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Line H

Male Line H

Female Line H

Line H (Spain)

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SUMMARY – A description of the Spanish line H, developed in Valencia (Spain) is carried out. 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 H, rabbits, performance, genetics.

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

1. Breed name

(i) *Breed name synonyms:* line H.
(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: 250.
(ii) Total number of females being used in crossbreeding: 100.
(iii) Percent of females being used pure: 60%.
(iv) Total number of males used for breeding: 30 in purebreeding.
(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	50
Young animals	1650	550
Range		
Adult animals	120-180	40-60
Young animals	1320-2000	440-660

2.1.3. Origin of the breed

The line was founded applying hyperprolific selection and embryo cryopreservation techniques (García-Ximénez *et al.*, 1996). The hyperprolific does were assembled from a large commercial population, spread over different Spanish farms. The hyperprolific does were required to satisfy one or both of the following criteria: to have 17 or more young born alive in one litter or to have a cumulative number of young born alive in all recorded parities equal or higher to the threshold corresponding to the best 1% does of a population with a mean of 9 rabbits born alive per litter, a standard deviation of 2.65 rabbits/litter and a repeatability of 0.2. A first step was carried out in 1993 to obtain male progeny (VH males) by hysterectomy from 20 hyperprolific does mated to the nine bucks of the different nucleus of line V, line showing a high prolificacy (Baselga *et al.*, 1992). In a second step a new and larger set of hyperprolific does (87 does) was mated to 47 VH males to obtain progeny (464 animals of 63 days) which constituted generation 0 of line H. In this second step, the availability of the hyperprolific does was in batches of less than 10 females. After mating these females to the VH males their compacted morula were recovered and vitrified to avoid health problems and to make all individuals of generation 0 contemporary. The thawing and transfer of these vitrified embryos were carried out between January and June of 1995. Generations 1 and 2 were obtained without selection. The selection began in generation 3, the objective being to improve the number of litter born alive. The method of selection is to select offspring from the best matings, evaluated by a BLUP under an animal-repeatability model. Now, generation 6 has been reached.

2.1.4. Situation with regard to danger of extinction

Apparently *endangered*, but this line is a recently founded line, that is increasing in number and has a conservation programme.

2.1.5. Conservation programme

Every two or three generations of selection a large sample of embryos are frozen.

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	30.4	28-32
Chest circumference	26.6	24-28.8
Loin width	4.8	4.4-5.5
Thigh circumference	11.8	10.6-13

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

This line has been founded recently and at the moment does not show special features of adaptability and resistance to heat stress. A larger variability for the traits related to production is observed than in other lines.

2.7. Nest quality: pooled

3. Pattern

3.1. Climate

3.1.1. Elevation and topography: this line is raised around Valencia but is being spread to other places of 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)	3270	3100-3500
Weight of doe at first mating (g)	3850	3400-4270

Table 4. Fertility and fecundity traits

Trait	Mean	Range
Conception rate (%)	79	60-90
Kindling interval (days)	46	41-54
Ovulation rate	15.7	13-18
Litter size at birth	10.5	8.5-12
Litter size at weaning (28 d)	8.9	7-10.5
Litter weight at birth (g)	568	–
Litter size at 21 days (g)	2770	–

Source: Cifre *et al.* (1994, 1998a,b), Gómez *et al.* (1999).

Table 5. 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)	350	200-600
Sperm motility (%)	75	65-90
Sperm abnormalities (%)	3	1-6

4.2. Prenatal mortality per litter (Table 6)

Table 6. Prenatal mortality per litter

Trait	Mean	Range
Total (%)	8	4-12
Abortion (%)	0.1	0-0.5
Stillbirths (%)	7.9	4-12

4.3. Milk yield traits

The number of teats has a mean of 9.6 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	7.9	6.8-8.9
Doe longevity (years)	1.1	0.9-1.3

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

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

Trait	Mean	Range
Weight at weaning (28 d)	530	410-680
Weight at 9 weeks	1870	1750-2100
Daily gain 4-9 weeks	38.3	34.5-43

Source: Gómez *et al.* (1999).

5. Genetic improvement

5.1. Selection for economic traits

Selection on hyperprolificacy was used for founding the line and this selection proved successful. As said before, after foundation, two generations without selection were obtained, starting selection in generation 3 for litter size at birth, evaluating the breeders by a BLUP method under an animal-repeatability model, considering the year, season and a combination of parity order and lactation state as fixed effects. The generation interval is 9 months and there is no estimate of response to selection.

5.2. Crossing of breed with other breeds

The breed is crossed to line V or line A to get crossbred females used in commercial farms.

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