



AFRICAN AGRICULTURAL TECHNOLOGY FOUNDATION
FONDATION AFRICAINE POUR LES TECHNOLOGIES AGRICOLES

Water Efficient Maize for Africa (WEMA)

Project Collaboration, Intellectual Property & Licensing Background

In January 2008, the African Agricultural Technology Foundation (AATF), the International Maize and Wheat Improvement Centre (CIMMYT) and the Monsanto Company (Monsanto) signed a collaboration agreement to work together, under a philanthropic mandate, to develop and deliver drought tolerant maize adapted to local conditions for use by smallholder farmers in South Africa and by any farmer in the rest of sub-Saharan Africa at a cost that is reasonably within their means.

The collaboration combines the benefits of Monsanto's molecular breeding, genomics and biotechnology platforms, CIMMYT's breeding program and adapted maize varieties, and AATF's expertise in product stewardship, regulatory affairs management and technology delivery. National agricultural research systems in Mozambique, Kenya, South Africa, Tanzania and Uganda are likewise contributing their expertise in breeding, field testing, line selection, evaluating drought tolerant maize varieties and adapted maize varieties. The collaboration applies the two research and development (R&D) engines of breeding and biotechnology, progressing in parallel and ultimately combined to maximize the level of drought tolerance achieved.

Breeding

CIMMYT, Monsanto and the national agriculture research institutes in partner countries are each selecting drought tolerant maize varieties to be used in developing improved varieties through this project. CIMMYT selects maize varieties adapted to African conditions from its established and successful conventional drought tolerance breeding program. Monsanto selects drought tolerant maize varieties from its proprietary germplasm pools around the world to be crossed with African germplasm, which is expected to introduce novel sources of drought tolerance to African germplasm, as well as increase the diversity of the project's overall germplasm collection. Conventional and marker-assisted breeding techniques will be used to increase the drought tolerance achieved in these lines.

Monsanto is using its high throughput marker aided breeding platform, developed over the last 15 years, to analyze the CIMMYT germplasm for quantitative trait loci (QTLs) associated with drought tolerance. All project-relevant QTLs and supporting marker information for QTLs identified in the CIMMYT germplasm are being provided to CIMMYT for world-wide use. CIMMYT is able to publish those QTLs and use them in its development of improved germplasm for the production of white corn, both hybrids and open-pollinated varieties

(OPVs) globally. In addition, Monsanto is licensing certain program-relevant QTLs that are identified in the Monsanto germplasm by the CIMMYT breeding program, to CIMMYT royalty-free for use in its non-profit research programs around the world.

WEMA's breeding work complements and builds on the achievements of another project, the Drought Tolerant Maize for Africa (DTMA) Project which is implemented jointly by CIMMYT and the International Institute for Tropical Agriculture (IITA), supported by national agricultural research and extension systems, seed companies, non-governmental organizations (NGOs), and others. Through WEMA's capacity for doubled haploid generation, new inbred lines based on DTMA germplasm are rapidly developed using the Monsanto proprietary techniques for further use in DTMA and WEMA breeding programs. WEMA will apply tools of marker-assisted breeding to DTMA germplasm to develop new drought hybrid varieties with enhanced drought tolerance for farmers. Drought tolerance transgenic events donated to WEMA may be incorporated into DTMA-developed varieties, contributing additional levels of drought tolerance beyond improvements gained through advanced breeding techniques.

Biotechnology:

In March 2007, BASF and Monsanto announced a long-term joint R&D and commercialization collaboration in plant biotechnology that focuses on the development of high yielding crops and crops that are more tolerant to adverse environmental conditions such as drought.

BASF and Monsanto are jointly donating to the WEMA partners up to four commercial track drought tolerance transgenic events from their collaboration. The drought tolerance event(s) will be introgressed into inbred lines from the WEMA breeding program destined for hybrid seed production. The resulting WEMA transgenic drought tolerant maize will be evaluated for performance, in terms of both agronomics and drought tolerance, in the environment of Sub-Saharan Africa.

It is anticipated that the drought tolerance transgenic event will contribute additional levels of drought tolerance under moderate drought conditions beyond the improvements gained through advanced breeding techniques.

Licensing:

The WEMA partners intend to make the products of the project broadly available to smallholder farmers in South Africa and by any farmer in the rest of Sub-Saharan Africa at a cost that is reasonably within their means through multiple seed producers. The collaboration agreement incorporates the relevant research and commercial licenses necessary to develop and eventually deliver project outputs to the intended beneficiaries.

In the agreement, CIMMYT and Monsanto respectively grant to AATF a personal, non-transferable, non-exclusive, fully paid-up, royalty-free license to each of the drought-tolerant maize lines to be developed in the project. CIMMYT and Monsanto also give AATF the right to grant royalty-free sublicenses to seed companies and other such entities that are able to deliver the same to smallholder farmers in South Africa and by any farmer in the rest of sub-Saharan Africa at a cost that is reasonably within their means.. The sublicense from AATF to a seed producer will include specific requirements to provide appropriate quality control and stewardship of the product.

The royalty-free license to and from AATF underscores the charitable nature of the collaboration as the project partners will not receive any payments from seed companies for the drought tolerant maize lines incorporating their intellectual property (IP) protected subject matter such as genes, promoters, etc. (see the WEMA Frequently Asked Questions for further elaboration of this point http://www.aatf-africa.org/wema/about_the_project/faqs/en/). Thus, the project partners expect that pricing by seed companies will not be influenced by the requirement to pay trait royalties, and that farmers in Africa should be able to purchase WEMA varieties at more or less the same price as regular non-WEMA maize varieties.

A seed producer will be able to sublicense inbred lines from AATF to make non-exclusive hybrids or sublicense individual inbred lines from AATF to cross with one of its own inbred lines to make producer-specific hybrid seed. All the resulting hybrid products will be required to provide sufficient drought tolerance to meet the product concept defined by the Partners and to meet recognized seed quality standards.

AATF will provide regular updates on the progress of the project for interested stakeholders.

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