Governing Agrobiotechnology in South-East Asia

Challenges for a common regulatory and economic framework on agrobiotechnology

South-East Asia is breaking through the international agricultural market with its continuous investments in agrobiotechnology. Since its economy is strictly linked to agriculture and due to its need to face important issues typical of developing countries, South-East Asia has been investing in agrobiotechnology to fit itself in with the trend of economic growth by the use of genetically modified organisms.

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A glimpse of regulation and biosafety issues on agrobiotechnology

South-East Asian countries (Indonesia, Malaysia, Singapore, Thailand, Philippines, Brunei, Cambodia, Vietnam, Laos and Myanmar) understood almost 45 years ago that by working together they could have reached more goals in various directions; for these reason, in 1967 the Association of South East Asian Nations (ASEAN), a geopolitical and economic organization that today includes all South-East Asian countries, was founded. The main focus of the association was to improve economic growth, social progress and cultural development and to create peace and stability in a stable external environment. Few years later, due to the crucial role of the food production and supply sector, ASEAN members decided to collaborate in this field, and subsequently on agriculture and forestry.

In 1997, Singapore made a proposal for harmonizing guidelines for products of agricultural biotechnology in the ASEAN countries. The ASEAN Guidelines on Risk Assessment of Agriculture-Related Genetically Modified Organisms, endorsed in 1999 during the 21st meeting of the ASEAN Ministers of Agriculture and Forestry, are the most important document concerning regulation of agrobiotechnology in the region (ASEAN, 1999). It is based on the idea that having a common understanding and a global strategy on issues related to transgenic food and crops can help ASEAN Ministers in making scientific evaluations on the applications for releasing genetically modified organisms into the environment or on the market.

Biotechnology applied to agriculture, in fact, is seen as a powerful tool to increase agricultural productivity, improve the quality of crops and derived food and give a new propulsion to the economic system; therefore, finding a common ground to manage and obtain the best out of it seems the only strategy to succeed in an area where agriculture plays such an important role for so many people.

According to the international regulation assessed by United Nation agencies – Food and Agricultural Organization (FAO), World Health Organization (WHO) and the Organization for the Economic Co-operation and Development (OECD) – the safety assessment principles and standards applied for conventional food should be applied also to genetically modified crops and derived food (ASEAN-ILSI, 2001), (FAO, 2008). It is undoubtedly known that any novel food is evaluated through a comparison with its traditional counterpart, to check the presence of any new or altered hazard that could affect health or to verify any possible change of the nutritional status of the product due to the modification (Substantial Equivalence).

ASEAN countries, however, have different approaches towards the agrobiotech field and thus towards development of policies on biosafety and food safety related to agrobiotechnological products.

South-East Asian countries' policies can be divided in two groups, according to their level of development of genetically modified products and biosafety issues. The first group includes countries that have yet to develop a policy on genetically modified organisms (GMOs): Cambodia, Laos, Myanmar and Brunei. The second group is composed by Indonesia, Malaysia, Philippines, Thailand, Vietnam and Singapore, all countries that exercise regulation on GMOs, either through their existing systems or new regulations. In many cases, new decrees of regulations entered into force only recently, changing the landscape of the regulation in some of those coun-

tries. Although all the ASEAN countries ratified the Convention on Biological Diversity, some of them still do not have the capacity to develop and manage biosafety clearing-house mechanisms. It seems evident that their main priority should be the implementation of national biosafety legal framework followed by the harmonization of the different measures put in force in the area.

Economic considerations

Agrobiotechnology poses great challenges for the global economy, either we consider the debate in Europe and USA or the upcoming situation in developing countries around the world. In South-East Asia agrobiotechnology is still moving its first steps and not many transgenic products (if any) have reached the commercialization phase yet. We however have data to make some considerations.

The global market of agrobiotechnology has been growing in the past years despite the effects of the economic crisis and the choice to devote huge agricultural areas to the biofuel sector. Esteems from the International Seed Federation report that the global seed market accounted for 36.5 billion USD in 2008 (International Seed Federation 2008) and for 37.02 billion USD in 2010 (20,3% of it in China and India – data updated to August 2010) (International Seed Federation 2010). The same trend can be observed in cultivation of transgenic crops, which increased significantly in 2009 (a total of 134 million hectares worldwide; 60,7 million hectares cultivated in the most relevant developing countries, namely Brazil, Argentina, India, China, Paraguay, South Africa, Paraguay and Bolivia) (James 2009). Promotion of agricultural innovation and improvement of R&D in South-East Asia has been the focus of multilateral and regional institutions, like ASEAN, Asia-Pacific Economic Cooperation (APEC), South Asian Association for Regional Cooperation (SAARC), but also like International Rice Research Institute (IRRI), International Centre for Genetic Engineering and Biotechnology (ICGEB) or Rockefeller Foundation as well. They launched many R&D collaboration programs, personnel training, research in both basic and applied science (main focuses are rice or development of varieties for semiarid regions) not to mention their attention to the improvement of biotechnological clusters and joint research. What is missing, however, is the integration of these measures into a broader policy framework or strategy for the development of agrobiotechnology. In terms of private investments, they are mainly linked to the most relevant western companies working in this field: local biotechnology industries involved in R&D, in fact, are still not competitive on the international market, since their size is typical for small or medium enterprises. So far, there is no venture capital investment in biotechnology, although technology partnerships are starting to become common in countries like Singapore or Malaysia.

Conclusions

South-East Asian countries has been working very hard to become competitive in the international market of agrobiotechnology. However, different level of economic development, lack of specific funding and limited number of qualified human resources could be an obstacle for the full regional cooperation and the adoption of a common strategy. Undoubtedly, some issues should be taken into consideration.

A well-developed bio/agrobiotechnology R&D industrial system takes time, funding, well-trained personnel, regional and international cooperation and the understanding of the challenges posed by the globalization of science and technology. However, all these aspects must be coherent with a well-developed regulatory framework and strategic policy; in particular, biosafety measurements must be put in force in the broader frame of the international regulatory system. Indeed, governments and policy makers should not forget issues as intellectual property rights, the role of rural labour – specifically in developing countries – the pressing of private research versus the public one, public acceptance and attitude towards agrobiotechnology. Including socio-economic and cultural considerations in the decision making process, in fact, is particularly challenging and requires attention by the governments in order to become part of the international market.

Bibliography

• ASEAN (1999): ASEAN Guidelines on Risk Assessment of Agriculture-related Genetically Modified Organisms (GMOs). Association of South East Asian Nations. Retrieved from http://www.asean.org/6226.htm

• ASEAN-ILSI (2001): 1st ASEAN-ILSI Training Workshop on Safety and Risk Assessment of Agriculture-Related GMOs. Association of SouthEast Asian Nations, International Life Sciences Institute.

• FAO (2008): GM food safety assessment – tools for trainers. Food and Agriculture Organization of the United Nations.

• International Seed Federation (2008): Estimated Value of the Domestic Seed Market in Selected Countries.

• International Seed Federation (2010): Estimated Value of the Domestic Seed Market in Selected Countries.

• James, C. (2009): Global Status of Commercialized Biotech/GM Crops: 2009 (ISAAA Brief No. 41). International Service for the Acquisition of Agro-Biotech Applications. Ithaca, New York. ■