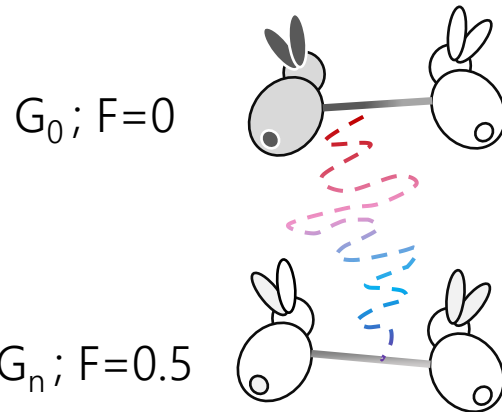# Reproductive performance of a maternal rabbit cross: Fauve-de-Bourgogne x INRA-1777

Savietto D., Debrusse A-M., Bonnemere J-M., Labatut D. Aymard P., Combes S., Fortun-Lamothe L., Gunia M.

davi.savietto@inrae.fr

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

INRAe

Introduction

Selection programs based in a close populations,

G_0 ; F=0

G_n ; F=0.5

reduces the effective population size, accumulates inbreeding and degrades the fitness of the selected population

Crossbreed are already present at commercial farms, but the establishment of robust lines to be used in the commercial cross is recent

G_n ; F=0.5

The use of genotypes with different origin and selection history is an alternative to boost the genetic diversity, like local breeds, to produce 'true' outbreed individuals
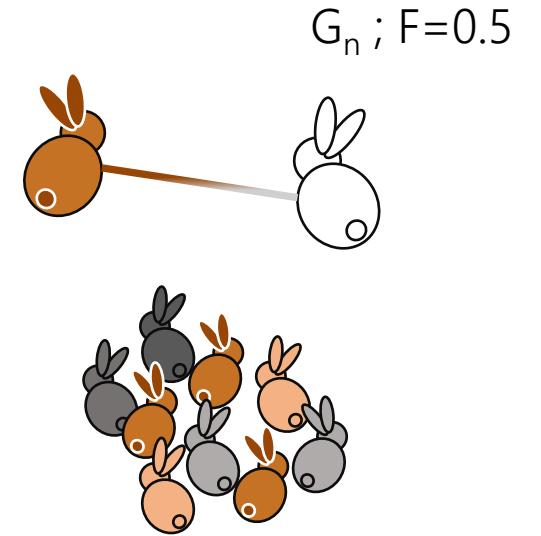
... evaluate the reproductive performance of Fauve-de-Bourgogne X INRA-1777 crossbreed females compared to pure breeds
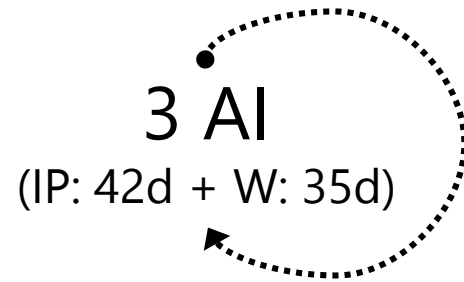
What we have done ?

Fauve (n=23)

INRA (n=48)

Fauve X INRA (n=43)

3 AI
(IP: 42d + W: 35d)

Measurements

♀ :

- Live weight (LW) at 1st AI
- Fertility rate at each AI attempt
- Litter size at birth

Kits :

- Litter weight at birth
- Litter weight at 18 days
- Individual weight at weaning (35 days)

Survival & reproductive traits of rabbit females

Traits	Fauve	INRA	Crossed
Female live weight at 1st AI (g)	3877[a]	4108[b]	4209[b]
Female survival at 3rd AI attempt (%)	91.3 (5.9)	70.8 (6.6)	90.7 (4.4)
Fertility rate (%)			
1st Artificial insemination	43.5[a] (10.3)	79.2[b] (5.9)	65.1[ab] (7.3)
2nd Artificial insemination	61.9 (10.6)	60.0 (7.3)	71.4 (7.0)
3rd Artificial insemination	23.8[a] (9.3)	61.8[b] (8.3)	69.2[b] (7.4)
Overall	42.2[a] (6.5)	67.7[b] (4.3)	68.6[b] (4.2)
Newborn kits (n)			
1st Artificial insemination	2.6[a] (1.2)	6.3[b] (0.6)	6.0[b] (0.7)
2nd Artificial insemination	5.3[a] (1.0)	9.6[b] (0.7)	8.2[ab] (0.7)
3rd Artificial insemination	6.3[a] (1.6)	10.7[b] (0.8)	7.3[a] (0.7)
Overall	4.7[a] (0.8)	8.8[c] (0.4)	7.2[b] (0.4)
Weaned kits (n)			
1st Artificial insemination	3.7 (1.2)	5.1 (0.4)	5.1 (0.4)
2nd Artificial insemination	4.6[a] (1.2)	8.4[b] (0.5)	7.1[b] (0.5)
3rd Artificial insemination	4.3[a] (1.2)	7.9[b] (0.6)	5.6[ab] (0.5)
Overall	4.2[a] (0.6)	7.1[c] (0.3)	5.9[b] (0.3)

Kits survival (0-35 days) & live weight at 0, 18 & 35 days

Traits	Fauve	INRA	Crossed
Kits survival (overall ; %)	70.9 (4.9)	75.4 (1.7)	79.8 (1.7)
Live weight at 0d (g)			
1st Artificial insemination	60.9 (3.6)	69.8 (2.2)	63.7 (2.1)
2nd Artificial insemination	52.3^a (3.1)	63.1^b (2.2)	58.5^{ab} (2.1)
3rd Artificial insemination	49.0^a (4.9)	63.0^b (2.4)	62.4^b (2.1)
Overall	54.1^a (2.3)	65.3^b (1.2)	61.5^b (1.2)
Live weight at 18d (g)			
1st Artificial insemination	262.7^a (23.2)	354.4^c (7.6)	322.8^b (8.8)
2nd Artificial insemination	279.9^{ab} (15.4)	280.6^a (10.4)	319.8^b (9.1)
3rd Artificial insemination	246.5^a (26.7)	280.6^a (11.2)	362.5^b (9.7)
Overall	263.1^a (12.9)	310.9^b (5.7)	335.0^c (5.3)
Live weight at 35d (g)			
1st Artificial insemination	692.5^a (40.5)	1039.5^c (13.6)	872.6^b (14.3)
2nd Artificial insemination	738.1^a (31.2)	843.4^b (14.3)	796.0^{ab} (13.4)
3rd Artificial insemination	634.4^a (47.3)	913.1^b (15.5)	943.1^b (14.8)
Overall	688.3^a (28.3)	932.0^b (11.0)	870.6^c (10.9)

Take home message

Crossbreed ♀'s :

- produces 1.6 kits less than INRA ♀'s

- similar fertility rate and kit survival during lactation compared to INRA ♀'s

- seems to better resist to _Pasteurella spp_.

- appear to combine the benefits of both ancestors :
  - the alleged rusticity of Fauve-de-Bourgogne
  - the reproductive traits of INRA-1777