

## **Global status of transgenic sugar beet and its advancement in Iran**

**Peyman Norouzi<sup>1\*</sup>, Morad Jaffari<sup>2</sup>, Behzad Ghareyazie<sup>3</sup>, Mohammad Ali Malboobi<sup>4</sup>, Mohammad Reza Rezapanah<sup>5</sup>**

1- Sugar Beet Research Institute of Iran,

2- Uromiyeh University

3- Agricultural Biotechnology Research Institute of Iran

4- Institute for Genetic Engineering and Biotechnology

5- Plant Protection Research Institute

\* Corresponding Author, Email: norouzi@sbsi.ir

### **ABSTRACT**

**G**lobal status of sugar beet transformation for enhanced biotic stress tolerance is reviewed. Biosafety concerns related to deliberate environmental release and commercialization of genetically modified (GM) sugar beet are discussed. Status of production of GM sugar beet in Iran is also reviewed. A case study of enhanced insect tolerance in sugar beet is presented. A *cry1Ab* gene under the control of two different PEPC and CaMV35 promoters was transferred to sugar beet using biolistic transformation method. Insect bioassays for T<sub>0</sub>, T<sub>1</sub> and F<sub>1</sub> generations against 3 different insect pests (*Prodenia*, *Caradrina* and *Agrotis*) were conducted. Results show significant enhanced tolerance among T<sub>0</sub>, T<sub>1</sub> and F<sub>1</sub> progenies against the tested insect pests in comparison to their non-transgenic counterpart.

### **Key Words**

Sugar Beet, *cry1Ab*, *Prodenia*, *Caradrina*, *Agrotis*, Genetic Engineering.