

Nuclear-derived techniques improve cattle productivity and milk quality in Cameroon

By Aabha Dixit

Increasing agricultural production and improving the quality of milk and meat are key to combating poverty and increasing food security in Africa. Countries such as Cameroon are increasingly turning to innovative, nuclear and nuclear-derived techniques to control and prevent diseases among livestock, and boost cattle and milk production.

“Nuclear techniques are important tools in practically all fields of animal science when the objective is to advance the productivity and health of economically vital domestic animals,” said Abel Wade, Head of Cameroon’s National Veterinary Laboratory (LANAVET). “Our country will face an unprecedented animal-product supply crisis if we don’t use all the available scientific tools to ensure good breeding and increase the healthy cow head count.” Cows are the main livestock in Cameroon: the country has 5.8 million cattle, compared with 4.6 million goats and 4 million sheep. Cattle are also regarded as a symbol of wealth.

Since the early 1990s, the IAEA has assisted Cameroon through its technical cooperation programme to use nuclear and nuclear-derived procedures such as radioimmunoassay (RIA) and enzyme-linked immunosorbent assay, molecular diagnostics and genetic screening in reproduction and breeding, artificial insemination and disease control programmes for livestock. Nuclear techniques for artificial insemination were introduced in Cameroon eight years ago. “If we don’t have healthy cows, we will not have good meat to eat or nutritious milk to drink,” said Wade.

Focus on productivity

In collaboration with the IAEA and the Food and Agriculture Organization of the United Nations

(FAO), LANAVET and the country’s Institute of Agricultural Research for Development are training veterinarians, veterinary extension services and breeders on disease control and artificial insemination to improve cattle productivity, breeding management and animal health control. Artificial insemination allows scientists to improve the genetic make-up of the offspring, leading to up to five times more milk produced per cow, said Mario García Podesta of the Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture.

The methodology assists technical staff in improving the reproductive management of cattle farms and in obtaining more calves, meat and milk than with traditional farm management. The application of progesterone RIA in artificial insemination helps to identify 20–40% more cows for breeding than conventional methods that involve watching behavioural signs. It can subsequently increase the conception rate by between 5% and 50%, depending on the effectiveness of the traditional method and management previously used, said García Podesta.

Improving livestock also involves tracking and preventing diseases such as contagious bovine pleuropneumonia, brucellosis, tuberculosis, peste des petits ruminants and African swine fever. LANAVET is performing surveillance to detect infectious diseases in northern Cameroon, where the seasonal movement of people with their livestock between summer and winter pastures poses disease risks to livestock, Wade explained. Mobile labs using isotopic, nuclear and nuclear-derived techniques also help to identify these risks early and rapidly, which results in an effective response.

Reaching out

To extend awareness of the benefits of artificial insemination among rural



Crossbred cows in a dairy farm in Cameroon. (Photo: M. García Podesta/IAEA)

farmers, who depend on traditional methods of cattle rearing, the Institute’s regional centre in Bambui works with them directly in getting across the message, and provides access to the tools required for artificial insemination. “The proactive efforts by the Institute to successfully convince our farmers will assist in meeting the rising demand for meat and milk production,” said Victorine Nsongka, Head of the Animal Production and Health Section of the Institute of Agricultural Research for Development in Bambui.

A related project, currently in its preparatory phase, will lead to the artificial insemination of 70 000 cows over the next six years in northwestern Cameroon, Nsongka said. Sponsored by the Islamic Development Bank, this initiative will also use the IAEA-supported techniques and will lead to the development of an artificial insemination and reproduction network in the region, she added.

Cameroon’s government is reaching out to extend support to breeding centres in Benin, Burkina Faso, the Central African Republic and Chad to increase the number of dairy animals through artificial insemination using semen from genetically superior animals.