Line A (Spain)

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Line A

Male Line A

Female Line A

Line A (Spain)

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SUMMARY – A description of the Spanish line A, 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) performance; and (iv) genetic improvement.

Key words: Line A, rabbits, performance, genetics.

RESUME – *"La souche A (Espagne)". Cet article rapporte une description de la souche espagnole A, 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 A, lapins, performances, génétique.*

1. Breed name

(i) *Breed name synonyms:* line A.
(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: 300.
(ii) Total number of females being used in crossbreeding: 1500.
(iii) Percent of females being used pure: 16.7%.
(iv) Total number of males used for breeding: 60 in purebreeding and 1300 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	150	30
Young animals	1350	270
Range		
Adult animals	120-170	10-200
Young animals	1100-1600	90-1800

2.1.3. Origin of the breed

Line A was founded in 1976 sampling NZW rabbits, reared by farmers near Valencia (Spain). After three generations without selection, the line has been selected by a family index (Estany *et al.*, 1989) to increase litter size at weaning. Now generation 26 has been reached and the line is kept closed since its foundation. There are two different nuclei selecting this line.

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 that are 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, besides conservation of the line, is 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 fur completely white.

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	33.3	31-35
Chest circumference	28.7	26.5-30.5
Loin width	4.6	4-5.2
Thigh circumference	11.2	9-12.5

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): docile

2.6. Special characteristics of the breed

It is sensitive to mucoid enteropathy. It is relatively well adapted to hot climates.

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 and some intestinal diseases.

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)	3400	3000-3900
Weight of doe at first mating (g)	3620	3300-4150

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)	260	200-400
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 (%)	75	58-85
Kindling interval (days)	49	45-58
Ovulation rate	13.5	10-15
Litter size at birth	9.3	7.5-11
Litter size at weaning (28 d)	8.1	6.1-9.5

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 (%)	7	2-12
Abortion (%)	0.1	0-0.5
Stillbirths (%)	6.9	2-12

4.3. Milk yield traits

The number of teats has a mean of 8.9 and range 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	7.5	6-8
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)	550	450-700
Weight at 9 weeks	1840	1700-2050
Daily gain 4-9 weeks	36.9	33-41

Source: Gómez *et al.* (1999a).

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

Trait	Mean	Range
Daily feed intake (g)	115	80-140
Feed conversion (g intake per g gain)	3.1	2.9-3.3

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)	1200
Dorsal length (cm)	25.8
Lumbar circumference (cm)	15.2
Dressing percentage	58.6
Fur weight (g)	287
Moisture (%)	74.0
Protein (%)	20.8
Ether extract (%)	3.3

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

5. Genetic improvement

5.1. Genetic parameters

Estimates of genetic parameters of growth and reproductive traits can be found in Baselga *et al.* (1982), García *et al.* (1982), Camacho (1989), Baselga *et al.* (1992), Gómez (1994) and Gómez *et al.* (1994). In general, the estimates of h^2, repeatabilities and genetic correlations agree with the most common values given in the literature. Baselga *et al.* (1988) studied the h^2 and repeatability of lung injuries as an indicator of genetic resistance to pasteurellosis, the estimates being 0.13 for h^2 and 0.45 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 family index that uses at maximum four items:

(i) The average litter size at weaning of the doe to be evaluated. This item is not available for the bucks.
(ii) The average litter size at weaning of the dam.
(iii) The average litter size at weaning of the full sisters.
(iv) The average litter size at weaning of the half sisters.

The family index is flexible because it computes the coefficients of the different items, animal by animal, as a function of the information inside each item. The generation interval is 9 months and a genetic trend of 0.1 young per generation in litter size at weaning has been estimated by mixed model methodology. Now, an experiment, using frozen embryos, is being carried out to estimate by direct comparison, the response to selection in litter size at weaning, other litter size and reproductive traits and growth, feed efficiency, carcass and meat traits.

5.3. Crossing of breed with other breeds

The line is crossed to line V to get 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).

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