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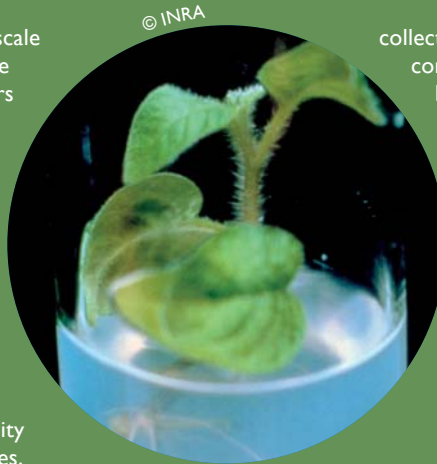
SPECIAL ISSUE ON PARTNERSHIP

From Brazil to Europe:
10 years of Labex Program,
EMBRAPA's laboratory without walls

Together in the Challenge Program Generation

'Challenge Programs' are large-scale transversal programs that enable 15 international research centers of the CGIAR Consortium to work together on the same theme. They are also intended to strengthen partnerships between CGIAR and research institutes in industrialized and developing countries.

The 'Challenge Program Generation' (CPG) is focused on genetic resources, the diversity of crop plants and related species. It aims to facilitate the use of a larger proportion of the diversity available in *ex situ*



collections (genebanks) via genomics (especially comparative genomics) and molecular biology technologies. CPG devotes research to abiotic stresses, especially plant drought tolerance.

As genomics is one of the themes selected by Labex-Europe, many projects have involved Brazilian and French laboratories, thus contributing to the increased development of Franco-Brazilian collaboration.

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Genetic resources, genome analysis and varietal improvement of groundnut

The cropped groundnut species is an allotetraploid resulting from a recent hybridization between two wild diploid species, which led to reproductive isolation of the cropped species from other species. The resulting genetic base is narrow, thus limiting the impact of breeding on responses to the main cropping constraints. In 2004, CPG funded a 3-year project (collaboration EMBRAPA, UCB, CIRAD, ICRISAT, CERAAS, IBONE and Aarhus University collaboration) aimed at:

- breeding synthetic wild varieties with the same ploidy level as the cropped species in order to gain access to the diversity of the wild compartment,
- developing the molecular tools required for studying the genome and implementing modern breeding approaches.

Synthetic varieties of wild origin developed by EMBRAPA were transferred to the groundnut development program of ISRA (Senegal). Scientific exchanges between EMBRAPA and CIRAD have resulted in the development of genome resources (BAC libraries) specific to the two wild species.

With the support of CPG, the partnership was continued through scientific visits, exchanges of plant material and supervision of a doctoral thesis. The resulting germplasm and molecular tools led to an approach involving marker-assisted selection and genetic analysis. A population of chromosome segment substitution lines was developed which renewed the genetic base of the cropped species and led to the identification of genome zones involved in the expression of characters of agricultural interest. This new germplasm provides opportunities for rapid



▲ Emasculation of a groundnut flower during manual crossing for backcross purposes..

improvement of the species cropped in dryland areas. Characterization of this material in a broad range of environments and its use for breeding purposes is ongoing in a broader CPG-Bill & Melinda Gates project framework.

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