Dharwad Declaration 21th June 2011

Disappearing non-GM cotton – ways forward to maintain diversity, increase availability and ensure quality of non-GM cotton seed

This declaration is made at the national workshop on 'Disappearing non-GM cotton – ways forward to maintain diversity, increase availability and ensure quality of non-GM cotton seed', organised by bioRe India (Ltd), the Research Institute of Organic Agriculture (FiBL Switzerland) the University of Agricultural Sciences Dharwad (UASD) and supported by other stakeholders. Scientific guidance was given by Dr. S. S. Patil and his team (UASD) who have many years of experience and an outstanding reputation in cotton breeding.

Cotton, a cash crop of India's rural economy is livelihood of about four million farmers. The adjacent textile industry employs another three million persons. In 2008, India has become the second largest cotton producer just after China. While seed cotton yield levels were rather modest (270 kg/ha) after independence, they steadily increased and reach on average up to 1820 kg/ha. The success of cotton improvement can mainly be associated to the coordinated efforts of farmers, breeders, agronomists, entomologists, pathologists and physiologists. Their commitments lead to the release of the world's first intra-specific *Gossypium hirsutum* hybrid cotton (HYBRID-4) in 1971. Besides indigenous Desi cotton varieties are native to India and provide sought-after characteristics such as hardiness, pest resistance and drought tolerance. Despite, this area under Desi cotton is fast declining. Nowadays Indian farmers grow 90% hirsutum, mainly hybrids, of which 90% is GM cotton. Thus, Desi cotton will only survive if yields and fibre quality will improve and the maturity period reduced. During the last two decades organic cotton production has gained increasing interest worldwide, but especially in India. The country has become the world's largest organic cotton producer. Up to 80% of world's organic cotton is reported to be produced in India. Also the global market for organic cotton products increased from 1.97 to 4.3 billion USD in 2007 and 2009, respectively. However, this market is threatened by the erosion of conventional varieties by GM cotton. Since the market for non-GM seed has become completely eroded, there is little interest by private seed companies to further invest in this sector. On the other hand, farmers have lost their traditional knowledge on seed production. Hybrid seeds have to be purchased each season and therefore cotton farmers depend today on a diminishing supply of non-GM cotton seed. Recent experience has been that available non-GM seeds has dubious quality (expired, chemically pre-treated, segregated) and based on only a few hybrids selected for responsiveness to fertilizer and chemical pest control that might not be adapted to their rain-fed, low input conditions. Moreover, there is a big risk of physical and genetic contamination of organic cotton with GM cotton and the loss of locally adapted genetic resources.

Breeding cotton varieties and hybrids to suit different agro-ecological regions and providing quality cotton to meet the needs of the cotton sector has always been the priority of cotton breeders in India. The University of Agricultural Sciences, Dharwad has been a pioneering institute involved in developing cotton varieties and hybrids for over a century. The university has thus some of the best Indian cotton breeders and the greatest cotton germplasm bank in India. The disappearance of non-GM cotton in India and the awareness for genetic erosion convinced concerned stakeholders of the organic movement to give high priority to this issue.

The participants jointly declare that immediate action is needed to improve seed availability, seed access and seed quality of non-GM cotton varieties adapted to organic and low input conditions. In particular we support activities in the following areas:

Collaboration and exchange:

- Gathering and facilitating exchange of information, techniques and genetic material among stakeholders;
- Pooling volume of producers seed demand and try to attract public and private cotton seed companies and organize an annual meeting to update on seed quantity needs;
- Promoting public-private partnerships for non-GM cotton and the active involvement and collaboration of public cotton research, pre-breeding, breeding and multiplication with organic cotton producers, processors and private seed companies;
- Forming a forum consisting of project heads, NGOs, farmer groups and other stakeholder to do policy advocacy.

Desired Policy Changes:

- Focusing policy and public research on conservation, multiplication and breeding of non-GM seed;
- Installing a board for organic cotton with financial and implementation powers;
- Continuing dialogue with policy makers;
- The provision for the safe guard of organic farmer from contamination of GM crop has to be included in the seed act;
- Declare ecologically sensitive zones (i.e. around national parks) GM-free.

Evaluation and multiplication of existing cotton varieties under organic and low input conditions:

- Local testing and multiplication of existing non-GM cotton varieties on-station and on-farm under various conditions;
- Maintaining and utilising of genetic diversity of non-GM germplasm in situ, especially of Desi cotton, to be prepared for future challenges of climate change.

Establishing and optimizing the non-GM cotton seed value chain:

- Implementing stringent preventive measures to avoid physical and genetic GM contamination;
- Identifying specific non-GM areas for seed production;
- Installing seed quality testing that can be implemented by farmers organizations, including test for GM contamination;
- Establishing seed data base on availability of seeds and results from variety trials, especially fibre traits under different growing conditions;
- Training farmers in seed multiplication, processing and storage;
- Empowering farmers and farmer groups to set up own seed business;
- Bringing valuable germplasm of public institutions to farmers' fields.

Continuous improvement of non-GM varieties:

- Breeding non-GM cotton for high and stable yield and tailor-made quality for rain-fed low input conditions in isolation from GM fields;
- Promoting participatory breeding approaches including breeders, farmers, researcher, processor, seed traders and spinning industry;

- Taking special attention for local adaptation, nutrient and water use efficiency, natural mechanisms against pest and diseases, niche markets and extreme weather events;
- Utilizing broad germplasm including the indigenous Desi cotton and other Gossypium species;
- Improving also inbred seed varieties for the option of farm saved seeds;
- Releasing varieties explicitly for organic and low input;
- Training farmers to produce their own seed.

To achieve these goals we join forces and partner in non-GM cotton seed issues to secure non-GM seed availability and genetic diversity over long-term.

Dharwad, 21 June 2011

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