

## **Cattle Breeding Meets Nuclear Science**

“Without the land and cattle, there will be no Maasai,” the words of a Maasai warrior.

The Maasai are indeed cattle people.

These animals are central to their lives, the main source of food and income.

In this remote part of central Tanzania the cows and the tribes live a quiet life.

There are no bulls to disturb the peace.

This community doesn't need them. They have this – frozen semen.

In the village of Alailelda it's the job of Maruka to carry out the inseminations.

### **SOUND BITE: Maruka, artificial inseminator**

Maruka conducts around 30 inseminations a month in six villages

He's one of around 50 inseminators who've been trained under projects operated by the Technical Cooperation Programme of the International Atomic Energy Agency – the IAEA.

The Agency runs an Animal Health and Production Section which helps countries to improve the quality of their livestock.

The training takes place at Tanzania's National Artificial Insemination Centre, in Arusha.

Participants come from all over Africa.

This centre is also the place where the semen is collected and prepared for distribution.

It's home to 29 prime bulls of various breeds and origins.

The “artificial vagina technique” is used to collect the semen from the bull.

This method uses a dummy in replace of a cow – most commonly a live bull.

From just one ejaculation 200 doses for artificial insemination can be produced.

A series of controls need to be conducted to evaluate the quality of the semen.

It's then diluted and filled into straws.

These are frozen and contained in liquid nitrogen.

This enables them to be easily transported and stored for many years without the need of electricity.

Up to 150 000 straws a year are produced at this centre.

When ready, they're collected by the inseminators who use them in communities all over Tanzania.

Over 87,000 Maasai live in the Ngorongoro Conservation Area.

Before the farmers started using artificial insemination, they had to depend on the indigenous cattle. These were of low quality – they grew slowly and produced little milk.

**SOUND BITE: Dr Kuya Sayalel, senior vet, Ngorongoro Conservation Area**

After insemination it's important for the farmers to know at an early stage if it's worked or not.

If a cow is pregnant, the farmer can plan ahead for new calves and more milk.

A non-pregnant cow means loss of income and the need to repeat the process.

A nuclear technique known as a radioimmunoassay – or RIA for short – is a kind of pregnancy test which can be conducted just three weeks after artificial insemination.

The RIA method measures the level of the progesterone in a milk or blood sample taken from the cow.

By using progesterone labelled with a radioactive isotope the level of the cow's own progesterone can be determined.

The levels of this hormone are key in pregnancy testing.

With conventional methods the farmers need to wait for up to two months, and a vet needs to examine cows individually.

One RIA test can be done on samples from up to 80 cows.

The IAEA has supported nearly 90 countries, including Tanzania, in the use of these techniques, by training experts, helping to establish laboratories and providing RIA kits.

The benefits of artificial insemination are plentiful.

Farmers are spared the expense of buying and keeping bulls.

The procedure leads to improved breeds of cows and better quality meat.

Such cows fetch a better price at market.

Livestock is of major importance all over Africa as in many other parts of the world.

Artificial insemination has proved to be a good way to get better quality and healthier cattle.