

Economic weights of sperm quality traits for sire breed using the gene flow method



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Pigs breeding

- meat production as the long-term breeding goal
- negative correlation between meat and sperm quality traits (SQTs)
- SQTs: heritable & variable
 - selection possible in sire breeds
 - important according to local breeders
- What is the **economic importance of SQTs?**



Material & Methods

Economic weight (EW) of SQTs

- Pietrain breed in the 3-way crossing system
- parameters considered:
 - age of boars (young / old)
 - average semen quality
 - no. of insem. doses/boar ejaculate
- change in profit of pig breeding system:
 - ↑ semen quality = ↓ costs(price)/dose = ↓ costs/insemination
- change of the SQT means by ± 0.5%
- in €/♀ in the system per 8 yrs. invest. period
- calculated by bio-economic model EWPIG2 (ECOWEIGHT package; Wolf et al., 2016)

Aim of study

Calculate **economic weights (EWs)** for SQTs:

- **sperm volume (VOL)**
- **sperm concentration (CON)**
- **% of prog. motion of spermatozoa (MOT)**
- **% of abnormal spermatozoa (ABN)**

using the gene flow methodology

Conclusions

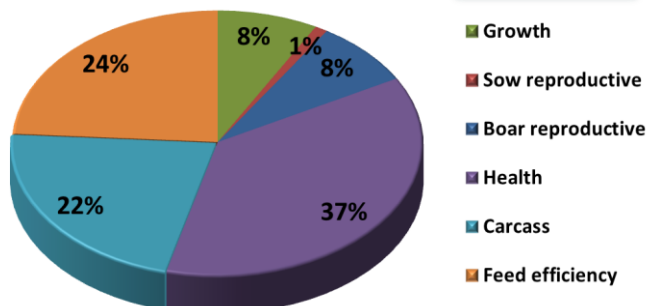


SQTs

- ✓ **8%** from the economic importance of all 18 traits
- ✓ should be **included in breeding goal for sire breed**

Results

User's Manual for the Program Package ECOWEIGHT (Programs for Calculating Economic Weights in Livestock), Version 8.0.0. Part 5A: Program EWPIG2 (Version 2.0.0) for Pigs
by J. Wolf, M. Wolfová, E. Žáková, Z. Krupová and E. Krupa
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Growth (ADG of finished animals, age of gilts at 1st mating); **Sow reproductive** (No. of piglets born alive, survival of piglets at birth and till weaning, conception rate of gilts and of sows); **Boar reproductive** (VOL, CONC, MOT, ABN); **Health** (survival of animals in nursery, after nursery, productive lifetime of sows); **Carcass** (dressing percentage and lean meat content of finished animals); **Feed efficiency** (feed conversion in the nursery and in finishing)

Parameter (unit)	Value*
Mean: VOL (ml)	275
CONC (10 ³ cells/mm ³)	426
MOT (%)	76.4
ABN (%)	10.6
Average No. of functional spermatozoa/insemin.dose (10 ⁹)	1.5
Deviation (young/old ♂) from the mean of: VOL (ml)	-40 / 20
CONC (10 ³ /mm ³)	20 / 0
MOT (%)	+0.5 / -0.5
ABN (%)	-1 / 1
Average price of insem.dose at the mean SQ (€/dose)	5.10
Number of sperm doses produced/♂/6 mo.: young	1001
mature	1232
Productive lifetime of ♂ at AI stations (mo.)	34
Proportion of young ♂ at AI stations/all ♂ of the breed	0.15

Parameter (unit)	EW (€)*
Semen volume (ml)	275
Sperm concentration (10 ³ cells/mm ³)	426
Motility (%)	76.4
Percentage of abnormal spermatozoa (%)	10.6

*Taken from Wolf (2009) and Wolf and Smital (2009)

*Expressed in €/unit of the trail/ sow of the crossing system over 8-years