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BOOK OF ABSTRACTS

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Arabusta seed morphology: Arabica-like or Robusta-like? A preliminary comparison with parental species.

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RATIONALE

Arabusta coffee is an interspecific hybrid derived from *C. arabica x C. canephora*, often used in coffee breeding to study both the gene transfer from Robusta and its possible use in coffee production. The plants have very different morphological characteristics, as well as different levels of fruit production when compared with the parental species. Arabusta coffee was also studied from a sensory point of view, but in general the literature on this hybrid is rather scarce and the knowledge on it is still fragmentary. From a morphoanatomical point of view, as far as we know, no investigations have been devoted to study Arabusta seed morphology and to disclose possible Arabica-like or Robusta-like traits in its cell structure and this highly stimulated the present work.

METHODS

Seed samples of *C. arabica* L. (Costarica, 2019), *C. canephora Pierre ex-Froehner* (French Guyana, 2019) and F1 clones of *Arabusta* coffee (French Guyana, end of 2018) were harvested, properly processed and selected. Seeds were kept in a fixative solution for several days, then rinsed in tap water and cut at -20°C with a cryostat (Leica CM1520). Seed sections of 60 µ in thickness were observed by a Scanning Electron Microscope (Hitachi TM3030plus). Sections of 12 µ in thickness were staining in a Toluidine Blue O solution to highlight the main cell components. Measurements of cell wall area were performed on the electronic images by a Leica Software (Las X).

RESULTS

Arabusta is characterized by an elongated seed, slightly rounded, generally with a linear furrow. The endosperm cells are regular, characterized by a polygonal shape, with not frequent nodes present in their cell wall. Cell wall thickness is not significantly different from the parental species (5,7 ± 1,6 µ). However, the area occupied by the cell wall respect to the cell total area (28%) is more close to that measured in Arabica seeds (29%) than that in Robusta seeds (43%). Optical microscopy observations furtherly put in evidence this tissue aspect, showing similar cell size in Arabusta and Arabica seeds, and smaller cells for Robusta coffee. This feature is probably related to ploidy level (Arabica and Arabusta : 2n = 4x = 44, Robusta 2n = 2x = 22). No histochemical differences in the cell content were observed among the examined coffee species under the chosen experimental conditions.

CONCLUSIONS & PERSPECTIVES

The measurements performed on cell wall area and measured diameter as well as cell content area and endosperm cell size show that the morphoanatomical characteristics of Arabusta seeds corresponds more to those of Arabica than Robusta seeds. Further studies are necessary to confirm this preliminary view.