Small farmers are reaping the benefits of a hardy forage that helps carry their animals through the Egyptian summer.

In spite of the high productivity of the Egyptian land, and a cropping system that ensures a regular production to meet both export and local needs, there is a serious shortage of meat and animal products in the country. According to Dr. Abdel Moneim Makky, director of the Animal Production Research Institute at the Ministry of Agriculture in Cairo, one of the major causes of this shortage is that cropping patterns do not produce enough forage for farm animals. He backs up his opinion with statistics: only about 18 percent of the total farmland is planted to clover in winter, which hardly covers the total animal feed requirements. In summer, no special forage is planted to meet animal needs; they are fed on the available by-products of plant crops, mainly wheat straw, stripplings of corn leaves, wheat and rice bran, and cottonseed cake concentrates. The feed shortage in summer amounts to about 61 percent of the total feed requirements, estimated to be 3.1 million tons of starch equivalent. To compensate for this shortfall, six million tons of cottonseed cake would need to be produced instead of the present annual production of 850,000 tons.

In an attempt to solve this problem, elephant grass (Pennisetum purpureum), native to Uganda and other equatorial countries, was tested as a new source of forage. In 1966, Dr. Makky, together with a number of his colleagues and assistants, began introducing this plant in a number of Egyptian governorates. The project was supported by IDRC in 1975.

Dr. M.K. Hathout, the principal investigator for the project, says that during the past 14 years elephant grass has proved itself, producing high yields of...
feed with a high nutritive value under Egyptian agricultural conditions. Field surveys have shown that the yield may reach more than 100 tonnes per hectare per season. Moreover, during its growing season from April to November, it can be cut from seven to ten times. This means an increase in total production, and a corresponding increase in the farmers' total income. And according to the researchers, elephant grass is new, attaked by the cotton worm (a common pest) in spite of its dense growth during the warm season.

Having proved itself under experimental conditions, the new forage was introduced in private farms in four governorates, including the Sharkia governorate. The grass was first planted on live big farms whose owners were willing to experiment. One of them is Mr A. Beny Helal, in Menia El Kamh. After planting elephant grass, he noticed a great increase in milk production, and a weight gain in animals that he estimates to be about 25 percent. Milk production was higher in summer than in winter. He attributes this to the higher nutritive value of the new grass compared to clover, the winter forage. The dense green vegetation on his land and the animals' sustained health and production did not go unnoticed. Many smallholders in his village subsequently requested elephant grass seed for their pastures.

One of these smallholders, Mr Mohamed Ramadan, started by planting 3 kirats (one hectare equals about 60 kirats) to elephant grass and has now increased the area to 13 kirats. He says that elephant grass solved one of his major problems: he usually had to sell all of his animals at the beginning of the summer season as he had no money to buy the feedstuffs needed to support them. After planting the summer forage, he was able to keep his animals, feed them, and sell only the milk produced.

Another villager, Mohamed Ramadan, planted his only hectare to elephant grass. He says that his average production is 100 tonnes, enough to enable him to fatten his cattle, to produce animal feeds equal to about 700 grams daily. This does not cost him more than 15 piasters, whereas to obtain the same increase using straw and concentrates would have cost him 70 piasters.

In Monofia, elephant grass was first introduced in Hassan Askawy's land. A smallholder who owns only six kirats, he planted three kirats to the new grass in 1975 to test it for himself. He has since increased the area to cover all of his land. He says that his income increased by about 25 percent, just from selling the milk from his two buffaloes. This income increased as he no longer prevents his animals from mating at any time during the year. So convinced was he about the new forage, that he talked his neighbours into planting it on their land. There are now about 50 other smallholders in his village planting elephant grass.

In Meete-Khain village, in Monofia, there is a woman farmer called Om-Bakr. She planted her only three kirats to the new forage in order to feed her animals. She can always find herself something to eat, she says, but her animals used to starve, and she had to sell them one after the other.

Elephant grass as a new summer forage is making continuous inroads in Egypt, and the distribution of germ plasm is currently progressing. This situation stimulated the investigators to conduct more studies on agronomy, soil, and forage conservation. An experimental station, Mehalet Mousa, was established to elephant grass for these studies. The station, a 10-hectare farm, is 80 kilometres north of Cairo, and 5 kilometres from the Institute's laboratories in Sakha, where the collected samples are analyzed. Besides evaluating the productivity and nutritive value of the grass, the researchers are assessing the effects of the new fodder on the farmers' income and the nutritive status of farm animals.

Economic studies were carried out to find the ideal way to introduce elephant grass without disrupting the production of other food and cash crops used locally and exported. The first system proposed by Dr Makky and Dr Hathout was to grow the new summer forage in half the area reserved for clover in the conventional pattern of crop rotations, and to leave it on the land during the entire year. As elephant grass is dormant in winter, clover production is not interrupted. The other half of the clover area is to be planted to extra wheat in winter to compensate for the loss of grain from the half now occupied by the new summer forage, and to equal parts of corn and rice during the summer. This system would improve the overall grain balance and produce animal feeds equal to about 5.5 million tonnes of starch equivalent. This increase, Dr Makky points out, would more than cover the annual feed shortage.

A second system proposed is based on cultivating summer maize and sorghum crops on 75 percent of their usual area, and planting the rest to elephant grass to feed the animals. Dr Makky estimates the cash value of the animal feeds produced under this system to be 99 million Egyptian pounds (about US$142 million). The total cash value of the additional milk and meat produced according to that system would be more than 145 million pounds (US$207 million).

The elephant grass project is expected to lower the costs of milk and meat production, increase the national income, and introduce a great change in the traditional pattern of animal rearing in Egypt. It could go a long way toward alleviating Egypt's chronic meat shortage.

Azza El Husseini is a science writer with Al Ahram newspaper, based in Cairo.

THE RESEARCHERS

As part of the summer forage project, a number of graduates students received "on-the-job" training. Azza El Husseini introduces four of them.

The first researcher was Mr Soliman Aly Soliman from the Faculty of Agriculture, Ain Shams University. While completing his master's degree on the effect of using different levels of elephant grass in fattening buffalo cows, he was able to prove that this summer forage was sufficient for fattening cattle without needing extra feeds. Experiments conducted on Friesian cows for his PhD produced almost the same results.

Three other researchers are about to present their thesis on elephant grass:

- Mr Kameel Osman Ibrahim from the Faculty of Agricultural Sciences in Zakazik University researched the effect of the new summer forage on milk production and composition while using different levels of concentrates. He assessed the effect on milk yield and weight gain of feeding elephant grass to buffalo, together with different concentrate supplements. He deduced that the new forage is both palatable and nutritious, and could cover buffalo requirements without supplementation.

- Mr Ahmed, from the Faculty of Agriculture, Al Azhar University, tested the effect of the type of ration on buffalo milk yield and composition. He concluded that buffalo fed elephant grass gave higher milk production and more fat content than those fed straw and concentrates. Moreover, he noticed that milk production did not cease on buffalo fed elephant grass, as it did in those fed other foodstuffs.

- Mr Helmy Ghanem from the Faculty of Agriculture, Zarkas University, analyzed the milk properties of dairy cattle fed different levels of dair protein sources. He was able to deduce that feeding lactating cows with elephant grass alone gave approximately the same results as those fed with extra sources of foodstuffs. Elephant grass, say these researchers, could be the only known hope for increasing total milk and meat production in Egypt, and thus increasing total national income.