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Insights on the interactions between the nut rot agent *Gnomoniopsis castanea* and the Chinese gall wasp *Dryocosmus kuriphilus* on chestnut

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Gnomoniopsis castanea is an emergent fungal pathogen causing nut rot in chestnut trees.
In Italy its occurrence was detected in conjunction with the invasion of *Dryocosmus kuriphilus*. This exotic pest lays eggs inside the chestnut buds inducing galls formation and reducing the development of leaves and flowers. To assess if an ecological association between the fungus and the insect exists, the following hypotheses were tested: I) whether adults of *D. kuriphilus* may be vectors of viable inoculum of *G. castanea*; II) whether the presence of *G. castanea* in the galls is correlated to the number of inhabiting insects; III) whether the presence of *G. castanea* in the buds and oviposition may be related.
I) From 323 galls sampled in three different sites, 339 emerging adults of *D. kuriphilus* and five fragments per gall were plated to isolate *G. castanea*. The fungus was not isolated neither from the 53% of insects coming from galls colonized by *G. castanea*, nor from the others. This finding suggests it is unlikely that adults of *D. kuriphilus* could carry viable inoculum of *G. castanea.*
II) The above experiment showed also that, on average, galls colonized by the fungus host a significantly higher number of insects if compared to the others (3.76 *vs.* 2.54; $P<0.05$). This may indicate a possible synergy between *G. castanea* and *D. kuriphilus.*
III) Before oviposition time from 350 buds sampled in the same sites *G. castanea* was isolated on average in 33% of samples. After oviposition time other 350 buds were inspected both for *D. kuriphilus* eggs and for *G. castanea* presence. The odds ratio of 0.98 with a 95% confidence interval between 0.71 and 1.33 indicates the absence of association between the two phenomena. This demonstrates that the fungus can colonize galls tissues before and independently from *D. kuriphilus* oviposition.