



# Editorial

## Organotransgenesis arrives

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Much has been written about the vast field of biodiversity and agriculture; if you include related social sciences, a few quick search moves easily find well more than 9500 references, most of them published in peer reviewed journals. In nature conservation circles, it has become clear that optimal plant and animal protection cannot be reached by neglecting the major factor: agricultural production. This is especially important in regions with an important percentage of agricultural production on all inhabited continents. Conservation efforts are paying off particularly in regions with a highly productive industrial agriculture where ecological and also socio-economic insights are often neglected. This is where a trend towards a better integration of biodiversity conservation makes most sense. This cannot be achieved by regressing to old-fashioned production schemes of small holder agriculture, as some eco-romantics advocate, because it is unethical to stress eco-friendly production in poor countries at the cost of the livelihoods of smallholders, where the ultimate priority would be to come swiftly to better production figures to fight dramatic hunger situations. This does not mean that much higher yields should be reached at the excessive cost of environmental deterioration and in addition it is equally important to focus not only on higher yield but also on the socio-economic side of enhancements.

This can only be achieved through a serious commitment to deliver innovation in agriculture. Plant biotechnology is widely acknowledged as a key resource for environmentally responsible and sustainable plant productivity practices. International organisations such as the WHO and FAO cite genetically modified crops as an important component of programmes for sustainable agricultural development and poverty alleviation. Indeed since the first commercial plantings in 1996, there have been extensive documentations of the impact of GM crops in terms of land use, crop varieties, quality and quantity of food, environmental benefits, socio-economic development in neglected rural areas and health. As the technology matures further, new crop varieties will be developed to conserve more resources, such as water, land and energy. Most notably, crops with improved ability to tolerate periods of drought and other water-related stresses will be invaluable to both food security and the environment in the long term.

Now we need new paradigms of agriculture, which take into account the best from many different production strategies, including some practices in organic farming, which has its advantages, not in the ideologically steered exclusion of innovative agricultural technologies, but in taking very seriously socio-cultural aspects and integral views, among them landscape

quality. In the concept of Organotransgenesis, there is no place for a sterile ideological warfare between biotechnology and eco-agriculture; rather the reverse, there is a necessity to forget the contrasts and urgently work together for the sake of humanity and nature and create synergies.

In a first publication in this journal (*New Biotechnology* 25:101–107, 2009), the analysis of such new paradigms revealed that there are ample reasons, even in accordance with most of the official rules of organic farming, why certain transgenic crops could well fit into new agricultural practices. In the second part of the analysis in this issue, it can be demonstrated that some organic practices could very well be adopted by hi-tech agriculture; indeed, they actually fit well into modern concepts of high-yield agriculture, especially when it comes to the adoption of biodiversity-friendly landscapes. Moreover, new insights in resistance management – by introducing a concept of crops with stacked genes or even better by introducing seed mixtures of modern traits, which could be assembled with the help of new knowledge in community ecology and adapted to local needs – might be a way forward. Finally, a future oriented and dynamic concept of sustainability is introduced, taking into account innovative agro-ecological, social and evolutionary management systems.

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