

## Sorghum Variety Macia Released in Tanzania

The improved sorghum variety Macia (SDS 3220) was released on 14 Dec 1999 by the Tanzania National Variety Release Committee. Macia is a high-yielding, early-maturing, white-grained variety developed jointly by ICRISAT and national scientists in southern Africa. It has so far been released in five SADC countries—Mozambique, Botswana (under the name Phofu), Zimbabwe, Namibia, and now Tanzania. It is suitable for areas with a growing season of 3-4 months.

Macia was developed by mass selection in the F<sub>4</sub> generation from material originally developed at ICRISAT-Patancheru (India). The new line, indexed as SDS 3220, was selected by breeders at the SADC/ICRISAT Sorghum and Millet Improvement Program (SMIP) in 1984/85. A series of preliminary and advanced trials at SMIP demonstrated its potential, after which SDS 3220 was evaluated in collaborative trials at multiple locations across the region between 1988/89 and 1990/91. It then underwent multilocal testing in Tanzania for three seasons—1991/92 (7 sites), 92/93 (5 sites), and 93/94 (2 sites). Grain yields of Macia in these trials were 15% higher than those of two released, improved varieties, Pato and Tegemeo. In on-farm trials conducted in northern Tanzania, Macia gave yields comparable to or better than Pato and Tegemeo.

The new variety has several other advantages. It has large heads and a high degree of uniformity. It matures earlier than other improved varieties, and is thus less susceptible to terminal drought. Plants are short, making bird scaring easier. It is also a multipurpose variety, suitable for food, fodder, and other uses.



A smallholder farmer in Tanzania, one of the early adopters of Macia

Macia has white, medium-sized grains, a thin pericarp, and a white pearly endosperm. It produces white flour, which is universally preferred throughout the region. Farmer-participatory assessments have confirmed the grain quality characteristics of the variety and its potential for widespread adoption. Macia also has the potential for improving fodder supplies—it has broad leaves that stay green even after maturity, a key advantage in mixed crop-livestock systems. Analytical laboratory tests by SMIP have shown that Macia has a high SDU value (Sorghum Diastatic Unit), indicating its suitability for malting. Current efforts in the five countries where it has been released are geared towards sustainable production and distribution of seed to farmers.

## Sorghum Ergot—a Sticky Disease Problem in Southern Africa

**D E Frederickson** (INTSORMIL Pathologist, SADC/ICRISAT Sorghum and Millet Improvement Program, PO Box 776, Bulawayo, Zimbabwe)

Ergot disease of sorghum is not new to Africa - the causal pathogen, *Claviceps africana* Frederickson, Mantle, and de Milliano was first recorded in Kenya as far back as 1923. However, ergot disease only began to gain recognition as a potential problem in sorghum production in the 1960s, when all the A-lines in Nigeria's national breeding program became infected, to the near complete exclusion of seed production (Futrell and Webster 1965).

The pathogen has now been recorded in every sorghum-growing country on the continent. By 1997, when it had reached the Americas, Australia, and the USA, ergot disease had gained notoriety as the major biotic constraint to sorghum production globally (Bandyopadhyay et al. 1998). Ergot causes annual losses of 12-25% and 60% in hybrid seed production in Zimbabwe and South Africa respectively.

The pathogen, *Claviceps africana*, is a fungus that specifically targets the sorghum ovary. The spores, or conidia, germinate on the stigma and the germ tubes track down the ovary wall to the distal nutrient supply. Once the fungus has access to this sugar-rich nutrient source there is enormous proliferation of hyphae and almost complete destruction of the ovary to form the soft, white, globose body or sphaecelium. The sphaecelium produces millions more conidia in a sticky exudate called honeydew. Conidia represent the asexual form of the fungus, enabling rapid clonal propagation during the sorghum growing season. Honeydew droplets may collect on the tips of infected florets or may drip to smear the whole panicle or drip onto the leaves or soil.