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Molecular Genetics & Breeding - Group leader

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Research for a strong future of agriculture and fisheries in Flanders

The Plant Sciences Unit clusters within the Institute for Agricultural and Fisheries Research (ILVO) all the plant-derived research and is composed of 4 different research domains (www.ilvo.vlaanderen.be). The Plant sciences unit has infrastructure and equipment for performing breeding and selection programs, applied biotechnology and eco-physiological research. In 2011 a new research greenhouse was taken into use housing a new eco-physiological lab, separate growth rooms and custom infrastructure with sufficient steerable separate compartments. In 2012 is further invested in the creation of growth rooms including LED lighting. Recently investments in a complete new infrastructure of 3 movable rain-shelters was done. The Plant sciences unit has very close contacts within the horticultural and agricultural sector for various research projects. This guarantees project results easily are transferred to interested companies. The ILVO Plant Sciences Unit aims to raise knowledge for rational approaches to plant breeding.

The research domain Plant-Applied Genetics & Breeding (GV) owns an extensive knowledge and competence in plant research in the area of plant breeding, *in vitro* techniques, biotic and abiotic stress resistance. The research is concentrated on fodder crops like forage grasses and clovers, vegetables, chicory and green manure crops on the one hand and ornamental plants as azalea, roses, woody ornamental trees, *Begonia*, Araceae and chrysanthemum on the other hand. Plant-GV has an extensive and well-characterized gene bank of azalea and related *Rhododendron* species. Also an extensive collection of *Begonia* is available. Plant-GV has a long-lasting expertise in the use of DNA markers for protection of cultivars (cultivar identification, plant variety protection, fraud) and for the support of resistance breeding. Different marker techniques (AFLP, microsatellites, STS, SNP) were developed in various crops (mainly grasses, clovers and pot azalea, rose). Data acquisition and analysis methods were developed for those applications. Expertise is present for expression analysis using RT-qPCR and the translation from model crops for the isolation of candidate genes. Recently also NextGen sequencing for transcriptome analysis has started in azalea and ryegrasses that allows to isolate faster and easier candidate genes. Plant-GV also collaborates in the recent Rose Genome Sequencing Initiative (http://rosegenome.org/) for sequencing the rose genome.

Jan De Riek is specialist in molecular genetics and marker assisted breeding; leads national and EU projects for molecular breeding of ornamental and agricultural crops e.g. coordinator of the EU-Marie Curie **ForESTFlowers** project (FP7-People-2010-IRSES 269204) 'Expressed sequences (EST) as tags for functional genes for genetic characterization of flowering woody ornamental shrubs from an oriental origin' and FP5 project **GENEROSE** (QLRT-2001-01278), partner in FP7-REGPOT-2009-1-245751 **PROFICIENCY**. Several regional projects with the Flemish agency for Innovation by Science and Technology (IWT) for the ornamental industry (a.o. impact of polyploidy in roses on (a)biotic stress resistance).

CIOPORA Board member since 2008 (International community of breeders of asexually reproduced ornamental and fruit varieties). CIOPORA is an international non-governmental organization, representing

the interests of breeders of asexually reproduced ornamental and fruit varieties worldwide. Top priority of CIOPORA is the constant development of systems of protection which both, international state organizations and single states, have provided for the protection of the intellectual property concerning ornamental and fruit plants.