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Botrytis cinerea can rapidly produce massive amounts of inoculum on diseased plants and control methods have been developed to reduce spore production. In addition to spores produced within a crop (endogenous inoculum), the airborne spora of *Botrytis* over a canopy may also include exogenous inoculum carried from a variety of places and hosts. The relative proportion of both types of inoculum may influence the efficacy of control methods and the impact of selective pressures resulting from their implementation.

A trial was set up to quantify the impact of endogenous inoculum on disease development and on the population structure of *B. cinerea* in four tomato glasshouse compartments of CTIFL-Balandran. Plants were grown in quasi-commercial conditions. Isolates were collected from the air spora 4 days before and 14 days after inoculation of 6 plants per compartment with one of two reference strains (differing in their SSR profile and aggressiveness on tomato). Disease development was monitored and isolates were collected on stem lesions 60 days after inoculation. All isolates were characterised using 9 microsatellites described by E. Fournier, INRA-Versailles.

Among 80 isolates collected in the air spora prior to inoculation (while all plants were healthy), none had SSR profiles similar to either of the reference strains. Following inoculation with the reference strains, lesions developed and sporulation was observed on all inoculation points. Within 14 days, SSR profiles identical to those of either introduced strain represented 63% of the 323 samples characterised from the air spora of the four compartments.

The disease spread steadily to non-inoculated plants and incidence reached an average of 3-7 lesions per plant (depending on the compartment) by 90 days after inoculation. Among 224 isolates collected from stem lesions at 60 days after inoculation, 61% and 39% had SSR profiles similar to the aggressive and to the less aggressive reference strains, respectively.

This suggests that the displacement of the initially dominant population of *Botrytis* was concomitant with its negligible contribution to the epidemic on tomatoes. These results are compatible with the hypothesis of a polycyclic development of *Botrytis* epidemics in tomato greenhouses and illustrate the importance of endogenous inoculum in this growing system. Furthermore, they raise the question of possible host specificity within *Botrytis cinerea* in naturally occurring epidemics.