

New Aspects of Coffee Processing: The Relation Between Seed Germination and Coffee Quality

D. SELMAR, G. BYTOF, S.-E. KNOPP

Botanical Institute, Technical University, Mendelssohnstr. 4, 38106 Braunschweig, Germany

SUMMARY

Quality of green coffee depends on the processing method. Up to now, these differences were attributed exclusively to differences in the original material used for processing. This explanation neglects the occurrence of metabolic reactions that run in the living coffee seeds and strongly depend on the physiological status of the beans. Coffee seeds are recalcitrant. This means that seed germination is already induced while they still are within the fruit. However, further development is suppressed, either by the osmotic potential of the fruit flesh or by germination inhibitors. Consequently, rather than dormant seeds, coffee beans represent germinating seeds which are blocked in their further development.

In contrast to wet processed green coffee beans, where the fruit flesh is removed directly after harvesting and thus the inhibition of further development is neutralised immediately, in dry processed coffees, the inhibition should be maintained throughout processing. Accordingly, the germination status, and thus the mobilisation of reserves influencing the composition of aroma precursors, should be quite different in wet and dry processed coffee seeds.

The processing of identical original material by both methods in parallel leads to significant differences in the cup quality of the corresponding roast coffees. These differences are based on metabolic reactions within the coffee seeds that differ markedly depending on the mode of post-harvest treatment. These reactions mainly comprise the mobilisation of reserves, liberating low-molecular substances. These, like free amino acids, are potential aroma precursors and thus influence the coffee quality. In this context the quantity and quality of free amino acids of wet and dry processed coffees was analysed. In all cases the total content of amino acids was higher in washed green coffee beans than in the corresponding dry processed ones, verifying cogently the hypothesis mentioned.