OTTAWA-IDRC -- Egypt's fertile agricultural lands and crop rotation system provide much of the cereals and legumes required to meet the country's needs. However, there is a serious shortage of meat and animal products, and livestock production is a cause for national concern.

One of the reasons for the shortage is that cropping patterns do not produce enough forage to maintain the country's farm animals during the summer months. In winter, berseem (clover) is grown as a rotation crop on 30 percent of farmlands and is sufficient to feed the livestock. But no special forage is planted in the summer.

Farmers may set aside small plots of densely planted maize, called darawa, but animals are generally fed available crop by-products such as wheat straw, wheat and rice bran, leaves stripped from maize plants, and cottonseed meal. These sources of feed meet less than 40 percent of the energy and protein requirements of the livestock.

The lack of green forage in the summer means dependence on imported feed concentrates that are expensive and often in short supply. As a result, farmers feed their animals poor quality roughages. This leads to weight loss and reduced milk production. Some farmers are forced to slaughter immature animals before the summer season because they cannot feed them. As the number of animals continues to grow, the problem will become even more acute.

Livestock production accounts for about 30 percent of Egypt's gross...
agricultural product and is an important source of food and income. Livestock ownership rests primarily with small landholders, farming less than three feddans (about 1.2 hectares), mainly in the Nile Delta.

These farmers follow a government-controlled system of crop rotation for the production of basic foods such as maize, wheat, and rice, as well as cotton for export. The system leaves little land on which to grow forage crops, particularly in the summer months. Because of the seriousness of the forage shortage, the Ministry of Agriculture has recently changed the crop rotation regulations to allow 10 percent of the maize area to be planted to summer forage.

To make the best use of these lands, it is imperative to know what summer forages are best suited to the country's climatic and agronomic zones. Work on identifying such forages began some years ago by scientists at the Animal Production Research Institute (APRI) of the Ministry of Agriculture.

After evaluating a number of grasses for summer productivity, the researchers felt that elephant grass (Pennisetum purpureum) was a promising summer forage.

Native to Uganda and other equatorial countries, elephant grass was introduced in a number of governorates. A perennial, and dormant in winter, it can be grown intercropped with berseem to provide a year-round forage system. It is also resistant to cotton budworm, a common pest. Because it is perennial, and grows in large, difficult-to-remove clumps, there are some limitations to the use of elephant grass in the strictly controlled Egyptian crop rotation system.

In 1976, Canada's International Development Research Centre (IDRC) supported a project at APRI to test the suitability and adaptability of different fodder crops in the various soils and ecological zones of Egypt. The research initially concentrated on elephant grass and built on previous work with the Institute.

It was determined that elephant grass could be cut five times a season,
starting 45 days after planting. As forage, it could be used to maintain body weight in buffalo stock, together with milk production of about six kilograms per day without the need for any supplementary feed.

Although the research led to much better understanding of the performance of elephant grass and its advantages as a perennial crop in village fields, its suitability as an annual crop remained to be demonstrated. Studies were also needed to see if elephant grass was practical compared with recently introduced hybrid varieties of forage sorghums and millets, or with the traditional *Darawa* maize. The hybrid sorghums and millets, although producing an excellent annual forage, require yearly purchases of seed. *Darawa* is a locally available and well-known summer forage, but has a low rate of production.

In cooperation with the Field Crops Institute and the Agriculture Economics Research Institute, and with support from IDRC, APRI is now conducting comparative agronomic, nutritional, and economic studies of the three forages.

The best varieties of elephant grass and forage sorghums will be identified, as will the best management practices for each crop. Particular attention will be paid to the productivity of the three forages when cultivated as part of the temporary summer forage rotation.

The research will take place on small farms, managed by the farmers themselves, following APRI scientists' recommendations. The cost of production, harvesting, and feeding will be determined, along with the yield and nutrition quality of the forage. Farmers will be interviewed about their preferences.

At the same time, controlled feeding trials will also take place on larger farms and include studies of the effects of concentrate and mineral supplementation in animal feeds based on summer forage. Farmers and extension staff will be trained in the propagation and management of summer forage.

The researchers feel that the high yield potential of elephant grass and forage sorghums can contribute greatly to alleviating the severe summer feed shortage in the Nile Delta. The identification of the most appropriate summer forage for small and large farms in the Delta, as well as for farms in desert
lands, should ultimately benefit all of Egypt's population -- for whom animal products are an important source of food.

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