Molecular tracing of white muscardine in Asian corn borer using inter-simple sequence repeat (ISSR) analysis

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ABSTRACT. Beauveria bassiana is a soil fungus that parasitizes arthropod species, and is used to control the Asian corn borer in Northeast China. In this study, B. bassiana was investigated in Xiaoxian County and Baicheng City, and the results were compared with those of Gongzhuling City, where the fungus was not applied. Using the inter-simple sequence repeat (ISSR) molecular marker technique, 198 isolates were extracted from Asian corn borer and other insect cadavers, and soil and air, and two released strains were analyzed to trace the infection source. In Xiaoxian and Baicheng populations, artificially released B. bassiana subpopulations were more abundant than indigenous fungi, and the released strains were the main cause of disease in those areas. Artificial B. bassiana displayed positive effect on overwintering of Asian corn borers in corn straw stacks in Xiaoxian County. Indigenous populations in Gongzhuling City showed
higher genetic variation. In summary, we identified a significant correlation between genetic distance and geographic distance ($P < 0.01$).

**Key words:** Asian corn borer; *Beauveria bassiana*; Molecular tracing; Population genetic structure; Inter-simple sequence repeat; Genetic distance