IPBB

PROCEEDINGS

of the 4th International conference

"PLANT GENETICS, GENOMICS, BIOINFORMATICS AND BIOTECHNOLOGY"

(PlantGen2017)

Best Western Plus Atakent Park Hotel

May 29 – June 02, 2017,
Almaty, Kazakhstan

POSTER SESSION

TRANSFER OF TRANSGENES TO VARIETIES AND RELATIVES OF RAPESEED

K.Zh. Zhambakin, M.Kh.Shamekova, A.K.Edilova

Institute of Plant Biology and Biotechnology, Almaty, Kazakhstan

Email: zhambakin@gmail.com

Aim of the study: The cultivation of genetically modified (GM) crop varieties leads to the transfer of transgenes to other plants as a result of cross-pollination. As a result of increasing environmental risks, for which the possible significant change to biodiversity of wild flora and fauna, as well as agro-technical risks, such as decline in biodiversity among cultivars, and change of the properties of non-target qualities of varieties, the appearance of super-weeds. In addition, among the possible consequences of cross-pollination with transgenic plants an increase in the invasive potential of hybrids and weed and disappearance and assimilation of wild species are indicated.In this paper we studied the possibility of gene transfer from GM rapeseed to non-GM oilseed rape varieties and their wild relatives.

Materials for the study were GM Chris rapeseed cultivar *(Brassica napus)* with reporter gene 2GUS35S115x3GUS, derived from transgenic plants of 2015 rapeseed varieties Chris *(Brassica napus), Brassica juncea* Rocket variety *(Brassica juncea),* Golden and wild rapeseed varieties *(Brassica campestris),* and shepherd's purse *(Capsella bursa-pasroris).* Experiments were carried out for 2 years (2015 and 2016). In a study of transgenes transfer experimental design was used, in which the central portion is surrounded by areas of GM with non-GM rapeseed.In a study in the first year of a central plot contained transgenic rapeseed Chris *(Brassica napus)* with 2GUS35S115x3GUS genome which was surrounded by several groups of non-genetically modified rapeseed plants at a distance of 1-10 meters. The first round of non-transgenic plants - the recipient was divided in the form of sectoral areas. On the experimental plot of the 2nd year (2016) rapeseed colza and mustard, as potential recipients sown oriented to the cardinal points (North, South, East, West, North-East, North-West, South-East and South-West). Rapeseed was sown sector, and rape and mustard rays at 18.3 meters from GM plants.After harvesting, the samples were screened on kanamycin, followed by an analysis of the seeds in the presence of a foreign gene in the studied varieties. Seeds were plated on a Petri dish with nutrient medium containing 50 mg / l kanamycin.

Analysis of the results showed the presence of cross-breeding between GM and non-GM varieties of oilseed rape. A significant effect of environmental conditions was revealed, depending on the year of cultivation. It was determined that the hybridization level of the transgenes in the 1st year amounted to 4.8% of the rapeseed *(Brassica napus),* 1,3% of mustard *(Brassica juncea),* and 0.9% with rapesedd*(Brassica campestris).* In the 2nd year cross-pollination with transgene was 22.5% for the rapeseed (Brassica napus), 7,8% for mustard *(Brassica juncea)* and 6.8% for high-quality summer rapeseed *(Brassica campestris).* Hybridization with shepherd's purse *(Capsella bursa-pasroris)* and wild rapeseed were not found. At the same time, the largest cross-pollination with transgenic canola rapeseed varieties at a distance in the first year, from 2 to 7 meters, and in the second year, from 2 to 13 meters.

These studies are carried out within the framework of funding for Kazakhstan scientific technical program 0.0677 "Development of biotechnological bases for the creation and monitoring of genetically modified plants with improved economically valuable traits" for 2015-2017.