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Influence of environment and host plant genotype on the structure and diversity of the *Brassica napus* seed microbiota

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Seeds are involved in the vertical transmission of microorganisms from one plant generation to another and consequently act as reservoirs for the plant microbiota. Exploring the ecological processes involved in the assembly of the seed microbiota is therefore of interest for selecting in the future microbial communities that could promote plant-growth and plant-health. In this work, the relative contribution of host- and environmental-filtering on the assembly of the seed microbiota of *Brassica napus* was investigated. The taxonomic structure of seed microbiota was estimated with two molecular markers, *gyrB* and ITS1, on a range of *B. napus* genotypes, representative of winter oilseed rape diversity, cultivated for two successive years in self-fertilization. Our results highlighted a significant influence of the harvesting year and the host genotype on the structure of the seed microbiota. Investigation of the core seed microbiota of *B. napus* highlighted 20 fungal taxa shared between all the genotypes, while there was no bacterial taxa conserved across all genotypes, underlying the specific influence of host genotype on the structure of the seed microbiota. This latter aspect was confirmed by community-based collection of more than 2,000 seed-associated bacterial isolates. The opportunity to change seed microbiota composition through environmental and genotype selection provides an interesting starting point for investigating its consequences on *B. napus* growth and health.