

Biosafety management of genetically modified insects in China

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Genetic engineering is one of the most powerful twenty-first century technologies, and its use is driving the new green revolution in agriculture. Due to the relatively limited agricultural resources in China, the use of genetic engineering technology is particularly important for improving agricultural productivity. Therefore, China is making great efforts for development and use of genetically modified organisms (GMO) to boost agricultural productivity. In particular for insects, Chinese scientists have achieved a great progress on transgenic insect researches, such as transgenic corn borer for pest control and silk worm for silk industry. To ensure the safe use of GMOs, biosafety risk assessments from both environmental and food/feed safeties are required as an important part of the regulatory oversight of such products. According to China's regulations, any GMO product has to be subjected to a rigorous pre-market risk assessment, which is a pre-requisite for the regulatory decision whether to approve or not to approve GM events for cultivation, human food, or livestock feed use. To facilitate regulatory decision-making and guarantee the safety of GM events before commercialization, biosafety regulation from laboratory research to approval for use of a novel GMO event is divided into five stages, namely: laboratory research, pilot testing, environmental release field testing, preproduction testing, and application for biosafety certificates. However, the present guidelines mainly came from the case studies of GM crops such as insect resistance and herbicide tolerance crops. It is necessary to establish a special regulatory frame on engineered insect for promoting the safe and effective deployment of this new technology.