PPILOW

Poultry and Pig Low-input and Organic production systems' Welfare

Large White genetics in organic system : breeding for piglet survival

Laurianne Canario
Stéphane Ferchaud
Stéphane Moreau
Catherine Larzul
Armelle Prunier

INRAE

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74th

Piglet mortality

Major issue for organic production

A multi-criteria approach

Sow maternal ability

Major component of successful piglet production

Sow capacity of adaptation

Maintaining production levels despite environmental changes or disturbances

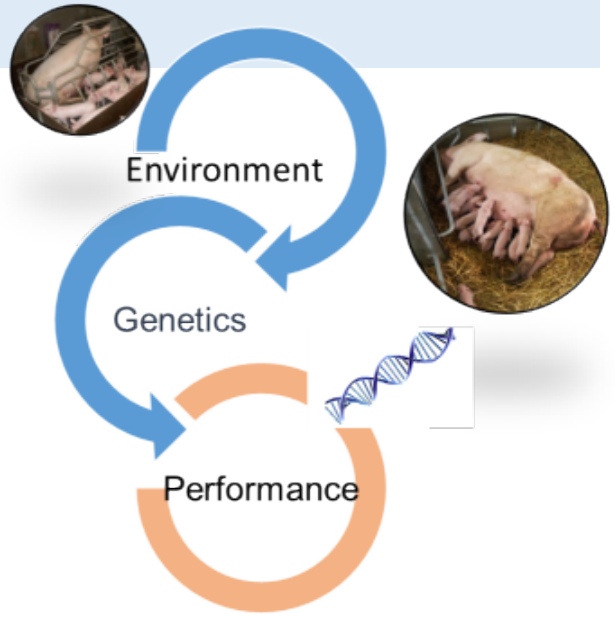
Piglet potential of survival

Influenced by dam and boar

Sow housing

Temporary crating

Genetics



The core population

Most organic pig farms use maternal lines of pigs selected under conventional conditions that are not really adapted to organic systems

Lack of specific breeding scheme for organic production

Objective: A genetics for better compliance with organic farming needs

Selection upwards for piglet survival

Sows with high performance over several parities were chosen as founders (G0) from the French Large White genetic scheme
> Daughters moved to experimental unit

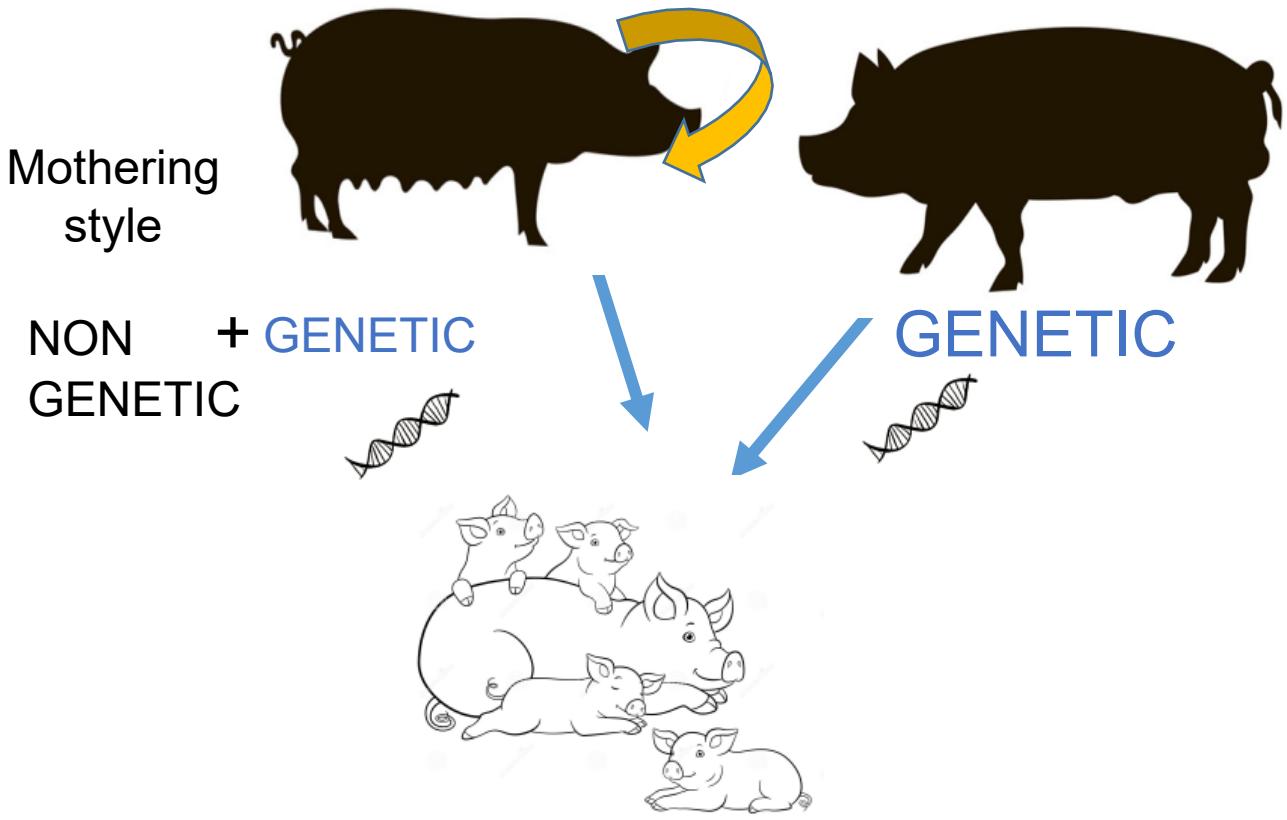
CORE organic

POWER

AXIOM
l'évidence génétique

Nucléus
L'innovation pour l'excellence

Sows inseminated over **successive generations** with semen from boars with a high genetic merit for piglet survival (h^2=0.10)



Daughters from best dams chosen as future breeders

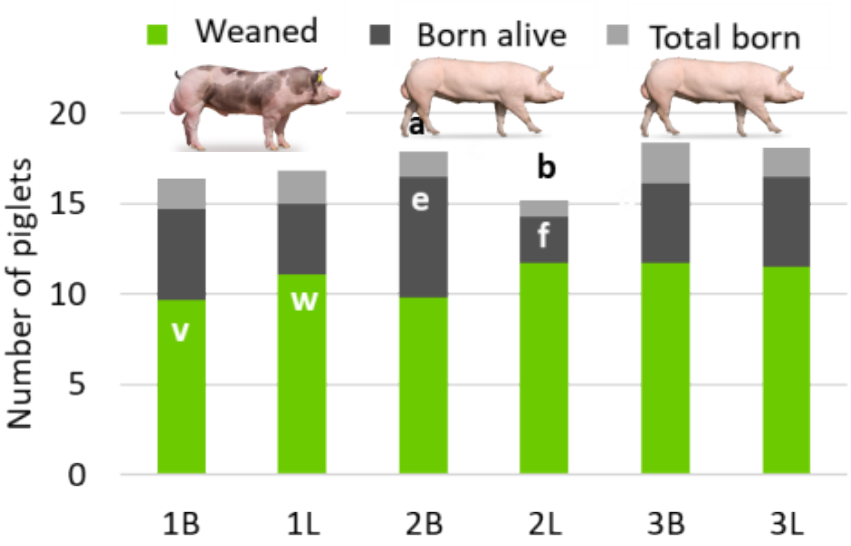
G1

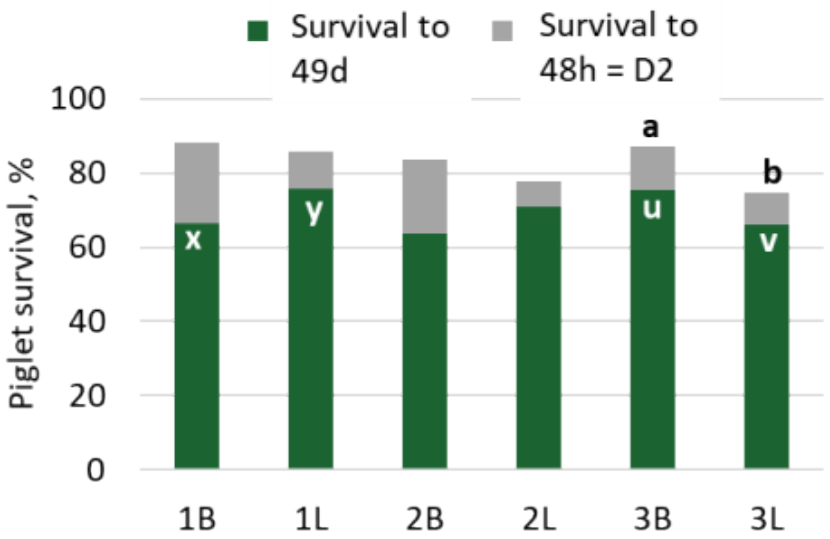
Sisters inseminated with the same boar

90 % free **B**

100 % free **L**

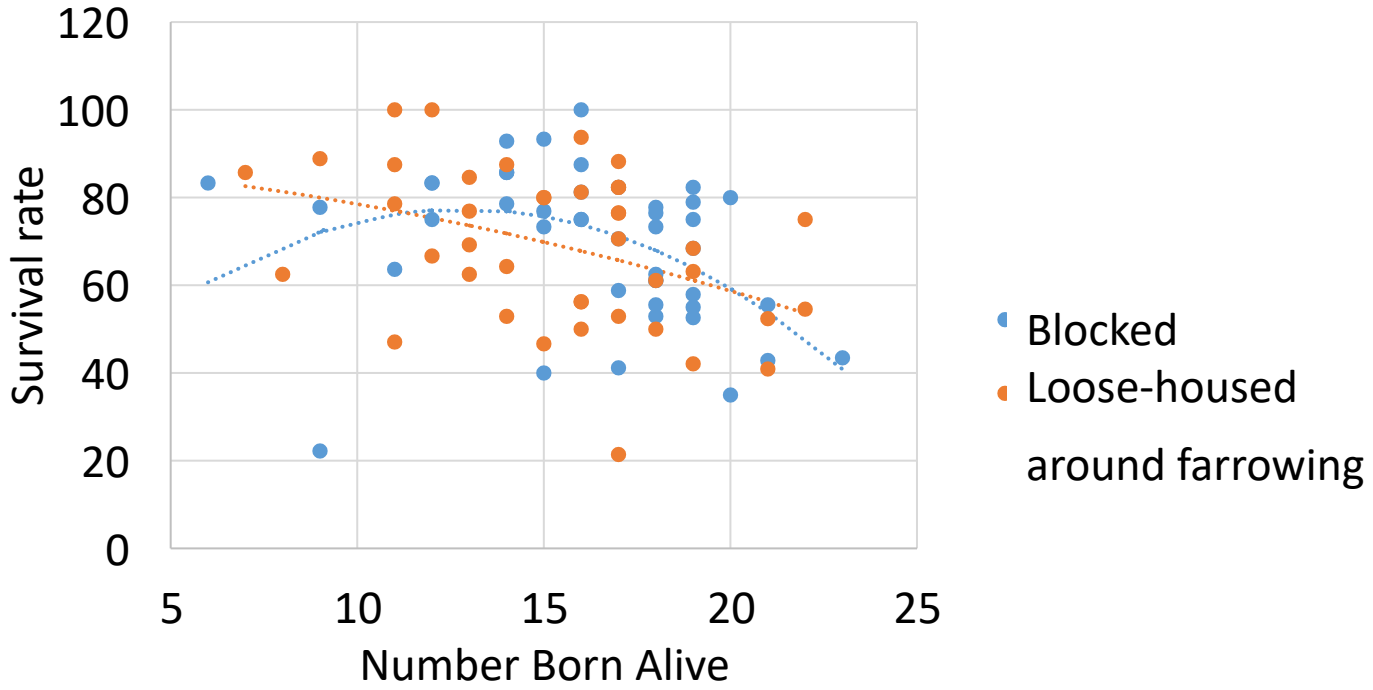
Same genetics - Test effect of temporary crating





Litter survival rate

As a function of number of piglets raised – parities 2 and 3

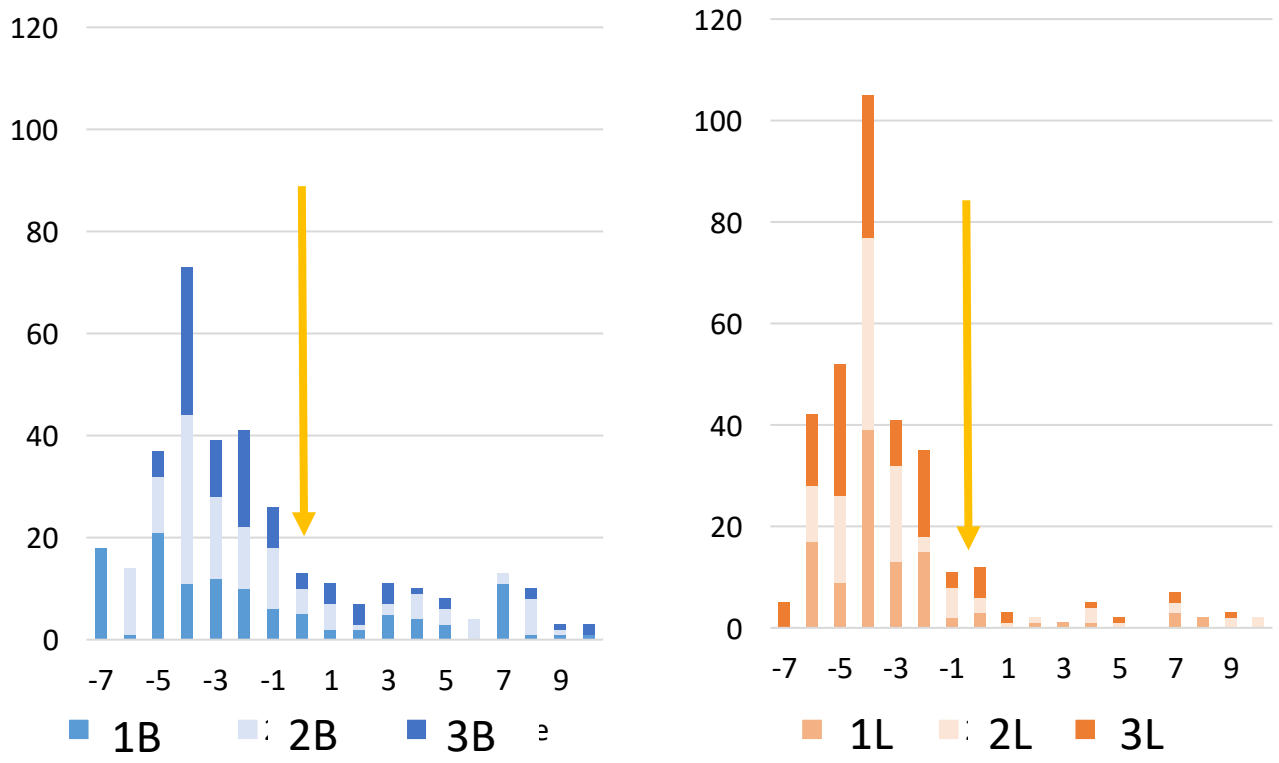


Great variability between sows for the same prolificacy
decrease beyond 17 piglets

Related to the number of functional teats, sow capacity to produce colostrum and milk

Piglet mortality

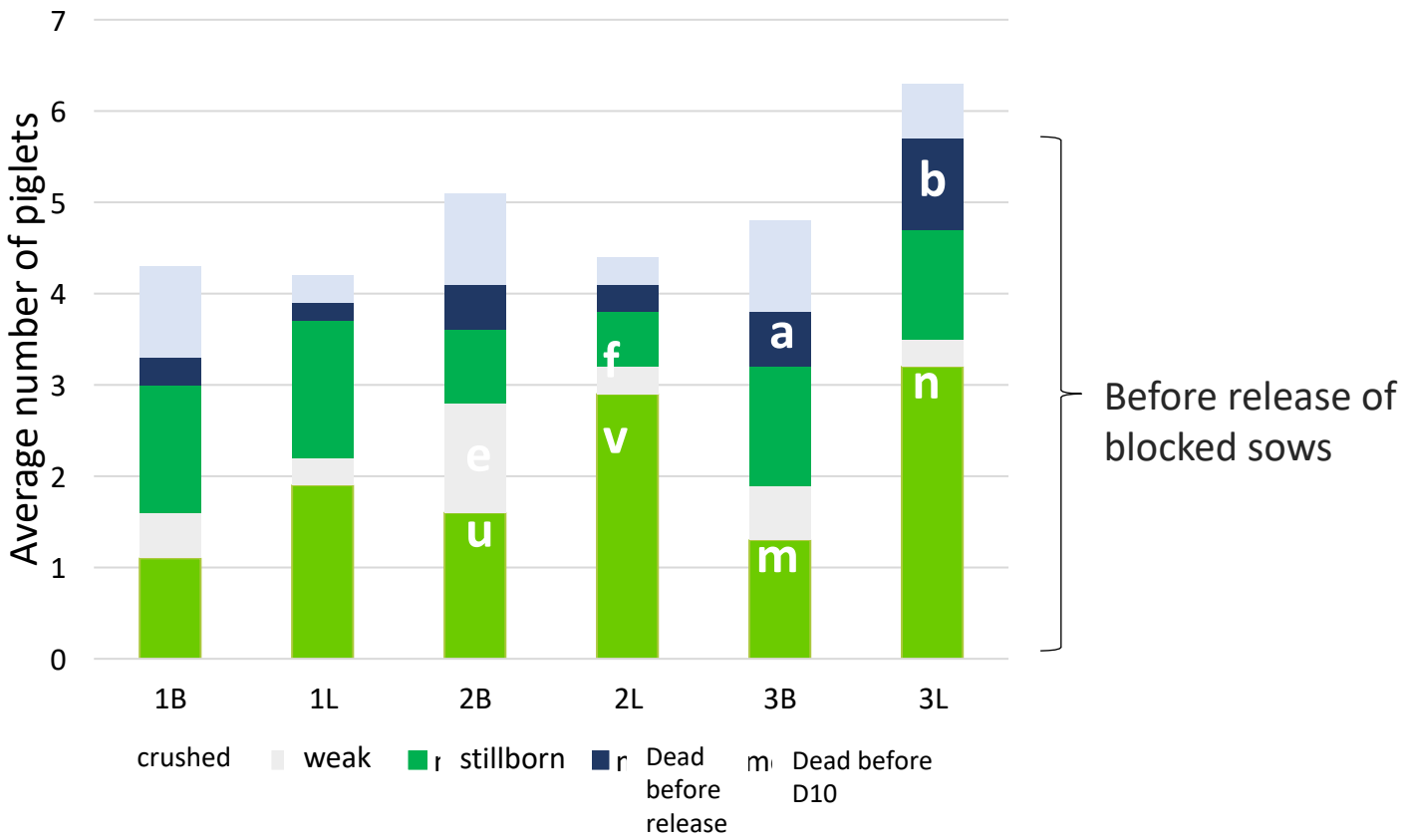
Depending on the time difference from the **release** of the blocked sows



Litter size aligned with sow capacity of investment at different times

Piglet mortality

Analysis according to different causes – external examination + necropsy

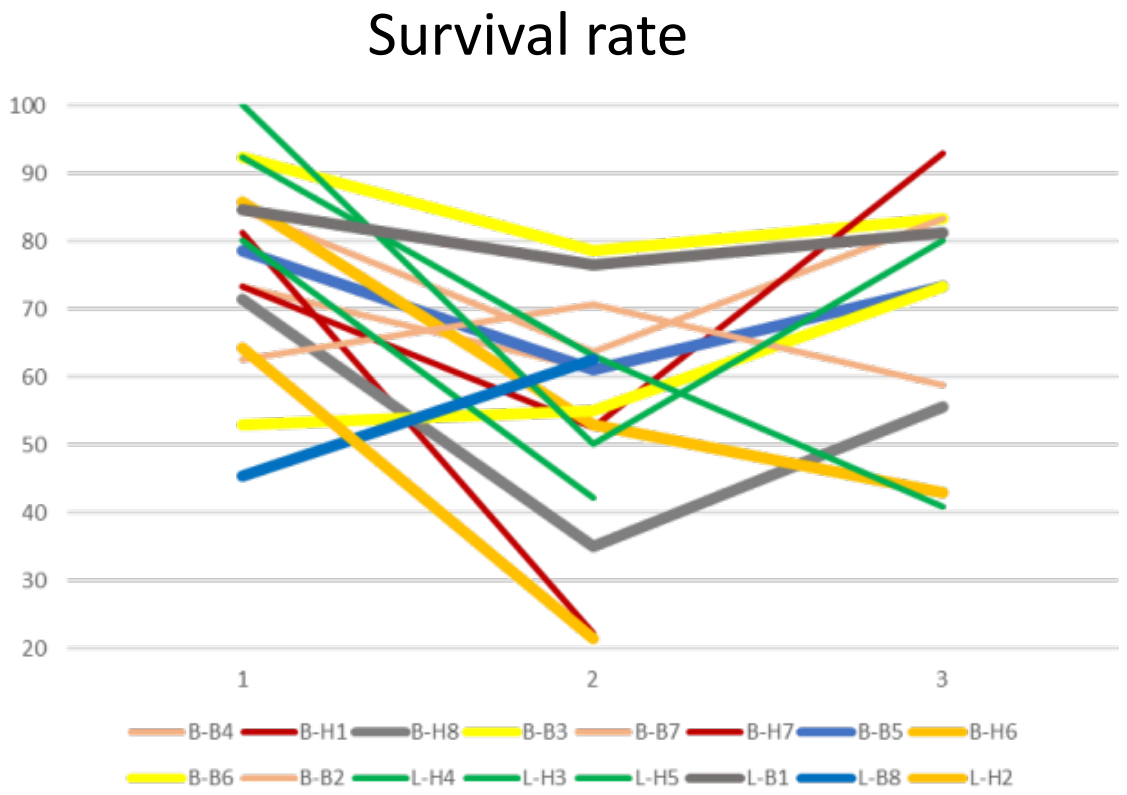


Majority of losses in early lactation

Greater losses in parity 3 by crushing in loose-housed sows than temporary crated sows

Stability of performance accross parities

An asset for sustainability

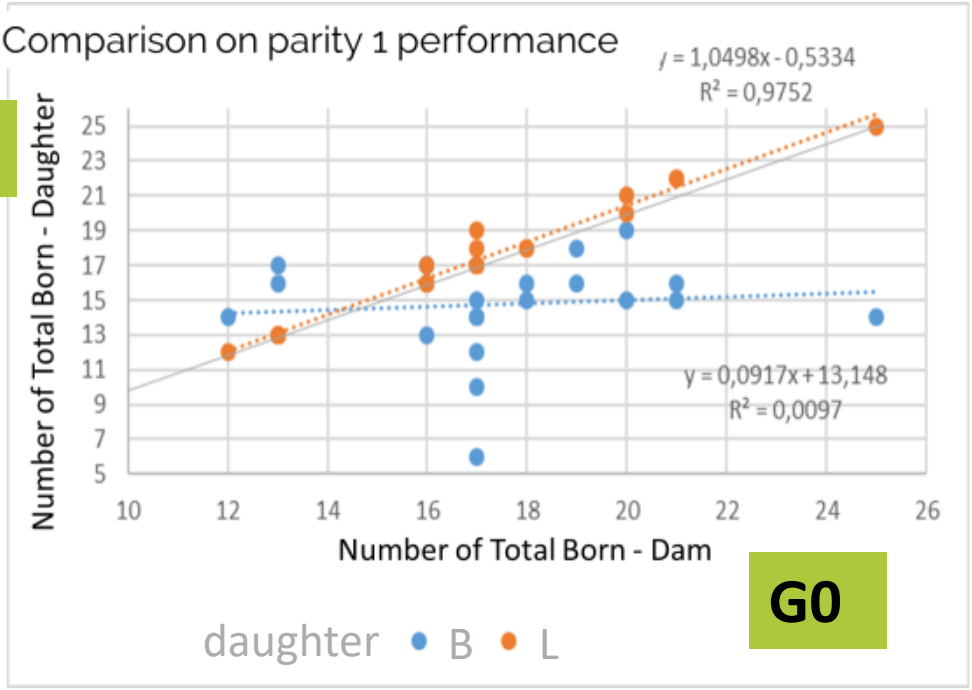


Variation between sisters Unstability within environment

Light colour: more stable – Green: 100% loose-housed

Low connexion between G0 dam and G1 daughters performance

G1



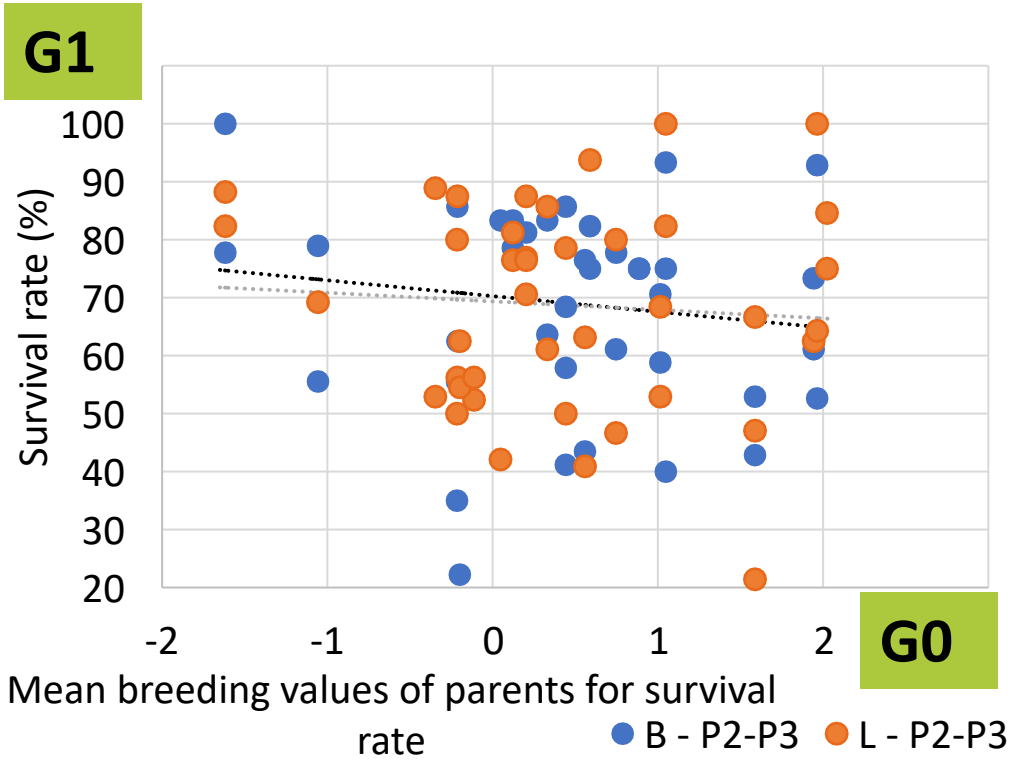
G0

Relationship differs between the 2 G1 groups genetically similar

Limited expression of genetic merit

Interaction with the environment

Large within-population variability



To be re-estimated with larger data base

Sow behaviour key factor for improvement

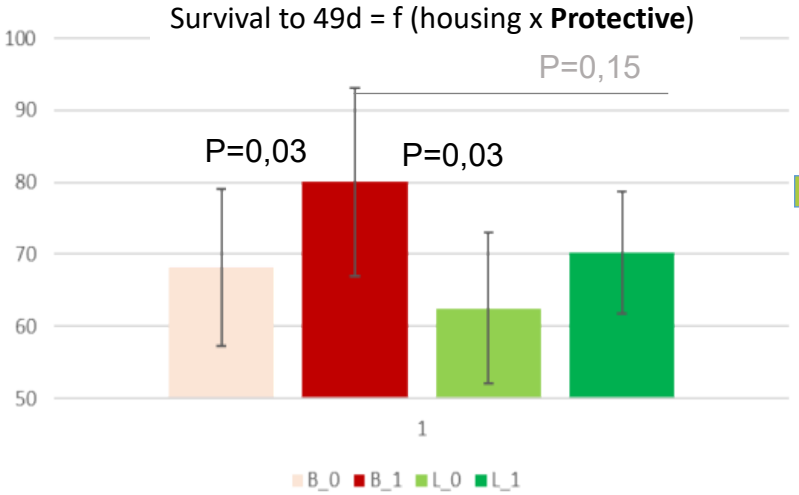
1. On-farm notations

G1

Litter return after separation D1

Protective towards piglets

B: 36.4% vs L : 69.6% P=0.05



2. Video recording

Sow activity

Automated analysis of behaviour

Bonneau et al., 2021
Girardie et al., 2023

Temporary crated sows showing maternal behaviour at D1 : higher piglet survival rate until weaning

Young females kept for breeding chosen according to performance and behaviour : no/low crushers, handling ease

Conclusion

Difficulty on **G1** P1 : new facility
Crossbred litters did not perform better than LW purebred
Loose-housed sows weaned more piglets in P1 but advantage disappeared later on : big sows

Selection to improve survival rate and limit litter size (sire EBV)

Possible interactions of genetics with the environment

Young LW females chosen for **G2** acc. to performance, capacity of adaptation and behaviour of their dams produced slightly fewer piglets (two first litters)

Survival rate until 48h after farrowing higher in G2 than G1 :
88.1% vs 83.7%

LW suitable for organic production ?

Thank you for your attention