



HAL
open science

Control by light intensity of bud outgrowth along the axis of *Rosa hybrida* "Radrazz"

Adrien Corot, Nathalie Leduc, Soulayman Sakr, Sabine Demotes-Mainard

► To cite this version:

Adrien Corot, Nathalie Leduc, Soulayman Sakr, Sabine Demotes-Mainard. Control by light intensity of bud outgrowth along the axis of *Rosa hybrida* "Radrazz". 11. Colloque National de la SFBF (Société Française de Biologie Végétale), Jul 2016, Angers, France. hal-02739361

HAL Id: hal-02739361

<https://hal.inrae.fr/hal-02739361>

Submitted on 2 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Control by light intensity of bud outgrowth along the axis in whole plants of *Rosa hybrida* "Radrazz"

Adrien Corot, Nathalie Leduc, Soulaïman Sakr, Sabine Demotes-Mainard

IRHS, Agrocampus-Ouest, INRA, Université d'Angers, SFR 4207 QuaSaV, 49071, Beaucouzé, France

In ornamentals, particularly in rose, the visual aspect of a plant is an important element of its quality. In rose bush, the visual quality depends on many objective criteria, including plant shape and compactness that vary with branching (Boumaza et al. 2009). Bud outgrowth, which is at the origin of branching, is controlled by a network of interacting hormones. The three main families are auxin and strigolactones, which inhibit bud outgrowth, and cytokinins, which promote it; the hormonal signal varies along the shoot and is responsible for various branching patterns (Domagalska et Leyser 2011). Light environment strongly impacts branching (Leduc et al. 2014; Demotes-Mainard et al. 2015; Huché-Thélier et al. 2015), notably low light intensity decreases bud outgrowth in many species, including rose (Furet et al. 2014). Decreasing light intensity can reduce photosynthesis and thus sugar availability. A natural hypothesis that emerges is that decreasing light intensity limits bud outgrowth via a shortage of sugars necessary for bud growth (Girault et al. 2010). Recent studies also suggest that sugars can act as a signal that triggers bud outgrowth through modulation of hormonal signals (Barbier et al. 2015). However, the mechanisms by which light environment affects bud outgrowth, especially the mediating role of hormones and nutrients in this regulation, is still poorly understood. This poster presents preliminary results on the mechanisms involved in the inhibition of bud outgrowth by a decrease in light intensity in rose. The study is conducted on whole plants and attention is paid to the location of bud outgrowth along the shoot.

- Barbier et al. 2015. « Sucrose Is an Early Modulator of the Key Hormonal Mechanisms Controlling Bud Outgrowth in *Rosa Hybrida* ». *Journal of Experimental Botany* 66 (9): 2569-2582.
- Boumaza et al. 2009. « VISUAL CHARACTERIZATION OF THE ESTHETIC QUALITY OF THE ROSEBUSH ». *Journal of Sensory Studies* 24 (5): 774-796.
- Demotes-Mainard et al. 2015. « Plant Responses to Red and Far-Red Lights, Applications in Horticulture ». *Environmental and Experimental Botany*, mai.
- Domagalska, et Leyser. 2011. « Signal integration in the control of shoot branching ». *Nature Reviews Molecular Cell Biology* 12 (4): 211-221.
- Furet et al. 2014. « Light and Nitrogen Nutrition Regulate Apical Control in *Rosa Hybrida* L. ». *Journal of Plant Physiology* 171 (5): 7-13.
- Girault et al. 2010. « Sugars Are under Light Control during Bud Burst in *Rosa* Sp.: Photocontrol of Sugars during Bud Burst ». *Plant, Cell & Environment*, avril.
- Huché-Thélier et al. 2015. « Light signalling and plant responses to blue light and UV radiations – Perspectives of application in horticulture ». *Experimental and Environmental Botany*.
- Leduc et al. 2014. « Light Signaling in Bud Outgrowth and Branching in Plants ». *Plants* 3 (2): 223-250.

Acknowledgments: this research is supported by the French regional programme "Objectif Végétal, Research, Education and Innovation in Pays de la Loire"

Adrien Corot Tel.: +33 (0)2 22 41 56 44 adrien.corot@etud.univ-angers.fr