

ses revealed the features associated with the morphogenetic process leading to the induction multiple meristem associated to NC. The morphogenetic route associated to CN induction and development comprises an efficient tool for the mass and fast propagation of endangered or high ornamental value bromeliads.

S12.312

Current Status of *Davidia involucrata* Baill. Wild Populations in China

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CENTRAL SOUTH UNIVERSITY OF FORESTRY AND TECHNOLOGY, NO 498 SHAOSHAN SOUTH RD., 410004, CHANGSHA, CHINA, *Davidia involucrata* Baill (dove tree) originated from tertiary period and now is a relic plant known to the world. It becomes one of the world famous ornamental tree for gardens and parks in many countries because its flowers look like "flying doves". In recent years, the increase of regional developing projects has led to decrease of this ancient and rare plant in nature, especially its habitats and populations. The plant has been listed in the rare and endangered plants in China. *Davidia involucrata* mainly distributed in very special niche habitats in the mountainous region of Youngzi River in China. After exploring and sampling some natural populations, we summarized that the species became endangered plants because of 1) narrow distribution (niche habitat). Dove tree usually grows in the deep areas of the mountain ranges, with warm summer and abundant moisture. 2) Seed abortion. It is very serious and majority of embryos could not develop normally. 3) Difficulty of natural regeneration. The seed of dove tree has a long period of after-ripening and a hard exterior covering. Germination usually occurred after three years, which leads to the significant loss of seed viability. (4) Human disturbance. Habitat loss (logging) and collection of wild seedlings were one of the important reasons to reduce its populations. Dove tree was very sensitive to the change of habitat. The environment change would cause its reproduction difficulty. The number of individuals of dove tree was declined dramatically. Further studies on its protection and habitat restoration should be our priority.

S12.313

Natural Populations of *Davidia involucrata* Baill in Hupingshan Nature Reserve, China

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CENTRAL SOUTH UNIVERSITY OF FORESTRY AND TECHNOLOGY, NO 498 SHAOSHAN SOUTH RD., 410004, CHANGSHA, CHINA *Davidia involucrata* Baill is the only species in *Davidiaceae* with narrow distribution area of West Hunan, east Guizhou and Sichuan, China. To better understand its natural community and propose management strategy, we investigated 3 populations by sampling 20×30 m² area, respectively. The results concluded that: 1) The community vertical structure was simple, which composed of tree layer, shrub layer, herb layer and interlayer plant. Herb layer was better than tree layer and shrub layer. There were 65 vascular plant species in the community belonging to 37 families and 59 genera. In term of life form, 32.3% phanerophytes were on the top, then 30.8% hemicryptophytes, 24.6% chamaephytes, 7.6% therophytes and 4.6% geophytes. The composition of life form was similar to that in subtropical evergreen and deciduous forest. 2) The importance value of *Davidia involucrata* was 70.3, then was *Tetracentron sinense* (60.8). The entire community richness is 65. The Simpson and Shannon-wiener diversity indices in herb layer were higher than that in tree layer and shrub layer. The Pielou indexes (Jsw and Js) in tree layer were higher than herb layer and shrub layer. 3) The composition of *Davidia involucrata* community was that the East Asia Plants was the largest, reached to 27.1 % (16 genera). Next was North Temperate Zone, about 20.3% (12 genera). The component of species have the typical transition characteristics that from the subtropics to the temperate zone. 4) The community of *Davidia involucrata* was scattered in mountain valley where was warm, abundant rainfall, more mist and few sunshine days. Natural regeneration ability of *Davidia involucrata* was weak and seed germination was low. It's indicated that *Davidia involucrata* community in Hupingshan Nature Reserve had not yet developed into its climax and we should protect this natural treasure plant, especially its habitat.

S12.314

Flower Color and Flavonoid Synthesis Gene in Evergreen Azalea

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FACULTY OF LIFE AND ENVIRONMENTAL SCIENCE, SHIMANE UNIVERSITY, 1060 NISHIKAWATSU, 690-8504, MATSUE, JAPAN Flower color trait is one of the most important breeding objectives in evergreen azalea. Azalea flower colors are due to the presence of flavonols and anthocyanins as the major pigments. To know relationship flower color and flavonoid synthesis gene expression, we compared flower color, pigment composition and gene expression in wild species and cultivars of evergreen azalea. Flower color was mostly dependent on pigment composition in wild species and cultivars. Red flower had cyanidin type pigments and purple flower had both cyanidin and delphinidin type pigments. White flower of azalea had no anthocyanin. A real-time PCR analysis showed that transcripts of chalcone synthase (CHS), flavonoid-3'-hydroxylase (F3'H), flavonoid-3',5'-hydroxylase (F3'5'H), and anthocyanidin synthase (ANS) genes were expressed concomitant with anthocyanin synthesis during petal development of *Rhododendron x pulchrum* 'Oomurasaki', which had purple petal. Also, 'Oomurasaki' red flower sport contained only cyanidin type pigments, and abundant of F3'5'H gene was 0.14-fold those of 'Oomurasaki'. Furthermore, flower color in wild species and their hybrid could be explained by pigment composition and F3'5'H gene expression except partial individuals. These results indicated that F3'5'H gene is strongly correlated to delphinidin synthesis in azalea petals, but expression of other flavonoid genes are unclear for anthocyanin synthesis. We are searching factor or gene which controls floral pigmentation.

S12.315

Phenological and Molecular Approach for Flowering in Evergreen Azalea

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For the purpose to study flowering of evergreen azalea, we have observed plant phenology and investigated flowering-related genes using garden planted 'Oomurasaki' (*Rhododendron x pulchrum*). During the flowering in mid-April to early May, shoots begin to sprout from the base of inflorescence and develop. Shoot development slow down in late June, and in early August, apical bud can observe and develop to grow. Genes related to floral induction and initiation have been reported FLOWER-ING LOCUS T (FT), SUPPRESSOR OF OVER EXPRESSION CONSTANS 1 (SOC1), LEAFY (LFY), APETALA 1 (AP1) and TERMINAL FLOWER 1 (TFL1) in *Arabidopsis*. Floral pathway integrator genes (FT and SOC1-like genes), floral meristem identity genes (LFY and AP1-like genes) and floral inhibitor gene (TFL1-like gene) were isolated from shoot apical part tissues (apical meristems with stem) in 'Oomurasaki'. When the expression of floral pathway integrator genes in stems and leaves was examined, the gene expression was detected in late June. After strong expression of floral inhibitor gene on apical parts in late July, expression of floral meristem identity genes was detected strongly in early August. Expression of homologues related to flowering genes suggest that these genes participate in floral induction and initiation in 'Oomurasaki'.

S12.316

The Effects of Time and IBA on Rooting of Cadaman Cuttings

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Cadaman (*Prunus persica* × *Prunus davidiana*) is a one of the important rootstocks of Peach. In this study, the effects of five IBA levels (0, 1000, 2500, 3500 and 4500 ppm) and two time (December and January) on rooting of Cadaman hardwood