Phytotoxic activity of barnyardgrass’ soil and its component of phytochemicals

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Barnyardgrass is one of the most noxious paddy weeds, causes great troublesome to many crops worldwide. In a bioassay, extract of paddy soil infested with barnyardgrass showed strong but selective suppression on growth of rice, whereas growth of barnyardgrass itself was the least influenced, as well as rice was inhibited by greater magnitude than other crops. By the use of a separation resin, eighteen compounds belonging to terpenoids, derivatives of cinnamic acid and ferulic acid, long-chain fatty acid, and steroid that potentially involved in the phytotoxic activities in barnyardgrass soil were isolated and identified by GC-MS. Of which quantities of linalool, 4-terpinenol, coumaran, methyl phenethyl ketone, and methyl ester cinnamic acid were 1.42, 0.37, 0.02, 3.12 µg g⁻¹ wet soil, respectively. The present study demonstrates that barnyardgrass obtains strong allelopathic properties and it releases phytotoxins into soil field to compete with rice and other paddy weeds in its vicinity by chemical pathway.

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