



Steering Committee Meeting 18th October 2017 Findings of unauthorized GM petunia and actions to terminate the release



GM petunia have entered the EU market

- GM petunia have not been approved for commercial release in the EU and therefore must not be marketed
- In April 2017 the Finnish competent authority (EVIRA) informed on orange coloured petunias, that were removed from the market
- Due to their distinctive orange blossom colour, which is untypical for petunia, plants of different tradenames were tested for genetic modifications.



Origin of the GM petunia detected by EVIRA

<u>Tradename:</u>	<u>Breeder / Trade:</u>
Pegasus Orange	grower/nursery, Münster, NRW
Pegasus Table Orange	grower/nursery, Münster, NRW
Pegasus Orange Morn	grower/nursery, Münster, NRW
Potunia Plus Papaya	Breeder, Rheinberg NRW
Bonnie Orange	Breeder, Stuttgart, BW
Go!Tunia Orange	Trade, Zwiendrecht, Netherlands
Sanguna Patio Salmon	Breeder, Netherlands
Sanguna Salmon	Breeder, Netherlands
African Sunset	Breeder, Ltd, Japan



GM petunia in NRW

- It was suspected that four of these varieties came from NRW
- The competent authorities (CA) took petunia samples for analysis.
- The suspicious varieties were immediately blocked for sale.
- As soon as the suspicion was confirmed by PCR-based DNA-analysis, the GM petunia had to be destroyed.
- The customers were identified and informed.
- In case, there were customers outside NRW, other states or countries were informed.



Photo: Bezirksregierung Düsseldorf



Background information - petunia from breeding to sale

- Crossing petunia
 - Petunia for crossing are from cooperation partners, other breeders or from the neighbour garden market
 - Selection over 2 years
 - No pure varieties, plants extremely heterozygous, propagation mainly via cuttings
 - Varieties are often not patented → no registered varieties
 - Varieties which are labelled as "improved" may be genetically very different to the plants sold in the previous year with the same name (without "improved")
- Selected plant
 - Creation of sterile "elite cultures" in the laboratory
 - Mother plants
 - Extraction of cuttings
 - Young plant production
 - Production of semi-finished and finished products
 - There are a lot of different specialised operators at every production stage in or outside EU.
 - Variety names or trade names change along the distribution chain

„Bingo Orange“ (variety) = „Pegasus Orange“ (nursery; grower) = „Go!Tunia Orange“ (nursery; grower)

At the end of the distribution chain the plants are often labelled as „Petunia“ or „Petuniahybrid“ or „Ornamental Plant“.



More unauthorised GM petunia

- Variety names and trade names of GM petunia were published on the webpage of the Federal Office of Consumer Protection and Food Safety (BVL)

https://www.bvl.bund.de/DE/06_Gentechnik/04_Fachmeldungen/2017/2017_05_22_qv_petunien_2.html

- Not only petunia with orange blossom colour!



Crazytunia Citrus Twist,



Bingo Coral Blast,



Potunia Plus Red 2016

- Development of blossom colour
Example: „Crazytunia Citrus Twist“



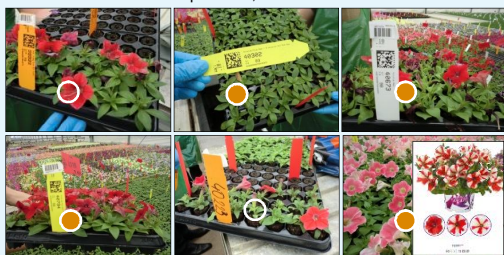
The same plant at time of probing and two weeks later

Photos: Bayerische Landesanstalt für Weinbau und Gartenbau (LWG) Veitshöchheim

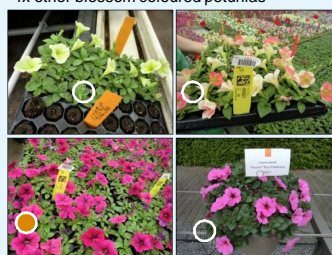


Next sampling in the glasshouse of one breeder

6x red blossom coloured petunias,



4x other blossom coloured petunias



Results

- 4 out of 6 petunia red blossom coloured are confirmed as GM petunia,
- 1 pink blossom coloured is also confirmed as GM petunia

Photos: Bezirksregierung Düsseldorf



Molecular characterisation of GM petunia

Currently, there is evidence that GM petunia belong to two different groups, according to the combination of genetic elements detected:

1. GM petunia of this group are characterised by the presence of the dihydroflavonol-4-reductase coding sequence from maize.
http://www.euginius.eu/euginius/pages/gmo_detail.jsf?qmoname=df+GM+petunia
2. GM petunia of this group are characterised by the presence of a flavonoid 3', 5' hydroxylase coding sequence from Petunia hybrida.
http://www.euginius.eu/euginius/pages/gmo_detail.jsf?qmoname=F3%27%27H+GM+petunia



Situation

- On EU market a lot of GM petunia were found in 2017 (67 trade names are known from the „BVL-list“).
- We informed all known operators in the petunia distribution chain about the situation and what to do, if they found GM petunia.
- Randomly chosen operators were controlled:
 - from the breeders lists or
 - from lists submitted from other states.
- Information transfer in the first level of the distribution chain is reliable.
- Operators usually had already taken the necessary measures.
- Breeders were shocked and cooperative:
Two breeders from NRW tested their entire collection and informed the customers that a lot of their varieties had been tested positive and therefore would not longer be available on the market. They instead suggested their customers negative tested substitute varieties for the next year.



We learned...

Our experience in crop seed monitoring was not transferable to the monitoring of ornamental plants

- One variety includes plants with a defined phenotype (not a defined genotype).
- The trade names change along the distribution chain.
- Trade is international, the corresponding distribution chain often comprises several traders (licensee, importer, horticulture, cooperatives, auctioning platforms, mail order, supermarkets, retailer, etc.).
- Through varieties and trade names there is no transparency to which genetics are traded.
- To be sure that a certain petunia on the market has been genetically modified implies that it has to be analysed



Ideas for a future monitoring of petunia

- The German competent authorities (CA) constituted an ad hoc working group on "genetically modified ornamental plants" to analyse the situation on GM petunias and to develop a monitoring concept for next year.
- Through an early monitoring of the petunia production bottlenecks and distribution chain bottlenecks, it may be possible to avoid propagation or commercialisation of large quantities GM petunia.
- According to the experience with GM petunia this year, we expect that the future petunia production will be controlled systematically on GM presence by the operators. Official monitoring could be based on these controls when the molecular biological analysis was carried out by an ISO 17025 certified laboratory.
- Within the scope of official monitoring, the breeders analysis can be double checked. To check the breeders results CA can conduct further analysis randomly.



Thank you!