

## PolicyPennings by Daryll E. Ray & Harwood D. Schaffer

# Public research on indigenous cereal seed varieties could be a key to increasing food supplies in Africa

With the world's population projected to exceed 9 billion people by 2050, many are concerned to make sure that we have the ability to feed the additional 2 billion people. With this growth as justification, some of those involved in producing genetically modified crops (GMOs) are using this as a means of pressuring those countries, particularly the Europeans, who have resisted the adoption of this technology, to accept the use of these crops. The argument is that only by the adoption of the available technology and using GMOs will farmers be able to feed the additional people who will inhabit this planet in 40 years.

This argument misses the point on several levels. First, GMOs ought to be accepted or rejected on their own merits and using the population increase to push a proprietary technology that will enrich some at the cost of others seems somewhat opportunistic. Second, even if they are proven safe, the acceptance or rejection of GMOs by consumers is not a matter simply of science, but is also a matter of consumer preference and the problem of keeping non-GMOs from being contaminated with GM genetics.

Third, and probably most important for developing countries, is the lack of research, either public or private, on traditional crops that are often the culturally preferred food or used to make culturally preferred foods.

As the US National Research Council (USNRC) authors of the "Lost Crops of Africa: Volume I Grains" write "Africa has more native cereals than any other continent. It has its own species of rice, as well as finger millet, fonio, pearl millet, sorghum, tef, guinea millet, and several dozen wild cereals whose grains are eaten from time to time.

"This is a food heritage that has fed people for generation after generation stretching back to the origins of mankind. It is also a local legacy of genetic wealth upon which a sound food future might be built. But, strangely, it has been largely bypassed in modern times."

Often these crops are ignored in agricultural development projects, not because they are not worthy of attention—they are—but because the researchers are more familiar with the cultivation and production of the world's major grains: maize, wheat, and rice. This leaves a gap that needs to be attended to.

The indigenous grains are usually better adapted to survive the stress of local conditions of weather variability, poor soils, and diseases than the three major crops. In addition, many of these indigenous crops have great storability attributes and provide a level

of nutrition that meets or exceeds those of the major crops.

What is lacking is research. The demand is so localized that major plant genomic companies cannot make any money on the small amount of seed they would sell if they researched the crop. And besides that, most of these crops are grown by subsistence farmers who have little cash with which to purchase seed.

In addition, the support for public research has not been available despite the fact that most of these crops are represented by a large number of landraces, providing the genetic variability needed to establish a good breeding program. For example, while the native varieties of Africa rice that are commonly grown are generally low yielding—less than 1 tonne per hectare, compared to US rice yields of 7-8 tonnes per hectare, there are landraces of Africa rice that yield 5 tonnes per hectare under African weather conditions.

The problem is that these high yielding landraces suffer from shatter and lodging. Both of these are problems that can be solved through traditional plant breeding techniques. What is needed is research. The good news is that the Africa Rice Center is working on this problem.

The bad news is that the money available for this research is limited when compared to what is spent on the major crops. What is needed is the directing of public and private money toward the development of locally adapted varieties of indigenous crops that meet the cultural needs of the families growing them.

As the USNRC authors write, "After the year 2000, it could well be advances in today's 'second tier' cereals that are the buffers against famine. It is they that have the greatest amount of untapped potential.... they are the crops of the poorest countries, which means their improvement could directly benefit the people in the greatest need.... Forged in the searing savannas and the Sahara, sorghum and pearl millet in particular have the merits to become crops for the shifting and uncertain conditions of an overpopulated 'greenhouse age.'"

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