France Génétique Elevage

FRANCE, HIGH QUALITY GOAT GENETIC PERFORMANCE

KEY FIGURES:

907 kg/year
the average milk productionof the 283,000 French goats enteredin the official national milk recording scheme

Broodstock selected
by a world leader in the sector

The **820 000 high genetic merit goats** of the national herd make France one of the world leaders for goat milk production. France is ranked fifth in the world with **an annual milk production close to 643 million litres,** representing 30% of the total European Union production produced with only 10% of the total number of goats.

The French national herd consists mainly of two breeds recognised worldwide: the **Alpine breed** (55% of the national herd), and the **Saanen breed** (42%). They benefit from breeding programs that are at the cutting edge of technology and which generate important genetic gains. These breeding programs are capable of delivering semen and breeding stock not only of outstanding genetic and health quality, but also **able to accommodate different context and production objectives.**

The national framework for the genetic improvement of these breeds is driven by France Génétique Elevage, an umbrella organisation for all professions involved in French breeding programs.

1
Comprehensive and supervised breeding programs

The French breeding programs for goats, run by Capgènes, combine **choice on ancestry, selected matings, milk recording, zootechnical recording, test station recording for males as well as progeny testing.**

They integrate the latest technological and scientific developments, particularly in terms of health security.

In the interest of consistency and thoroughness, the technical protocols for each of these steps are established at national level by the Institut de l'Elevage (Livestock Breeding Institute), responsible for supervision and technical assistance to the breeding programs.

Following protocols and methods defined at international level, the recorded data are subjected to an external quality control under the auspices of France Génétique Elevage.

2
Balanced selection objectives

The continuing increase in milk production by the Alpine and Saanen breeds remains an important objective. However, aims to improve milk quality and the functional morphology of the animals have received particular attention for several years.

The main selection criteria relate to the **level of milk production,** along with a coefficient that enables improvements in protein/nitrogen and fat content. A new selection criterion concerning **milk cell count** has been published since 2013. This genetic index is an indirect indicator for resistance to mastitis.

Udder morphology (side view, udder depth, rear attachment quality...) is included in the overall selection objective. The goals are to preserve animal adaptation for grazing, improve longevity and optimise milking time. Breeding abilities of livestock (fertility, precocity) are consistently maintained.

3
High standard selection base

Out of 282,516 milk recording goats in total, **more than 150,000 are part of the selection base for the Alpine and Saanen breeds,** characterised by a high level of artificial insemination use, the organisation of planned matings, the use of genotyping (Alpha S1 Casein), etc.

The integration of genomic information in the selection of breeding stock is being prepared.

The 1,100 best females (« buck dam » = dams that will produce bucks) achieve exceptional performances with **an average recorded lactation in excess of 1,200 kg per year.**

HIGH PRODUCTIVITY HERD

	NUMBER OF LACTATIONS	LACTATION LENGTH	AVERAGE LACTATION	FAT CONTENT	PROTEIN CONTENT
All breeds	282,516	299 days	907 kg	36.9 g/kg	34.2 g/kg
Alpine	158,972	295 days	886 kg	37.8 g/kg	34.8 g/kg
Saanen	114,630	306 days	946 kg	35.8 g/kg	33.4 g/kg

Source : Official milk recording 2013 – Institut de l'Elevage / France Conseil Elevage

BUCK DAMS OF EXCEPTIONAL PERFORMANCE LEVEL

	TOTAL NUMBER	AVERAGE LACTATION	FAT CONTENT	PROTEIN CONTENT
Alpine	600	1,265 kg	39.3 g/kg	36.9 g/kg
Saanen	480	1,288 kg	36.7 g/kg	35.5 g/kg

Source : CAPGENES –France Contrôle Elevage 2013

AN INDEPENDENT AND RIGOROUS GENETIC EVALUATION

All available recorded data is transmitted to the INRA (Institut National de la Recherche Agronomique – National Institute for Agronomical Research) for computation of the official genetic evaluation.

The indexes are calculated using the BLUP multitraits animal model. This method employs the most advanced statistical methods taking into account not only each animal's individual performances but also kinship relationships between animals.

4
An internationally unique progeny testing scheme

Every year, the 200 best bucks from the selection base enter the individual performance test station, which is in compliance with international sanitary standards.

At the end of a 30-day quarantine period where sanitary, growth, and conformation controls are carried out, only 120 males are retained. These males are then tested on their sexual behaviour, sperm production (quality and quantity) as well as the aptitude of the sperm to withstand cryopreservation.

The 80 best bucks from the individual performance station are evaluated using their on-farm progenies in order to accurately estimate their genetic potential. For each male, the genetic evaluation is based on approximately 200 artificial inseminations, and the performance recording (milk production and udder morphology) of 80 daughters on average.

The daughter performance recording carried out over the entire French territory in multiple farming contexts leads to very reliable genetic evaluation results. This progeny testing scheme orchestrated by Capgènes is the only one of its kind worldwide due to the number of daughters recorded.

After analysis of the results, only the 30 to 40 best bucks are retained each year as elite and licenced to be used for artificial insemination in frozen semen straws.

5
Outstanding results

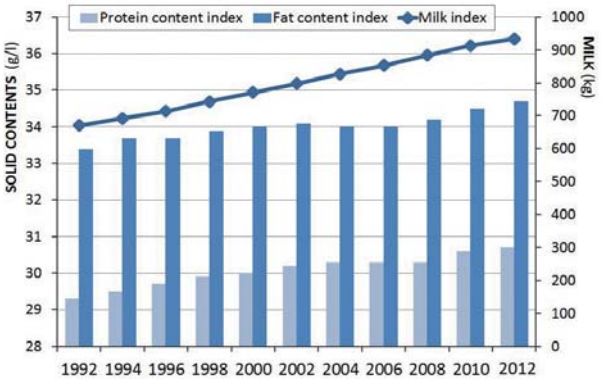
During the last 30 years, French breeding programs have generated remarkable genetic gains (outside environment effects) as much in quantity as in quality of the production.

Every year, these genetic gains have led to an increase in farm production of 12 kg per lactation of milk, along with an annual increase of 0.1 g/kg milk of nitrogen and fat contents.

In 10 years, the average lactation of Saanen and Alpine herds has thereby increased by 125 kg entirely as a result of their genetic improvement.

On farms, the use of artificial insemination straws from progeny tested bucks greatly contributes to the increase in herd performances.

REGULAR AND SUBSTANTIAL GENETIC PROGRESS



Source : CAPGENES – France Conseil Elevage 2013

6

Decisive impact on farms

The use of artificial insemination semen from breeding stock that is sourced from the French selection programs and progeny tested, greatly increases herd performances.

In France, herds with more than 50% of goats bred through artificial insemination present an average recorded lactation greater by 25% (190kg) compared to herds with low or no usage of such breeding stock.

7

For both purebred and crossbred purposes

The quality of French Saanen and Alpine bucks is internationally recognised. **Every year, their semen is commercialised in more than 25 countries** that have confidence in its productivity and sanitary guarantees.

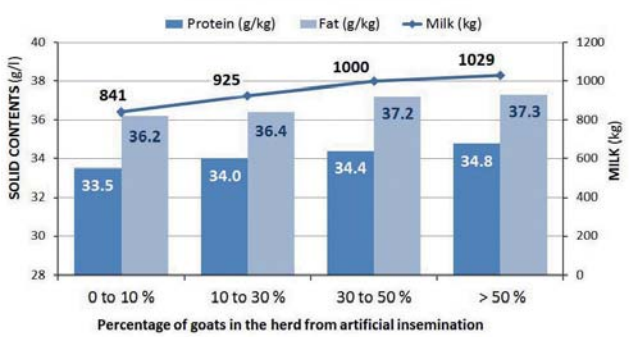
These semen straws enable remarkable results, within breed but also across breed.

In difficult farming conditions, local breeds are often well adapted but their milk production levels remain relatively low. Crossing these animals with Alpine or Saanen breeds selected in France is therefore an opportunity for development. Alpine and Saanen breeds bring their milk production potential, whereas the genes from the local breeds maintain the essential aptitudes for robustness and adaptation to the environment.

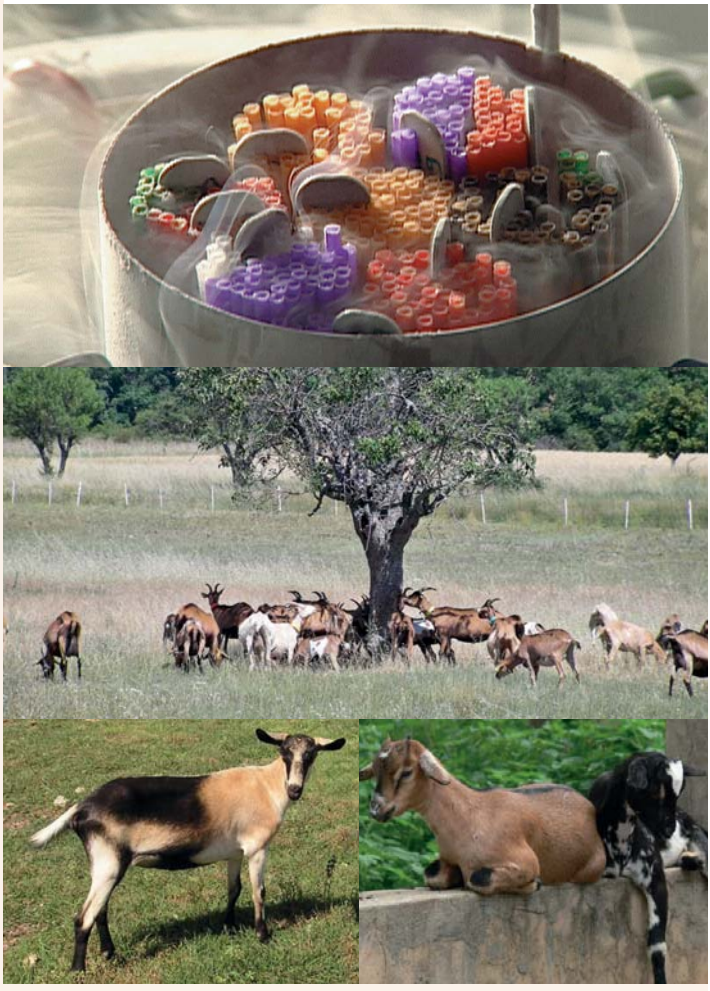
Heterosis, a phenomenon induced by crossing different breeds, further increases the performances in the F1 generation.

Don't hesitate to contact us for more detailed information.

HERDS PERFORMANCE BY PERCENTAGE OF GOATS FROM ARTIFICIAL INSEMINATION



Source : Genetic inventory CAPGENES 2013



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