Line V (Spain)

Baselga M.

in

Khalil M.H. (ed.), Baselga M. (ed.).
Rabbit genetic resources in Mediterranean countries

Zaragoza : CIHEAM
Options Méditerranéennes : Série B. Etudes et Recherches; n. 38

2002
pages 235-241

Line V

Male Line V

Female Line V

Line V (Spain)

M. Baselga
Departamento de Ciencia Animal, Universidad Politécnica de Valencia, Camino de Vera 14, Apartado 22012, 46071 Valencia, Spain

SUMMARY – A description of the Spanish line V, developed in Valencia (Spain) is made. Items that are dealt with are: (i) a general description; (ii) climate and main features of its farming; (iii) performances; and (iv) genetic improvement.

Key words: Line V, rabbits, performance, genetics, maternal line.

RESUME – *"La souche V (Espagne)". Cet article rapporte une description de la souche espagnole V, créée à Valence (Espagne). Les éléments suivants ont fait l'objet d'études : (i) une description générale ; (ii) le climat et les principales caractéristiques d'élevage ; (iii) les performances ; et (iv) l'amélioration génétique.*

Mots-clés : *Souche V, lapins, performances, génétique, souche maternelle.*

1. Breed name

(i) *Breed name synonyms:* line V.
(ii) *Strains within breed:* none.

2. General description

2.1. Population data

2.1.1. Population size and census data

(i) Total number of females being used in purebreeding: 940.
(ii) Total number of females being used in crossbreeding: 11,000.
(iii) Percent of females being used pure: 7.8%.
(iv) Total number of males used for breeding: 200 in purebreeding and 700 in crossbreeding.
(v) Number of males used in AI-service: none.

Source of data: Unidad de Mejora Genética, Departamento de Ciencia Animal, Universidad Politécnica de Valencia, Spain.

2.1.2. Herd sizes (Table 1)

Table 1. Herd sizes

	Nucleus of selection	Farms producing crossbred does
Mean		
Adult animals	175	40
Young animals	1900	440
Range		
Adult animals	150-200	10-120
Young animals	1600-2200	120-1440

2.1.3. Origin of the breed

Line V was founded in 1981 as a synthetic line, crossing animals that were progeny of four specialised maternal lines. After three generations without selection, the line has been selected (Estany *et al.*, 1989) to increase litter size at weaning. The method of evaluating the animals is a BLUP under an animal-repeatability model. Now generation 23 has been reached and the line is kept closed since its foundation, and the selection is performed in six different and closed nuclei.

2.1.4. Situation with regard to danger of extinction

There is no danger, despite the greatest number of females and males of the line being mated to males or females of line V to produce crossbred does, because there is a conservation programme.

2.1.5. Conservation programme

Every two or three generations of selection a large sample of embryos are frozen. The aim of freezing the embryos is, besides conservation of the line, to have animals available to check the response to selection, because after thawing the embryos it is possible to compare rabbits pertaining to different generations at the same time (Cifre *et al.*, 1999).

2.2. Use of the breed in a descending order of product importance

This line is a specialised maternal line used to be crossed with another maternal line to produce crossbred does of interest in meat production.

2.3. Colour

Albino, with white distal parts or light back.

2.4. General type

2.4.1. Body parts (Table 2)

Table 2. Body measurement (cm) at marketing age (63 d)

Trait	Mean	Range
Body length	29.5	27-32.5
Chest circumference	26.2	24.7-29
Loin width	4.8	4.5-5.5
Thigh circumference	11.0	10-12

2.4.2. Head: convex

2.4.3. Eyes: pink

2.4.4. Ears: erect

2.4.5. Feet and legs: medium in length

2.4.6. Tail: straight

2.5. Basic temperament (for males and females): moderately tractable

2.6. Special characteristics of the breed

This line is being selected in different places but selection began in Valencia, from where the line has been replicated to other places and where the selection has reached the maximum number of generations. Valencia has long, hot and very humid summers and continuous culling against pasteurellosis and foot disease is carried out. This line has been reared in countries of hot weather with acceptable performances (Yamani, 1994; Testik, 1996).

2.7. Nest quality: pooled

3. Pattern

3.1. Climate

3.1.1. Elevation and topography: this line is raised in crossbreeding all around Spain

3.1.2. Favourable climate: temperatures between 18-22°C and humidity between 70-75%

3.2. Main features of farming

3.2.1. Socio-management system: intensive

3.2.2. Mating method: natural and AI

3.2.3. Nutrition

(i) *Concentrates:* pelleted.
(ii) *Water:* freely available.
(iii) *Seasonality of nutrition:* no seasonality.

3.2.4. Housing

(i) *Cages:* wired cages and indoor rabbitry is the most common situation but open air farms with wired cages under an isolated roof are also used.
(ii) *Photoperiod:* both possibilities, light-dark constant photoperiod and variable periods.

3.3. Common diseases and parasites

Pasteurellosis.

4. Performance

4.1. Reproduction (Tables 3, 4 and 5)

Table 3. Information of sexual maturity

Trait	Mean	Range
Age of buck at first service (months)	4.5	4-5
Age of doe at first mating (months)	4.5	4-5
Age of doe at first kindling (months)	5.5	5-7
Weight of buck at first service (g)	3380	3050-3940
Weight of doe at first mating (g)	3320	2600-4100

Table 4. Information of semen

Trait	Mean	Range
Reaction time (seconds)	10	5-15
Ejaculate volume (ml)	0.9	0.2-2
Sperm concentration per ml (10^6)	340	200-600
Sperm motility (%)	80	70-90
Sperm abnormalities (%)	1	0-5

Source: Vicente and Viudes de Castro (1996).

Table 5. Fertility and fecundity traits

Trait	Mean	Range
Conception rate (%)	78	60-90
Kindling interval (days)	47.5	42-55
Ovulation rate	14	11-16
Litter size at birth	10	8.3-11.5
Litter size at weaning (28 d)	8.4	7.0-10.0
Litter weight at birth (g)	520	–
Litter weight at 21 days (g)	2590	–

Source: Cifre *et al.* (1994), Gómez *et al.* (1999a).

4.2. **Prenatal mortality per litter** (Table 6)

Table 6. Prenatal mortality per litter

Trait	Mean	Range
Total (%)	6	4-10
Abortion (%)	0.2	0-1
Stillbirths (%)	5.8	4-10

4.3. Milk yield traits

The number of teats has a mean of 8.8 and ranges between 8 and 10.

4.4. **Lifetime production per doe** (Table 7)

Table 7. Lifetime production per doe

Trait	Mean	Range
Number of litters per year	7.7	6.6-8.7
Doe longevity (years)	1.3	1.1-1.6

4.5. Post-weaning body weight, gain and food utilisation (Tables 8 and 9)

Table 8. Post-weaning growth traits of body weights and gains (g)

Trait	Mean	Range
Weight at weaning (28 d)	525	400-680
Weight at 9 weeks	1850	1730-2070
Daily gain 4-9 weeks	37.9	34-42

Source: Gómez *et al.* (1999a).

Table 9. Post weaning food utilisation per young (4-9 weeks)

Trait	Mean	Range
Daily feed intake (g)	122	90-150
Feed conversion (g intake per g gain)	3.2	2.9-3.4

Source: Feki *et al.* (1996).

4.6. Carcass traits and meat composition (Table 10)

Table 10. Carcass traits and meat composition

Trait	Mean
Slaughter age (weeks)	9
Slaughter weight (g)	2040
Hot carcass weight (g)	1214
Dorsal length (cm)	25.4
Lumbar circumference (cm)	15.2
Dressing percentage	59.3
Fur weight (g)	298
Moisture (%)	74.0
Protein (%)	20.8
Ether extract (%)	3.5

Source: Gómez *et al.* (1998), Plá *et al*. (1996).

5. Genetic improvement

5.1. Genetic parameters

Results of Baselga *et al.* (1992) and Gómez *et al.* (1994) show an important heterogeneity in the determinism of litter size of different parities. The heritability of litter size at first litter is near 0.20, decreases at the second and is near zero at the third. Santacreu and Blasco (1991) give estimates of h^2 and genetic correlations between different components of litter size. The estimates of h^2 range between 0.17 and 0.26. Camacho (1989) gives estimates of genetic correlations between growth and reproductive traits, the estimate of the genetic correlation between post-weaning daily gain and litter size at weaning being close to 0.2. Baselga *et al.* (1988) studied the h^2 and repeatability of lung injuries as an indicator of genetic resistance to pasteurellosis, the estimates being, 0.07 for h^2 and 0.50 for repeatability.

5.2. Selection for economic traits

This line is being selected to improve litter size at weaning. The method used to evaluate the animals, bucks and does, is a BLUP under an animal-repeatability model. The fixed effects considered are the year-season and a combination of the parity order and the lactation state. The offspring selected came from the best evaluated matings. The generation interval is 9 months and a genetic trend of 0.03 young per generation in litter size at weaning has been estimated by mixed model methodology. Now, an experiment is being concluded that uses frozen embryos to estimate the response to selection in litter size at weaning, other litter sizes and reproductive traits and growth, feed efficiency, carcass and meat traits by comparison. First results show that daily gain and feed efficiency have not been significantly modified by selecting on litter size at weaning.

5.3. Crossing of breed with other breeds

The line is crossed to line A to obtain crossbred females used in commercial farms. Some results, comparing crossbred A V does, V does and H does can be found in Cifre *et al.* (1998) and comparing lines A, V, R and their crosses for growth and feed efficiency in Gómez *et al.* (1999b).

References

Baselga, M., Deltoro, J., Camacho, J. and Blasco, A. (1988). Genetic analysis of lung injury of four strains of meat rabbits. In: *Proceedings of the 4th World Rabbit Congress,* Vol. 2, Budapest (Hungary), 10-14 October 1988, pp.120-128.

Baselga, M., Gómez, E., Cifre, P. and Camacho, J. (1992). Genetic diversity of litter size traits between parities in rabbits. *J. Appl. Rabbit Res.*, 15: 198-205.

Camacho, J. (1989). *Estimación de correlaciones genéticas entre caracteres reproductivos y de crecimiento en conejos*. PhD Thesis, Univerdidad Politécnica de Valencia, Spain.

Cifre, J., Baselga, M., García-Ximénez, F. and Vicente, J.S. (1998). Performance of a hyperprolific rabbit line. I. Litter size traits. *J. Anim. Breed. Genet.*, 115(2): 131-138.

Cifre, J., Baselga, M., Gómez, E.A. and García, M.L. (1999). Effect of embryo cryopreservation techniques on reproductive and growth traits in rabbits. *Ann. Zootech.*, 48: 15-24.

Cifre, J., Vicente, J.S., Baselga, M. and García Ximénez, F. (1994). Ovulation rate in lines of rabbits selected on different criteria. *Options Méditerranéennes, Series Cahiers*, 8: 247-252.

Estany, J., Baselga, M., Blasco, A. and Camacho, J. (1989). Mixed model methodology for the estimation of genetic response to selection in litter size of rabbits. *Livest. Prod. Sci.*, 21: 67-76.

Feki, S., Baselga, M., Blas, E., Cervera, C. and Gómez, E. (1996). Comparison of growth and feed efficiency among rabbits lines selected for different objectives. *Livest. Prod. Sci.*, 45: 87-92.

Gómez, E.A., Baselga, M. and Cifre, J. (1994). The influence of genetic diversity between parities in selection for litter size in rabbits. In: *5th World Congress on Genetics Applied to Livestock Production*, Vol. 19, University of Guelph, Guelph-Ontario (Canada), 7-12 August 1994, pp. 253-256.

Gómez, E.A., Baselga, M., Rafel, O., García, M.L. and Ramón, J. (1999a). Selection, diffusion and performance of six Spanish lines of meat rabbit. *Options Méditerranéennes, Series Cahiers*, 41*:* 147-152.

Gómez, E.A., Baselga, M., Rafel, O. and Ramón, J. (1998). Comparison of carcass characteristics in five strains of meat rabbit selected on different traits. *Livest. Prod. Sci.*, 55: 53-64.

Gómez, E.A., Rafel, O., Ramón, J. and Baselga, M. (1999b). Feeding efficiency in crossbreeding among three of the strains selected in Spain. *Options Mediterranéennes, Series Cahiers*, 41: 153-158.

Plá, M., Hernández, P. and Blasco, A. (1996). Carcass composition and meat characteristics of two rabbit breeds of different degrees of maturity. *Meat Sci.*, 44(1-2): 85-92.

Santacreu, M.A. and Blasco, A. (1991). Estimación de los parámetros genéticos del tamaño de camada y sus componentes en conejo. *ITEA*, 11(2): 610-612.

Testik, A. (1996). The situation of rabbit production and production performance of some exotic rabbits in Turkey. In: *Proceedings of the 6th World Rabbit Congress,* Vol. 3, Toulouse (France), 9-12 July 1996, pp. 435-436.

Vicente, J.S. and Viudes de Castro, M.P. (1996). A sucrose-DMSO extender for freezing rabbit semen. *Reprod. Nutr. Dev.*, 36: 485-492.

Yamani, K.A. (1994). Rabbit meat production in Egypt. *Options Méditerranéennes, Series Cahiers*, 8: 57-64.