

Caffeine Does Not Protect Coffee Against the Leaf Miner *Perileuoptera coffeella*

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SUMMARY

The larvae of *P. coffeella*, a leaf miner, is one of the main pests attacking coffee plantations. Caffeine is the major alkaloid in this crop and may have a role in insect resistance. Since there is genetic variability in both resistance to the coffee leaf miner and in caffeine content among different coffee species, we investigated the role of this alkaloid as an anti-herbivore compound. Coffee plants containing different levels of caffeine were exposed to oviposition of the insect and the caffeine content and damaged leaf area were evaluated. The same procedure was carried out with interspecific hybrids between *C. arabica* and *C. racemosa*, varying in resistance against the leaf miner. In addition, plants were exposed to the insect but one leaf of each pair was protected from oviposition with paper bags. In another experiment, leaf disks from plants with known susceptibility to the attack of the leaf miner were infiltrated with caffeine aqueous solutions, from 0 to 2%, and exposed to oviposition. None of the experiments established a significant correlation between reduction of leaf damage and caffeine content of the tissue. In the experiment in which one leaf of the pair was protected of the insect, there was an increase in caffeine in the infested leaves, particularly in younger leaves. It is suggested that caffeine does not have a protective role in coffee plants but that its increase due to different stresses, as indicated in several reports and observed here, might be a consequence of changes of the size of the adenine pool, which is its main primary precursor, as the general metabolism is affected.