Two-year field study shows little evidence that PPO-transgenic rice affects the structure of soil microbial communities

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There is global concern about the environmental consequences associated with transgenic crops. Their effects on the soil ecosystem are of special interest when assessing ecological safety and integrity. Although many efforts have been made to develop crops genetically modified to have resistance to protoporphyrin oxidase (PPO)–inhibiting herbicides, little is known about their influence on soil microbial communities. We conducted a 2–year field study and an analysis via terminal restriction fragment length polymorphism (T–RFLP) to assess the impacts of PPO–transgenic rice on bacterial and fungal communities. In the first year, we sampled the rhizosphere and surrounding bulk soil, while in the second year, we sampled rhizosphere soil only. No differences were observed in the diversity indices and community composition of microbial communities between transgenic rice and its parental non–transgenic counterpart (cultivar Dongjin). Instead, community variation was strongly dependent on growth stage and year. Therefore, we observed no adverse effects by these crops of modified rice on the microbial community composition in paddy soils.

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