e.g. no bones)
  - Part cannot be sold under market program (e.g. tails)
  - Retailer margins are typically proportional
  - Additional logistic costs
- Example: +10 cents/kg carcass, shop price +50cents/kg meat
- May be completely different in China

# Some pictures of a Dutch pig farm



# Farm for sale in the Netherlands (no successor)



1,740 sows + 2,800 gilts/finishers  
Farm buildings built 1989-2008  
Solar power

<https://www.boerderij.nl/Varkenshouderij/Foto-Video/2020/6/Te-koop-groot-varkensbedrijf-in-extensieve-regio-596723E/>



# Feeding



Compound feed + some home-grown ingredients



Fully automated  
climate control



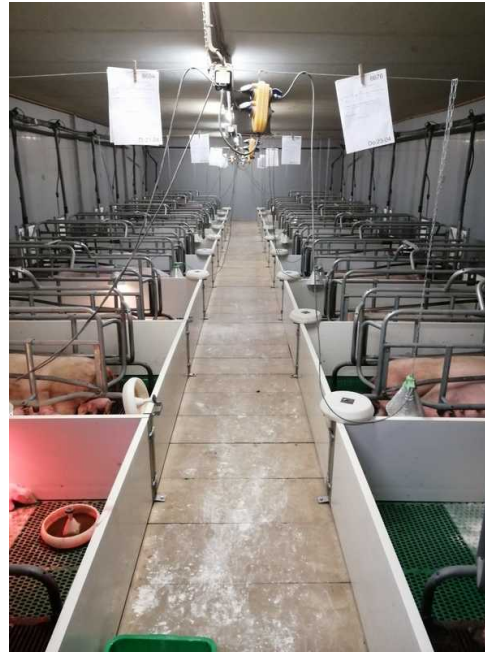


# Sow housing



Pregnant sows held in groups

Farrowing:  
20 pens per department  
Heated area for suckling piglets



# Rearing and finishing



Rearing piglets  
Group feeding  
Playing material

Finishers: 0.8m<sup>2</sup>



Questions?





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