

CROSSBREEDING WITH FRENCH DAIRY GENETICS



KEY FIGURE:

+ 25 to 100 %

in milk yield
from the first
generation

When genetic combination leads to added economic value

Coming from a long breeding tradition, exceptional genetic heritage and selection programmes at the cutting edge of technology, **the range of French dairy cattle breeds combines diversity and economic performance.** This makes France one of the world leaders in dairy production and genetics.

This **wide range of zootechnical aptitudes** makes it possible for all breeders to find the genetics to match their objectives, their production conditions and their market requirements.

Its increasing distribution in crossbreeding is also proof of its efficiency. The technical performances and economical results of animals crossbred with French breeds are substantially improved in commercial farms, whether family farms or large scale units, with a local maternal breed of cattle (*bos taurus*) or zebu (*bos indicus*).



1

Accessing a wide range of genetics thanks to crossbreeding



French breeding offers an exceptional range of genetics. This includes as much the **highly productive breeds of international importance (Prim'Holstein, Montbeliarde, Normande, Brune...)**.

But this offer also includes **productive hardy breeds (Abondance, Tarentaise...)** which are more specifically adapted to difficult forage and climate conditions.

2

Adding new genes and combining aptitudes

Local cattle type (*bos taurus*) or zebu type (*bos indicus*) populations frequently present substantial hardiness and capacity to adapt to the agro-climatic production context : resistance to disease (trypanoresistance...) and to parasites (ticks), aptitude for the beneficial use of specific forage resources, resistance to extreme temperatures...

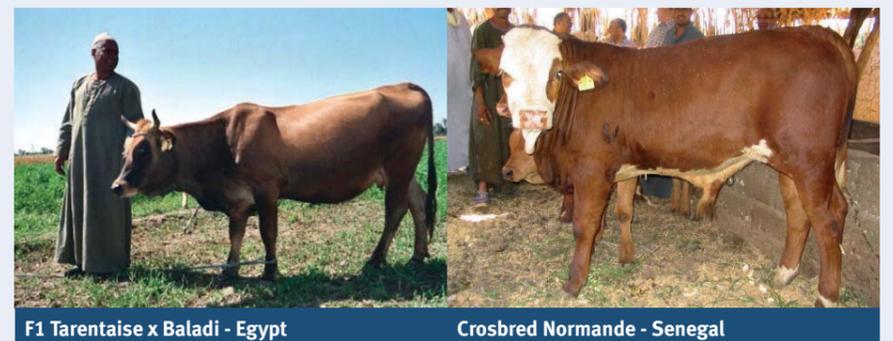
But, the dairy potential of these breed types remains poor for the most part. The same can be said for their meat production, the sale of which can nevertheless represent a substantial sideline for the economic viability of small farms, which are often non-specialised.



The efficiency of French selection programmes, integrating all progress in genomics, has enabled these breeds to achieve unequalled levels of efficiency, at the same time respecting the diversity of their aptitudes.

In crossbreeding, French dairy genetics rapidly and at low cost produce convincing results within herds.

The addition of new aptitudes combined with the renowned hybrid vigor of crossbred animals is converted into technical performance and added economic value for farms.



In this context, introducing blood from selected French dairy breeds enables **the combination of their milk production aptitudes (quantity and quality) with the often indispensable resistance aptitudes of local cattle or zebu type populations.**

In the first generation, crossbred animals accumulate the hardiness inherited from their mother and the potential for production provided by French genetics.

This genetic complementarity shows a significant increase in milk production, varying from 25 to 100% depending on different crossings and the capacity of the system to ensure suitable herd management.

By the same genetic combination effects, **gains in meat production** (weanlings, young fattened males) oscillate between 10 and 20 % from the first generation on, also without significant increases in feeding.

3

Benefiting from the heterosis effect or « hybrid vigour »

The heterosis effect, more commonly known as « hybrid vigour », results in **superiority for a given trait in hybrid animal F1 over the average of its two parents.**

The heterosis effect is particularly significant on aptitudes that are crucial for dairy farms' profitability : **precocity and fertility in crossbred females, vigour at birth, health and better survival rate at weaning for crossbred calves...**

This hybrid vigour is more significant the further apart the parents are genetically. Its effect is thus particularly noticeable for animals that come from crossbreeding French dairy cattle breeds and often dual purpose milk/meat zebu type breeds (Gyr, Guzera...).



Normande x Brahman - Colombia

In tropical environments, crossing local zebu commercial herds with Montbeliarde or Normande bulls is a convincing example. The wide distribution of such crosses in these tropical zones is the proof of the benefits.

4

Convincing results from the first generation



F1 Montbeliarde - Chad

Brune x Brahman - Mexico

For the first generation F1, crossbreeding with selected genetics results in marked improvements in dairy production (quantity and quality) and in reproduction traits (fertility, precocity). The heterosis effect adds to the cumulative advantages of the two breeds.

This injection of exogenous blood can already in F1 represent a substantial productive leap that can be sufficient when livestock farming conditions are considered.

Large crossbreeding programmes ensure an injection of exogenous blood by artificial insemination coupled with wide distribution of recorded crossed F2 bulls. Day by day they are proving their efficiency for large numbers of breeders, while managing to conserve local genetic resources at the same time.

In India, the BAIF (Development Research Foundation) has been running programmes such as these for more

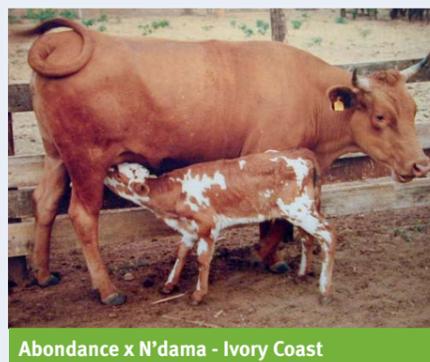


F2 Tarentaise x Baladi - Egypt

than 20 years in 16 states of the country. They combine in particular French **Prim'Holstein** with the herds of small producers, from local zebu types (Khillar, Dangi, Red Singhi...).

In Egypt, as on the shores of the Mediterranean, the authorities and small breeders put their trust in the **Tarentaise** breed. A hardy breed of small frame, the Tarentaise meets the needs of the small mixed crop-livestock farms of the Nile valley and delta particularly

well. Crossed with the local Baladi type cows, the Tarentaise breed is producing astounding results in these traditional farms.



Abondance x N'dama - Ivory Coast

In sub-Saharan Africa (Senegal, Chad, Ivory Coast...), crossing taurine breeds (N'dama, Baoulé...) with **Abondance**, a dairy breed that is also hardy, of medium size and with a good level of meat production, has enabled significant

productivity gains to the traditional agro-pastoral systems. **In more favourable conditions or in peri-urban areas, crossing with the Montbeliarde breed gives very good levels of satisfaction.**



Normande x Zébu - Colombia

In **Colombia**, more than 300 000 females of different levels of crossbreeding with the **Normande** breed have been gaining widespread popularity among the family farms on the slopes of the Andes. Given the potential

of the Normande breed, this success has spread over recent years to the tropical plains, through crossbreeding with zebu type populations (Brahman, Gyr...).



Montbéliarde x Gyr - Colombia

In this tropical plains of **Latin America** and of **Asia**, the **Montbéliarde** breed has been proving its worth for a long time, bringing all its dairy and meat potential to the local bos indicus dual purpose milk/meat herds.

5

Crossbreeding rate adapted to the farm context



F3 Brune x Brahman - Brazil



F3 Prim'holtésinx Gyr - Brazil

Within any herd, crossbreeding can be pursued beyond the first generation F1 and the production of F2 animals (3/4 exogenous blood and 1/4 local blood), and F3, indeed F4, according to the level of technicality, the agro-climatic conditions and the socio-economic context of the farm.



F3 Montbéliarde x Clavel - Chile

The success of such crossbreeding ventures with highly productive breeds such as Montbéliarde or Normande is particularly noticeable in the peri-urban areas of Africa and of Asia.

Family farming systems in these zones have easier access to inputs, technical support and a regular market.

While taking measures to ensure the preservation of a variable proportion of local blood, depending on the health context (parasitism), these herds have seen in just a few years **large gains in productivity that contribute to their goals of specialisation and production intensification.**

6

Increased following in Europe and North America as well



Rotational crossbreeding Montbéliarde Procross - USA

The addition of crossbreeding with French dairy genetics has a following among the most intensive and specialised farms of Europe and North America.

In order to improve the genetic variability of their Holstein herd and consequently improve reproduction performances, a growing number of breeders are developing a **rotational crossbreeding system.**

It alternates the semen from 3 highly productive breeds including Montbéliarde or Normande.



Rotational crossbreeding Normande - USA

While maintaining milk yield at a high level, these French breeds, thanks to their assets and the heterosis effect, bring a **clear improvement in fertility, longevity, calving ease as well as a reduction in calf stillbirth rates.**



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