Agriculture II

# THERMAL TIME, PRECIPITATION, COFFEE FLOWER EVOCATION AND BUD EMISSION PHASES

Tuesday, September 21, 2021 4:00 PM – 5:00 PM US EDT

## Poster Presenter(s)

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Flowering induction or evocation in coffee plants is a controversial matter that lacks examination. It is an important part of the reproductive cycle and can determine plant adaptability and productivity. While some authors believe temperature and day length are the most important induction factors, others think that water availability is the most essential factor for flowering. Previously, we analyzed nine coffee cultivars regarding fruit development and maturation phases. For the present work, four cultivars out of those nine, the fastest/earliest (Catucai Amarelo 24/137 and a Catucai Vermelho 785/15, genotypes 4 and 18, respectively) and the slowest/latest ones (Palma III and Arara, genotypes 11 and 24, respectively) in reaching the mature fruit stage were selected to study flowering induction and flower bud emission phases. Data were collected from 2015 to 2017, at the Procafe Foundation Experimental Farm, in Varginha–MG, Brazil. For each cultivar, 64 branches were tagged (4 branchesx4 plantsx4 blocks) and observed weekly to receive phenological grades (PHENGR) from 0 (for slim non induced buds) to 1.6 (for branches displaying at least four glomerules with flower buds identified by naked eye per node in most of the nodes). These data were used to calculate averaged cultivar PHENGRs for the dates of observation. The thermal time (TT) and the precipitation accumulated (ACPP) from the January-1st of each year up to the dates of field observation and phenological grade registration each week were calculated. PHENGRs, TTs and the ACPPs were assessed as XYZ triplets to produce 3D-contour graphs. 2-D analyses of correlation were also performed (Sigma Plot software, $p < 0.05$ for significant differences/correlations). Two patterns of data dispersal were observed. The latest/slowest cultivars regarding fruit phenology evolved more slowly through flower induction and emission as well, only displaying grades around the maximum 1.6 when TTs went around 2,900 degree-days and mostly when ACPPs reached 600 mm. The earliest/fastest cultivars were also those that evolved faster during flowering, displaying 1.6 grades when TTs were around 2,500 or even, rarely, 2,300 degree-days. For the fastest 04 and 18, PHENGR x TTs correlations were 0.812 and 0.732, both significant, and very low non-significant PHENGRs x ACPPs correlations were observed, for both cultivars. Differently, the slowest cultivars displayed even higher and significant PHENGRs x TTs correlations - R=0.918 (cult. 11) and 0.875 (cult. 24) - and intermediary significant PHENGRs x ACPPs correlations - R=0.562 (cult. 11) and 0.535 (cult. 24). Conclusion is that, for the years 2015-2017 and the cultivars evaluated, in the period going from January-1st up to the emission of at least four glomerules with flower buds in most of the nodes in tagged branches, TTs were more influential than ACPPs. Acknowledgments: Embrapa Coffee (SEG 02.13.02.017.00.04), Juliano de Carli, Isabela Couto, Claudia Veloza