The Zemmouri Rabbits (Morocco)

Barkok A., Jaouzi T.

in

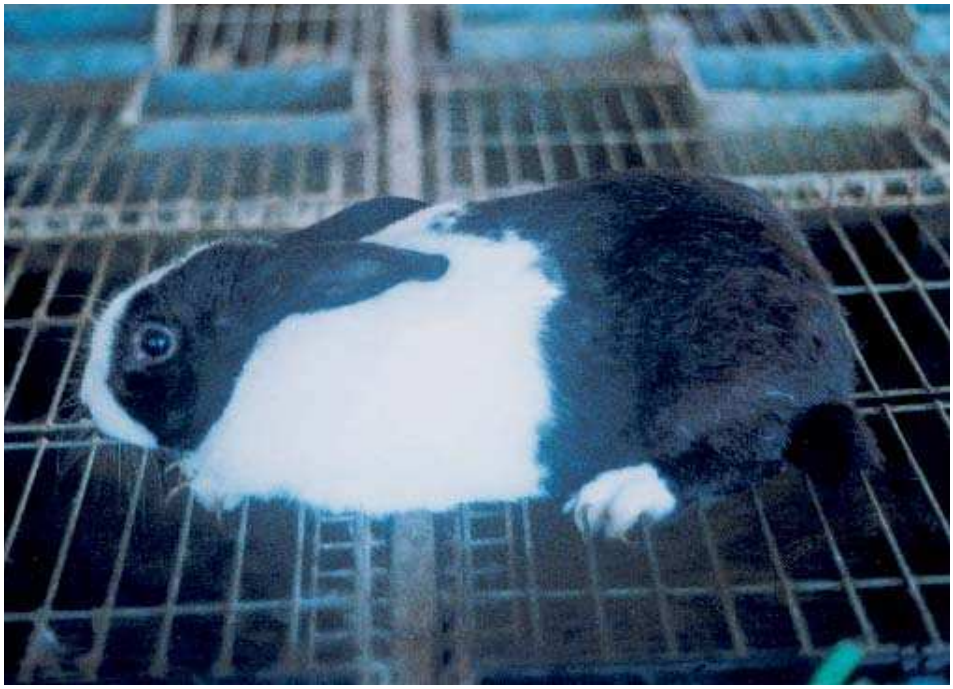
Khalil M.H. (ed.), Baselga M. (ed.).
Rabbit genetic resources in Mediterranean countries

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

2002
pages 179-185

The Zemmouri Rabbits

Male Zemmouri



Female Zemmouri

The Zemmouri Rabbits (Morocco)

A. Barkok* and T. Jaouzi**
*Station Expérimentale d'Aviculture de Skikima, Témara, Morocco
**Département de Pathologie Aviaire, IAV Hassan II, 6230 Rabat-Instituts, 10101 Rabat, Morocco

SUMMARY – The present work summarises the description of the Moroccan local breed of rabbits known as "Zemmouri". The parameters described here are: (i) phenotypical description; (ii) management and farming; (iii) diseases and stress resistance; (iv) performances; and (v) improvement trials.

Key words: Zemmouri, description, performances, resistance, genetics.

RESUME – *"Les lapins Zemmouri (Maroc)". Le présent article récapitule la description de la race locale marocaine de lapins connue sous le nom de "Zemmouri". Les paramètres suivants y sont rapportés : (i) une description phénotypique ; (ii) la gestion et l'élevage ; (iii) les maladies et la résistance au stress ; (iv) les performances ; et (v) les essais d'amélioration.*

Mots-clés : *Zemmouri, description, performances, résistance, génétique.*

1. Breed name

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

2. General description

2.1. Population data

2.1.1. Population size and census data: >10,000

(i) Total number of females being used in purebreeding: 100.
(ii) Total number of females being used in crossbreeding: 30.
(iii) Percent of females being used pure: 1%.
(iv) Total number of males used for breeding: 10.

Source of data: estimates from field work and experimental data.

2.1.2. Herd sizes

The following herd sizes, given in Table 1, were taken from experimental data and field work investigations.

Table 1. Herd sizes in governmental and small scale farms

	Governmental	Small scale farms
Mean		
Adult animals	36	11
Young animals	700	210
Range		
Adult animals	24-48	2-20
Young animals	170-1350	30-490

2.1.3. Origin of the breed

At the beginning of the colonisation of Morocco by France and Spain (1912), some exotic rabbit breeds were brought by the European religious people. These rabbits were naturally mated to the native stock of the local population in Azrou (middle Atlas mountains) and Temara (Rabat region). After several generations, the resulting populations were adapted to local environmental conditions. Then, the inter-mating of the populations of both areas, probably gave origin to the Zemmouri population, that now is quite stable, regarding phenotypical external traits.

From 1996 to 1998, experimental studies were carried out and there are others in progress at the Skikima Station collaborating with the Department of Avian Pathology (IAV Hassan II Rabat) and in the National School of Agriculture (Meknes). The objective is to study the performances of Zemmouri rabbits in controlled conditions of farming and management (pelleted feed and indoor wire cages). Attempts are made to study performance traits in pure breeding (local local) and crossbreeding experiments (Californian and New Zealand males local females).

2.1.4. Situation with regard to danger of extinction

There is no danger of extinction since the total number of breeding rabbits is over 10,000.

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

The Zemmouri breed is of medium size and raised for meat production, the skin being used for traditional manufacture.

2.3. Colour

See photographs.

2.4. General type

2.4.1. Body parts (Table 2)

Table 2. Body measurement (cm) in adult animals

Trait	Mean	Range
Body length	49.3	46-53
Chest circumference	32.0	32.5-34
Loin width	7.2	6.3-8.0
Thigh circumference	16.1	16.0-17.0

Regarding its large body length, Zemmouri rabbits seem to have a good ability for meat production; the hips are quite strong; the loin, which is quite large, carries a good amount of meat; the chest circumference balances in good shape with the rest of the body.

2.4.2. Head: convex

2.4.3. Eyes: maroon

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

Fairly adapted to hot weather but less resistant to some diseases as the viral hemorrhagic disease and viral infections.

2.7. Nest quality: pooled

3. Pattern

3.1. Climate

3.1.1. Elevation and topography: the Zemmouri rabbits are adapted to various geographical areas (mountains, valley, flat land and Atlantic coastal land)

3.1.2. Favourable climate: temperatures between 3°C and 37°C and humidity between 30-80%

3.2. Main features of farming

3.2.1. Socio-management system: extensive rearing, free range system (old houses) and underground cells (Matmoura)

3.2.2. Mating method: natural

3.2.3. Nutrition

(i) *Concentrates:* pelleted feed (governmental farms), local sub-products of farm (small scale farms).
(ii) *Water:* freely available all year round in governmental farms and not required when the main nutrition is based on greens and vegetables as in the small scale farms.
(iii) *Seasonality of nutrition:* grains and cereal by-products (straw, hay) and household vegetable waste all year round. Greens in winter and spring, and also in summer in irrigated areas.

3.2.4. Housing

(i) *Cages:* wired cages and indoor rabbitries in governmental farms. Several traditional housing systems (wood, stones or bricks in small scale farms). Free range (old buildings), underground cells, deep wells…
(ii) *Photoperiod:* adopted photo-period of 16 h light/day in governmental farms. No particular photo-period programme is used in small scale farms.

3.3. Common diseases and parasites

Coryza (pasteurellosis), viral haemorrhagic disease, coccidiosis, digestive problems, feet problems (wire reared rabbits) and external parasites (fungal parasites of the legs and ears).

4. Performance

4.1. Reproduction

Regarding sexual maturity, parameters reported in Table 3, Zemmouri rabbits seem to be sexually mature earlier than the exotic breeds known in Morocco. This trait has to be further studied. However, the body weight at first mating for both sexes seems to be within the normal range.

Table 3. Information of sexual maturity

Trait	Mean	Range
Age of buck at first service (months)	7	6-8
Age of doe at first mating (months)	5	4-6
Age of doe at first kindling (months)	6.5	5.5-7.5
Weight of buck at first service (g)	2700	2500-2900
Weight of doe at first mating (g)	2150	1800-2500

Conception rate in Zemmouri rabbits (Table 4) is relatively lower than those seen in exotic improved breeds (Californian and New Zealand White). However, no data are available for the ovulation rate, litter size at 21 days and litter weight at 5 weeks (weaning done at 4 weeks). The litter size at birth and at weaning, and the litter weight at birth and at weaning are still low in comparison to improved breeds.

Table 4. Fertility and fecundity traits

Trait	Mean	Range
Conception rate (%)	66.6	54-78
Kindling interval (days)	70	50-80
Litter size at birth (total born)	6.7	6.0-7.6
Litter size at weaning (4 weeks)	5.4	4.3-6.5
Litter weight at birth (g)	403	357-452
Litter weight at 21 days (g)	1757	1588-1959
Litter weight at 4 weeks (g)	2516	1931-3377

4.2. Prenatal mortality per litter

The available data concerning percentage of stillbirths (mean: 14.3, range: 1.4-27.7) indicate a relatively high mortality at birth in the Zemmouri rabbits, but we do not have information about embryonic mortality.

4.3. Milk yield traits

The number of teats has a mean of 6 and ranges between 6 and 8. Other different parameters referring to milk production are still to be investigated.

4.4. Lifetime production per doe (Table 5)

It appeared from field work investigations that rabbit longevity is greater in colony rearing farms. This might be due to the low number of litters per year and the extensive way of farming.

Table 5. Lifetime production per doe

Trait	Mean	Range
Number of litters per year	4.5	4-5
Doe longevity (years)	4.2	4-6

4.5. Pre-weaning food utilisation per litter

Daily feed intake per litter (0-4 weeks) for Zemmouri rabbits is about 152 grams, with a range of 125-179 grams (Azizi, 1998). Accordingly, daily crude protein per litter during this period is about 23.3 grams.

4.6. Post-weaning body weight, gain and food utilisation (Tables 6 and 7)

Table 6. Post-weaning growth traits of body weights and gains (g)

Trait	Mean	Range
Weight at weaning (28 d)	478	454-520
Weight at 6 weeks	823	705-940
Weight at 8 weeks	1211	941-1400
Weight at 10 weeks	1589	1324-1800
Weight at 11 weeks	1787	1559-1950
Daily gain 5-8 weeks	25.7	21.0-32.0
Daily gain 8-11 weeks	29.1	28.3-30.6

Table 7. Post weaning food utilisation per young

Trait	Mean	Range
Daily feed intake (g)		
5-6 weeks	67.9	62.4-73.5
6-7 weeks	83.1	78.8-87.5
7-8 weeks	97.3	92.8-101.9
8-9 weeks	111.1	108.8-113.4
9-10 weeks	115.5	114.9-116.2
10-11 weeks	116.0	115.7-116.2
Feed conversion (g intake per g gain)		
5-11 weeks	3.19	2.91-3.50

When compared to exotic breeds raised in Morocco, Zemmouri rabbits show moderate results for the following characters: body weight at weaning (4 weeks), post-weaning growth (6-11 weeks) and the corresponding daily gains and feed conversion rate. However, feed intake from weaning to slaughter seems to be comparable but still needs to be further investigated.

4.7. Carcass traits

Table 8 shows that the slaughter weight obtained in Zemmouri rabbits is relatively high at an early age of 11 weeks. The dressing percentage is almost similar to exotic breeds (but data here is obtained with carcasses including the head). The fur weight appears to be higher.

Table 8. Carcass traits at 11 weeks

Trait	Mean	Range
Slaughter weight (g)	2035	2000-2070
Hot carcass weight (g)†	1262	1260-1263
Dressing percentage	62	61-63
Fur weight (g)	270	255-285

†Carcass with head.

4.8. Hair and fur traits

The hair length of Zemmouri rabbits is shown in Table 9, ranging the length of the normal hair between 30-45 mm.

Table 9. Hair traits

Trait	Mean	Range
Length of down hair (mm)	30	25-40
Length of guard hair (mm)	38	30-45

5. Physiological reaction to climatic stress

Under air temperatures of 15°C, Zemmouri rabbits showed average values of 39°C, 34.7°C, 36°C, 27.3°C and 23.2°C for temperatures of the body, skin, abdomen, hair and ear lobe (Table 10). It seems that Zemmouri rabbits stand the high environment temperature better than the improved breeds. However there are no data available so far concerning experimental induced temperature stress.

Table 10. Physiological parameters characterising responses of adult Zemmouri rabbits to environmental stress

Trait	Mean	Range
Hair temperature (°C)	27.3	25-30
Ear lobe temperature (°C)	23.2	19-27
Pulse rate	215	180-240
Respiration rate	164	148-180

6. Genetic Improvement

6.1. Genetic parameters

No data is available.

6.2. Selection for economic traits

The first experiments carried out from 1996 to 1998 were intended to study zootechnical parameters of economic importance in Zemmouri rabbits (litter size at birth and weaning, body weight gains and live weight at 77 days).

On the other hand, we tried to adapt local Zemmouri rabbits to intensive rearing methods, wire cages and pelleted feed.

6.3. Crossbreeding of Zemmouri rabbits with improved breeds

In 1997 and 1998 we compared zootechnical parameters for both the local Zemmouri pure breed, and local Zemmouri females mated to Californian and New Zealand White males. The preliminary results showed improvement of reproductive and growth performance traits as litter size at birth and weaning, daily gain from weaning to slaughter (4-11 weeks) and feed conversion ratio (Bouymajjane, 1997; El-Maharzi, 1997; Ajakkaf, 1998; Azizi, 1998).

When the females were themselves crosbred (Bouymajjane, 1997; Ajakkaf, 1998), improvements were found in litter size and weight at birth, daily gain, litter weight and body weight at 21 days, weaning and 11 weeks and feed conversion ratio.

References

The set of references that follows, concerns papers dealing with Zemmouri rabbits, not necessarily cited in the previous text.

Abboubi, A. (1998). *Prospection de l'élevage cunicole dans les communes de Maaziz, Sidi Abderrazek et Kansera (province de Khémisset)*. PhD Thesis, IAV Hassan II, Rabat.

Ajakkaf, W. (1998). *Evaluation de quelques paramètres zootechniques chez le lapin local de la région de Rabat en race pure et en croisement avec la race Californienne*. PhD Thesis, IAV Hassan II, Rabat.

Azizi, Y. (1998). *Evaluation de performances zootechniques du lapin local en comparaison avec la race Néo-zélandaise et la race Californienne*. Mémoire de 3ème cycle en Agronomie (productions animales), ENA Meknès.

Bouymajjane, Z. (1997). *Evaluation de quelques paramètres de production chez le lapin local et la race Californienne en pur et en croisement*. PhD Thesis, IAV Hassan II, Rabat.

El-Maharzi, L. (1997). *Résultats des performances de reproduction et de croissance des lapins de la population locale*. Mémoire de 3ème cycle en Agronomie (productions animales), ENA Meknès.

El-Mekhtoum, A. (1996). *Les performances zootechniques chez le lapin. Eléments de bibliographie*. PhD Thesis, IAV Hassan II, Rabat.