Nederlandse Vereniging voor Plantenbiotechnologie en -Weefselkweek
Netherlands Society for Plant Biotechnology and Tissue Culture
KvK nr. 40121960 NL42INGB0004240007 www.nvpw.nl info@nvpw.nl

Samenvattingen van de lezingen van het NVPW najaarssymposium, vrijdag 9 december 2016,
Summaries of the lectures on the NVPW autumn symposium, Friday, December 9th 2016
Hotel de Nieuwe Wereld, Marijkeweg 5, 6709 PE Wageningen.

The Nagoya Protocol, its implementation in the EU, and the consequences for users of genetic resources.

Dhr. dr. Martin Brink – Wageningen UR / Centre for Genetic Resources, the Netherlands (CGN)

Access and Benefit-Sharing (ABS) has become important with the coming into force of the Convention on Biological Diversity (CBD) in 1993. Since 12 October 2014, when the Nagoya Protocol and the EU ABS Regulation came into force, users of genetic resources in the EU have the obligation to exercise 'due diligence' to ascertain that the genetic resources have been accessed in accordance with ABS legislation of providing countries, and that benefits are shared. At present, the geographical, temporal and personal scope of the EU ABS Regulation are clear, but the material scope ('what is utilisation') is still under discussion. Sector-specific guidance documents are being developed to povide more clarity. However, it is clear already that seeking, keeping and transferring information on access conditions and benefit-sharing agreements has become essential.

Praktijkvoorbeeld van het op commerciële schaal afharden van weefselkeek in de klimaatcel onder innovatieve LED

Dhr. John Bijl – Vitro Plus B.V.

Asplenium 'Crispy Wave' is een varensoort die door Vitro Plus middels weefselkweek wordt vermeerderd. Om aan de kwaliteitseisen van de klant en fytosanitaire restricties van de Amerikaanse overheid (USDA) te voldoen, wordt deze plant onder zeer schone en geconditioneerde omstandigheden afgehard. Dit gebeurt in een groeikamer onder LED-verlichting in plaats van in de kas. Daarbij wordt gebruik gemaakt van het door Vitro Plus ontwikkelde pluggensysteem met semipermeabele folies die gaswisseling en verdamping regelen. Door te starten met deze techniek is bij Vitro Plus een leerproces op gang gekomen waardoor voor afharding van steeds meer producten het laboratorium wordt gekozen in plaats van de kas. Protocollen worden besproken en voor- en nadelen op een rij gezet. Ook worden innovaties op het gebied van LED-verlichting gepresenteerd.

Time Lapse Studio: observation of plants in real-time

Dhr. dr. Johan Bucher – Wageningen UR / Plant Breeding

Observing plants is time consuming and labour intensive, especially if one likes to monitor development day and night. In addition some traits develop over time spans of months. Scientist/technicians or students cannot sit next to a single plant for that period for continuous observations. This is where the Time Lapse Studio can assist us. Time lapse movies are generated from pictures taken at regular intervals stacked behind each other. Our brain links these pictures into what appears like a movie. One of the advantages of a time lapse is that it is now possible to reverse time or zoom in at any desired time point for close inspection of the plant. With this low throughput system we can for instance observe the progress of infection of potato plants by Phytophthora infestans. In this particular case the studio helped to define optimal time points for RNAseq analysis. Another example is to observe flower development in different Pelargonium accessions, to visualize full flower development, including timing of processes important for pollination. The studio is being under constant development. We now develop new directions to also focus on 3d and later on even 4d analyses.

Impairment of potato *S* genes reduces susceptibility to late blight and powdery mildew

Mrs. Kaile Sun MSc. - Wageningen UR / Plant Breeding

Phytophthora infestans, the causal agent of late blight, is a major threat to commercial potato production worldwide. Significant costs are required for crop protection to secure yield. Many dominant genes for resistance (*R* genes) to potato late blight have been identified, and some of these *R* genes have been applied in potato breeding. However, the *P. infestans* population rapidly accumulates new virulent strains that render *R* genes ineffective. Here we introduce a new

class of resistance which is based on the loss-of-function of a susceptibility gene (*S* gene) encoding a product exploited by pathogens during infection and colonization. Impaired *S* genes primarily result in recessive resistance traits in contrast to recognition-based resistance that is governed by dominant *R* genes. In *Arabidopsis thaliana*, many *S* genes have been detected in screens of mutant populations. In the present study, we selected 11 *A. thaliana S* genes and silenced orthologous genes in the potato cultivar Desiree, which is highly susceptible to late blight. The silencing of five genes resulted in complete resistance to the *P. infestans* isolate Pic99189, and the silencing of a sixth *S* gene resulted in reduced susceptibility.

Marker applications in next generation vegetable breeding

Mevr. dr. ir. Marion van de Wal – Bayer Crop Science Division / Nunhems Netherlands B.V.

samenvatting volgt nog

Plant tissue rejuvenation: from somatic embryogenesis to polycarpy

Dhr. dr. Remko Offringa – Institute of Biology – Universiteit Leiden

In flowering plants, aging is defined by a series of developmental transitions or phase changes that start with vegetative growth, followed by flowering and culminating in seed production. Tissue senescence and plant death follow seed production in monocarpic plants, while polycarpic plants prolong their life span by maintaining a number of vegetative axillary meristems, thereby allowing subsequent cycles of vegetative and reproductive development. Here I will present our work on the reversion of plant developmental transitions by rejuvenating plant tissues, leading to 2,4-D-independent somatic embryogenesis or a switch from mono- to polycarpic development.

Identification of enzymes and regulators of the iridoid pathway in *Catharanthus roseus*

Dhr. prof. dr. Johan Memelink – Institute of Biology – Universiteit Leiden

Identification of enzymes and regulators of natural product pathways in plants has been speeded up by new transcriptomics and new screening technologies. This lecture will illustrate the successful use of new technologies with the so-called iridoid (a class of ring-containing terpenes) pathway in the medicinal plant *Catharanthus roseus* (roze maagdenpalm).

Van CRISPR naar Kas: een voorbeeld van *floral dip* transformatie met camelina

Dhr. Jarst van Belle MSc. – Wageningen UR / Linnaeus Plant Sciences B.V.

De CRISPR/Cas technologie, waarmee men met hoge precisie een genoom kan aanpassen, wordt in steeds grotere getale toegepast in plantenonderzoek. CRISPR/Cas is immers een universele techniek en een construct wordt met groot gemak gemaakt. De aard van een plant beperkt echter op welke manier transformaties uitgevoerd kunnen worden en hoe uiteindelijk gewenste mutanten gevonden worden. In deze presentatie ga ik kort in op de toepassing van CRISPR/Cas in camelina, een oliegewas met een complex genoom, maar zal het vooral gaan over de optimalisatie van zogeheten *floral dip* transformaties.

Exposanten:

Van den Berg Klimaattechniek: dhr. Stephen van den Berg**,** Nieuwdorperweg 31, 2811LB Reeuwijk, tel: 06-21531937, stephen@vandenbergklimaat.nl, www.vandenbergklimaat.nl

Duchefa Biochemie B.V.: dhr. drs. Frank Kors, A. Hofmanweg 71, 3021 BH Haarlem, tel. 023-5319093, f.t.m.kors@duchefa.nl, www.duchefa-biochemie.com