

# The use of Embryo Transfer in sustainable cattle production and food security

## Dr. Michael Motta

Jamaica has received international acclaim for the research and development which led to the creation of four tropical cattle breeds in the 20th century - Jamaica Brahman, Jamaica Red Poll, Jamaica Hope and Jamaica Black. Various sire service programmes, including artificial insemination (AI) introduced in 1945, were pivotal to the development of these breeds.



The total cattle population exceeded 300,000 at the time of Jamaica's Independence in 1962. The present cattle population is fewer than 100,000. This has impacted four breeds and creates the risk of their becoming endangered or extinct. Embryo Transfer (ET) technology offers a solution to the urgent need to rescue, conserve and multiply our treasured breeds. It has proven to be instrumental in growth and sustainability of the cattle industry in many countries.

The decline in cattle population has contributed to increased importation of beef, milk and dairy products. Jamaica's annual beef imports amount to approximately US\$24,000,000 while milk/dairy imports reach US\$42,000,000 (External Trade Statistics – Statistical Institute of Jamaica).

Embryo Transfer is a specialized veterinary technique in which a mature cow (the donor) is treated with hormones to produce multiple ova (eggs). These are fertilized inside her either by natural or artificial insemination and the resulting embryos are harvested by a process called flushing before they implant in the uterus. These are then transferred into the uteruses of surrogate (recipient) cattle which become pregnant and carry the calves to term. In this way, a genetically superior cow, which would normally produce eight to ten calves in her lifetime, may produce many times that number.



*Embryos are harvested via a tube inserted into the cow's uterus through the vagina.*



*Embryos seen under a microscope*

A number of calves have been produced from all four Jamaican breeds, including the first Brahman calves produced by the method. There is an urgent need for investment, expansion & development of the technology. Challenges include the identification of potential donors through the



*Brahman calves born to Jamaica Red, Jamaica Black and Jamaica Hope surrogate mothers*

national certification via breed societies, the availability of competent personnel, equipment and supplies, the acquisition of latest technology and the scourge of praedial larceny. These are not insurmountable.



*A Jamaica Red Poll cow with her six calves produced in one year using ET and surrogate mothers*

The expansion of the use of ET will augur well for the rescue and multiplication of our four breeds, the conservation of family lines within the breeds and sustaining our cattle population in general, improving our food security. Public and private sector stakeholder support is essential.

*Dr. Michael Motta is a Senior Veterinarian with Hi-Pro Farm Supplies, a member of the Jamaica Broilers Group of Companies.*