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Jean-François Bourgeay[1], Marc Bardin[1], François Lecompte[2], Magali Duffaud[1] and Philippe C. Nicot[1].

[1] *INRAE, Pathologie végétale, F-84140 Montfavet, France.*

[2] *INRAE, PSH, F-84914 Avignon, France*

Many studies show that the level of nitrogen fertilization of plants influences their susceptibility to pathogens. On strawberry, it was shown that reduced nitrogen fertilization applied continuously for several weeks significantly reduced the susceptibility of the leaves to *Botrytis cinerea* (Nicot et al. 2013, IOBC-WPRS Bulletin 88:39-42). However, a continuously low nitrogen fertilization regime can hardly be applied in production because it may be detrimental to strawberry yield. A temporary reduction in nitrogen nutrition would be preferable but its effect on the level of plant susceptibility is not known. The objective of this study was therefore to determine the time needed for reduced nitrogen fertilization to have an effect on the susceptibility of strawberry to *B. cinerea*.

To address this objective, strawberry plants (varieties Candiss and Darselect) were subjected to three levels of nitrogen nutrition (0.5mM, 5mM, 10mM), following an initial period with a regular fertilization regime (10mM nitrogen). Plant susceptibility was then assessed weekly, using a detached-leaf assay with two strains of *B. cinerea* differing in their aggressiveness. In two independent trials, we observed a rapid onset of the beneficial effect of nitrogen reduction on plant susceptibility. As early as one week after the application of the low nitrogen regime, a reduction of up to 28% in lesion size was recorded on the leaves, in comparison with leaves from plants maintained under the regular fertilization regime. The effect was enhanced over time, with reductions in lesion size of up to 68% after 4 weeks of low nitrogen nutrition. This effect was different depending on the strain of *B. cinerea* and the strawberry variety. Possible hypotheses and the relevance of this study for the integrated protection of strawberry will be discussed.

Key words: Strawberry, *Botrytis cinerea,* nitrogen fertilization