

## **Bioprotection against the root parasite *Orobanche crenata* is induced in pea roots inoculated with *Rhizobium leguminosarum* bv *viceae* defective in Nod factor production**

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*Orobanche crenata* is a root holoparasitic plant which constitutes the major constraint for pea (*Pisum sativum* L.) (Fabaceae) cultivation in the Mediterranean area and Middle East. The most feasible method of control is breeding for resistant plant genotypes, although little resistance is available within cultivated pea.

Pea is able to establish a species-specific symbiosis with *Rhizobium leguminosarum* bv. *viceae*. In compatible *Rhizobium*-legume interactions transitory increases in defence mechanisms are induced in the legume plant, and it has been demonstrated that the activation of some molecular and biochemical mechanism of defense in rhizobial peas decrease the infection by *Orobanche*. To our knowledge nothing is known yet about the effect of incompatible *Rhizobium*-legume interactions on *Orobanche* infection.

In the *R. leguminosarum* mutant (*nodC*<sup>-</sup>) the production of the protein NodC which regulates the synthesis of the Nod factor is altered. This results in an incompatible interaction with pea. In this incompatible pea/*R. leguminosarum* mutant interaction, it has been demonstrated that SA levels increase in plant roots and this could be related with the induction of a SA-mediated defence. In the present work, inoculation of peas with *R. leguminosarum* 248 (mutant *nodC*<sup>-</sup>) in presence of *O. crenata* reduced infection of *O. crenata* by 74%. Our data suggest that the *Rhizobium* mutant *nodC*<sup>-</sup> stimulates an specific active mechanism of resistance against *Orobanche* in plant roots.