Genetically Engineered (GE) Herbicide-Tolerant Gene Detected on Local Soybean of Indonesia

Genesiska 1¹, Rachma Camelia Suratmi 2¹ {genesiska@umy.ac.id1¹, rachmacamelias@gmail.com2¹}

(Departement of Agrotechnology, Faculty of Agriculture, Universitas Muhammadiyah Yogyakarta, Indonesia. 55183)

Abstract. Fifty percents of soybean in Indonesia has been imported from the United States. Most of 94 % imported soybean was genetically engineered soybean. In meanwhile, products of Genetically Modified Organism (GMO) of Indonesia were not labeled yet in the market packaging products. This aim of the study study was to detect EPSPS-CP4 gene which potentially indicates of transgenic gen of soybean in order to help Indonesia to implement government regulation on label and food advertisement and fulfill consumer right. The result indicated that the local soybean also contained Genetically Engineered (GE) herbicide-tolerant gene called EPSPS-CP4 gene of transgenic soybean by using Polymerase Chain Reaction (PCR) method. Those Local soybeans brand name sold in the market were *Lokal, Galunggung,* and *Wonosari.*

Keywords: Consumer Right, Genetically Engineered, Herbicide-Tolerant Gene, Local Soybean

1 Introduction

Soybean is a raw material of food products after rice and maize. In Indonesia, productivity of the commodity only 1.3 tons/ha in meanwhile the potential of production might reach up to 2.0 - 2.5 ton/ha. Every year, production of *Témpe* required at least 1.85 million tons of soybean as well as soy and *tauco* products spent at least 8.32 tons of soybean [1]. However, production of soybean in Indonesia only reached 65.61 % for domestic consumption. Thus, national security of soybean was up to 35 % solved from import of soybean [2]. Instability of soybean production in Indonesia happened due to decreasing of harvesting area was not equal to increasing of soybean production [3].

Export rate of Indonesia decreasingly up to 5, 92 % from 1961 to 2012. Unbalance of production and consumption of soybean affects high import rate of soybean every year. Import rate increases up to 0, 05 % per year. Fifty percent of soybean import in Indonesia originated from United States cultivar. Most of 94 % of soybean production and consumption from United States is transgenic soybean [2]. Transgenic soybean called genetically modified soybean seeds for food production has been used continuously throughout the world [4].

Commonly, engineered transgenic plant is designed to have resistance to the herbicide in order to gain agricultural efficiency improvement. The broad-spectrum herbicide called Roundup Ready has the active ingredient namely Glyphosate. The herbicide ingredient known