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Male Prat

Female Prat

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SUMMARY – A brief description of a Spanish selected strain of rabbit, Prat, is given. A general description of the population and some performances are presented. Notes about genetic parameters of economic traits are also included.

Key words: Prat, rabbits, performance, genetics, maternal line.

RESUME – *"La souche Prat (Espagne)". Cet article rapporte une brève description de la souche espagnole de lapins sélectionnés Prat. Une description générale de la population ainsi que quelques performances sont présentées. Des notes sur les paramètres génétiques des caractères d'intérêt économique sont également incluses.*

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

1. Breed name

(i) *Breed name:* Prat.
(ii) *Breed name synonyms:* IRTA's grandam.

2. General description

2.1. Population data

2.1.1. Population size and census data: 5000

(i) Total number of females being used in purebreeding: 420 females.
(ii) Total number of females being used in crossbreeding: 3000 females.
(iii) Percent of females being bred pure: 14%.
(iv) Total number of males used for breeding: 94 bucks.
(v) Number of males used in AI-service: none.

2.1.2. Herd sizes (Table 1)

Table 1. Herd sizes of Prat rabbit farms in Governmental and commercial farms

	Governmental farms	Commercial farms
Mean		
Adult animals	380	608
Young animals	2100	3360

2.1.3. Origin of breed

In 1992, a closed population with 178 crossbred animals (146 females and 32 males) was constituted in a experimental farm in El Prat del Llobregat (Barcelona, Spain). Selection started after two discrete generations without selection.

2.1.4. Situation with regard to danger of extinction

Endangered, since the total number of breeding males is less than 200.

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

This strain is mainly used as grand-dam in a three way crossbreeding scheme. Crossbred daughters work as dams, being mated with males from specialised sire strains. Offspring is bred to produce rabbit meat.

2.3. Colour

Albino.

2.4. General type

2.4.1. Body parts (Table 2)

Table 2. Body measurements at marketing age (cm)

Trait	Mean
Body length	25.0
Thigh circumference	15.4

2.4.2. Head: convex

2.4.3. Eyes: pink (albino)

2.4.4. Tail: straight

2.5. Basic temperament: docile

2.6. Special characteristics of the breed

Bred in continental and Mediterranean climates.

3. Pattern

3.1. Climate

3.1.1. Elevation and topography: not for desert conditions

3.1.2. Favourable climate: continental and Mediterranean

3.2. Main features of farming

3.2.1. Socio-management system: intensive systems in wired cages (flat-deck o batteries)

3.2.2. Mating method: natural mating is still the most usual method

3.2.3. Nutrition

(i) *Concentrates:* pelleted.
(ii) *Water:* available free.

3.2.4. Housing: wired cages and indoor rabbitries are used. Also semi "open-air" systems are usually found

3.3. Common diseases and parasites

Pasteurellosis, diarrhoea and sore hocks.

4. Performances

4.1. Reproduction (Tables 3 and 4)

Table 3. Information of sexual maturity

Trait	Mean
Age of buck at 1st service (months)	5
Age of doe at 1st mating (months)	4.5
Age of doe at first kindling (months)	5.5
Weight of buck at first service (g)	4000
Weight of doe at first service (g)	3900

Table 4. Fertility and fecundity traits

Trait	Mean
Conception rate (%)	85.3
Litter size	
Total born	10.3
At birth	9.9
At weaning (32 d)	8.3
Litter weight (g)	
At weaning (32 d)	6082

4.2. Prenatal mortality per litter in local breeds rabbits

The percentage of stillbirths is 4.3.

4.3. Lifetime production per doe

In order to reduce the generation interval, does are culled after their fifth weaning. In commercial farms, Prat does have a long lifetime production.

4.4. Post-weaning growth traits (Tables 5 and 6)

Table 5. Post-weaning food growth traits

Trait	Mean
Body weight (g)	
Weaning (32 d)	760
Post-weaning	
39 d weight	1038
46 d weight	1305
53 d weight	1586
60 d weight	1893
Average daily gain (g/d)	
32-60 d	42

Source: Morón (1999).

Table 6. Post-weaning food utilisation per young

Trait	Mean
Daily feed intake (g)	
32-39 d	84
39-46 d	112
46-53 d	139
53-60 d	163
32-60 d	125
Feed conversion	
32-39 d	2.13
39-46 d	2.77
46-53 d	3.26
53-60 d	3.78
32-60 d	2.98

Source: Morón (1999).

4.5. Carcass traits and meat composition for meat type

Carcass traits have been recorded (Gómez *et al.*, 1998a) in agreement with Blasco and Ouhayoun (1996) criteria (Table 7).

Table 7. Carcass traits of Prat rabbits at 62 days old

Trait	Mean
Slaughter weight (g)	2021
Hot carcass weight (g)	1198
Chilled carcass weight (g)	1166
Carcass lengths	
Dorsal length (cm)	25.0
Thigh length (cm)	7.9
Lumbar circumference (cm)	15.4
Dressing percentage (%)	59.3
Dressing out percentage (%)	57.7
Drip loss percentage (%)	2.68
Full gastrointestinal tract weight (g)	369
Liver weight (g)	74
Kidneys weight (g)	14
Head weight (g)	112
Reference carcass weight RCW (g)	932
Fat deposits weight (adjusted to RCW = 1045 g)	
Perirenal fat weight (g)	19.9
Scapular fat weight (g)	7.8
Joints weight (adjusted to RCW = 1045 g)	
Fore legs weight (g)	185
Thoracic cage weight (g)	106
Loin weight (g)	320
Hind legs weight (g)	406

5. Genetic improvement

In 1992, a population with 178 crossbred animals (146 females and 32 males) was constituted. Selection started after two discrete generations without selection. Litter size at weaning is the trait undergoing selection. A repeatability animal model was proposed to predict breeding values via BLUP methodology. Year-season and physiologic state of the doe at mating are taken into account in the model as fixed effects. Young individuals are selected according to the predicted breeding value of the mating they come from.

Animals are divided in six reproduction groups, making it easy to control incompatibilities between partners, reducing the increment of inbreeding.

5.1. Genetic parameters

Genetics parameters were estimated for the trait litter size at weaning. Estimated heritability was 0.04 (s.e. 0.022) and the proportion of variation due to permanent effects was 0.075 (s.e. 0.025). REML was the estimation method, and the model was the previously defined for the prediction of breeding values (Gómez *et al.*, 1996).

In a second paper, genetic relationships between reproductive (at first parity) and growth traits were concerned (Gómez *et al.*, 1998b). Table 8 shows the estimates of heritability on the diagonal, and genetic correlations between the traits above the diagonal.

Table 8. Heritabilities (on the diagonal) and genetic correlations (above the diagonal) of individual weight at weaning (IW32) and at last control (IW60), average daily gain (ADG), litter size born (LSB), born alive (LSBA) and litter size at weaning (LSW) at first parity

Trait	IW32	IW60	ADG	LSB	LSBA	LSW
IW32	0.41	0.74	0.31	–0.05	–0.07	–0.25
IW60		0.37	0.56	0.11	0.03	–0.16
ADG			0.34	0.04	–0.06	–0.16
LSB				0.12	0.99	0.96
LSBA					0.13	0.98
LSW						0.08

Heritabilities of growth traits ranged between 0.34 (ADG) and 0.41 (IW32), and those of litter size were low, between 0.08 (LSW) and 0.13 (LSBA). Genetic correlations between weights and litter size were small in magnitude (lower than 26%), and they were even negative between LSW and growth traits (between –0.16 and –0.25).

5.2. Selection for economic traits

Line Prat is a dam line, selected for litter size (Gómez *et al.*, 1996). Breeding values for litter size at weaning are predicted using a repeatability animal model. Selection is made on the predicted breeding values of the matings. In order to minimise the increase of inbreeding, the sons are selected intrafamily of sire, and the selected offspring from a mating or from a dam is limited.

5.3. Crossing of breed with other breeds

A three-way crossbreeding scheme is recommended in rabbit breeding, in order to take profit of the heterosis on reproductive traits in the crossbred does, and the complementarity on growth traits in the terminal cross using a specialised sire strain (e.g. R-Valencia or Caldes

strains). The Prat strain is widely used in Spain to produce crossbred does, especially crossing with V-Valencia strain, also selected for litter size (Gómez *et al.*, 1999a). Positive effects of crossbreeding on prolificacy were reported by Gómez *et al.* (1999b).

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