

Molecular breeding for developing countries: Summary report of the ABDC-10 parallel session¹

Facilitator: Jean-Marcel Ribaut, Switzerland

Panel Members: Roberto Tuberosa, Italy; Dave Hoisington, USA; Carmen de Vicente, Spain

Rapporteur: Nicolas Roux, France

Participants: approximately 60 from a number of countries

The session was well attended, with around 60 participants and facilitated by Jean-Marcel Ribaut, Director of the Generation Challenge Program. The session started by the facilitator reminding the participants that ‘molecular breeding’ is perhaps not the most appropriate terminology since it sounds technology driven and appears in conflict with conventional breeding. Therefore, it was suggested to use ‘modern breeding’ to describe the use of genomic tools in breeding. Three presentations were given to provide background information and stimulate discussion. The first presentation laid out the overall strategies and options for the application of molecular technologies in breeding. The second discussed opportunities for providing molecular technology to research and breeding programs via technology platforms and regional genotyping/biotechnology laboratories located in developing countries. The third presented studies on the potential impacts of molecular-based breeding and examples for capacity building and communities of practice toward the use of genomics in breeding.

From the presentations it was clear that there are several opportunities for scientists in developing countries to access large-scale marker services. Thus, there is less need now to consider major investments in in-house technology. The need is now to build the capacity of scientists/breeders in developing countries to better understand how best to apply genomics in their programs, including data interpretation and management.

The session was then opened to the participants for comments and discussion. A first point raised in the discussion regarded the potential for intellectual property rights (IPR) to affect the ability to use molecular markers in breeding. In general, molecular markers are not patented, although some cases are known. In addition while some institutes, even in the public sector, seek IPR on genomic technology, many of these do this to keep the technology in the public domain and make such technology freely available, especially to developing countries. There was also a feeling that with the advent of large-scale genomics, less IP protection is being sought on the technology itself; however, the critical knowledge (eg, about the linkage between a trait and a marker) is often not disclosed.

A few of the participants presented cases where national governments are supporting the establishment of national biotechnology laboratories, especially where the breeders/researchers are convinced of the potential impact of the technology. Some of these national facilities are interested to provide services on a regional basis as capacity grows and the need increases.

While genomic resources are perhaps more advanced in animals than in plants (as presented in the previous session), there was a comment that there is a limited ability within the animal breeding community of many developing countries to actually promote the use of modern technology as compared to the plant community. Unfortunately, the session lacked sufficient

¹ This is the summary report of the parallel session organized by the Consultative Group on International Agricultural Research (CGIAR) on the second day of the FAO international technical conference on Agricultural Biotechnologies in Developing Countries (ABDC-10) that took place in Guadalajara, Mexico on 1-4 March 2010 (<http://www.fao.org/biotech/abdc/parallel/en>).

expertise in the animal sector to properly evaluate if this was a correct observation; however, there is a general lack of ability of breeders in all species to effectively use genomics.

Finally, enhancing the capacity of researchers and breeders in developing countries to understand when and how to use genomics in their program is a clear need. A 'tsunami' of genomic data and information is coming. Therefore, effective data management and analysis systems will be critical and could become a major impediment for scientists in developing countries to optimally use genomics. Efforts should be initiated to ensure that the power of genomics is not lost as an option to improve the global food and nutritional security.