

水氮互作下长雄野生稻化感作用与田间抑草效果

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Allelopathy and Weed-Suppression of *Oryza longistaminata* under Water-Nitrogen Interactions in the Field

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摘要

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摘要 以化感抗稗草长雄野生稻(*Oryza longistaminata*), 非化感栽培稻RD23以及它们的F₁代(RD23 × *O. longistaminata*)为材料, 采用实验室内生物测定和田间调查相结合方法, 研究水肥对长雄野生稻化感作用的影响和探讨对野生稻化感作用及其田间抑制杂草作用的互作关系。在移栽后20~50 d内设淹水、2种形式的干湿交替和旱种等4种田间管理方式, 对每种水分管理方式分别设3个施氮(尿素)水平处理。野生稻叶片的水提液, 检测了对稗草的化感作用。结果表明, 长雄野生稻化感作用在干旱与不施氮水平下最强, 对稗草根长与干重的抑制率分别达到69.3%和74.6%, 但随着施氮水平的提高与淹水时间的延长而降低; 田间则以干湿交替条件下控制稗草效果最好, 旱种管理后进行灌水能显著提高野生稻控制稗草的效果。水分与氮互作效应对长雄野生稻化感作用及其田间抑制杂草效果极显著, 对F₁代化感作用及其田间抑制杂草效果也达显著水平。

关键词: 长雄野生稻 水氮互作 化感作用 抑制杂草

Abstract: Under different irrigation and nitrogen levels, wild rice (*Oryza longistaminata*) with allelopathic potential, and *Oryza sativa* (RD23) without allelopathic potential and their F₁ (RD23 × *O. longistaminata*) were used to study their allelopathy and weed-suppression effects to barnyard grass. During 20 - 50 days after transplanting, four kinds of irrigation managements, and three levels of nitrogen were conducted in the field. In bioassay, the allelopathic effect of extracting solution from rice leaves on barnyard grass germination was observed. The results showed that *O. longistaminata* gave the strongest allelopathy under the conditions of deficiency water and low nitrogen, the inhibition rates for the root length and dry weight of barnyard grass were 69.3% and 74.6%, and decreased with elongating submerging time and increasing nitrogen. The density and biomass of barnyard grass were investigated after growing together with rice 30 days in the field. Wild rice showed the best weed-suppression effects under the alternation of wet and dry in the field. After dry cultivating for wild rice, irrigation could significantly improve its control effect on barnyard grass. Furthermore, interactive effects between irrigation and nitrogen were significant on the allelopathy and weed-suppression in the field for wild rice and the F₁.

Keywords: Wild rice Water-Nitrogen Interaction Allelopathy Weed-suppression

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