PORK NEXUS

Connecting people, science and industry

Swine Mortality and Productivity in Brazil – Benchmarks and Nutritional Solutions

Adsos Adami dos Passos, Ph.D.

Global Swine Manager
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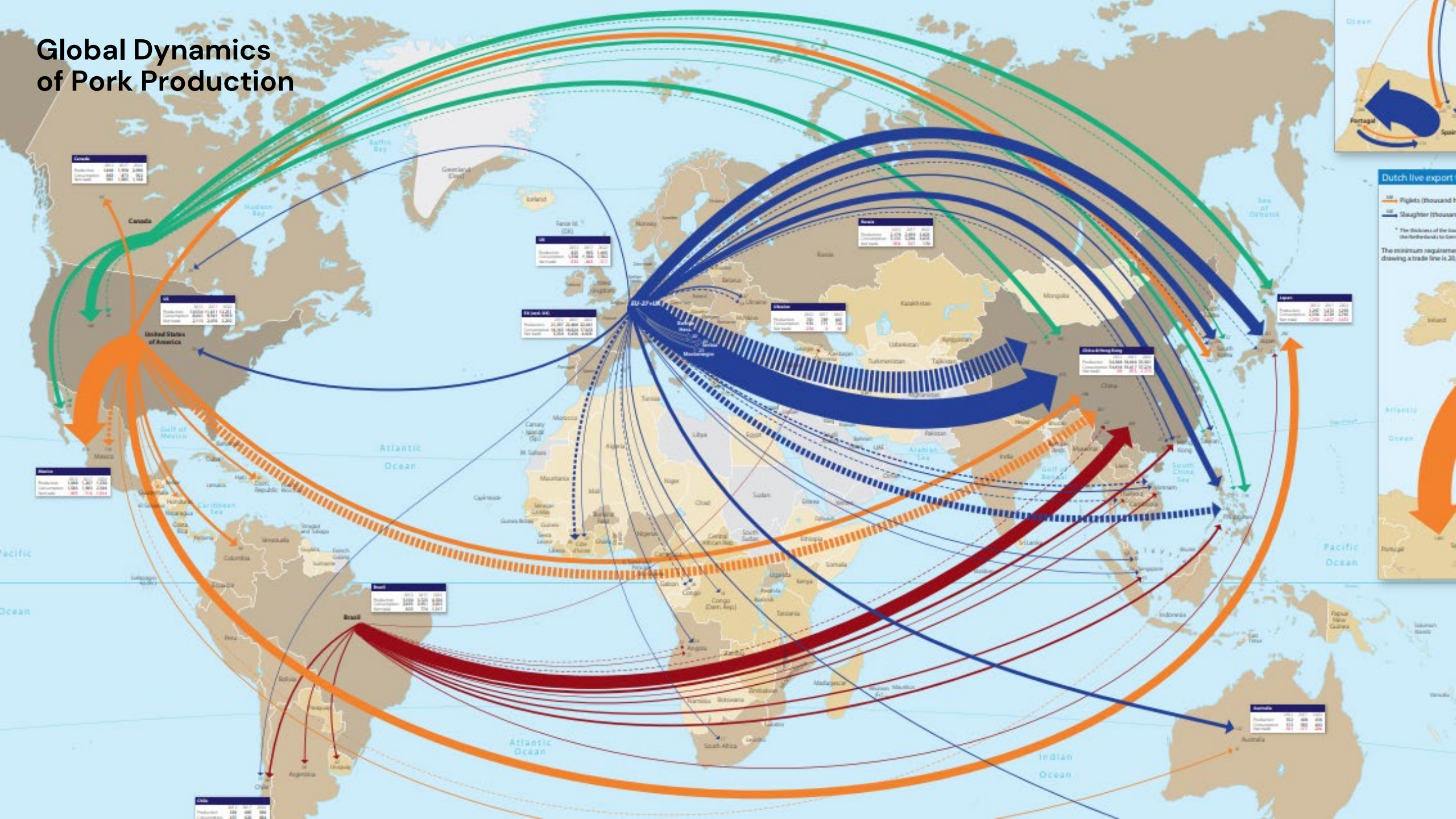
01 Pork Production in Brazil

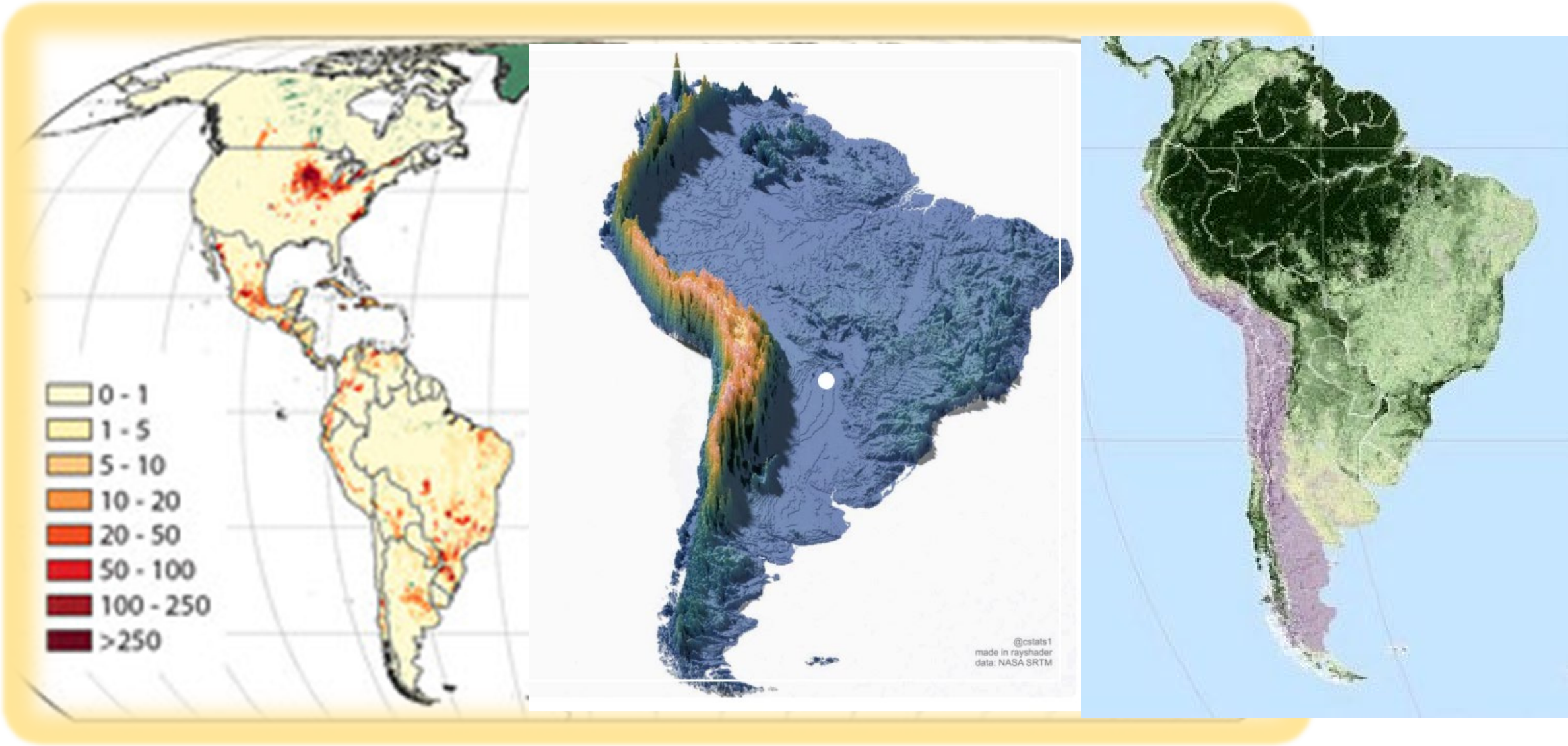
Global Dynamics of Pork Production



Brazil: Current Figures

- Sow inventory: **2,1 MM sows**
- Hogs produced: 46.5 MM hogs
- Total feed production at **21 MM metric tons**
- Pork production at 5.1 MM metric tons
- Internal consumption represents 76% of total production
- Por exports represents **24%** of total pork
- Local consumption **at 18.3 kg/person/year**

Geography or swine production



Number of pigs per square kilometre

fao.org

Geography or swine production

State	Slaughter (K heads per state 2023)	% of total
SC	15.4	33
PR	9.3	20
RS	9.2	20
MG	4.1	9
MS	2.9	6
MT	2.6	6
GO	1.5	3
SP	1.4	3
Others	0.1	0
Total	**46.5**	**100**

3 Southern States account for:

- 6.8% of area
- 25% of grain production
- 73% of Pig Production

ABPA, 2024;

Value chain
Independent Farmers, Integrations, Cooperatives

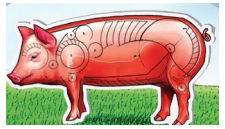
Ingredientes

Genética

Ambiente **Enfermedades**

Instalaciones **Manejo**

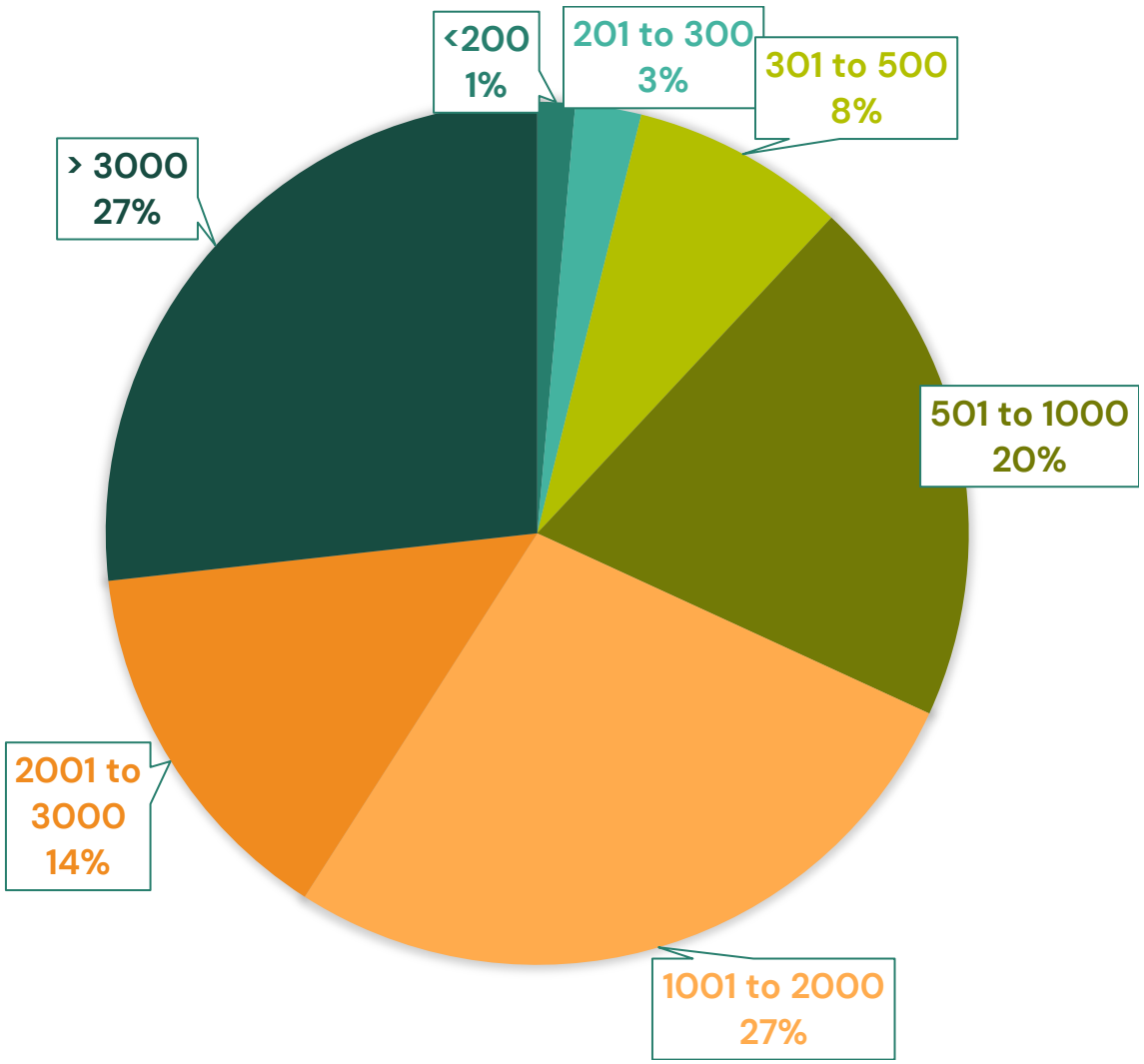
Personas



Industria

02 Benchmarks

Number of sows per farm in Brazil



Agriness: Melhores Suinocultura

Reproduction performance data 2023

Parameter	Average	Top 50	Top 10
Piglets weaned per sow per year	**30.05**	**36.23**	**37.79**
Age First Breeding (days)	232.35	234.24	233.44
Farrowing Rate (%)	88.15	93.19	93.52
Total Born	15.36	16.86	17.43
Average Parity	3.65	3.51	3.51
BW at birth (kg)	1.33	1.33	1.35
Pre-Weaning Mortality (%)	8.91	5.85	4.64
Nonproductive days	14.45	7.14	6.46
Farrow/sow/year	2.35	2.49	2.48

Top Farm in BR: 40.83 piglets/sow/year

Average in US: 27.30 piglets weaned/sow/year

Agriness: Melhores Suinocultura
PigChamp

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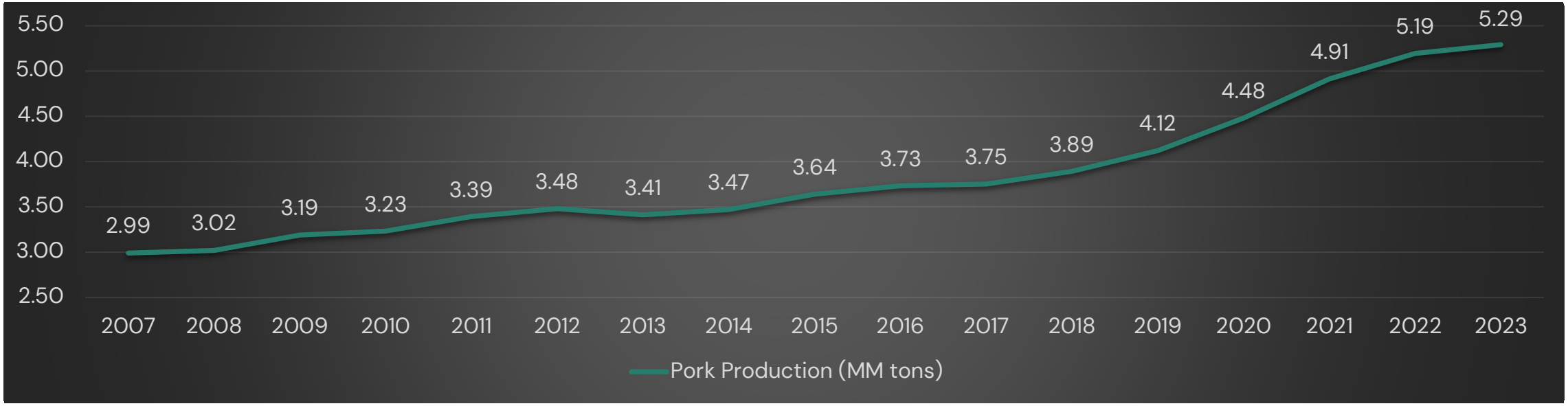
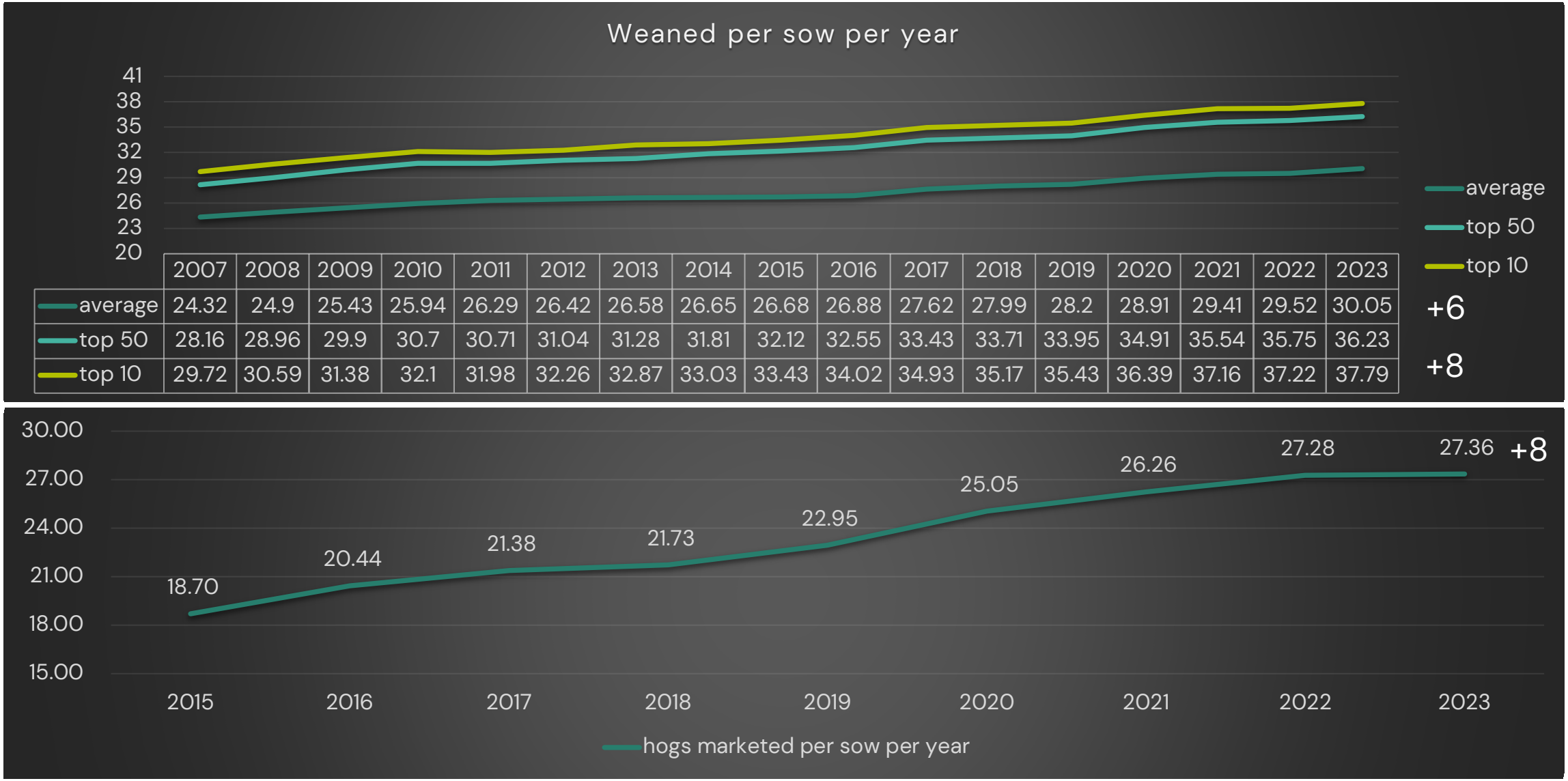
Sow inventory relatively stable while pork production growth 55% in the past 10 years



Abpa-br.com.br/setores/suinocultura

More hogs produced per sow



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
average	24.32	24.9	25.43	25.94	26.29	26.42	26.58	26.65	26.68	26.88	27.62	27.99	28.2	28.91	29.41	29.52	30.05
top 50	28.16	28.96	29.9	30.7	30.71	31.04	31.28	31.81	32.12	32.55	33.43	33.71	33.95	34.91	35.54	35.75	36.23
top 10	29.72	30.59	31.38	32.1	31.98	32.26	32.87	33.03	33.43	34.02	34.93	35.17	35.43	36.39	37.16	37.22	37.79

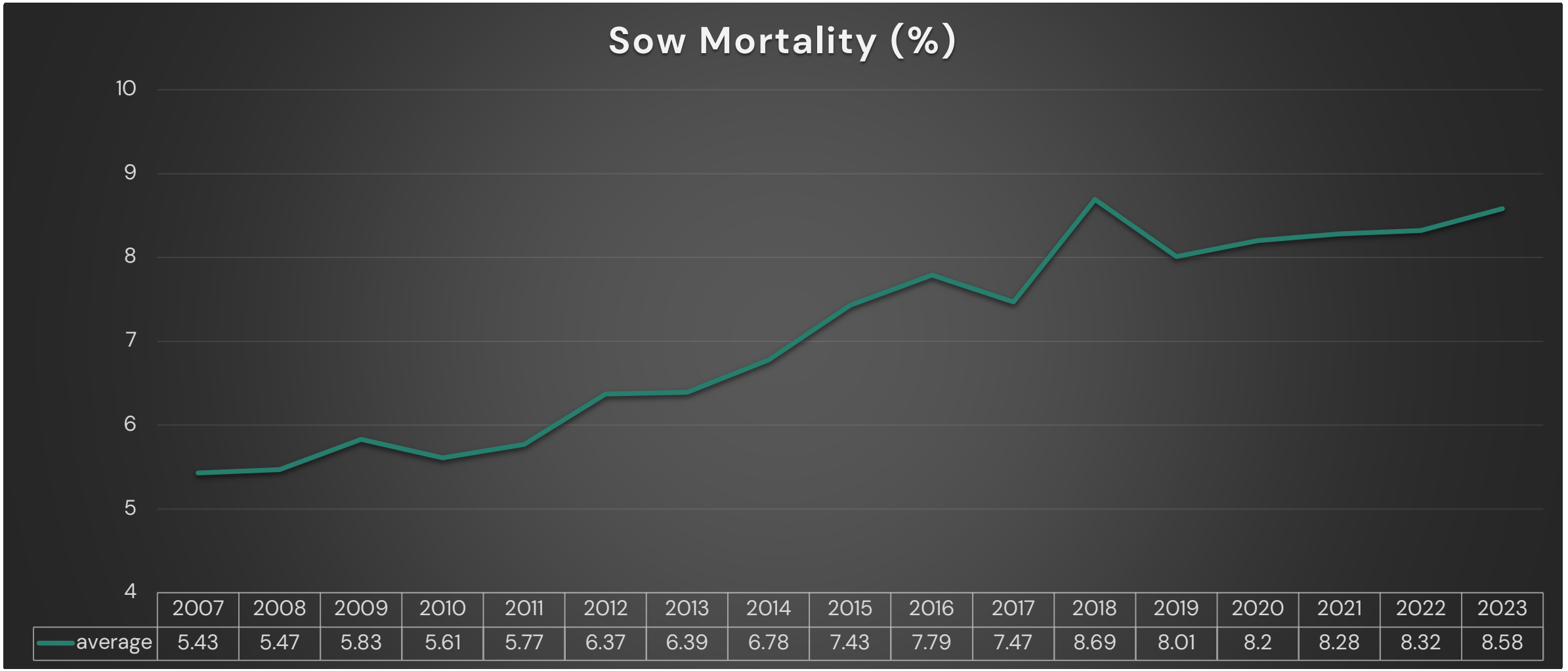
3tres3.com.br
Agriness: Melhores Suinocultura

Slaughter BW at 135 kg (South) and 110 kg (North)

03 Challenges

Mortality

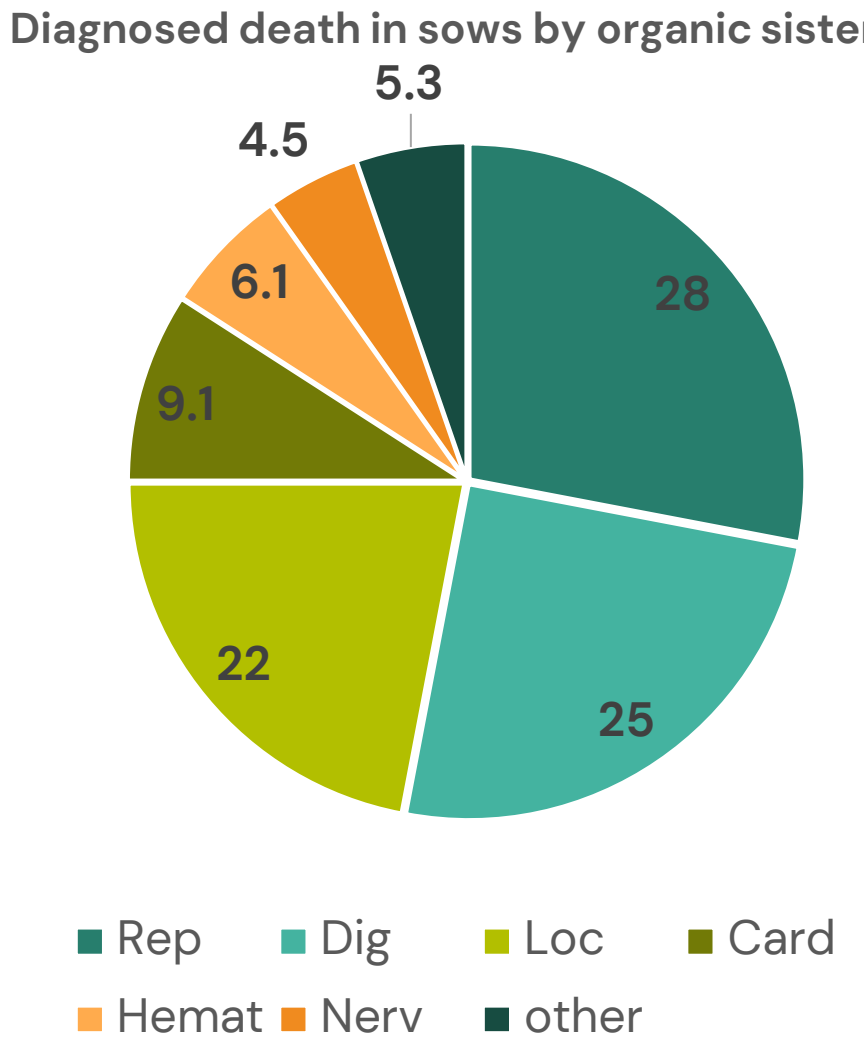
Sow Mortality



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
average	5.43	5.47	5.83	5.61	5.77	6.37	6.39	6.78	7.43	7.79	7.47	8.69	8.01	8.2	8.28	8.32	8.58

Agriness: Melhores Suinocultura

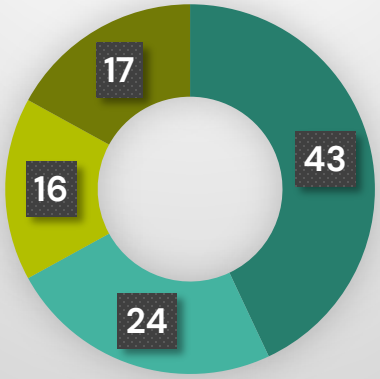
Locomotor, reproductive and digestive issues represents 75% of mortality diagnostics



Schwertz *at al.*, 2021

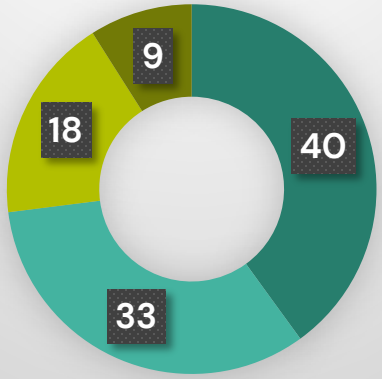
Locomotor, reproductive and digestive issues represent 75% of mortality diagnostics

Reproductive



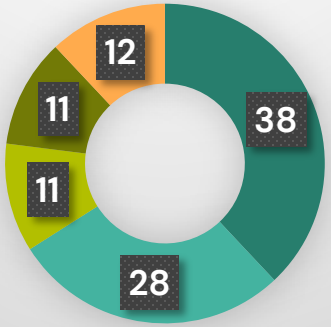
- Uterine Prolapse
- Vaginal or vaginal and rectus prolapse
- Metritis
- Others

Digestive



- Gastric Ulcer
- Liver Torsion
- Acute Gastric Distention
- Others

Locomotor



- Suppurative arthritis
- Pododermatitis
- Suppurative discopondylitis
- Coxofemoral luxation/subluxation
- Osteocondrosis dissecans

Prolapses represent 67% of reproductive issues

Torsions and distensions represent 51% of digestive issues

Schwertz *at al.*, 2021

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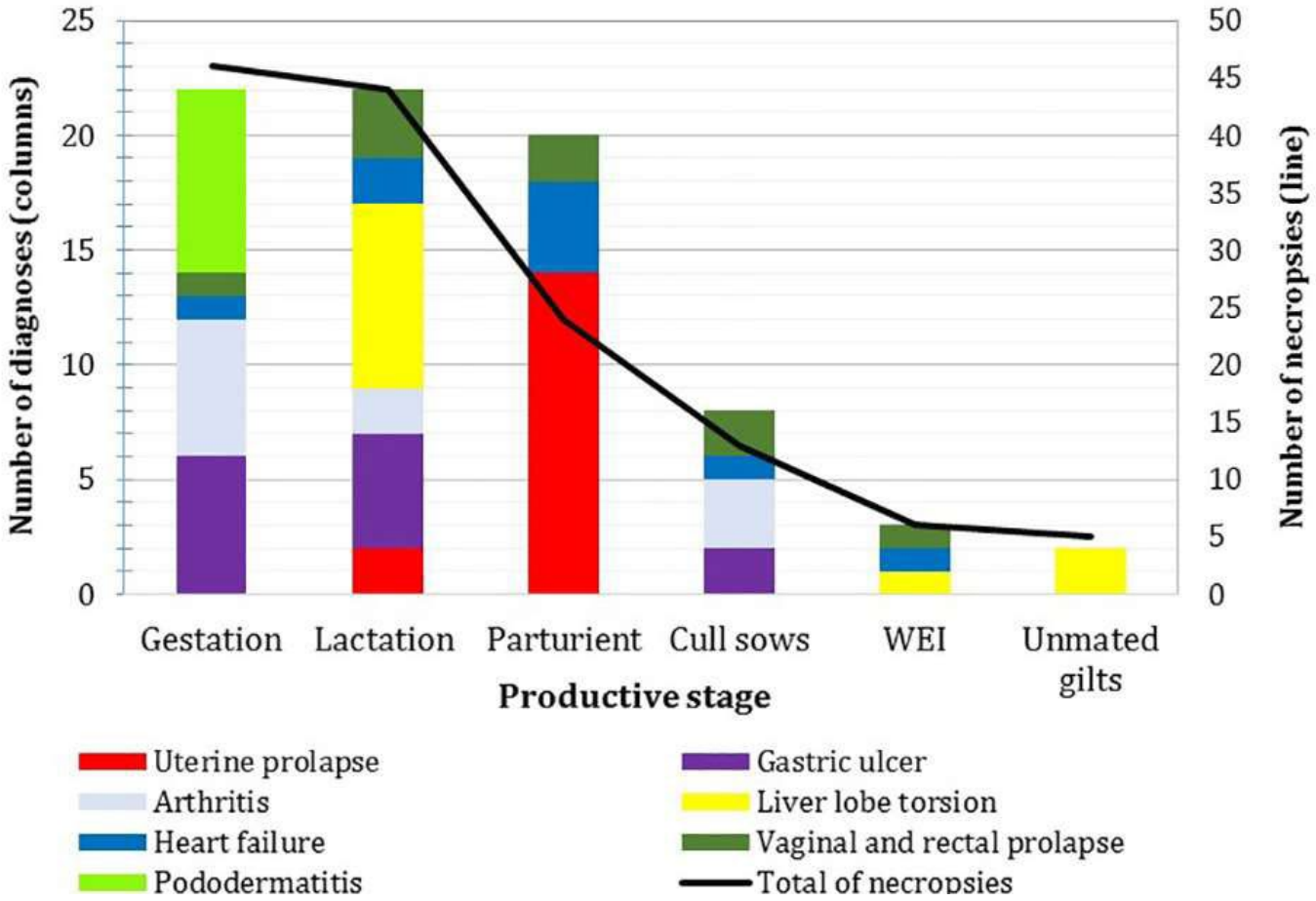
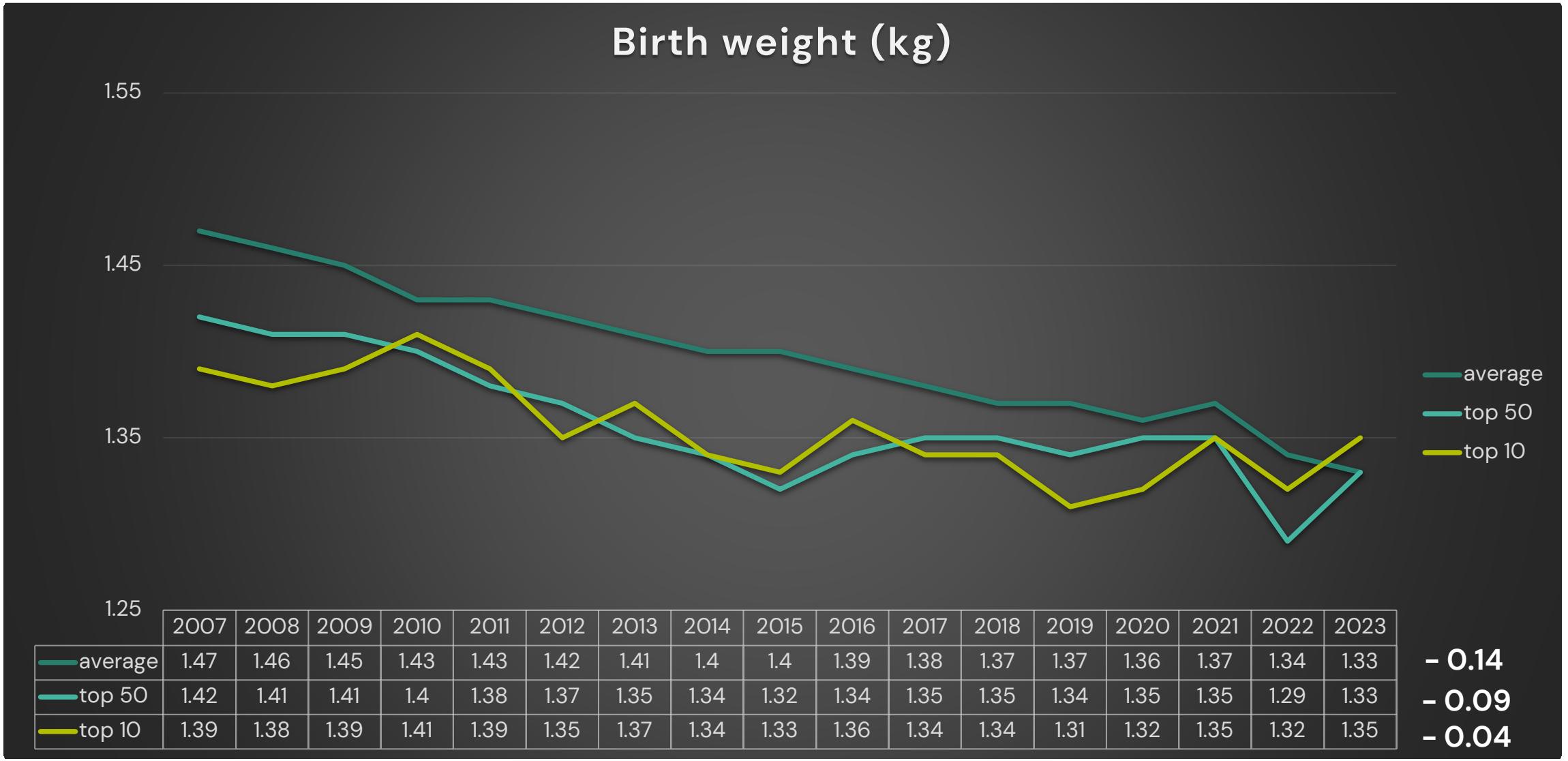
Sow mortality per phase of production



- Locomotor issues are main causes of mortality in gestation
- Prolapses mainly occurs in parturient sows
- Torsions are important during lactation

Schwertz *at al.*, 2021

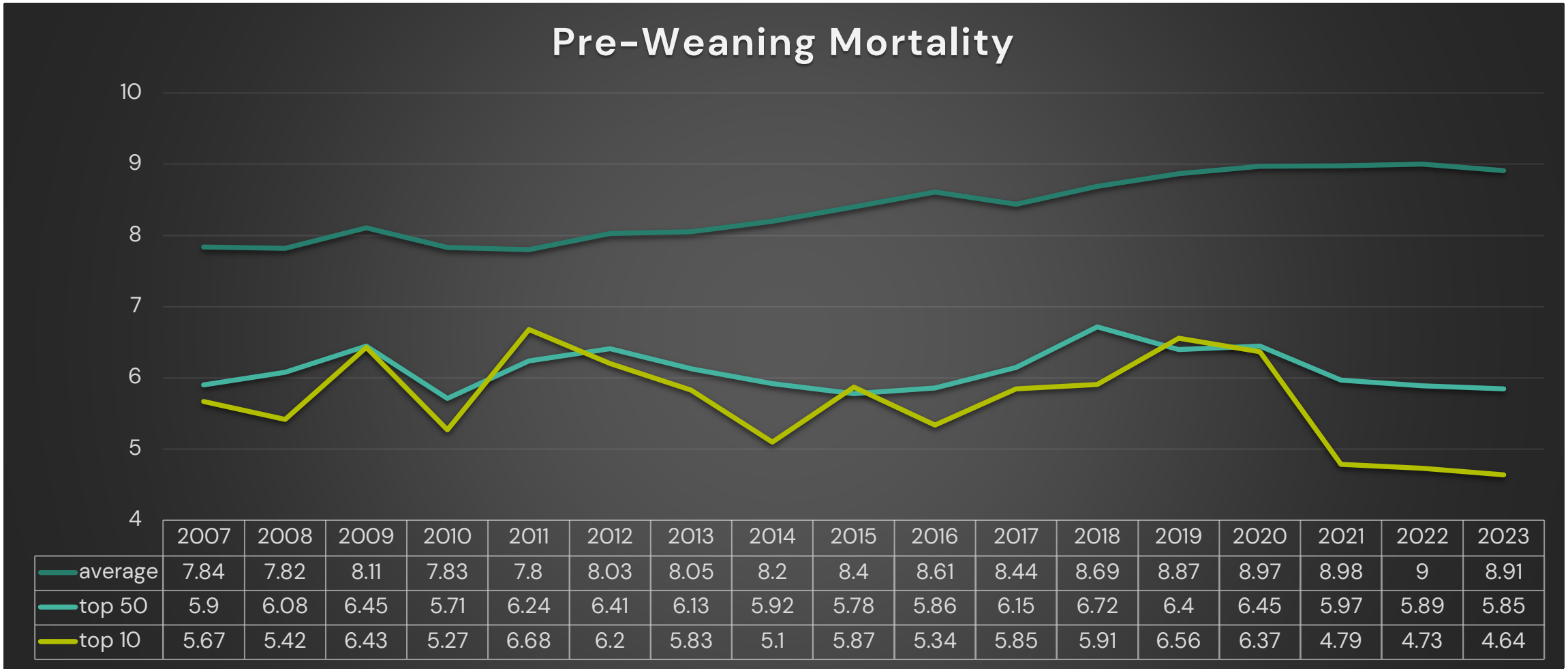
Birth weight is decreasing



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
average	1.47	1.46	1.45	1.43	1.43	1.42	1.41	1.4	1.4	1.39	1.38	1.37	1.37	1.36	1.37	1.34	1.33	- 0.14
top 50	1.42	1.41	1.41	1.4	1.38	1.37	1.35	1.34	1.32	1.34	1.35	1.35	1.34	1.35	1.35	1.29	1.33	- 0.09
top 10	1.39	1.38	1.39	1.41	1.39	1.35	1.37	1.34	1.33	1.36	1.34	1.34	1.31	1.32	1.35	1.32	1.35	- 0.04

Agriness: Melhores Suinocultura

Average of pre-weaning mortality keep growing



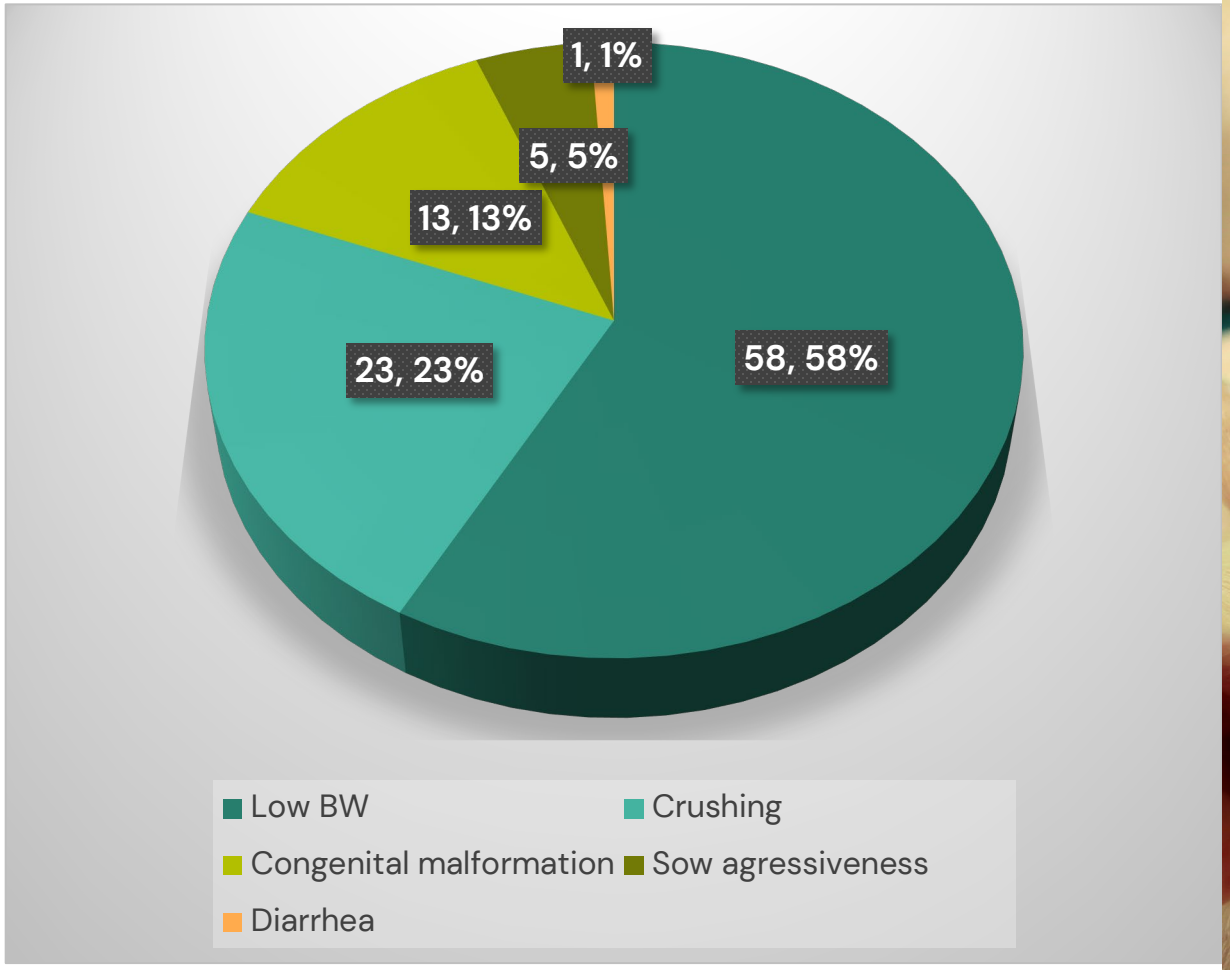
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
average	7.84	7.82	8.11	7.83	7.8	8.03	8.05	8.2	8.4	8.61	8.44	8.69	8.87	8.97	8.98	9	8.91
top 50	5.9	6.08	6.45	5.71	6.24	6.41	6.13	5.92	5.78	5.86	6.15	6.72	6.4	6.45	5.97	5.89	5.85
top 10	5.67	5.42	6.43	5.27	6.68	6.2	5.83	5.1	5.87	5.34	5.85	5.91	6.56	6.37	4.79	4.73	4.64

Top 50 and Top 10 farms in terms of weaned/sow/year have lower pre-weaning mortality

Average number of sows per worker (1 worker : 100-150 sows)

Agriness: Melhores Suinocultura

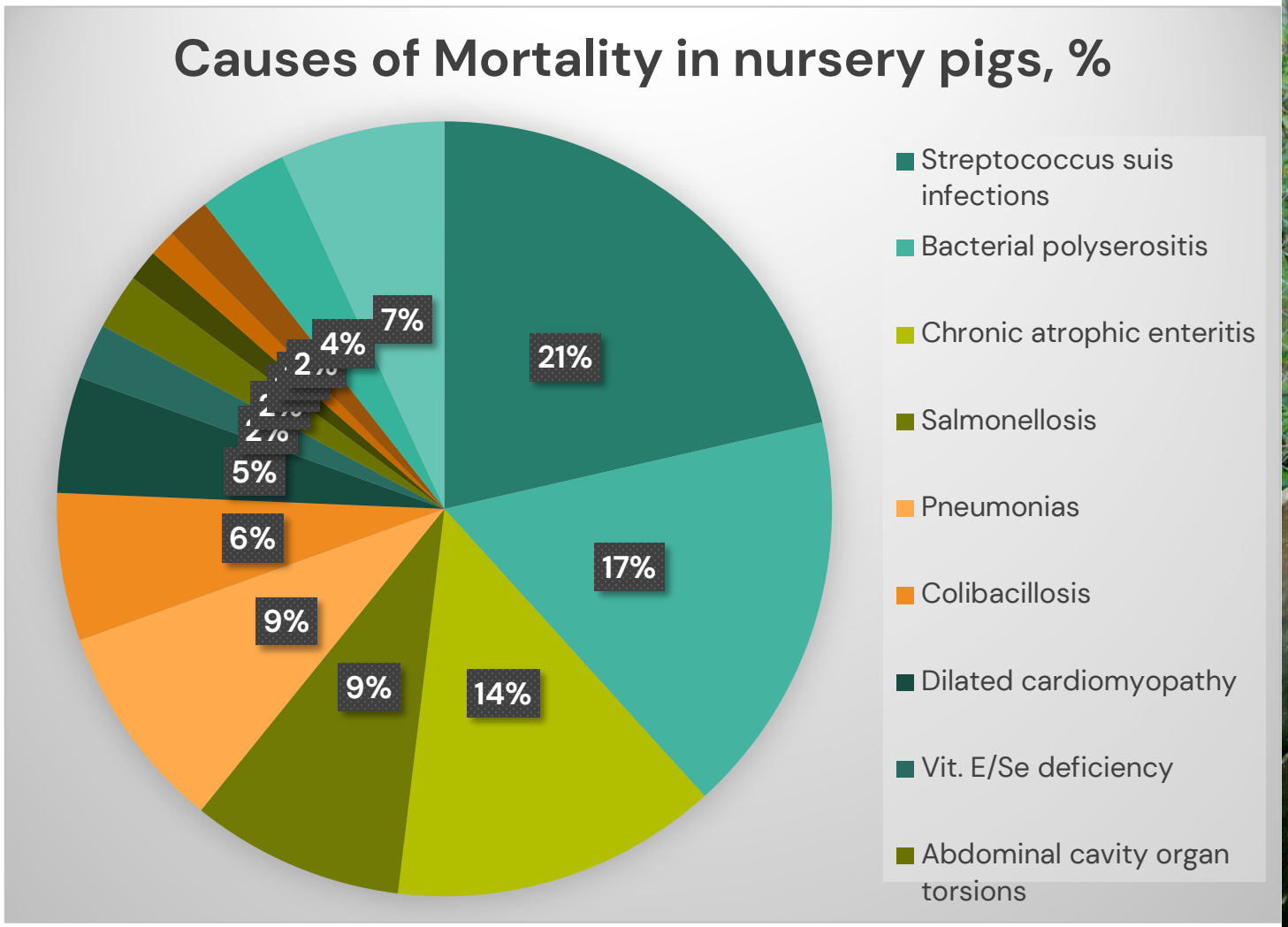
Low body weight the crushing are the main causes of pre-weaning mortality



Data from 14,820 litters

Souza *et al.*, 2020

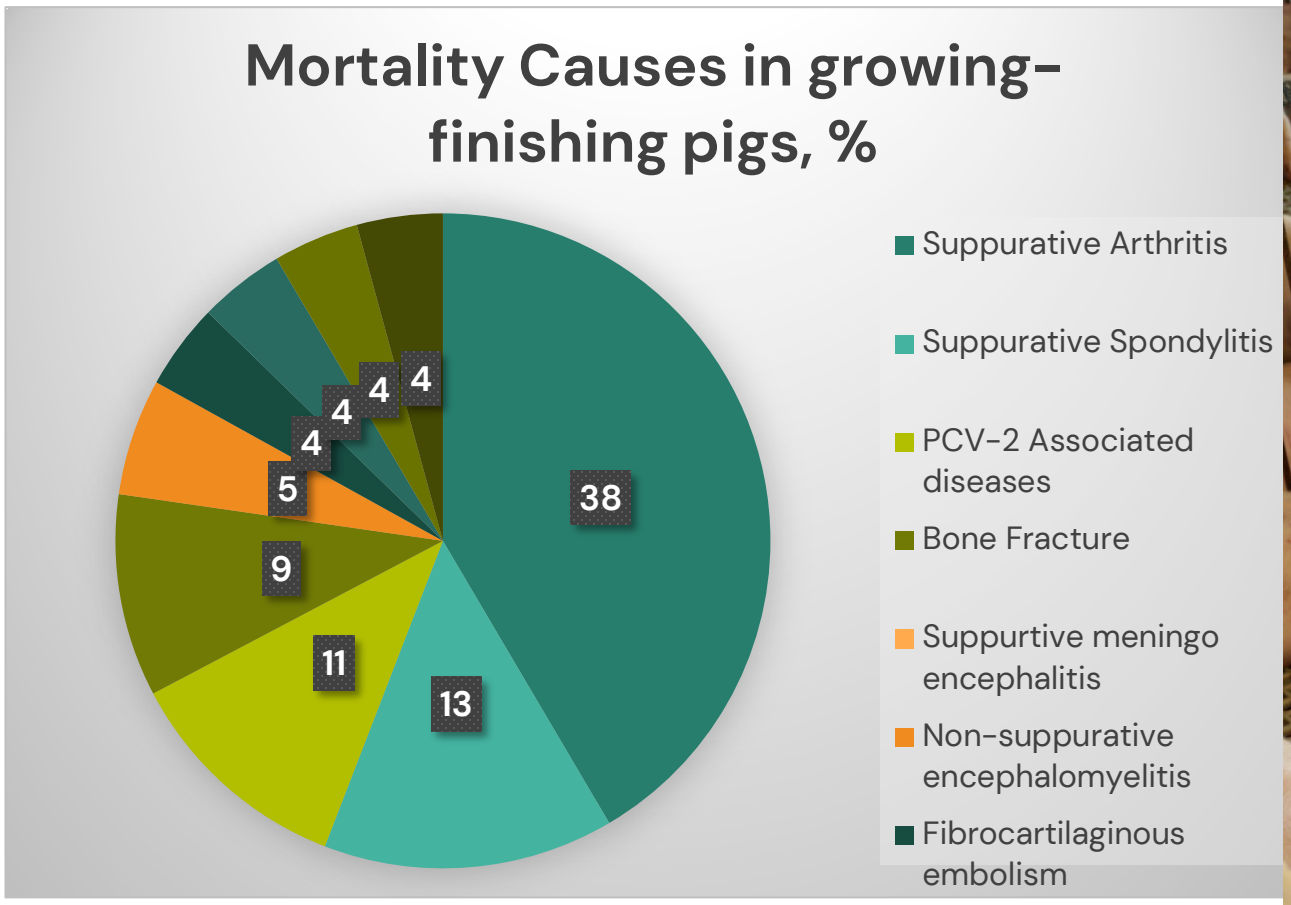
Mortality during the nursery phase: 3%



72% infectious diseases

Menegatt *et al.*, 2023

Mortality during the growing-finishing phase: 3%



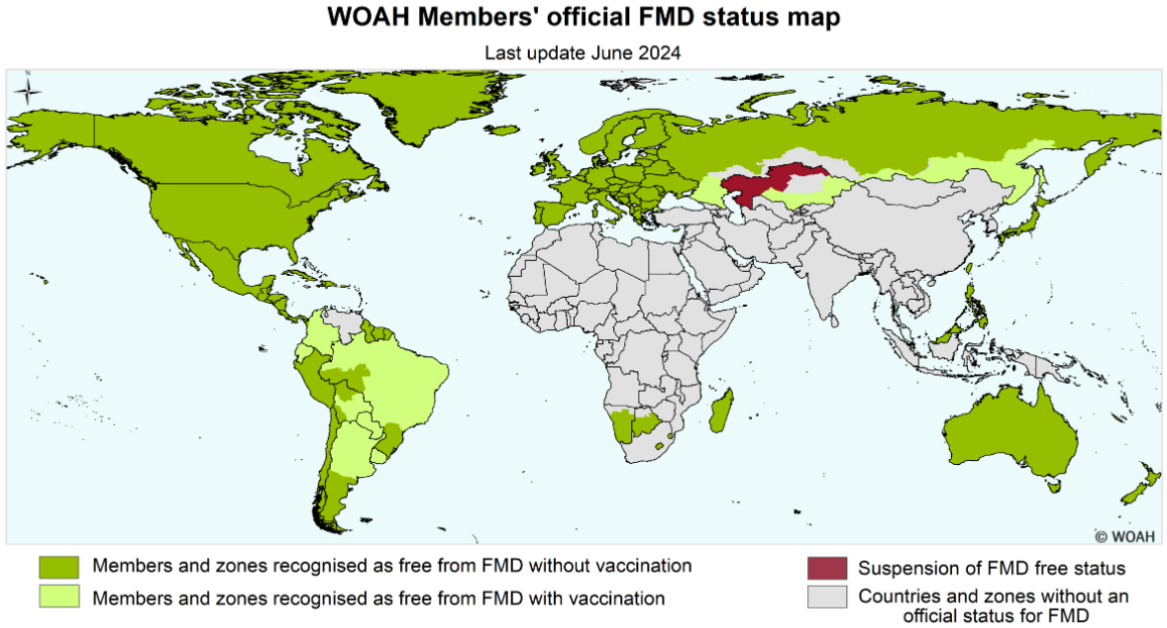
80% infectious diseases

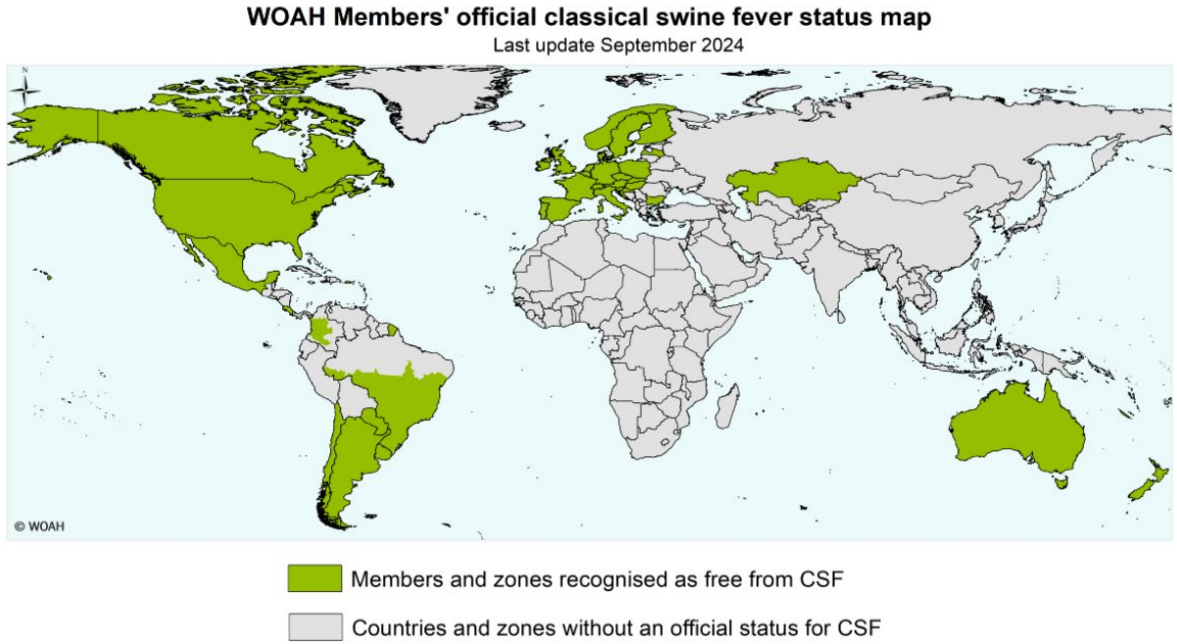
Piva *et al.*, 2023

03 Challenges

Disease Status

Disease Status: Foot and Mouth Disease and Classical Swine Fever





Southern State of PR become free of FMD without vaccination in 2021

Internal recognition of additional 16 states in 2024

Eradication plan build by UFRGS (prof. Corbellini)

Affected area divided in 3 subregions

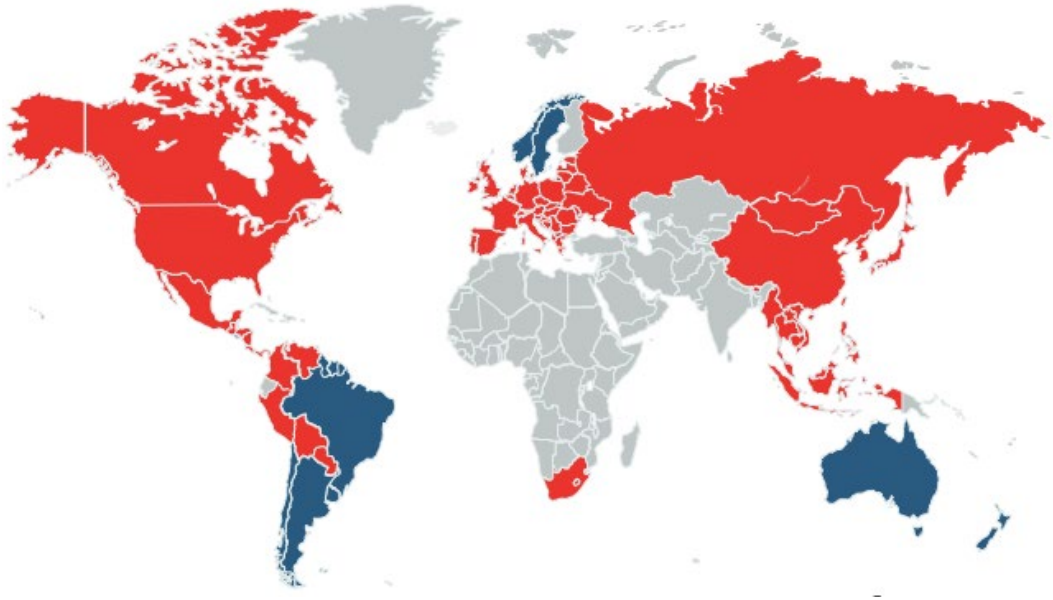
Initial vaccination attempt started in the northern state of Alagoas

WOAH

Disease Status

Country	PPRS	PED	ASF	CSF	Influenza	PCV	Aujezsky	FMD
Brazil				X	X	X	X (no cases since 2022)	
China	X	X	X	X	X	X	X	X
EU	X	X	X	X	X	X	X	
Russia	X	X	X	X	X	X	X	
USA	X	X			X	X		

Sanitary Status of PRRS



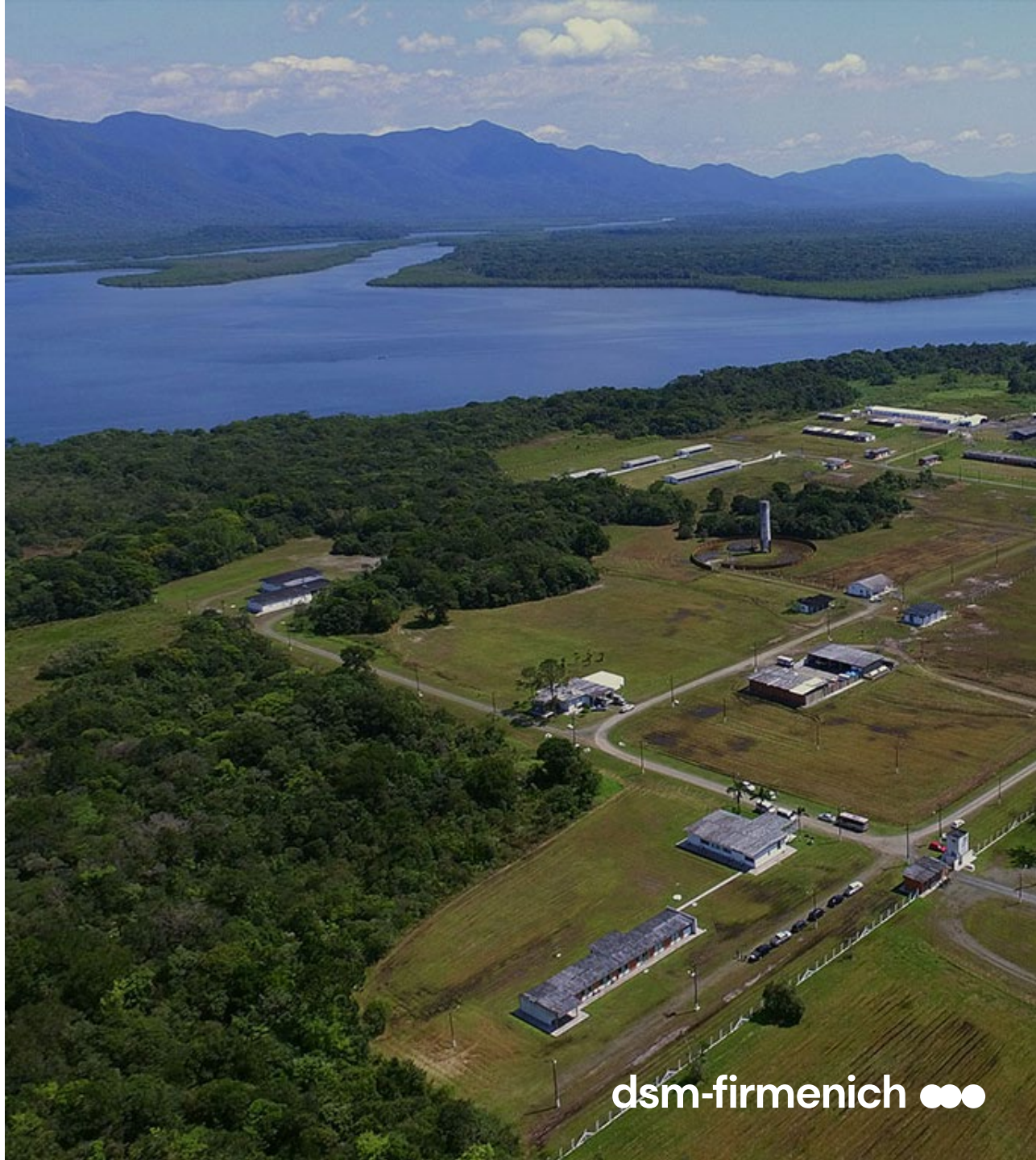
WOAH

Quarantine Station in Cananéia

abegs
Associação Brasileira das Empresas de Genética de Suínos

ABCS
ASSOCIAÇÃO BRASILEIRA
DOS CRIADORES DE SUÍNOS

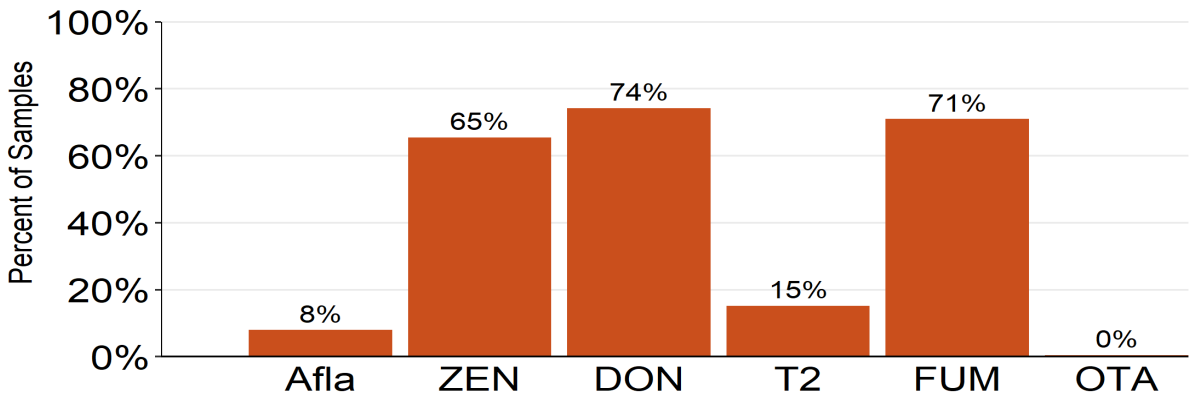
Ministério
da Agricultura
Pecuária e Abastecimento



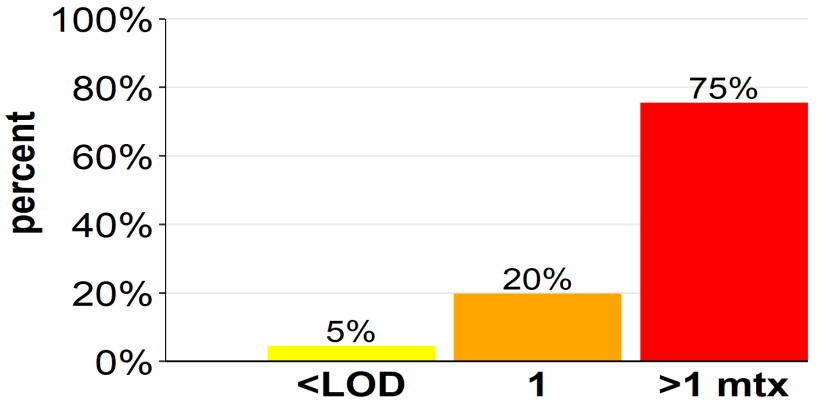
03 Challenges

Ingredients and Nutrition

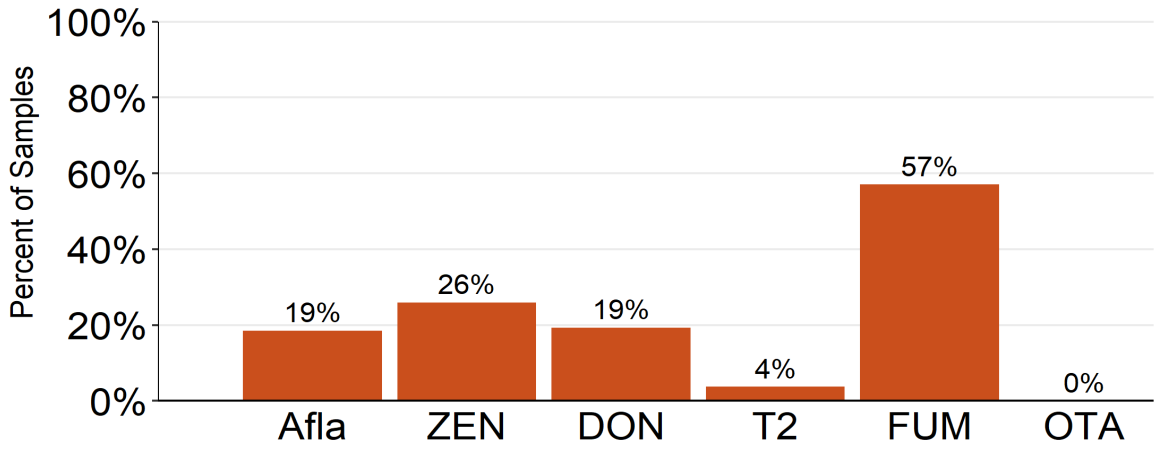
Corn (Kernels) Jan 2024 to Jun 2024

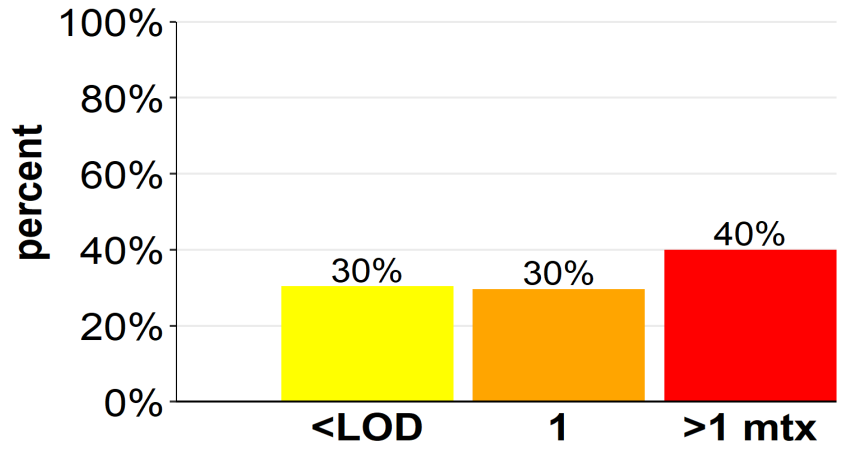


Prevalence of Mycotoxins Detected



No. of Mycotoxins per Sample





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Vitamin E

Plasma concentration of alpha-tocopherol

Level of vitamin supplementation represented as a percentage relative to the 2011 Brazilian Tables for Poultry and Swine for growing and finishing pigs

Below 1.5 ug vit. E/ml is indicative of deficiency (Danish institute of Agricultural Sciences)

Dalolio *et al.*, 2023; OVN 2022; Brazilian Tables, 2024

Arq. Bras. Med. Vet. Zootec., v.75, n.2, p.303-312, 2023

Effect of increasing levels of fat-soluble and water-soluble vitamins on improving performance and plasma vitamin concentration in modern hybrids pig's growth and finishing phase

[*Efeito do aumento dos níveis de vitaminas lipossolúveis e hidrossolúveis na melhoria do desempenho e na concentração plasmática de vitaminas em suínos híbridos modernos nas fases de crescimento e terminação*]

F.S. *Dalólio*[1], J.P. *Oliveira*[1], H.S. *Rostagno*[1], L.F.T. *Albino*[1], C.C. *Silva*[2], C. *Lozano*[2]

[1]Universidade Federal de Viçosa, UFV, Viçosa, MG, Brasil
[2]Practitioner, São Paulo, SP, Brasil

Vitamin E recommendations (mg/kg)

Phase	Optimun Vitamin Nutrition 2022	Brazilian Guidelines 2024	NRC 2012
Pre-Starter 1	105	74.4	16
Pre-Starter 2	105	67.2	16
Starter	105	56.1	11
Growing 1	64	47.4	11
Growing 2	64	38.2	11
Finishing 1	64	31.8	11
Finishing 2	64	27.4	11
Gestation	105	61.5	44
Lactation	105	61.5	44
Gilt	84	61.5	-

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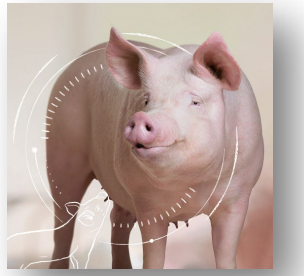
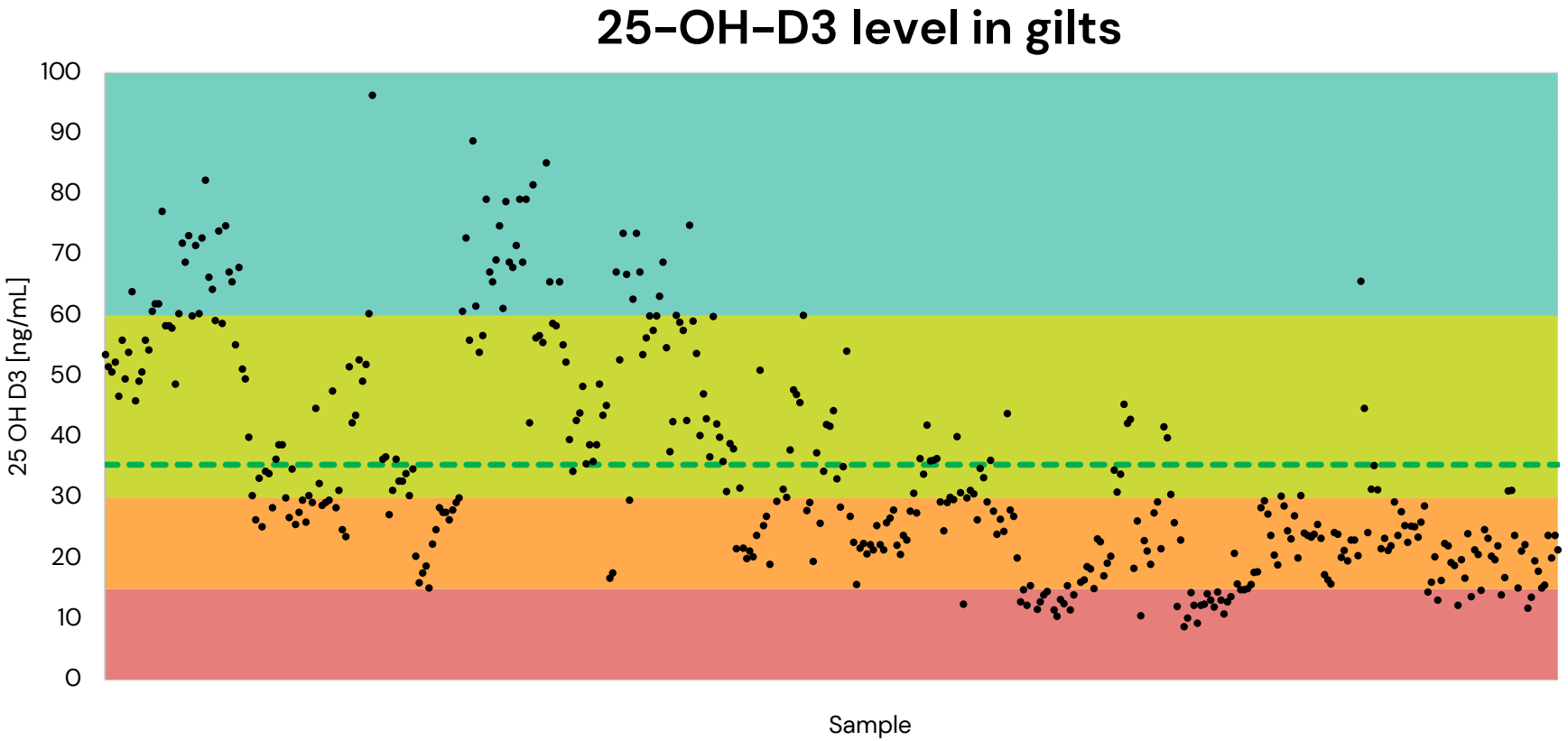
Global gilt survey 2023 – Supporting 'Gilt Protection you can Trust'

Blood 25-OH-D3





> 60 ng/ml	Optimum level that could trigger positive effects on immune competence, gilts selection rate, farrowing time and milk secretion
30-60 ng/ml	Adequate level for calcium and phosphorus metabolism and bone health
21-29 ng/ml	Insufficient level for calcium and phosphorus metabolism and bone health, with pigs at risk for bone disorders - e.g. reduced selection rate in gilts - prolonged farrowing time and milk release in sows. Insufficient for immune competence
<20 ng/ml	Deficient level for calcium and phosphorus metabolism - high probability of bone disorders e.g., rickets, osteomalacia, osteochondrosis - farrowing time, milk secretion and immune competence

Average: 35.4 ng/mL
Max: 110 ng/mL
Min: 8.8 ng/mL

Samples from:

- 431 Gilts
- BW= 109 kg ± 46
- 25 farms
- 12 countries
- 2 regions

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04 Conclusions

- Opportunities in terms of pre-weaning mortality
- Sanitary Status making the difference for Brazilian production (PRRS)
- Animals resistant to PRRS to sustain reproduction performance
- Nutritional status of vitamins based on the plasma/blood levels
- Monitor the quality of feed ingredients (mycotoxins and composition)