

## Evaluation of genotype – environment interactions of new *Coffea arabica* F1 hybrids planted in North-West provinces of Vietnam

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### RATIONALE

The H2020 BREEDCAFS (<http://www.breedcafs.eu>) project aims to test new F1 hybrids of *Coffea arabica* (high yielding, stress resistant and adapted to agroforestry) in coffee producing countries, such as Vietnam. In 2018, these hybrids were planted in “demoplots” on-farms, along an altitudinal gradient in the North-West Vietnam and monitored in the subsequent years (2019-2021). Yields were also estimated in 2020. The results of these multilocation trials are presented and discussed.

### METHODS

The tested F1 hybrids of *C. arabica* were Starmaya (male sterile CIR-SM01 x Marsellesa), and Centroamericano H1 (Sarchimor T5296 x Rume Sudan Ethiopia) [1-3]. The pure lines local Catimor (provided by NOMAFSI) and Marsellesa (father of Starmaya) were used as controls. In each “demoplot”, these accessions were tested in two repetition blocks of 50 plants (e.g. 5 lanes of 10 plants). Eleven “demoplots” were set up in smallholder farms located at various altitudes (from 600 to 1100 m.a.s.l.) and under various agroforestry systems in Son La and Dien Bien provinces. The climate conditions were registered in each plot. These trials were planted in June 2018 and monitored (height, basal trunk diameter, number of plagiotropic branches...) in May 2019 and 2020. Yield components (fruiting nodes/tree, fruits/node, seed-fruit ratio...) were also measured along the production cycle and yield obtained in late 2020 (first harvest). Beans were processed, graded and cup tasted.

### RESULTS

In all “demoplots”, the hybrids Starmaya and H1 were always the most vigorous with the highest height and trunk width. On the other hand, the highest numbers of primary (plagiotropic) branches were mainly observed for the Marsellesa and H1 hybrid. In all “demoplots”, local Catimor yields were consistently lower compared to other accessions. In addition, yield of all accessions was higher at high altitude. First results of cup-quality will be also presented.

### CONCLUSIONS & PERSPECTIVES

Beyond the BREEDCAFS project (ending in September 2021), plant phenotyping will continue in 2021 as well as yield and quality monitoring which will be also evaluated in 2021 and 2022. With the help of the local Vietnamese partners, work is ongoing to set up large-scale trials necessary for the accreditation process of these accessions in Vietnam.

### References:

- [1] Georget et al. (2019). *Frontiers Plant Science* 10: 1344. <https://doi.org/10.3389/fpls.2019.01344>
- [2] Marie et al. (2020). *Euphytica* 216: 78. <https://doi.org/10.1007/s10681-020-02608-8>
- [3] more information available at: <https://varieties.worldcoffeeresearch.org/>