PC AGRIC 120306

WATER EFFICIENT MAIZE FOR AFRICA (WEMA)

Project Summary Update

The Agricultural Research Council (ARC) is participating in a public-private partnership called Water Efficient Maize for Africa (**WEMA**). The **WEMA** project is aimed at developing and deploying royalty-free, water efficient maize varieties improved using conventional breeding, marker-assisted breeding and transgenic biotechnology, for use by smallholder farmers in sub-Saharan Africa. WEMA products will be drought tolerant white single-cross and three-way conventional and transgenic hybrids that give at least 25% yield advantage under moderate drought conditions compared to 2008 check hybrids. This yield benefit will be further protected by the inclusion of Monsanto's MON810 transgenic event to confer resistance to stem borers thereby enhancing yield stability. This will increase and stabilise maize production and food self-sufficiency at the household level. Drought and poor soil fertility, particularly low soil nitrogen, are the major factors limiting maize production in smallholder farms. South Africa produces surplus maize every year but about 14 million people are food insecure. This highlights the need to improve self-sufficiency at the household level.

The project partners are the African Agricultural Technology Foundation (AATF), the International Maize and Wheat Improvement Center (CIMMYT), Monsanto and national agricultural research systems (NARS) of South Africa (Agricultural Research Council, **ARC**), Kenya (Kenya Agricultural Research Institute, **KARI**), Mozambique (Agricultural Research Institute of Mozambique, **IIAM**), Tanzania (Commission for Science and Technology, **COSTECH**) and Uganda (National Agricultural Research Organisation, **NARO**). The Bill & Melinda Gates Foundation and Howard G. Buffett Foundation are funding the project through a grant to AATF.

Considerable progress has been registered in the product development effort. Experimental hybrids developed using conventional breeding and doubled haploid maize inbred lines are being evaluated in Regional Maize Testing Network of East and Southern Africa in all the partner countries. Preliminary results indicated some promising hybrids that are consistently superior to the commonly grown best checks across locations. The first drought tolerant conventional hybrids are expected to be released in 2014.

The ARC planted its first controlled transgenic (MON87460) drought tolerant maize trials in Lutzville (Western Cape Province) in 2009/10. Monsanto also planted trials at Orania, Hopetown and Delareyville. The results indicated that the early-maturing set had a significant yield benefit with MON87460 of more than 15%. Preliminary data of the first controlled transgenic drought tolerant trials using sub-tropical germplasm planted at Mubuku, Uganda and Kiboko, Kenya in 2010/2011 suggested that the

drought tolerant trait has the potential to significantly increase yields under drought. In addition, the gene does not reduce yield under favourable moisture conditions. Confined testing of transgenic (MON87460) drought tolerant maize hybrids is currently on-going in Kenya, South Africa and Uganda. Commercial release of transgenic WEMA maize hybrids is expected to start in 2017, subject to regulatory approvals.