Supporting improvements in food and agriculture through AFRA

Background...
Farming, of both livestock and crops, is an important source of food products and income for all African countries. Nuclear technologies can help to optimize livestock production, support improved animal nutrition, and diagnose and control the spread of disease. Nuclear technologies can also be used to enhance staple and traditional crops, so that they produce higher yields and are more resistant to unfavourable weather conditions and pests. They can also be used to increase soil fertility and to improve food quality and safety.

AFRA approach and successes...
Animal production:
AFRA is providing assistance to its Member States to develop and facilitate the application of selection criteria for genetically improved livestock. An important focus has been on the interaction between nutrition and reproduction for improved productivity and the use of modern reproductive techniques, such as artificial insemination, to enhance the productivity and reproductive efficiency of livestock in the region. AFRA promotes an integrated package of technologies, including artificial insemination and progesterone measurement using radioimmunoassay (RIA) for the diagnosis of non-pregnancy, ultrasonography for the diagnosis and treatment of infertility and reproductive disorders, metabolic and mineral profiles for assessment of nutritional adequacy, and feed supplementation strategies for overcoming inadequacies.

Crop production:
A total of 17 AFRA Member States are working to improve ‘neglected crops’, traditional crops that have not benefited from conventional breeding techniques. The development of drought tolerant lines has been of great importance to AFRA Member States. As a result, six new crop varieties have been released. These include sesame in Egypt, cassava in Ghana, wheat in Kenya, banana in Sudan, and finger millet and cotton in Zambia. In addition, several countries have promising mutant materials that are in the advanced stages of development, including sunflower, lupin and wheat in Egypt, rice and barley in Tanzania, barley and lucerne in Tunisia, and beans in Zambia.

New initiatives for crop improvement are under way in selected countries such as Tanzania, where the counterpart institute is working closely with the agriculture and food industry on the development of a new variety of barley. This has prompted other AFRA Member States to develop and disseminate staple and market oriented crops using mutation induction, biotechnology and farmer participatory approaches.

High yielding banana mutant breeds produced under an IAEA project and distributed to farmers.

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