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Diversity of parasitic fungi from soybean cyst nematode associated with long-term continuous cropping of soybean

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The soybean cyst nematode (SCN, *Heterodera glycines*) is a major yield-limiting pest of soybean. In this study, experiments were conducted to examine the diversity of parasitic fungi from SCN associated with disease-suppressive soil fields in Northeast China. Soil samples were collected from three fields under different rotation systems that were established in 1991: (1) a continuous long-term cropping field with soybean (SSSS) that had been shown to be SCN-suppressive, (2) cycles of three-year rotation with corn, soybean, and wheat (WCS), and (3) continuous cropping field with three-year cycles of two years soybean and one-year corn (SSC). In the traditional method result, cyst densities of SCN declined as increase of parasitic fungi, and the percentage of parasitic fungi associated with cyst of SCN was higher in SSSS field than other two fields. Polymerase chain reaction-denaturing gradient gel electrophoresis (PCRDGGE) also showed that parasitic fungi of SCN were also increased in SSSS field, compared with the other two fields. Principal component analysis based on PCR-DGGE data revealed that fungal communities on cysts could be divided into three groups: one group occurred in SSSS, and the other two groups were in WCS and SSC fields, respectively. Long-term cropping with soybean monoculture in the black soil field might increase parasitic fungi of SCN. These fungal communities may play an important role in the ecological suppression of SCN in disease-suppressive soil.