Norsvin and norwegian pig production

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Breeding Program Manager

Norsvin

Structure of Norsvin

Norsvin

Norsvin

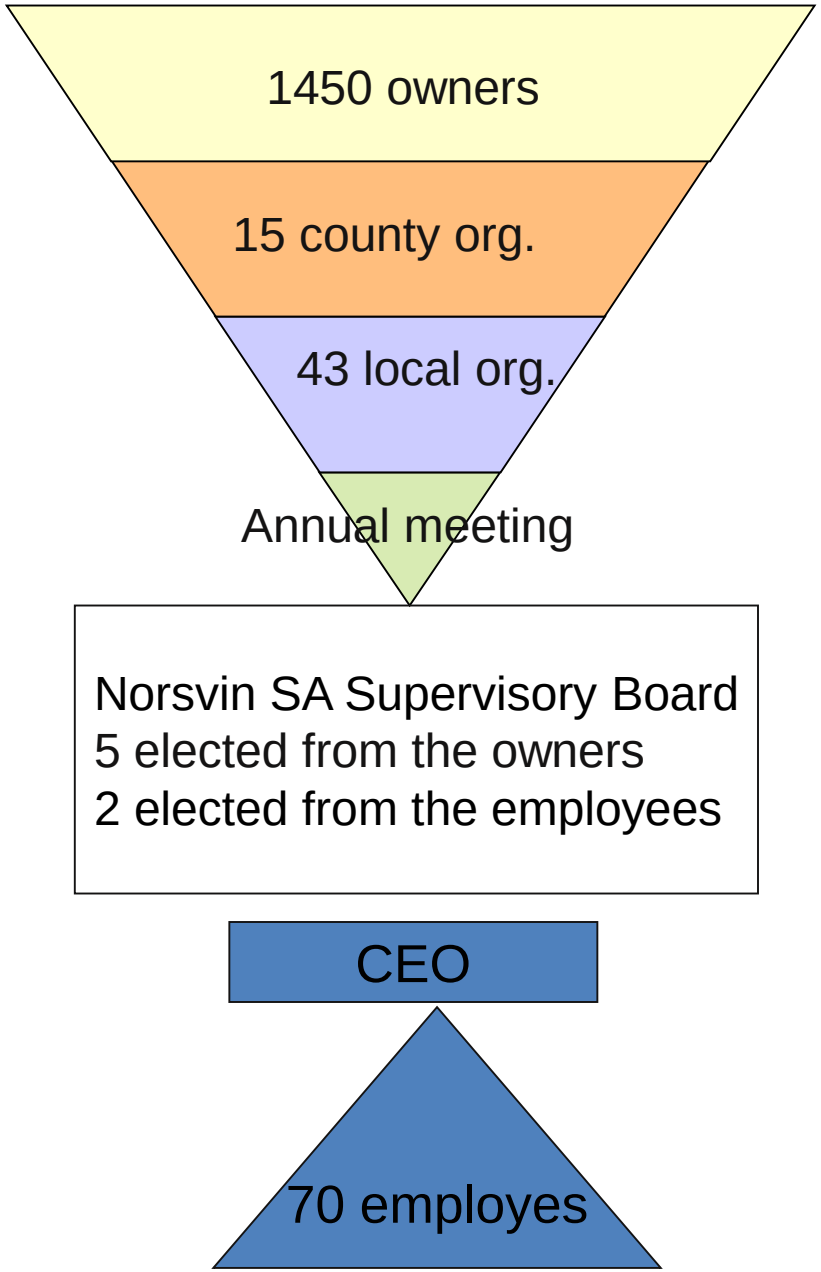
- Breeding company and a members organization
- Owned by Norwegian pig producers
- Head office in Hamar
- Research department at the Norwegian Universety of Life Sciences

Norsvin's purpose is to ensure the owners competitiveness through;

- Access to swine genetics of the best quality
- Ensure good framework conditions

3 GUIDING STARS (1958)

- The farmers independence
- Progress for the many
- Achievements through science


1450 owners
15 county org.
43 local org.
Annual meeting
Norsvin SA Supervisory Board
5 elected from the owners
2 elected from the employees
CEO
70 employes

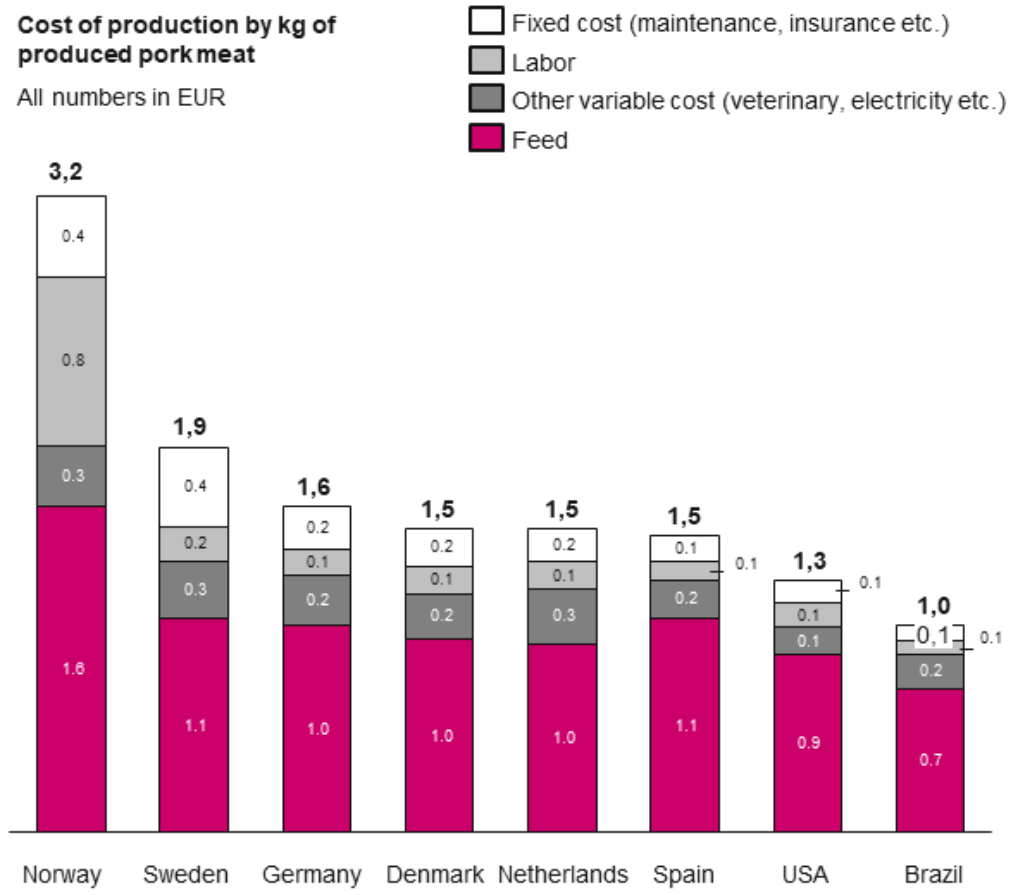
Norwegian pig production

Norsvin

Cost structure of pork production:

Feed is the most important cost component, especially in the low cost countries

Cost structure of pork production in selected countries proves feed a major concern for producers globally



Source: Norsvin, Interpig database, Danish Pig Research Centre. NOK/EUR: 8.12

Comments

- Total cost by produced unit shows the strong competitive advantage of net exporting pork producing countries such as the US and Brazil
- However, trade barriers and other protective measures makes production local
- Regardless of country, cost of feed is the most significant cost component in pork production. This is partly due to inflation in feed prices, and partly the relatively lower degree of economies of scale within feed compared to i.e. building/capital
- Feed cost as share of total cost is higher in low-cost producing countries

Feed efficient production inevitable in order to stay competitive

Norsvin

Facts about Norway (excl.Svalbard)

- **3% arable land**
  - 30 % cereal **(1 210 000 tonn)**
    - Wheat 24 %
    - Barly 47 %
    - Oat 27 %
    - Rye 2 %
  - 65 % meadows and pastures
- 38 % forest
- 52 % other land area
- 6 % water area
- 1 % icecap area
- Average farm size in Norway 23 hectare
  - Ringsaker: 32 hectar (excl pastures), 6 % of pork production, 8000 tonn

1)Åby, B. A., Kantanen, J., Aass, L., & Meuwissen, T. (2014). Current status of livestock production in the Nordic countries and future challenges with a changing climate and human population growth. *Acta Agriculturae Scandinavica, Section A—Animal Science*, *64*(2), 73-97

Regulation of price; Annual agriculture negotiations

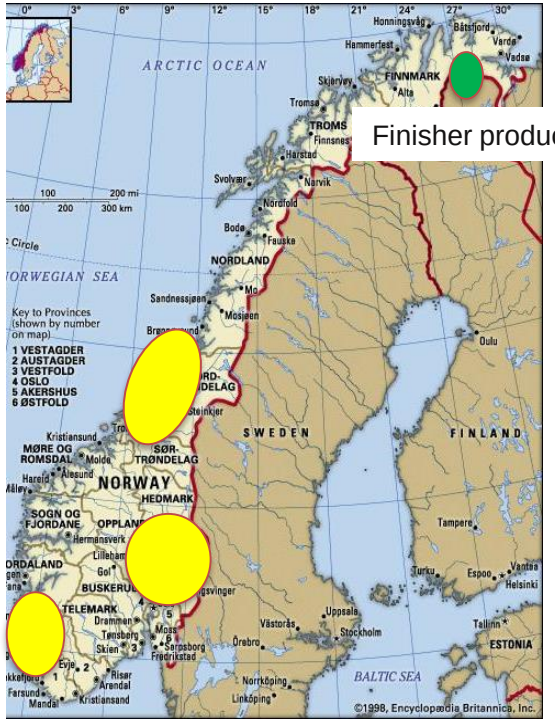
- The agricultural agreements specify target prices, financial transfers and other measures that will ensure farmers' income. In return, farmers will reach the production targets the government determines for Norwegian agriculture.

- Target price for pork: NOK 31.2/kg. Due to oversupply in 2017: 0.6 NOK/kg lower than the target.

- The oversupply can be exported, but the maximum quota is 1 900 tonn

- Concession rules; 105 breeding sows annually, equal to 2100 finishers per year.

Pig production in Norway



Finisher producer

Family farming

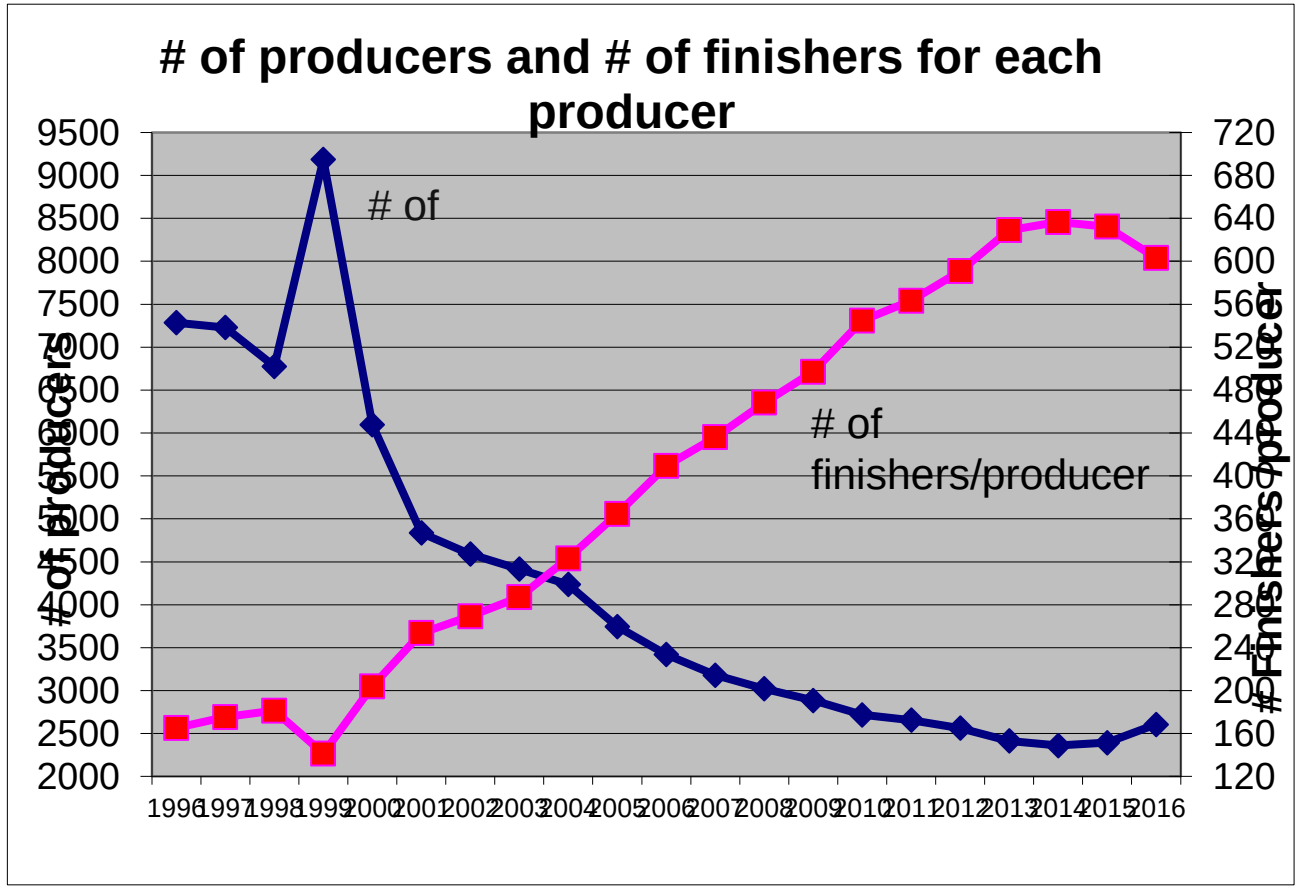
~1000 weaner producers

~47 000 sows

~1300 finisher producers

~1 mill finishers produced

– 1.6 mill



Slaughter industry

Annually: 1.6 mill heads (incl sows)

18 plants with pork

- Rudshøgda: 222 000 finishers

- Nortura:
  - Co-operative owned by farmers
  - Market share of 70 %

- Confederation of Meat and Poultry:
  - Represents the privately owned free standing part of the industry
  - Market share of 30 %

Norwegian Agriculture Agency (Omsetningsrådet)

- Norwegian Agriculture Agency is an agency of the Norwegian Ministry of Agriculture and Food, and is a national authority, having the competence to ensure that all schemes and regulations are administered uniformly across the country, and throughout the value chain.
- Mission Statement:
  To provide professional advice, implement agricultural policies, and facilitate co-operation within the agricultural and food industry.
- Key objectives:
  Within the framework of the national agriculture and food policy, the Norwegian Agriculture Agency strives to be a user-orientated and efficient enterprise that contributes to:
  - Securing the resource base for agriculture and forestry.
  - Securing value capture and growth while monitoring the competitiveness of agriculture-based trade and industry.

Price setting pigmeat pr. kg

Engrospris (”maks”) Max price	**32,92**	
÷ Control Fee and research fee (0,35 +0,14)	**0,49**	
= Målpris, target price, negotiated with goverment	**32,43**	
÷ Underprice due to markedbalance	**0,85**	
+ Biproduktsverdi, value other products, head, legs etc.	**?**	
÷ slaughtering, transportation, administration	**?**	
÷ market tax, omsetningsavgift	**1,30**	**150 mil kr**
÷ Slaughtery avanse ??	**?**	
= Price to the farmer	**26,18**	
÷ Feed cost	**14,45**	
÷ Other cost	**4,31**	
÷ Buildings	**5,59**	
+ Gouverment grants from negotiation, like supersede	**0,27**	
= remuneration, earings from each kg meat.	**+ 2,10**	**0,2 EURO**

How to use marked tax, omsetingsavgift

3 different purposes in 2016
-Regulation 120 mil kr
45 mil export subsidee.
-Information 52 mil kr
-Quality and breeding 70 mil kr

The big difference is due to the marked Situation (to much)

Can export but to high prices and limeted
Use of markedtax, 1900 tons.

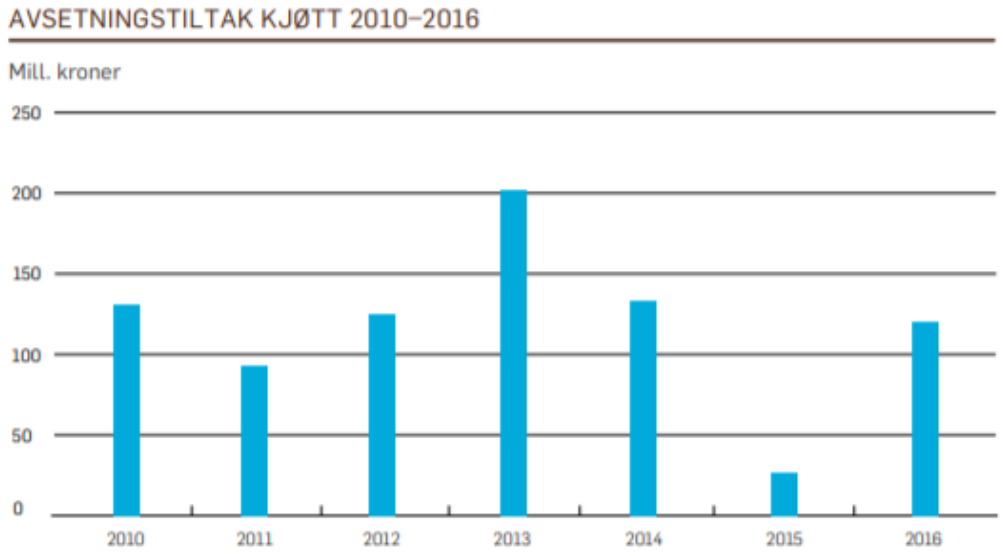
The markedtax has a minimum around 0,7 kr and max 2,5 kr.

Fordelingen av midler på avsetningstiltak for kjøtt de to siste årene i kroner

	2016	2015
Reguleringslager[1)]	52 579 735	9 634 456
Frysefradrag	9 702 755	235 993
Reguleringseksport	45 106 620	4 296 923
Tiltak for reduserte slaktevekter	0	0
Markedsregulators administrasjonskostnader	12 526 601	12 399 933
Sum avsetningstiltak kjøtt	**119 915 710**	**26 567 305**

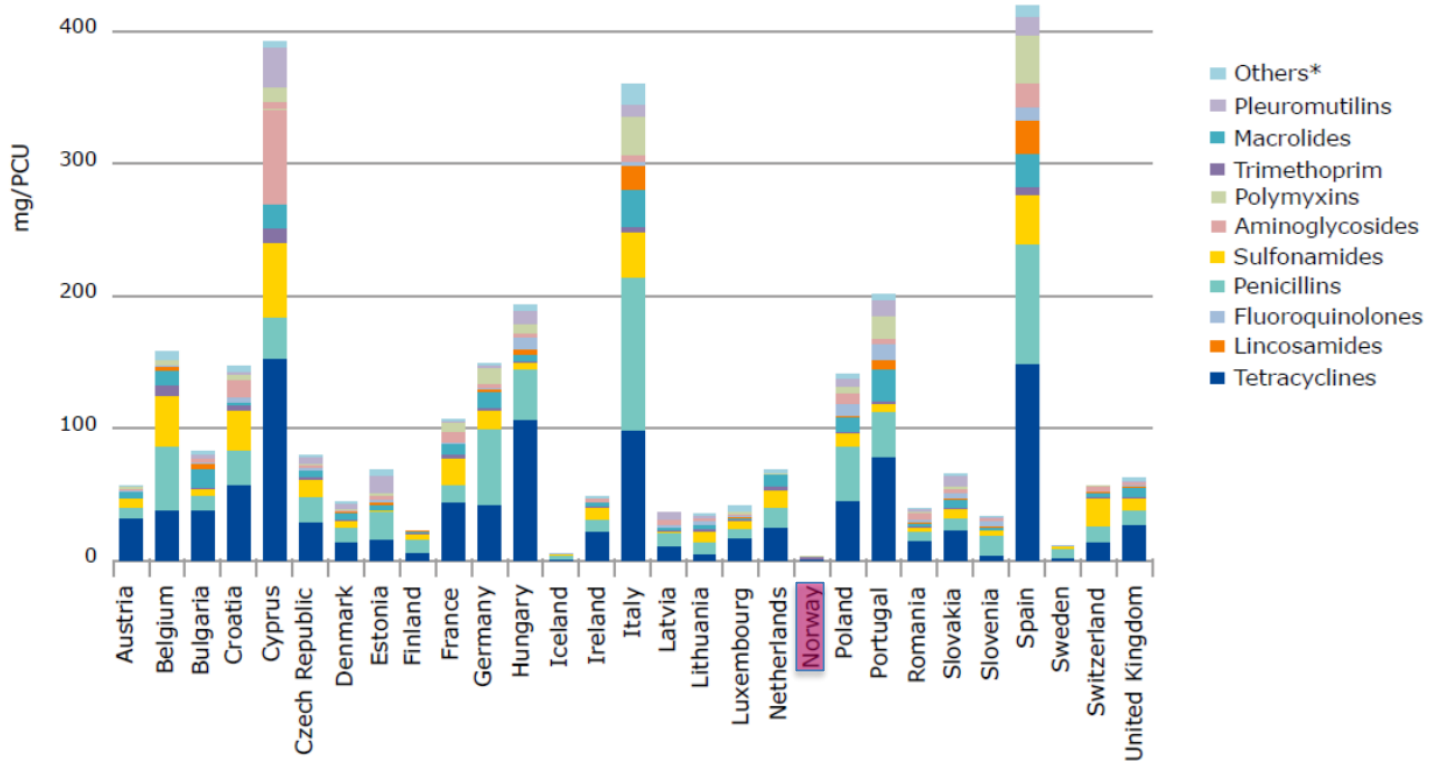
[1)] I posten inngår pristap/prisgevinst i perioden.

Bruk av midler til avsetningstiltak for kjøtt i perioden 2010–2016:



Use of antibiotics

Figure 8. Sales for food-producing species, in mg/PCU, of the various veterinary antimicrobial classes, for 29 European countries, in 2014[1]



Biosecurity

- All feed is heated for pelleting process
  - All phases of production
  - Started in 1963
- Only 4 swine importation events in the last 10-15 years
- Small herds all located indoors
- ~35 nucleus herds spread over a large bio-secure area.
- Transportation
  - Norsvin owns and operates trucks and trailers for all boar transportation

Methicillin resistent *Staphylococcus aureus* (MRSA)

- 1928: Alexander Flemming discovers penicillin
- 1944: Penicillin is used by the allied to treat infections
- 1947: First detection of penicillin resistant bacteria
- 1961: First detection of MRSA, in UK
- 2004: First detection of LA-MRSA, in the Netherlands
- 2008: First detection of MRSA in pigs in Norway
- 2011: First detection of LA-MRSA in pigs in Norway

National suveilence program for MRSA

- **2014:** Surveillance of all piglet producers with more than 10 sows
  - Only one positive herd
- **2015:** Surveillance where all finishing herds with more than 100 pigs produced annually were screened + all sow pools+ all breeding herds
- **2016:** All piglet producers with more than 10 sows + all sow pools + all breeding herds
- **2017:** All piglet producers with more than 10 sows + all sow pools+ all breeding herds

Preventive measures

- Use facemask, disposeable glowes and head coverage in adittion to the farms own coveralls and boots

- MRSA lab test of all personell working in the herd
  - New test after
    - Contact with pigs abroad
    - Contact with health institutions (including dentists) abroad
    - Longer stay abroad

LA-MRSA

- 2008: First detection of MRSA (human variant) in Norway
  - 1000 pigs from 200 herds tested, none found positive
- 2011: First detection of LA-MRSA in Norway
  - 1033 pigs from 217 herds tested. LA-MRSA found in two samples.
- 2012: 175 herds tested. LA-MRSA found in one herd.
- 2013: LA-MRSA found in two livestock flows; a) 12 herds, b) 11 herds.
- 2014 and 2015: LA-MRSA found in c) 3 + 7 herds, d) 9 herds (not LA-MRSA), e)22 herds, f)1 herd
- 2016: LA-MRSA found in 3 herds
- **2017: No new herd-systems contaminated with LA-MRSA**

Norwegian Animal welfare act

- *”§ 3. General requirement regarding the treatment of animals*

  Animals have an intrinsic value which is irrespective of the usable value they may have for man. Animals shall be treated well and be protected from danger of unnecessary stress and strains.”

- *”§ 25. Breeding*

  Breeding shall encourage characteristics which give robust animals which function well and have good health.”

Regulation for the keeping of pigs in Norway

- Flooring (concrete): Max distance between slats= 2 cm
- Weaning: Earliest weaning: 28 days
- Castration:
  - Before 4 weeks
  - By veterinarian
  - Anaesthetics must be administrated
- Docking of tail: Not allowed
- No fixation
- Rooting material must be present
- Feed
  - Fibre: gilts, sows and boars must have access
- Space requirements: Farrowing crates: minimum 6 m^2

Example: Bøhnsdalen Multiplier farm

- Production
  - 140 landrace sows
    - Produce TN70 sows
  - 3 weeks batch system, 20 sows/batch
  - Sales:
    - 10 gilts/sow/year
    - 1 000 piglets at 28 kg
  - Finishers: 1 600 finishers/year (by-product)
  - Conventional health (APP positive)
- Feeding
  - Mainly liquid feeding, (premix, soya and whey from dairyplant, bi-products form industry)
- Crop: 125 ha with oats, wheat, barley and rape seed

Production results

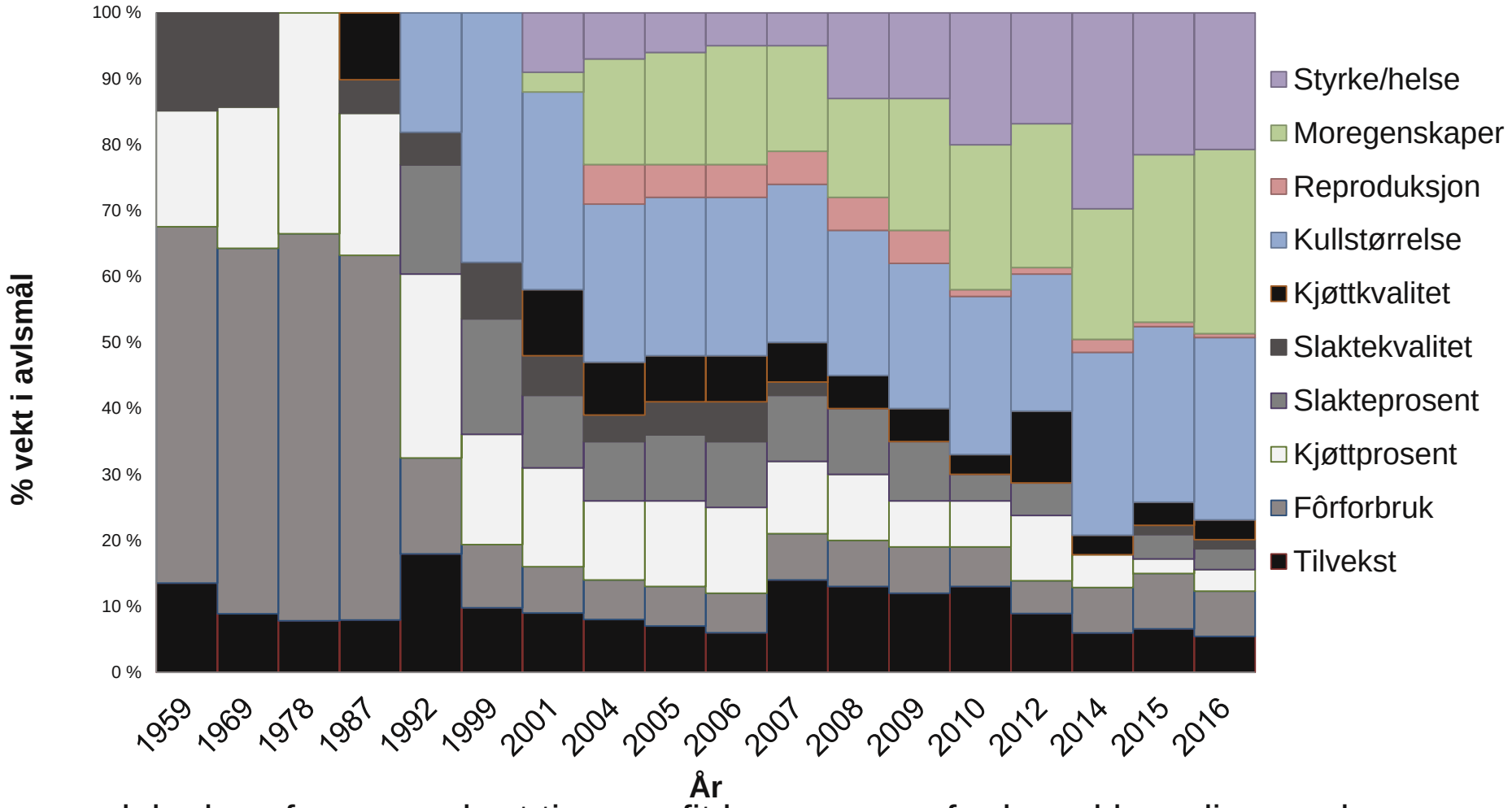
- Sows
  - Purebred landrace,
    - high P1 percentage
  - 29 PSY
    - NO nurse sows
  - 12.7 weaned/litter
  - 33 days at weaning
    - Piglets average 10.5 kg at weaning
  - 2.3 litters/year
  - Age at first farrowing: 340 days
- Finishers
  - By-product
    - (TN70- gilts and boars)
  - 30 - 125 kg. Improvac on boars
  - Growth: 1 120 g/day
  - FCR: 2.35
  - LMP – GP7: 61,5 %
  - Mortality < 1%

Docking of tail has never been a routine

The breeding program

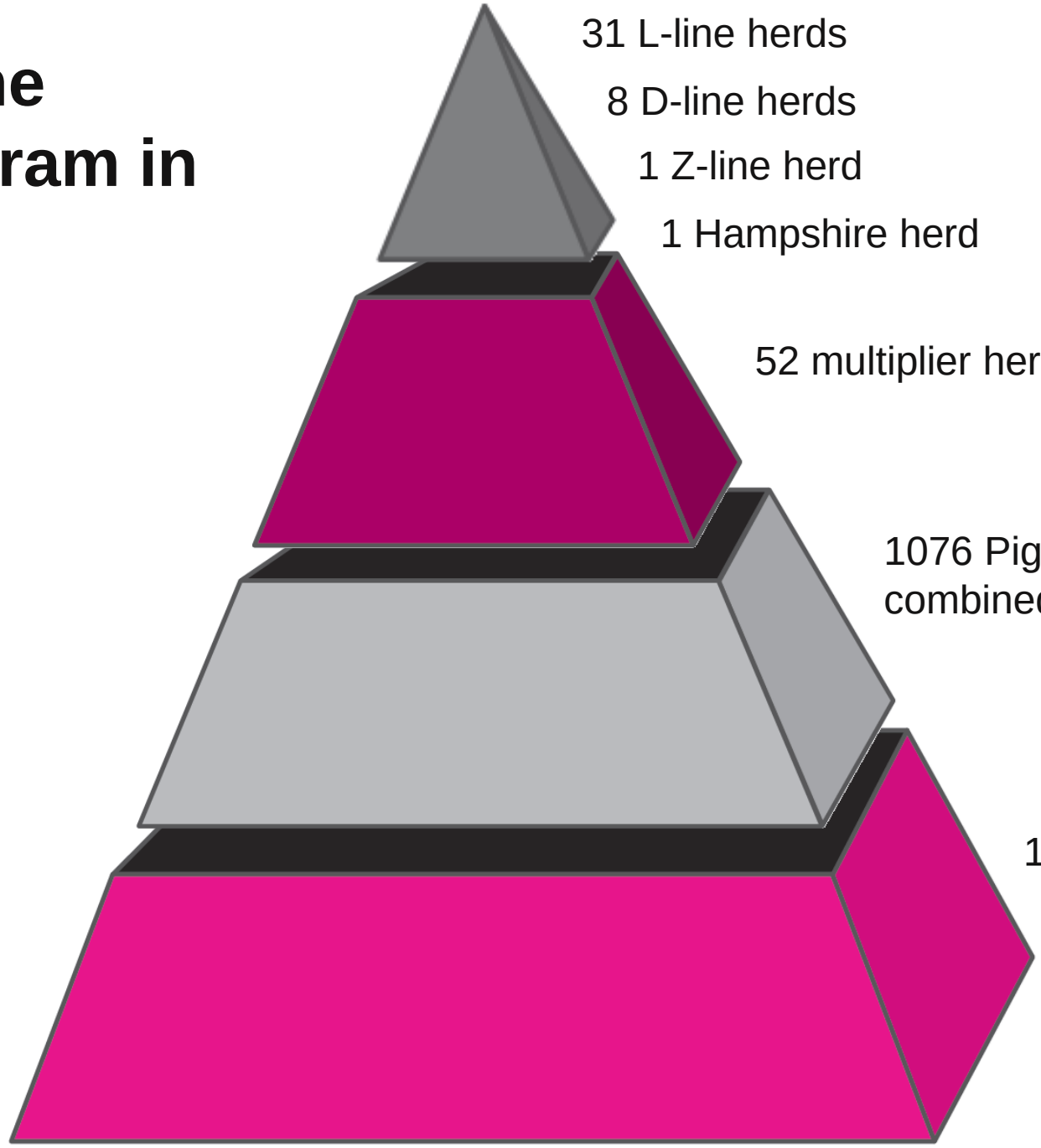
Norsvin

The Nordic model – sustainable breeding



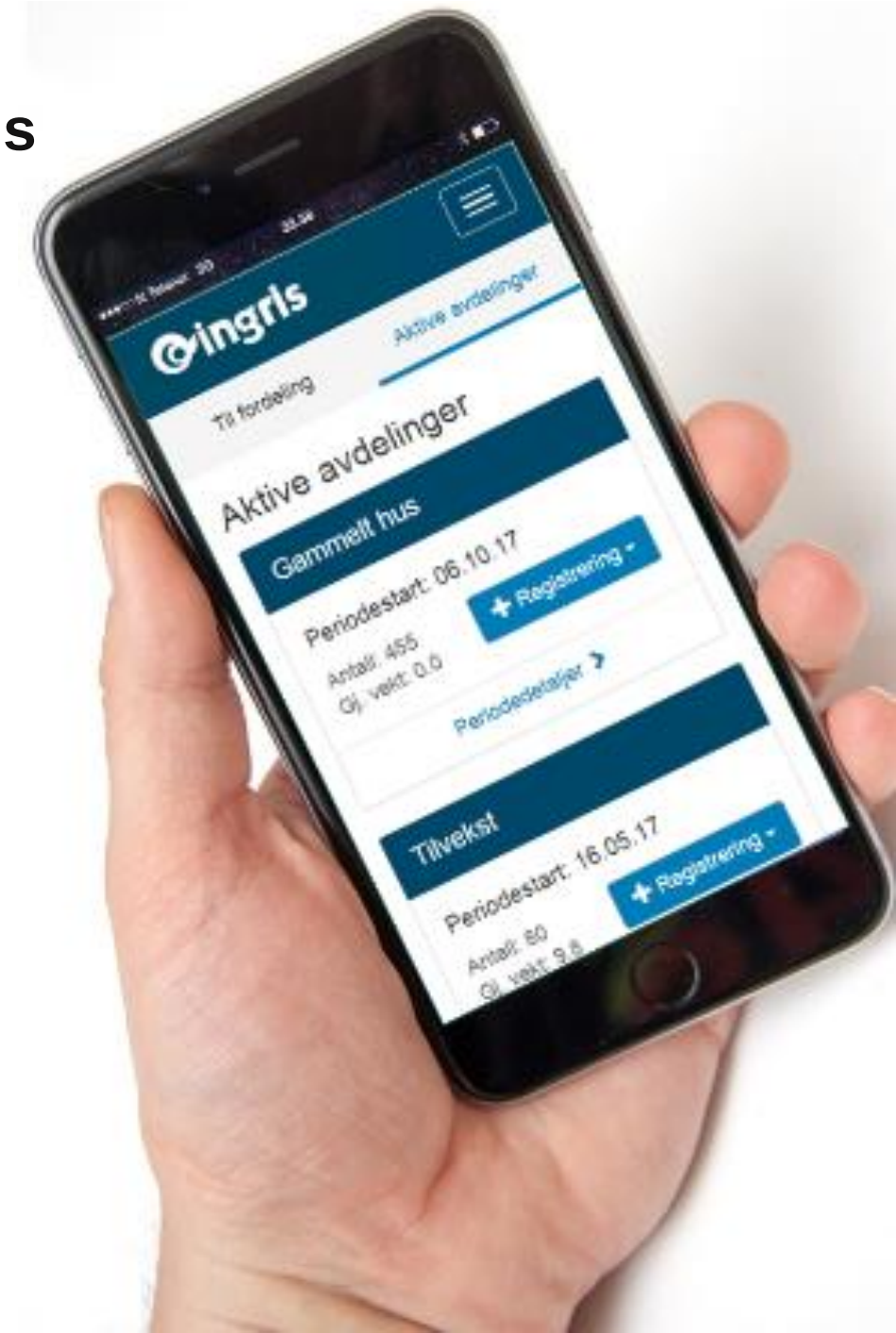
Cooperative model – less focus on short time profit leaves room for broad breeding goals

Structure of the breeding program in Norway



Breeding measure #1: Sow management systems – farmers effort

- Norway: Ingris mandatory to use for all breeding herds
- Online tool, Norsvin has access to the database
- Registrations from the farms are used in EBV-calculation the following day



Breeding measure #2: Boar station test – Norsvin effort

Breeding measure #3: On-farm testing og gilts and barrows – Norsvin and farmers effort

1958 – On farm test with ultra sound measurement of backfat

2018 – Still on-farm testing with UL measurement of BF, LD. Reserach project on IMF

Norsvin goes international

Norsvin

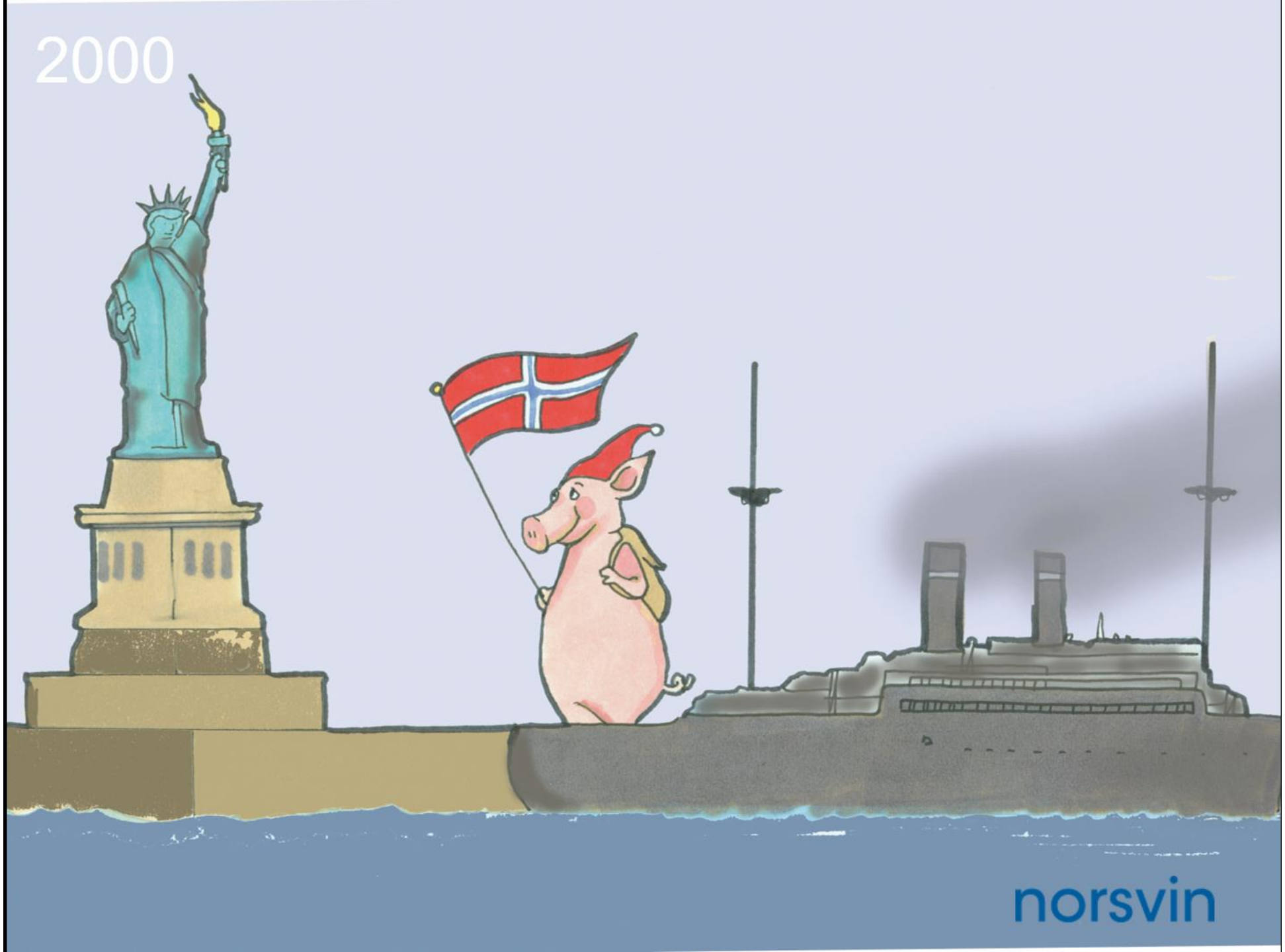
Strategic decisions in 1995

Background

- In the long term, the Norwegian pork meat market will be too small to finance growing demands for the development of a competitive breeding material. We need to get a bigger financial market.
- Today's development is too small compared to international competitors

Strategies

- Increased focus on international business
  - Norsvin International AS was founded
- Increased focus on R & D
  - Building own R & D business



Norsvin

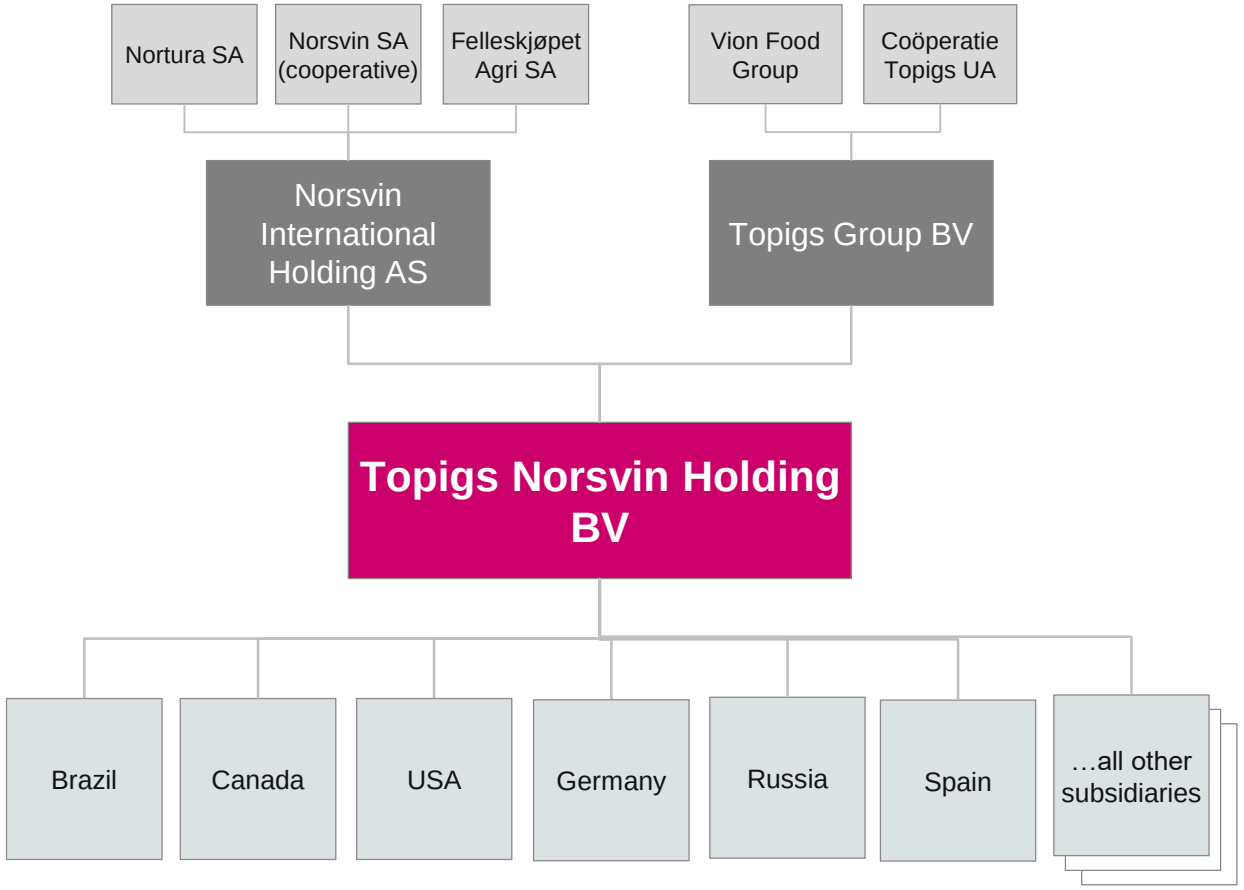
- In year 2000: Norsvin established Norsvin USA

How to succeed in the future (consolidation of the genetic buisness)

Need to establish strategic partnerships/aliances

2014: Norsvin and Topigs signed agreement

Simple overview of the Topigs Norsvin corporate structure



Ownership

- ***Dutch: 66,5%***
- ***Norwegian: 33,5%***

Supervisory Board

- ***Dutch: 4 seats***
- ***Norwegian: 4 seats***
- ***External: 2 seats***

Board of Directors:

- ***Martin Bijl (CEO)***
- ***Cor van Hertrooij (CFO)***
- ***Bjarne Holm (CDO)***
- ***Hans Olijslagers (CTO)***

All over the world

Present in 54 countries

We serve the Professional Pig Producers around the world

We know the local needs and circumstances

All over the world

700 employees world wide

€ 19

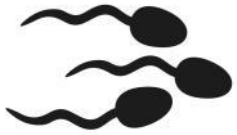
€ 19 million R&D budget

28 scientists have a PhD degree

All over the world

1,6 million crossbred gilts/year

100 million slaughter pigs produced/year



9 million doses of semen/year

Thank you for your attention