

# SEGES Innovation and Danish pig production

Agro Food Park 15

May 10, 2023

Uffe Pinholt Krogh, chief scientist, Livestock, Pig nutrition

SEGES Innovation P/S

STØTTET AF

**Svine**afgiftsfonden

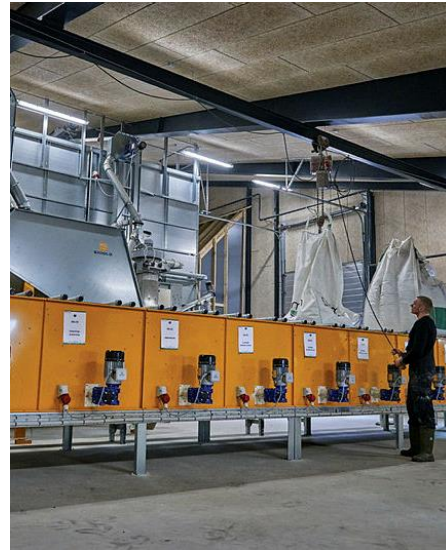
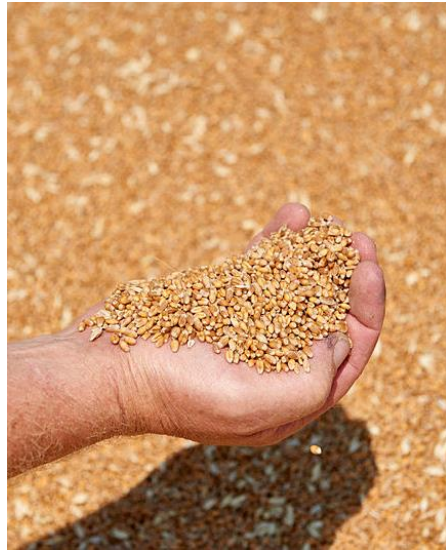
# Agenda

- **My background**
- **SEGES Innovation P/S**
- **Danish Pig production**



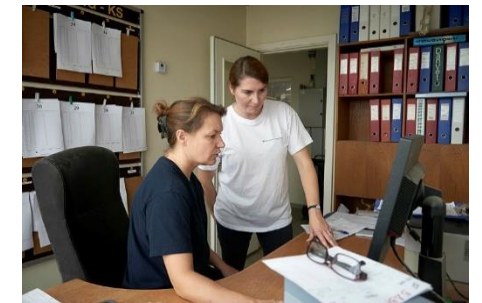
# My background

- General interest in agriculture
- Educated farmer
- Agrobiologist
- Aarhus University, Denmark
- INRAE, France
- SEGES Innovation P/S, Denmark

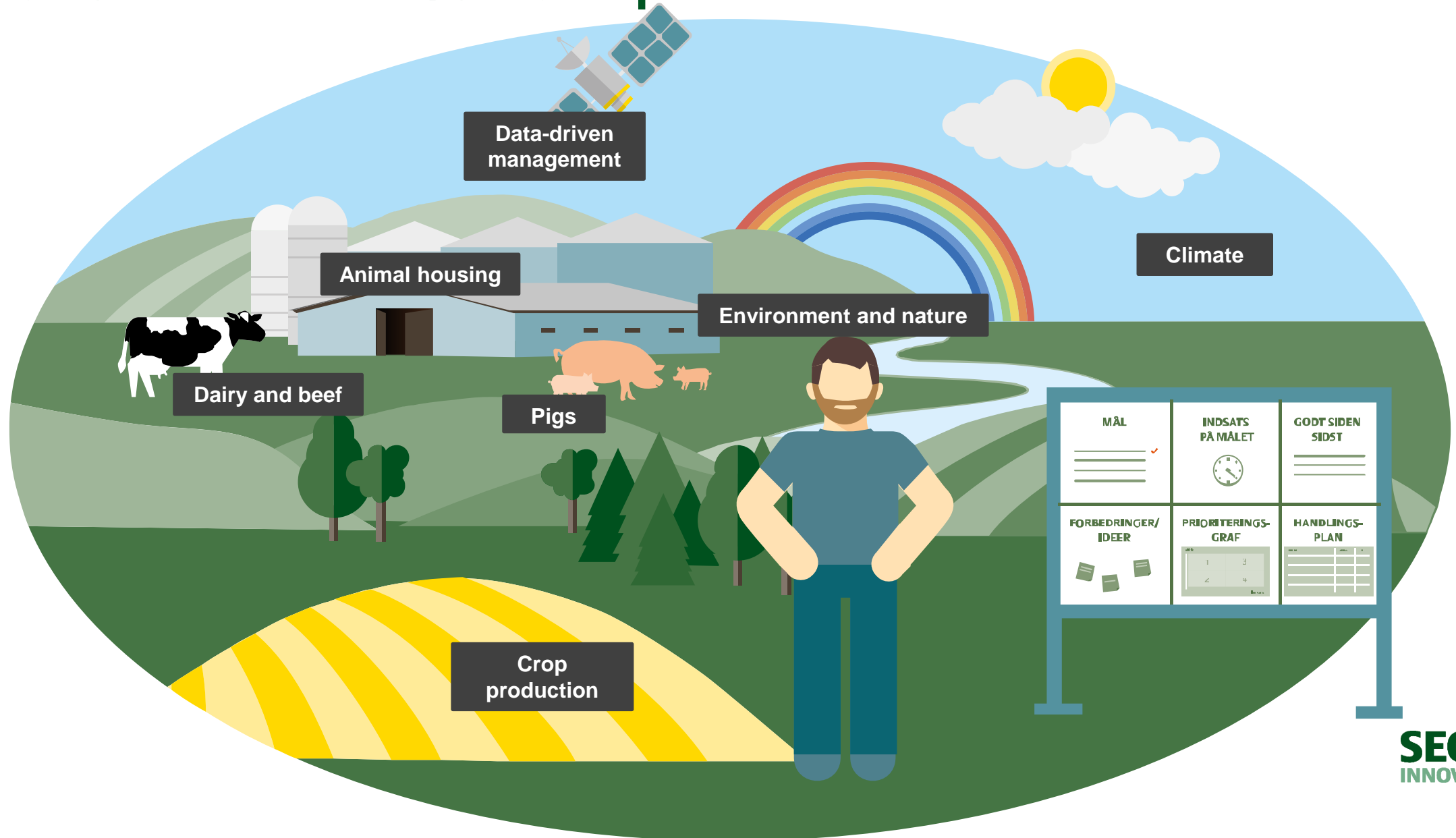


# SEGES Innovation P/S

- SEGES Innovation is a private, independent, non-profit research and development organization.
- Research and innovation tasks in agricultural and food-related areas.
- We develop, maintain, and support many of the farmer's other IT tools (Cows, pigs, crops, economy)
- Approximately 500 employees.




# SEGES Innovation P/S - Competences



# SEGES Innovation P/S

## Departments

- **Livestock** 
- Crops and environment
- Climate and sustainability
- Data driven management software
- Marketing

## **Livestock (115 employees):**

- **Pigs** (52 emp.)
  - **Nutrition**
  - Environment
  - Management and housing
  - Health
- **Dairy and beef** (46 emp.)
  - Health & production
  - Breeding
  - Milk quality
- **Horses** (16 emp.)
  - Registration and advisory
- **Poultry** (1 emp.)

# SEGES Innovation P/S – Pig Nutrition

## Aarhus



Karoline Blaabjerg  
(Head of section)



Per Tybirk



Niels Morten  
Sloth



Thomas Bruun



Uffe P. Krogh

## Copenhagen



Hanne Maribo



Gunner  
Sørensen



Sabine S.  
Grove



Camilla Kaae  
Højgaard

# SEGES Innovation P/S – Pig Nutrition

## Work areas:

- Feed evaluation and feed tables
- Nutrient recommendations
- Digestibility
- Production studies
- Health and welfare (e.g. antibiotics, Zn levels, pig survival)
- Reproduction
- Feed management
- Climate and sustainability (e.g. emissions, productivity)
- Environment documentation
- Intact male pigs





# SEGES Innovation P/S – Pig Nutrition group

- Online feed table [www.klimafoderdatabase.dk](http://www.klimafoderdatabase.dk)

SEGES INNOVATION KLIMAFODER database

Blanding baseret på: Q. Ung- og sl.svin: 30-115 og 45-75 kg  
Ret + flere indstillinger

Nulstil blanding

Fodermiddel	Andel %	Pris, kr. /hkg	Inkl. LUC %	Ekskl. LUC %
BYG, vinter, 2022	35,000	140	10,1	24,6
HVEDE, 2022	32,250	147	10	24,2
RUG, 2022	10,000	132	2,8	6,9
HESTEBØNNER, gennemsnit af høst 2012; ↓	0,000	189	-	-
SOJASKRÅFODER, afskallet toastet ↓	15,560	289	65,2	26,1
SOLSIKKESKRÅFODER, afskallet ↓	3,378	210	2,8	5,8
RAPSSKRÅFODER, lavt glukosinolatindhold ↓	0,000	219	-	-
RAPSKAGEFODER, lavt glukosinolatindhold ↓	0,000	228	-	-
VEGETABILSK OLIE OG FEDTSTOF, Palme ↓	0,420	694	2,2	4,4
VEGETABILSK OLIE OG FEDTSTOF, Soja ↓	0,420	746	4,2	1,4
LYSIN, L(sulfat)70% ↓	0,447	756	0,4	1
METHIONIN, DL 99 ↓	0,059	1840	0,1	0,1
TREONIN, L 98,5% ↓	0,122	1299	0,1	0,3
TRYPTOFAN, L 98% ↓	0,000	6224	-	-
VALIN, L 96,5 % ↓	0,000	3781	-	-
MONOCALCIUMFOS (16/22,7) ↓	0,264	633	0,2	0,6
FODERKRIDT, 36 % calcium ↓	1,476	46	1,3	3,2
NATRIUMCLORID ↓	0,394	61	0,4	0,9
Std. 0,2 % Vitamin- og mineralforblanding, Si ↓	0,195	1500	0,2	0,4
Ronozyme HiPhos GT tør, Std. dosis: 500 Fy ↓	0,015	5000	-	-
100,000				

Forside | Blandingsberegner | Fodermidler

BEREGN UDSKRIV

### Indhold af centrale næringsstoffer i blandingen

St.fordøjeligt indhold

Beregnet indhold	g/FEsv	% af lysin	Norm	% Norm
Råprotein	125	-	127	98
Lysin	8,1	100	8,4	97
Methionin	2,5	31	2,5	100
Met. + Cystin	4,7	58	4,9	96
Treonin	5,4	67	5,5	98
Tryptofan	1,63	20	1,68	97
Isoleucin	4,8	59	4,4	108
Leucin	8,8	108	8,4	105
Histidin	3	37	2,7	113
Fenylalanin	5,9	73	4,5	130
Fen. + Tyrosin	9,8	121	8,4	117
Valin	5,6	69	5,6	100

Fordejeligt fosfor: 2,26 (Totalindhold: 2,4)

Næringsstof	g/FEsv	% af lysin	Norm	% Norm
Calcium	6,3	-	6,4	98
Fosfor	3,7	-	-	-
Natrium	1,5	-	1,6	96
Vit. A, 1000 IE.	4	-	4	-
Fytaseakt. FYT/kg	1.410	-	-	-
Fytaseakt. FTU/kg	-	-	-	-
Råprot	147	-	-	-
Oploselige fibre	35,9	-	-	-
Uoploselige fibre	120,6	-	-	-
Ferm. kulh. (KFM)	70,3	-	-	-
Let for. kulh. (LKF)	447	-	-	-
Tørstof	871	-	-	-

### Klimaaftryk (kg CO2-ekv)

Beregnet indhold	g/FEsv	/kg foder
Kg CO2-ekv. inkl. LUC	1,19	39,814
Kg CO2-ekv. ekskl. LUC	0,49	21,374

Hvor kommer klimaværdierne fra?

### Beregnet I-faktor

I-faktor (%)	- EFOS (%)
FEsv/hkg vare	- EFOSL (%)

Diet composition

Standardized ileal digestible content: Protein and essential amino acids

Climate impact: CO<sub>2</sub>e

Energy content: Danish Feed Units

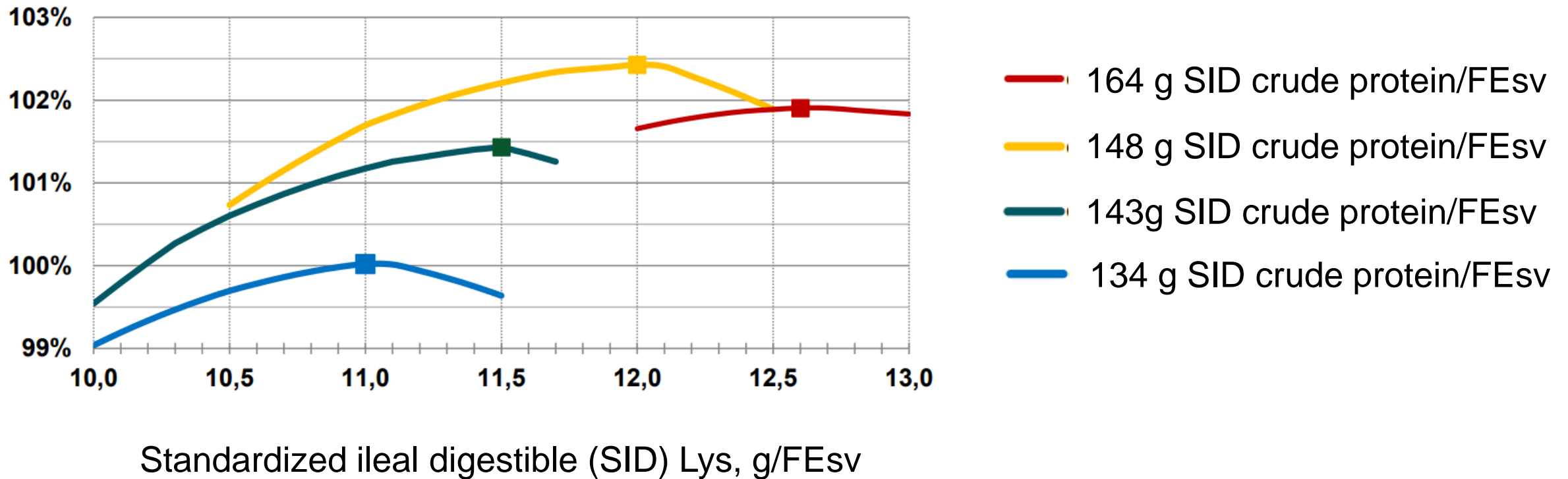
Digestible content: Phosphorus

Content of other nutrients and nutrient fractions

# SEGES Innovation P/S – Pig Nutrition group

- Nutrient recommendations

Gross margin



Reference: SEGES Innovation, meddelelse 1263, 2022

# SEGES Innovation P/S – Pig Nutrition

## Work areas:

- Feed evaluation and feed tables
- Nutrient recommendations
- Digestibility
- Production studies
- Health and welfare (e.g. antibiotics, Zn levels, pig survival)
- Reproduction
- Feed management
- Climate and sustainability (e.g. emissions, productivity)
- Environment documentation
- Intact male pigs



# SEGES Innovation P/S – Pig Nutrition Group

## Facilities (Pigs)

- **Research station Grønhøj**
  - Postweaning pigs
  - Growing and finishing pigs
  - Emissions of  $\text{NH}_4$  and GHG ( $\text{CH}_4$ ,  $\text{N}_2\text{O}$ )
  - Digestibility (Ileum and total tract)
- **Commercial farms**
  - Sows
  - Suckling piglets
  - Postweaning pigs
  - Growing and finishing pigs



# SEGES Innovation P/S – Pig Nutrition Group

## Facilities - Research station Grønhøj

- **Digestibility**
  - Fecal digestibility and balance studies
  - Ileal digestibility



# SEGES Innovation P/S – Pig Nutrition Group

## Facilities - Research station Grønhøj

- Postweaning pigs (≈1400 pigs)



# SEGES Innovation P/S – Pig Nutrition Group

## Facilities - Research station Grønhøj

- Growing and finishing pigs (≈2100 pigs)



# SEGES Innovation P/S – Pig Nutrition Group

## Facilities - Research station Grønhøj

- Emissions, NH<sub>4</sub> and GHG (18 chambers)





# SEGES Innovation P/S – Pig Nutrition Group

## Experiment on commercial farms

- Suckling piglets
- Sows
- Postweaning pigs
- Growing and finishing pigs



# SEGES Innovation P/S – Pig Nutrition Group

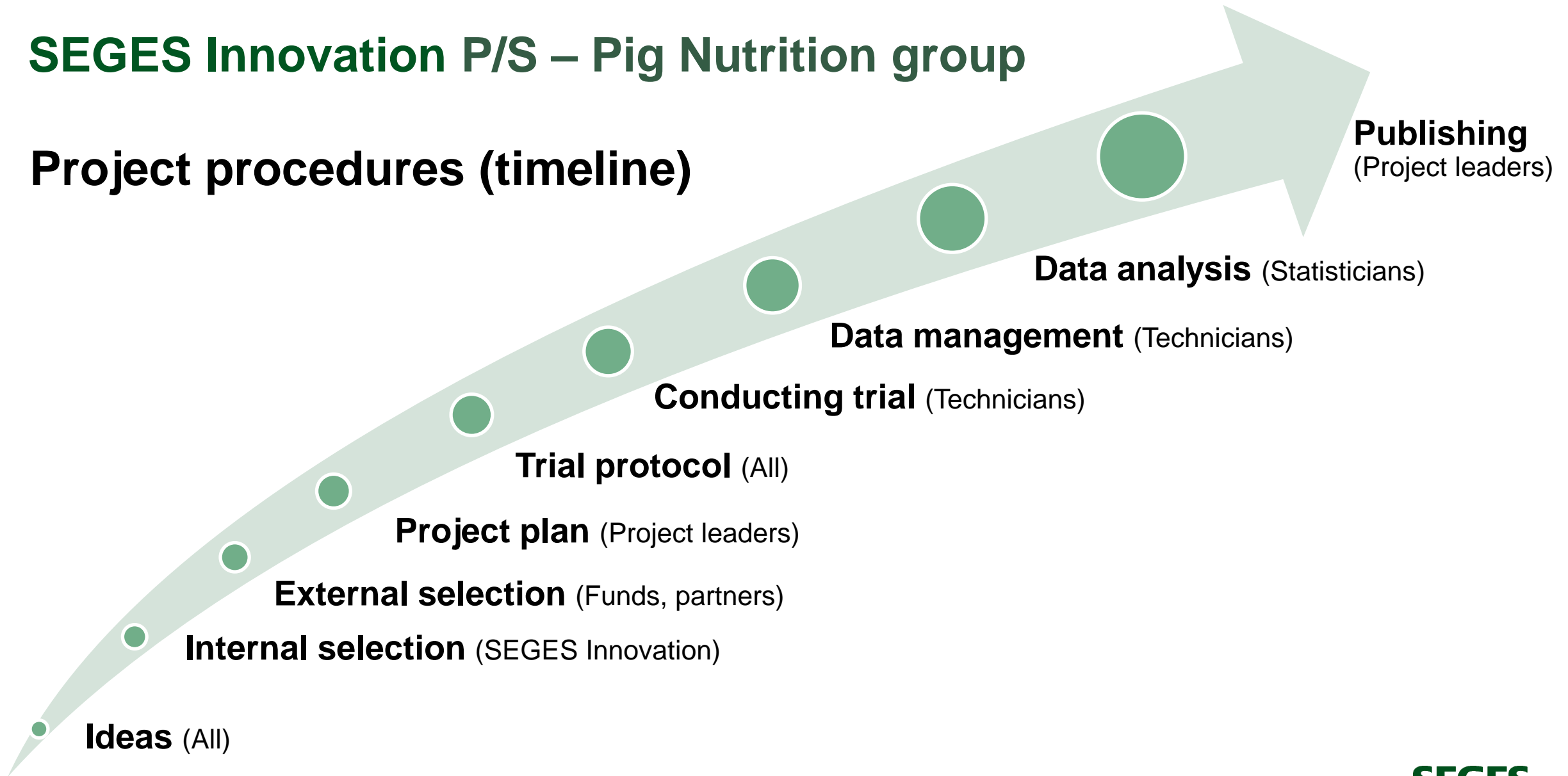
## Funding

- **National Levy funds**  
(Activities for the benefit of pig producers)
- **Other national and international funds**
- **Commercial activities**



# SEGES Innovation P/S – Pig Nutrition group

## Project procedures (timeline)



# Agenda

- My background
- SEGES Innovation P/S
- **Danish Pig production**



# Danish pig production (In broad terms)

- **Farm**
  - Family-owned
- **Feed company**
  - Cooperative
- **Slaughterhouse**
  - Cooperative



# Danish pig production

## Pig production in Denmark:

- **2,600** pig producers
- **33 Mio.** pigs produced
- **15 Mio.** live pigs exported (30 kg)
- **95 %** of Danish pig meat is exported to 140 countries



## Denmark

- **6 Mio.** people
- **60%** of the land is farmland

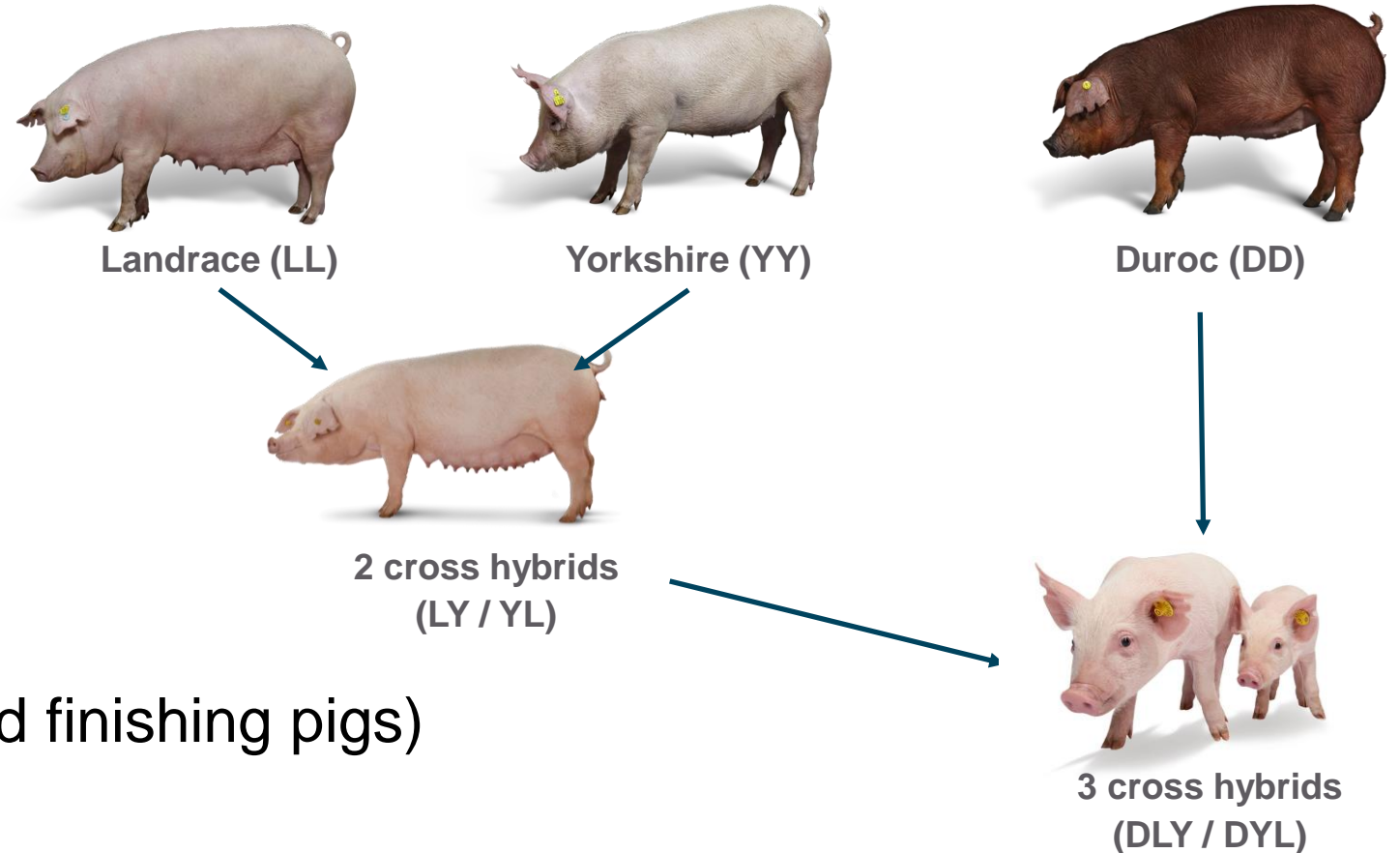


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# Danish pig production

## Common used genetics

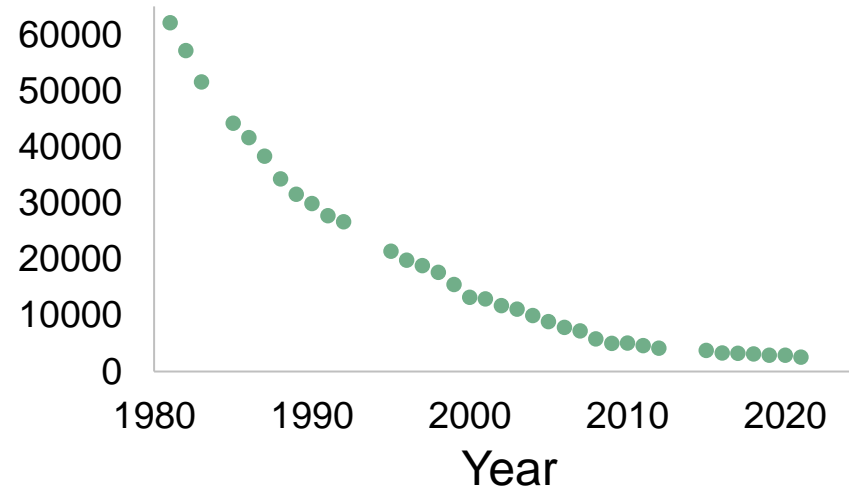
- Nucleus herds (≈ 30 herds)
- Multiplication (≈ 85 herds)
- Production herds (≈ 2500 herds, sows, grow and finishing pigs)



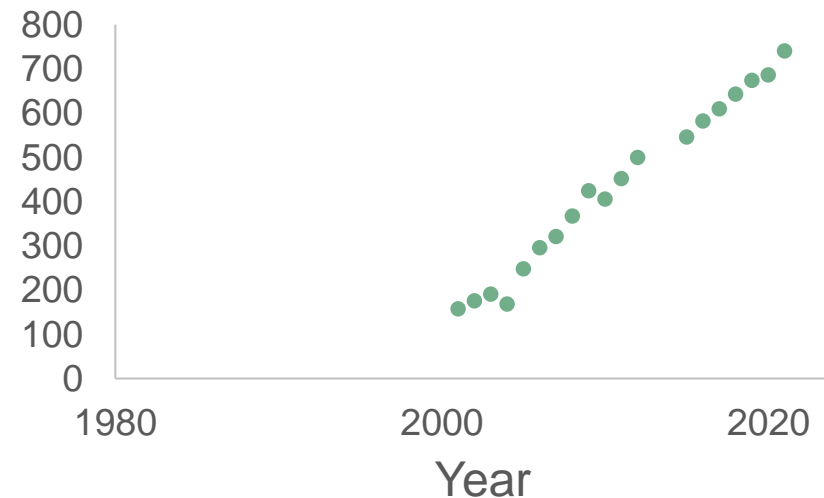
# Danish pig production

- **≈ 2600** pig farms
- **≈1400** sow herds
- **≈ 750** sows (Average herd size)

## No. of pig farms in Denmark



## Herd size, # sows



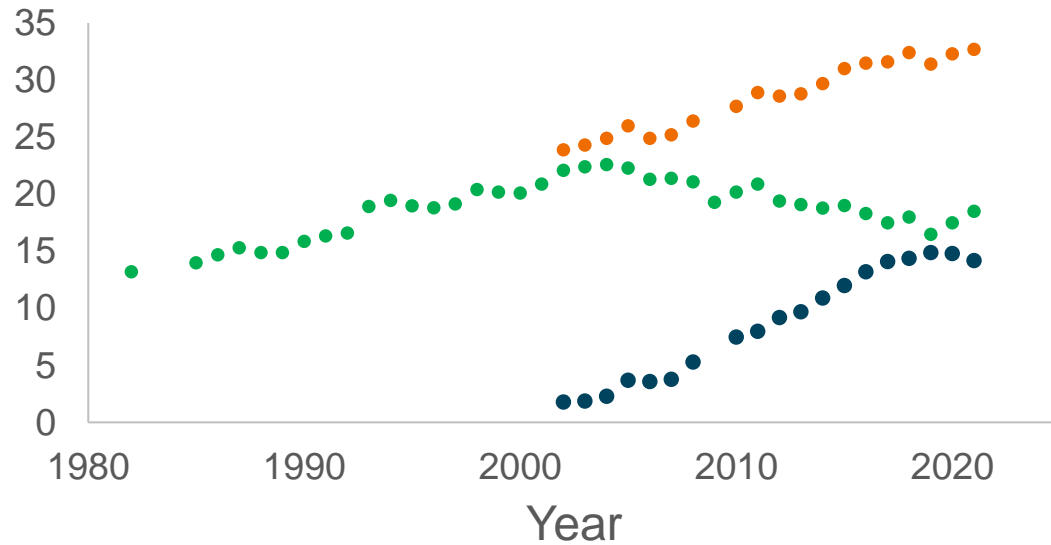
Sources: Danish\_Agriculture\_&\_Food\_Council (2022). "Statistics 2021 - Pig meat." [Danish agriculture & Food Council](#).

Hansen, C. (2021). "Landsgennemsnit for produktiviteten i produktionen af grise i 2020. SEGES Svineproduktion, Axelborg, København, Danmark."



# Danish pig production

## Mio pigs



## Total no of sows in Denmark, Mio sows



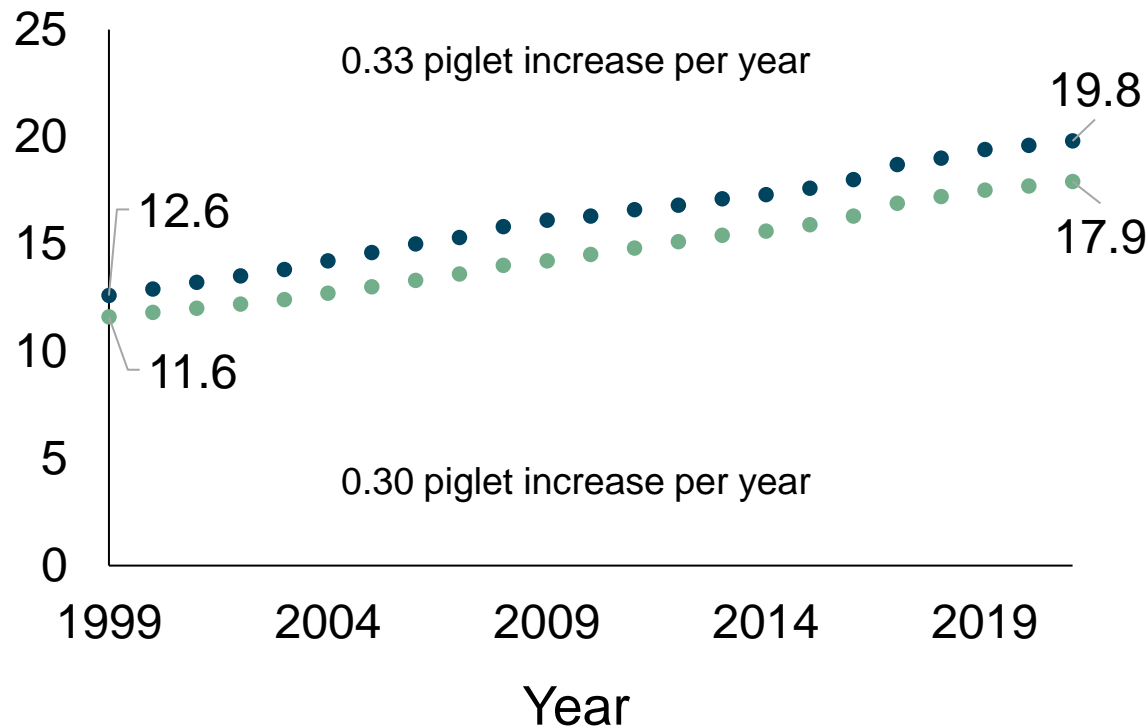
- Slaughtered pigs
- Export of live pigs
- Slaughtered + Exported pigs

Sources: Danish\_Agriculture\_&\_Food\_Council (2022). "Statistics 2001-2021 - Pig meat." [Danish agriculture & Food Council](#).  
 Hansen, C. (2021). "Landsgennemsnit for produktiviteten i produktionen af grise i 2020. SEGES Svineproduktion, Axelborg, København, Danmark."

# Danish pig production

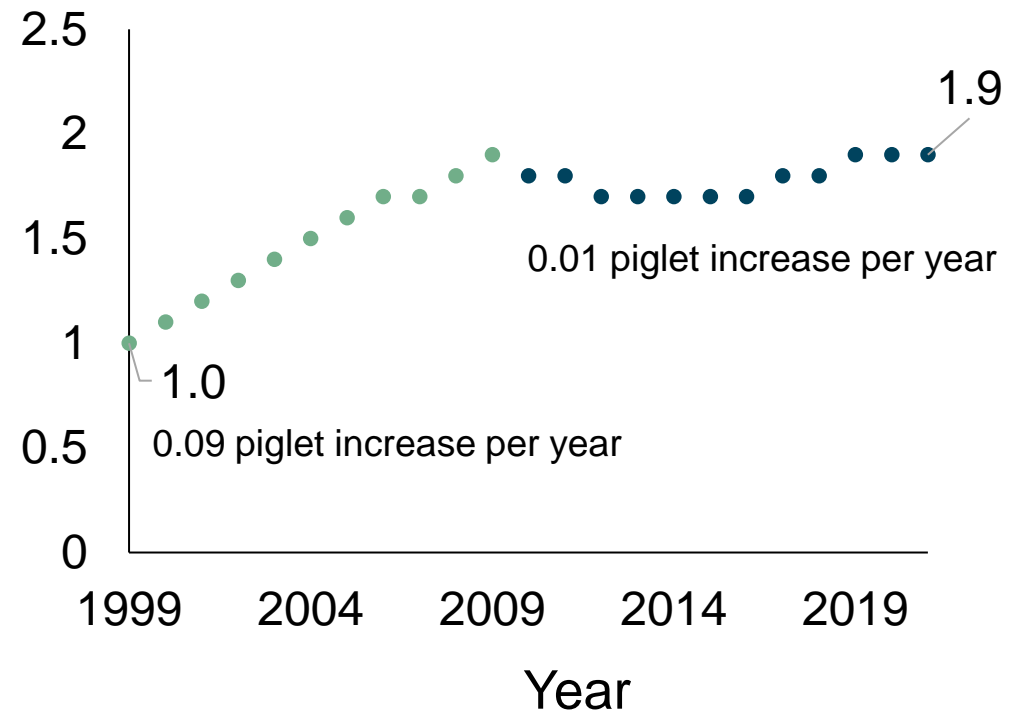
## Productivity, sow herds

Litter size



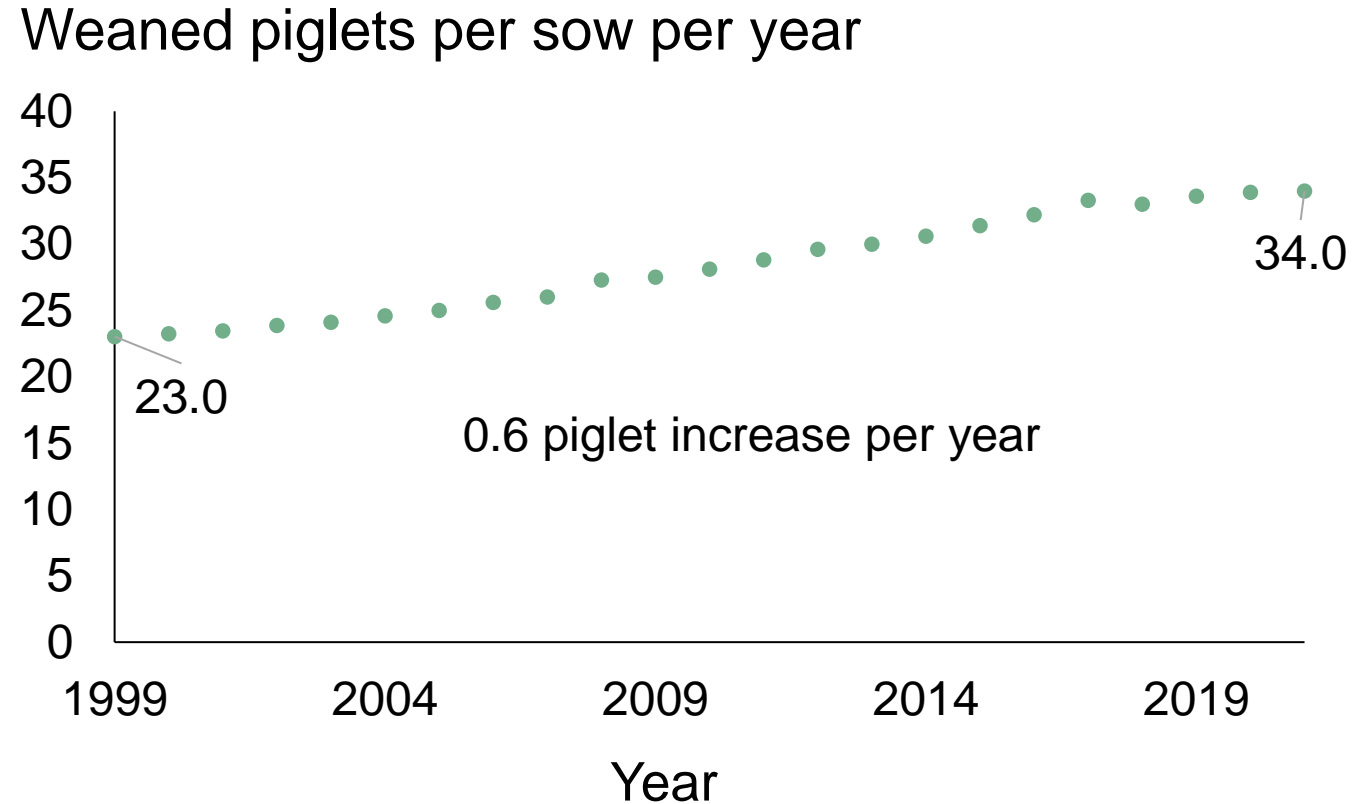
• Live born piglets • Total born piglets

Still born piglets



# Danish pig production

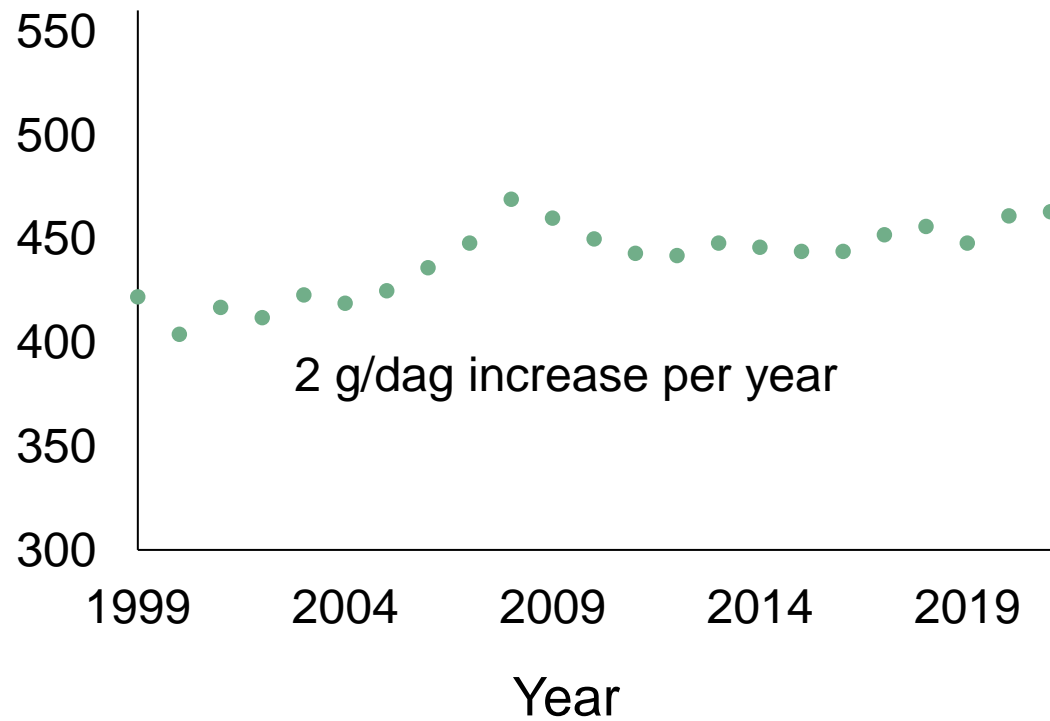
## Productivity, sow herds



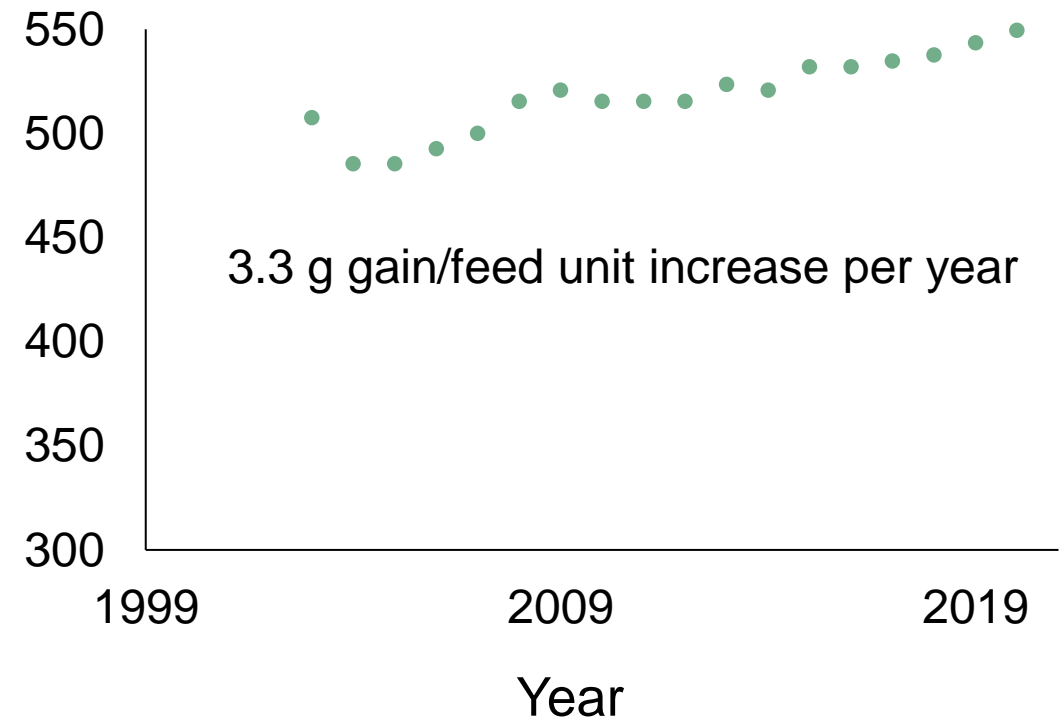
# Danish pig production

## Productivity, postweaning pigs

Daily gain (7-30 kg), g/day



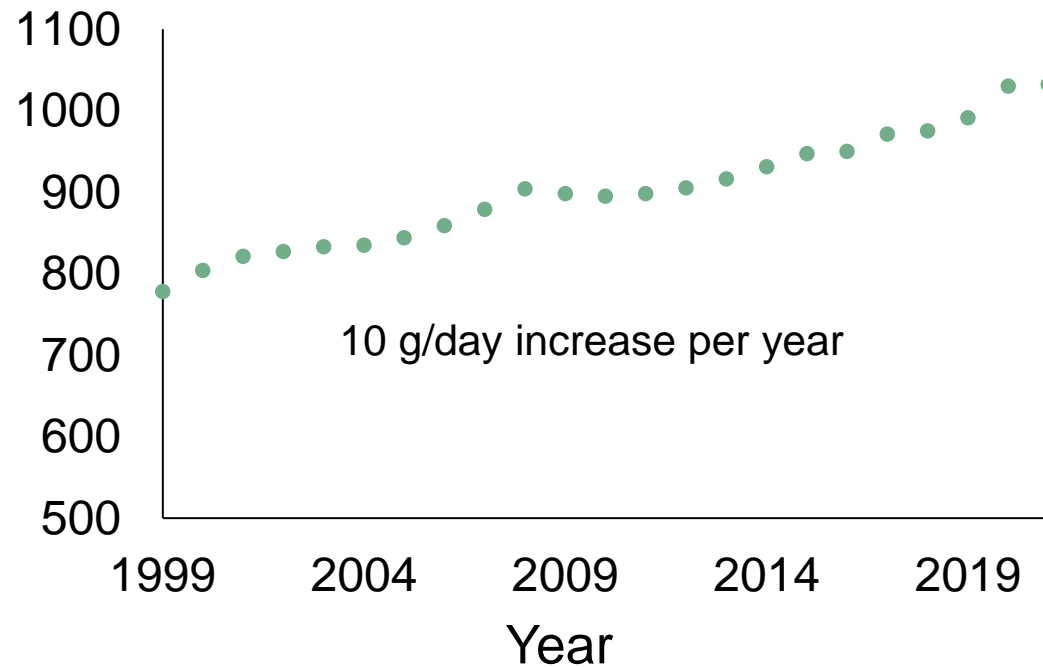
Gain:feed (7-30 kg), g gain/feed unit



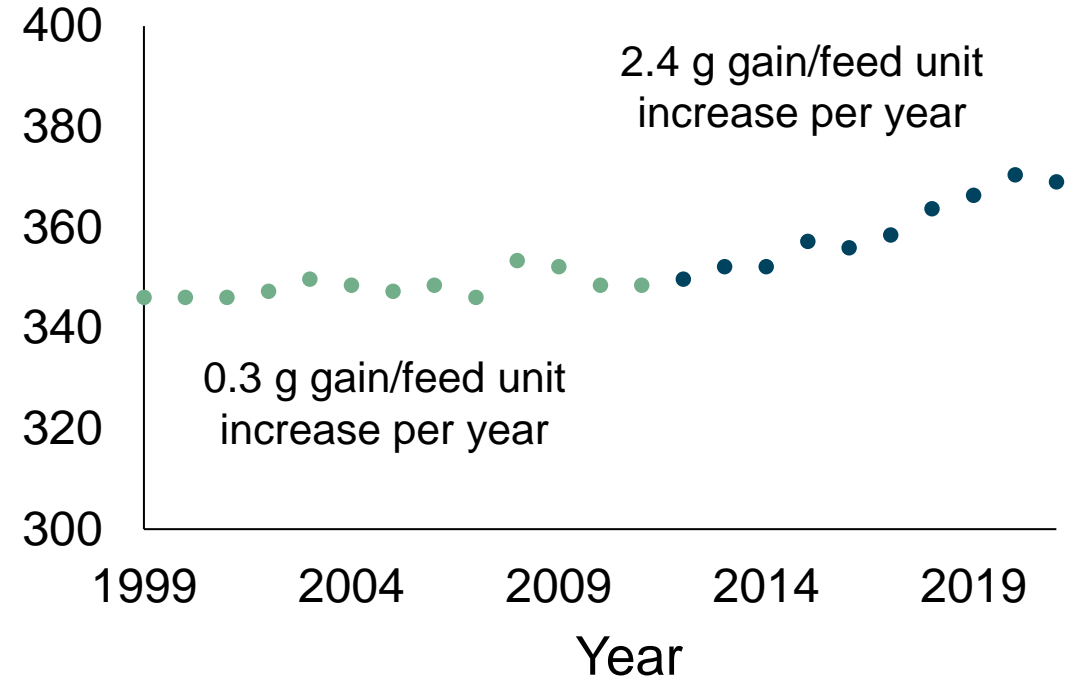
# Danish pig production

## Productivity, growing and finishing pigs

Daily gain (30-100 kg), g/day



Gain:feed (30-100 kg), g gain/feed unit



# Contact SEGES

**SEGES**  
INNOVATION



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