



GENETIC ANALYSES FOR PRODUCTION AND HEALTH TRAITS IN A COMMERCIAL RABBIT LINE

Hervé Garreau, Mickaël Maupin, Jacques Hurtaud, Mélanie Gunia



context

- The development of antibioresistance is a concern since the 1990's
- French action plan for “the reduction of the risks of antibiotic resistance in veterinary medicine” implemented in 2012
- Genetic selection for disease resistance is one alternative method
- Is it feasible and effective in commercial conditions ?
 - Well defined and easy to measure resistance traits
 - Genetic correlations among various disease traits and between disease and production traits

AGP59 line management



Selection nucleus

- 100 sires
- 200 dams – 42 days rythm
 - Litter 1
 - Litter 2 to n

Selection

Candidates

- 540 / batch
- Collective housing
- 70 days weighing
- Clinical signs of disease*

Sibs

- 80 /batch
- Individual housing
- Feed intake
- 70 days weighing
- Clinical signs of disease*
- Slaughter at 71 days
-> carcass yield

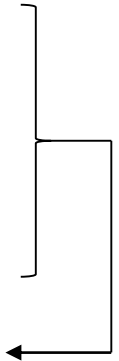
* Digestives
Respiratory
Other infections } Infectious syndromes 0/1

Selection criteria of the AGP59 line

Data recorded between 2008 and 2016

Basic statistics

	N	Mean	Min	Max
Body weight 70 d (g)	36 791	3288	1960	4535
Carcass yield (%)	5 372	58.7	51.4	64.3
Digestive syndromes	38 726	0.07	0	1
Respiratory syndromes	38 726	0.04	0	1
Other infectious	38 726	0.01	0	1
Infectious syndromes	38 726	0.12	0	1



Results: Genetic parameters

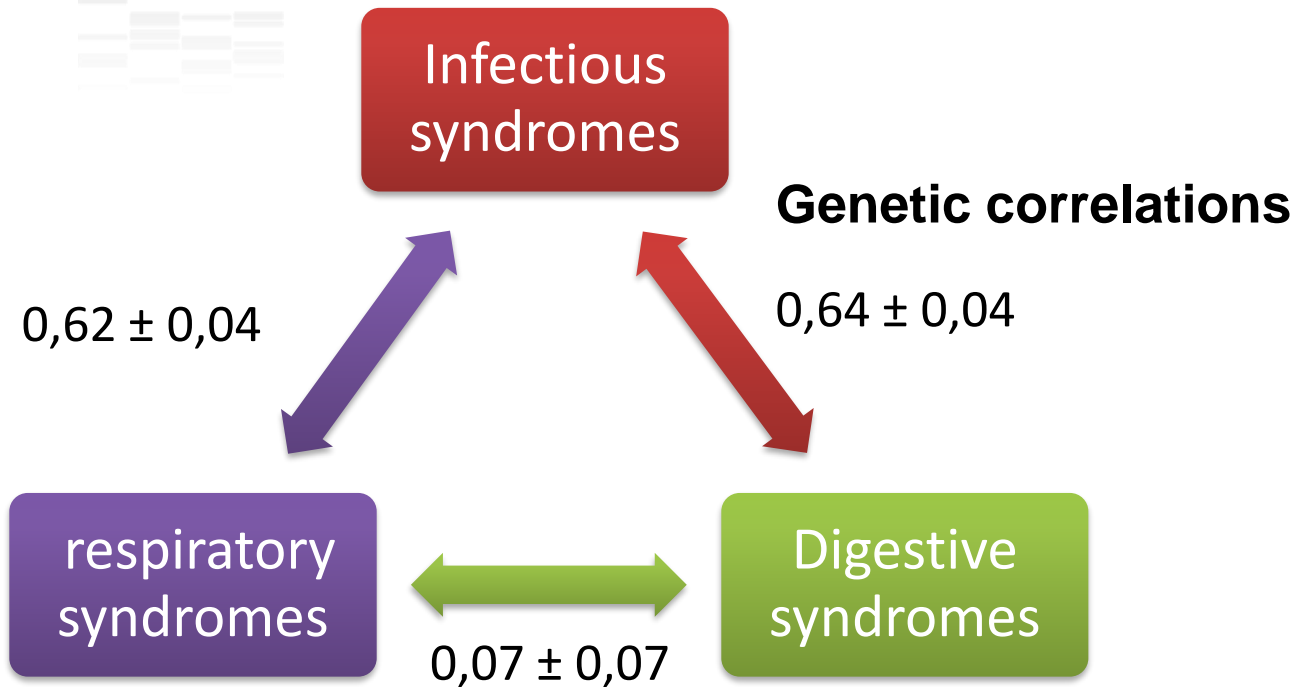
REML Method – ASReml Software

- Body weight 70 d: } parity of birth
- Carcass yield: } batch, litter size at weaning, sex
- Infectious syndromes: } parity of birth

Heritabilities, genetic correlations, phenotypic correlations

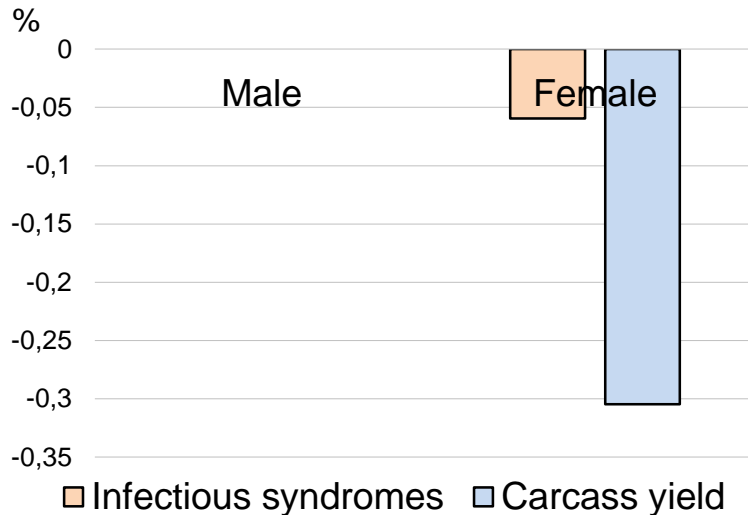
	Body weight 70 days	Carcass Yield	Infectious syndromes
Body weight 70 days	0.28±0.02	-0.11±0.07	0.08±0.10
Carcass Yield	0.14±0.02	0.44±0.05	-0.15±0.12
Infectious syndromes	-0.42±0.05	0.00±0.02	0.03±0.01

Infectious syndrome: a criteria to improve general genetic disease resistance



Results: estimates of the sex effect on infectious syndromes and carcass yield

Sex effect



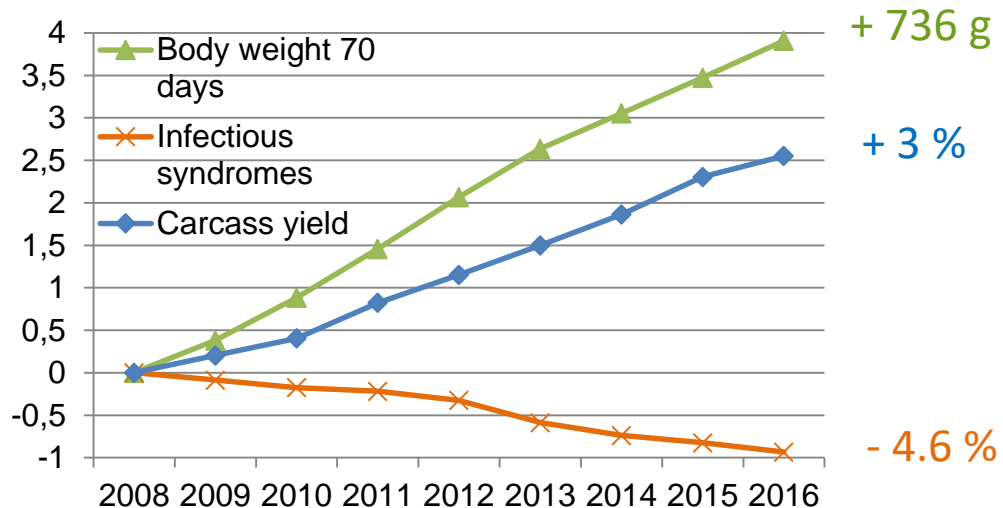
Results: estimates of the litter size at weaning effect on infectious syndromes and carcass yield



Results: genetic trends

- Multitrait Blup Animal Model

Genetic standard deviation



Conclusion

- It is possible to select rabbit for disease resistance by using simple health records without trade-off between disease and production traits
- The results of this study provide an additional tool to reduce the use of antibiotics in rabbit farms
- Breeding on general disease resistance is very promising in rabbit and could be extended to other livestock species

Thank you for your attention !

