# The Caldes Strain (Spain)

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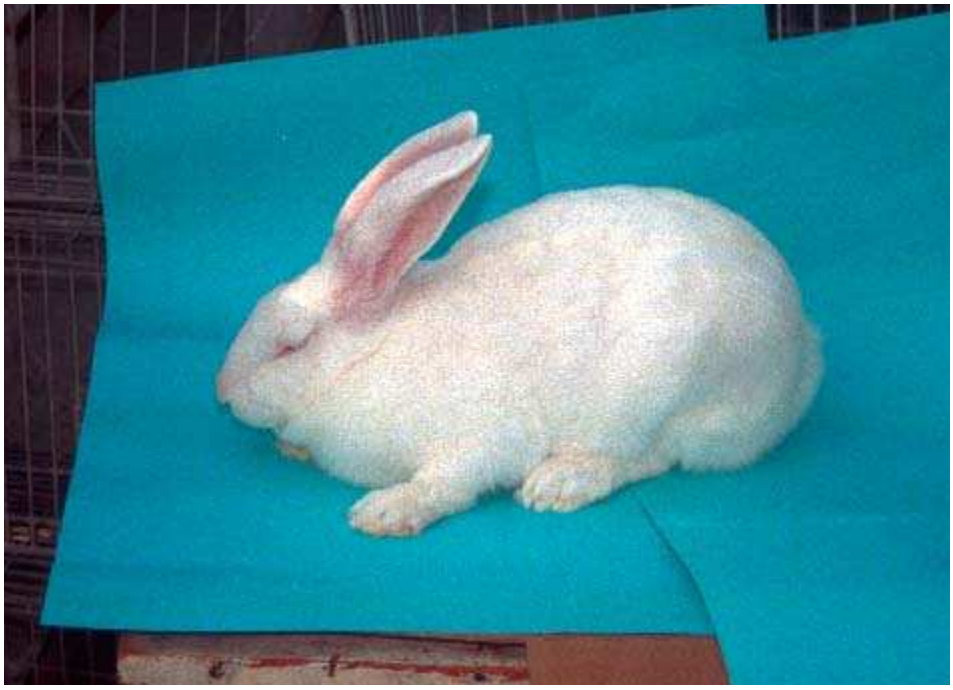
Male Caldes



Female Caldes

# The Caldes Strain (Spain)

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**SUMMARY –** A brief description of a Spanish strain of rabbits, Caldes, selected for postweaning growth rate is reported. A general description of the population and some performances are presented. Notes about genetic parameters of economic traits are also included.

**Key words:** Caldes, rabbits, performance, genetics, paternal line.

***RESUME –*** *"La souche Caldes (Espagne)". Cet article rapporte une brève description de la souche espagnole de lapins Caldes, sélectionnée pour le taux de croissance post-sevrage. 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 :*** *Caldes, lapins, performances, génétique, souche paternelle.*

## 1. Breed name

(i) *Breed name:* Caldes.
(ii) *Breed name synonyms:* IRTA's terminal sire.

## 2. General description

### 2.1. Population data

*2.1.1. Population size and census data:* 1000

(i) Total number of females being used in purebreeding: 270.
(ii) Total number of females being used in crossbreeding: 0.
(iii) Percent of females being bred pure: 100%.
(iv) Total number of males used for breeding: 96.
(v) Number of males used in AI-service: 300.

*2.1.2. Herd sizes* (Table 1)

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

| Mean | Governmental farms | Commercial farms |
|---|---|---|
| Adult animals | 128 | 174 |
| Young animals | 480 | 650 |

*2.1.3. Origin of breed*

In 1983 six lines of 14 does and 2 bucks were crossed on a experimental farm in Caldes de Montbui (Barcelona, Spain) following a factorial mating plan, in order to find a synthetic strain with 96 does and 30 bucks (split into 6 mating groups).

*2.1.4. Situation with regard to danger of extinction*

Endangered, since the total number of breeding females is less than 1000.

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

This strain is mainly used as terminal sire in a three-way crossbreeding scheme. Offspring is used for meat production.

**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 | 26.5 |
| Thigh circumference | 16.0 |

*2.4.2. Head:* convex

*2.4.3. Eyes:* pink (albino)

*2.4.4. Tail:* straight

*2.4.5. Ears:* erect

*2.4.6. Feet and legs:* medium

**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 or batteries)

*3.2.2. Mating method*

Natural mating is still the most usual method. Caldes bucks are also exploited in some insemination nuclei.

*3.2.3. Nutrition*

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

*3.2.4. Housing*

*Cages:* 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, 4 and 5)

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) | 4300 |
| Weight of doe at first service (g) | 4500 |

Table 4. Fertility and fecundity traits

| Trait | Mean |
|---|---|
| Conception rate (%) | 82 |
| Litter size | |
| Total born | 9.2 |
| At birth | 8.5 |
| At weaning (32 d) | 7.0 |
| Litter weight (g) | |
| At weaning (32 d) | 5533 |

Table 5. Information of semen characterising adult bucks

| Trait | Mean |
|---|---|
| Reaction time (seconds) | 5 |
| Ejaculate volume (ml) | 1 |
| Sperm concentration per ml ( $10^6$) | 300 |
| pH | – |
| Sperm motility (%) | 80 |
| Live sperm (%) | 90 |
| Sperm abnormalities (%) | 10 |
| Dead sperm (%) | 10 |

### 4.2. Prenatal mortality per litter

The percentage of stillbirths is 7.6.

### 4.3. Lifetime production per doe

In order to reduce the generation interval, does are culled after their fifth weaning, and bucks are substituted by their sons. In commercial farms, Caldes males have a long lifetime production.

### 4.4. Post-weaning growth traits (Tables 6 and 7)

Table 6. Post-weaning growth traits

| Trait | Mean |
|---|---|
| Body weight (g) | |
| Weaning (32 d) | 796 |
| Post-weaning | |
| 39 d weight | 1081 |
| 46 d weight | 1455 |
| 53 d weight | 1827 |
| 60 d weight | 2168 |
| Average daily gain (g/d) | |
| 32-60 d | 49.2 |

Source: Morón (1999).

Table 7. Post-weaning food utilisation per young

| Trait | Mean |
|---|---|
| Daily feed intake (g) | |
| 32-39 d | 80 |
| 39-46 d | 119 |
| 46-53 d | 159 |
| 53-60 d | 183 |
| 32-60 d | 135 |
| Feed conversion | |
| 32-39 d | 1.98 |
| 39-46 d | 2.37 |
| 46-53 d | 2.86 |
| 53-60 d | 3.68 |
| 32-60 d | 2.75 |

Source: Morón (1999).

### 4.5. Carcass traits and meat composition for meat type (Table 8)

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

Table 8. Carcass traits of Caldes rabbits at 62 days old

| Trait | Mean |
|---|---|
| Slaughter weight (g) | 2216 |
| Hot carcass weight (g) | 1322 |
| Chilled carcass weight (g) | 1288 |
| Carcass lengths | |
| Dorsal length (cm) | 26.5 |
| Thigh length (cm) | 8.1 |
| Lumbar circumference (cm) | 16.0 |
| Dressing percentage (%) | 59.5 |
| Dressing out percentage (%) | 58.0 |
| Drip loss percentage (%) | 2.6 |
| Full gastrointestinal tract weight (g) | 398 |
| Liver weight (g) | 88 |
| Kidney weight (g) | 15.4 |
| Head weight (g) | 117 |
| Reference carcass weight RCW (g) | 1036 |
| Fat deposit weight (adjusted to RCW = 1045 g) | |
| Perirenal fat weight (g) | 23.3 |
| Scapular fat weight (g) | 7.3 |
| Joint weight (adjusted to RCW=1045 g) | |
| Fore leg weight (g) | 183 |
| Thoracic cage weight (g) | 111 |
| Loin weight (g) | 319 |
| Hind leg weight (g) | 402 |

## 5. Genetic improvement

Animals are divided in reproduction groups, facilitating the control of incompatibilities between mates, reducing the increment of inbreeding. Overlapping generations enables a full occupation of the cages, and reduces the generation interval.

### 5.1. Genetic parameters

Genetic parameters were estimated for the trait litter size at weaning. Estimated heritability was 0.03 (s.e. 0.022) and the proportion of variation due to permanent effects was 0.11 (s.e. 0.020). REML was the estimation method, and a repeatability animal model was defined for the prediction of breeding values.

### 5.2. Selection for economic traits

From 1983 to 1992, the selection objective was a general criterion: litter weight at 56 days (Rafel *et al.*, 1990). In a first stage, does were selected according to their litter weight at weaning. In a second stage, individuals were chosen on their postweaning growth.

Since 1992, animals are selected on growth rate between 32 and 60 days.

### 5.3. Crossing of breed with other breeds

A three-way crossbreeding scheme is recommended in rabbit breeding, in order to take advantage 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. The Caldes strain shows high performances on growth (Gómez *et al.*, 1999a), even at French or Italian market liveweights (Gómez *et al.*, 1999b).

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