



TECHNICAL SESSION-II: AgriAsia. Enabling technologies in Agribiotech

Transgenic crops: potentials for crop improvement

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During the last decade the use of genetically modified crops in agriculture has experienced a constant increase worldwide. The last ISAAA report¹ points to a 15% increase in the total cultivated area dedicated to biotech crops from 2007 to 2008. After the positive effect of the use of biotech crops on yield and production has been demonstrated, each year new countries from all over the world are embracing plant biotechnology products. While United States and some European and South American countries have been using genetically modified crops for several years, African and Asian nations have just recently gained access to this technology. For farmers in developing countries biotech crops offer the possibility to alleviate poverty and obtain higher economic benefits from agriculture.

The first generation of biotech crops included herbicide and pesticide tolerant crops that increased yield and production. While this first generation of genetically modified crops is characterized by a single gene addition, the second generation of biotech crops includes plants with more than one new trait thanks to the gene stacking technique where more than one gene of interest is inserted. Among the desired characteristics for the new generation of biotech crops we can include an increase in yield, the tolerance to different abiotic and biotic stresses as well as improved quality. From an environmental point of view biotech crops can contribute to a more sustainable agriculture meaning a lower use of chemicals, soil status improvement, higher air and water quality and use of conservation tillage practices among other positive effects. With the world population projected to be 9 billion by 2050 and the depletion of energy resources, biotech crops with higher production per area will have a special interest due to their economic and environmental benefits for food and energy production. In this sense, Iden Biotechnology has developed new plant varieties expressing different plant and bacterial genes. These genetically modified lines show higher biomass yield and starch content in field experiments meeting two important objectives of biotech crops use: higher yields and better crop quality.

¹James, Clive. 2008. Global Status of Commercialized Biotech/GM Crops: 2008. *ISAAA Brief No. 39*. ISAAA: Ithaca, NY.

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Mrs. Xana Belastegui graduated from the University of the Basque Country (Spain) in 2000 with a degree in Biological Sciences and holds a Ph.D. in Biological Sciences since 2004. Since she graduated, Mrs. Belastegui has been developing her scientific career in public institutions both in Spain and abroad. She developed her doctoral studies in physiological and agronomic aspects of plant nutrition at the University of the Basque Country. During this period she participated in several national projects in collaboration with universities and technological centres. In 2005 she widened her plant molecular biology knowledge thanks to a postdoctoral stay at the Technical University of Darmstadt (Germany) collaborating in several projects on the plant parasites and plant aquaporins field.

In 2007 Mrs. Belastegui joins the R&D Department of Iden Biotechnology, company created in 2005 and whose main activity is the generation, development, transfer and market of biotechnological knowledge in the agrobiotechnology and microbiotechnology fields. Since then, she has been related to this department initially as R&D Lab Manager and lately as R&D Director.

Increasing the transfer of technology from public and private research institutions to the private sector is the main objective of the company. In this sense Iden promotes an active collaboration between academia and industry acting as a technology transfer interface and participating in the development of R&D projects. Since its creation, Iden has developed, and continues to enlarge, a patent portfolio of technologies of interest for diverse sectors like agriculture, seed producers, biofuel industry, biomaterials producers or pharmaceutical industry among others.