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Germination behavior of weedy and cultivated rice under field conditions

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Weedy rice (*Oryza sativa* complex) is a nonspecific weedy relative of cultivated rice (*Oryza sativa* L.) that occurs in rice fields worldwide and at present it is most common in all rice growing areas in Sri Lanka. Weedy rice has direct consequences on a farmer's income by reducing quantity and quality of the yield. Weedy rice is vegetatively very similar to cultivated rice but has some key differences: shattering seed dispersal, red pericarp pigmentation and the ability of seeds to persist in the soil. The high levels of seed shattering and seed dormancy have enriched the soil seed bank of weedy rice in infested fields. The variable and prolonged periods during which seeds remain dormant are major factors that contribute to the success of weedy rice as a "weed." Therefore, studying the germination behavior of weedy rice under similar field conditions is very important to find efficient control measures. Weedy rice seeds were collected from the Matara District and two widely grown improved varieties (At 362 and Bg 379-2) were included in this study. Seeds of the weedy and cultivated rice were placed separately in nylon bags and one set of bags was buried 15 cm deep in soil and another set at 30 cm. Seed germination and viability were tested in weedy and improved rice before burial and at two week intervals after burial. Both weedy rice and improved rice varieties showed more than 85% viability before burying. Weedy rice seeds could remain viable under soil for more than 24 weeks compared with the improved rice varieties, which did not remain viable beyond 16 weeks after burial. Viability of seeds was always higher in deep soil (30 cm depth) compared with surface soil (15 cm depth) for both weedy and improved rice. These results assist in understanding the persistent nature of weedy rice in soil and will help to adopt efficient control measures for weedy rice.

Keywords: Dormancy, weedy rice, viability, burial

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