

FEATURE

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THE NOBLE YAM

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From the Ivory Coast to Cameroon, in the countries bordering on the Gulf of Guinea, no edible plant has a richer social and religious heritage than the yam. In many areas, this delicious tuber remains the only crop requiring special ceremonies for its planting and harvest. It is so closely interwoven into the life of the people of the West African forest zone that a French botanist christened this region "yam civilization".

Births, weddings, deaths, and the inauguration of leaders are all occasions that call for yam dishes, usually prepared from special varieties and according to very elaborate recipes. The demand for yams - one of the oldest foodstuffs in existence - remains constant: witness, for example, the space devoted to yam dishes in the recently published encycopaedia of Cameroonian cooking, Grand livre de la cuisine camerounaise.

Yet, venerable as it may be, the yam has been criticized by a number of African governments. Its production is extremely costly, and the returns are meagre. In Cameroon, for example, it costs over 230 000 CFA francs (\$US 1,150) to plant a hectare of yams, and the grower often has to keep a third of his crop for seed! It is easy to understand the agricultural ministries' reluctance to support such a costly crop, particularly as it requires five or six times as much work as cassava or sweet potatoes. For African agricultural planners, there was no doubt that the yam was doomed to disappear, giving way to other more practical tubers, to which it was only logical to assign production priorities.

But they underestimated the attachment of millions of people for whom yams are the most prestigious of foods. Although it was looked down upon by progressive governments, yam production remained constant. The authorities were forced to acknowledge the error of their ways, and include the enormous tuber - the underground part of which may weigh as much as 60 kg - in their national agricultural programs.

Although it produces only about a million tons annually, compared to neighbouring Nigeria's twelve million tons, Cameroon included the yam in its root crop improvement plan. Mr Simon Ngale Lyonga, an agronomist at the Agronomic Research Institute's Ekona station, at the foot of Mont Cameroun, took charge of the Cameroonian yam program. "From 1959 to 1976, I was up to my ears in yams," he says. "In fact, the government had little choice : one area of Cameroon bordering on eastern Nigeria alone imported 4250 tons of yams in 1965; imports for the country as a whole totalled at least four times that amount."

Under the national root and tuber crop improvement program, Cameroonian authorities plan to increase yam production from the 400 000 tons harvested in 1975-1976, to 1.3 million tons in 1980-1981 - an annual increase of nearly 20 percent. Mr Lyonga, coordinator of the program, says that it is still too early to tell whether this objective is being met, but he estimates that even though the country still imports some yams, it exports just as many, particularly to Gabon.

However, the obstacles to be overcome before cultivation can be profitable are such that the Cameroonians speak of the need to "redesign" the yam. The aerial part of the plant is a vine that must be supported by a stake to obtain an acceptable yield. The demand for firewood, however, has drastically reduced the wood available and yams require some 2500 stakes per hectare! Moreover, as the tubers of some varieties grow nearly a metre below ground, harvesting involves major excavations and precludes mechanization

- short of bulldozers. Finally, enormous quantities of seed are required : growers must plant about 10 000 tuber pieces weighing 375 to 500 grams each, or up to five tons of seed per hectare! All that for a yield of 15 to 50 tons. It is going to take time to "redesign" the yam.

With the yam growers in mind, Mr Lyonga and his team wanted to tackle the most pressing needs first and come up with solutions or strategies that could be applied immediately. First they had to find the highest-yielding varieties. With assistance from Canada's International Development Research Centre (IDRC), 95 indigenous varieties were collected throughout Cameroon, and tested along with 19 other varieties received from the International Institute of Tropical Agriculture (IITA) in Ibadan, Nigeria. Analyses confirmed the relatively high protein content of the yam tuber, particularly of the species *Dioscorea dumetorum* which contains up to 11 percent protein. In addition, *D. dumetorum* yields acceptable crops even without staking, and the tubers do not burrow quite as deeply into the ground. It would be almost the ideal yam if it did not have a tendency to harden quickly and become woody after harvesting : it has to be eaten the same day, preventing commercial use. A chemist is trying to determine precisely why *D. dumetorum*'s carbohydrates turn into indigestible cellulose so rapidly.

While awaiting the development of ideal varieties, the person who made the yam the subject of modern agricultural research in Cameroon is now devoting his efforts to setting up an improved seed distribution network and to producing data sheets on cultivation practices. Mr Lyonga is particularly proud of the fact that, in addition to the department of agriculture's seed multiplication stations, more and more growers are devoting their energies to the production of seed material. Researchers and farmers are working together, reinforcing each other's efforts. "Developing ideal varieties is beyond the means of the national programs," states Mr Lyonga. "It is up to the international centres to produce a yam that

will stand on its own, resist disease, produce a globular tuber near the soil surface, and make better use of solar energy."

Thousands of crossbreeding attempts will have to be made before obtaining varieties that lend themselves to mass production. Having switched from sexual to vegetative reproduction centuries ago, the yam does not bloom. Fortunately, they are now able to induce flowering systematically at such places as IITA, where many promising hybrids have been produced.

Even if an acceptable yam is developed for mass production, small farmers will continue to plant the traditional varieties required by customs that have ensured this extremely demanding crop a prominent place through the ages.

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