

MOLECULAR EVIDENCE OF TEMPERATURE DECREASE INFLUENCE ON COFFEE FLOWER EVOCATION

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INTRODUCTION

- flower evocation = meristems became committed to differentiate in reproductive organs, under the lead of environmental signals;
- south-south-eastern Brazil, signals would be temperature and day-length [1];
- genes *FLC/M* and *VRN* are recognized for their roles in flower evocation driven by temperature: *FLC/M* are suppressors, and *VRNs* keep *FLC* methylated, to allow flowering.

Aims: verify how coffee orthologs to *FLC/M* and *VRNs* are involved in flower evocation

MATERIAL AND METHODS

- leaves from EARLY and LATE genotypes [2], nine plants each, growing in different experimental blocks, collected during 2021;
- total RNA extraction (Quickzol, Ludwig), cDNA synthesis, primer specific amplifications;
- amplicon intensities quantified using the **ImageJ** software, and normalized by the *GAPDH* internal reference [3] ;
- statistical analysis performed with SigmaPlot.

RESULTS/DISCUSSION

- *FLC* > *VRN* in the late ($P = 0.03$) and *FLC* < *VRN* in the early genotype;
- despite lacking statistical significance, linear models explained gene x time and gene x genotype interactions (**Fig.1**):

VRN up and *FLC* down for the **EARLY**;
VRN down and *FLC* up for the **LATE**

CONCLUSIONS/PERSPECTIVES

General results are in agreement to a current phenological model [1]. A powerful correspondence between phenological and molecular data has potential to be proven true

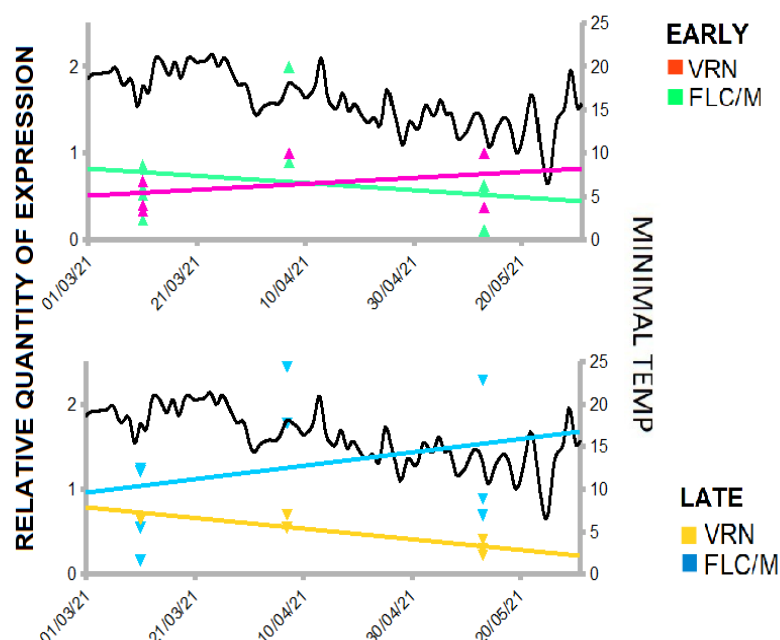


Figure 1. *C. arabica* flower evocation-related gene expression in **EARLY** and **LATE** genotypes. *VRN* and *FLC/M* genes' temporal expression patterns are depicted as regression trend lines, representing opposite responses to the minimal temperatures

References:

1. Camargo, AP; Camargo, MPB. *Bragantia*, 60: 65-68. 2001.
2. Angelo, PCS. *Agricultural Sciences*, 15: 754-779. 2024.
3. Cruz, F. et al. *Molecular Breeding*, 23: 607-616. 2009.