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Philippines targets more female dairy calves with 170,000-semen-scale facility

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The â?±237.9-million facility in Nueva Ecija will produce up to 170,000 sex-sorted semen straws annually, targeting more female calves for milk production and reducing dependence on imported breeding material

The Philippines has taken a major step towards expanding its domestic dairy herd with the inauguration of what the Department of Agriculture (DA) and Philippine Carabao Center (PCC) describe as the world's first laboratory dedicated exclusively to sex-sorting buffalo semen.

Located in the Science City of Muñoz, Nueva Ecija, the â?±237.9-million facility uses flow cytometry to separate sperm carrying X and Y chromosomes with approximately 90 per cent accuracy. The technology allows breeders to influence the sex of offspring according to production needs, enabling greater targeting of female calves for dairy operations and male calves for meat and draught purposes.

The facility could have particular significance for a Philippine dairy industry that remains heavily dependent on imports. Local milk production currently accounts for less than 5 per cent of national demand, leaving the country reliant on imported dairy products as well as imported breeding material. The PCC plans to produce approximately 170,000 sex-sorted semen straws annually, with female-oriented breeding expected to be the principal focus as the country seeks to expand its milk-producing buffalo population.

"This facility will give farmers the choice of whether they want a female calf that will eventually produce milk, or bulls for meat and farm work," Agriculture Secretary Francisco P. Tiu Laurel Jr. said. According to the DA, producing breeding material domestically could generate several economic and biosecurity advantages. It can reduce foreign-exchange outflows associated with imported breeding inputs, lower procurement costs and reduce exposure to risks associated with the movement of livestock and genetic material across borders.

Local production could also allow breeding programmes to place greater emphasis on animals suited to tropical production conditions, potentially improving the fit between genetics and local farm environments. The technology works by using flow cytometry to identify and separate sperm cells according to their chromosomal content. X-bearing sperm have the potential to produce female offspring, while Y-bearing sperm can produce males. Once sorted, the semen is cryogenically preserved and made available for artificial insemination programmes.

For a dairy sector constrained by herd size, sex-sorted semen can change the economics of herd expansion. Conventional breeding produces male and female calves in roughly equal proportions. Greater targeting of female offspring allows a larger share of breeding events to contribute directly to future milk-producing capacity. That does not, however, make technology alone a substitute for broader dairy-sector development. The economic impact will depend on the quality of donor bulls, conception rates, field artificial insemination capacity, calf survival, farmer adoption and the eventual productivity of the resulting animals.

The PCC will initially focus the laboratory on elite water buffalo bulls, although the technology has potential applications in other ruminant species. Distribution of the sex-sorted semen for field artificial insemination is scheduled to begin in the fourth quarter of 2026, with the first genetically targeted calves expected by late 2027.

The laboratory was funded under US Public Law 480, also known as the Agricultural Trade Development and Assistance Act of 1954, and was completed in three months under the DA's Intensified Community-based Enterprise Development programme.

The speed of construction reflects the government's attempt to move reproductive technologies from research institutions into field-level livestock programmes. The more important measure of success, however, will be whether the laboratory can consistently deliver semen at scale and whether farmers can convert the genetic targeting into larger, more productive dairy herds. The new laboratory therefore represents more than a reproductive-technology milestone. If its planned output of 170,000 straws a year is achieved and effectively deployed through artificial insemination networks, sex-sorted buffalo genetics could become a tool for accelerating the growth of the country's domestic dairy base—while keeping a greater share of breeding expenditure within the local agricultural economy.