

An assessment of weedy-rice seed density in paddy soils in the southern Sri Lanka

M.K.R. Silva¹, A.S.K. Abeysekera², L. Nugaliyadde¹ and D.G.E. Udayanga¹

¹Faculty of Agriculture, University of Ruhuna, Mapalana, Kamburpitiya, Sri Lanka

²Rice Research and Development Institute, Batalagoda, Ibbagamuwa

Abstract

There is an increasing awareness on the occurrence and problems caused by the weedy rice in Sri Lanka over the past two decades (Marambe and Amarasinghe, 2000; Abesekera, 2006; Dharshana et al., 2007). Recently, we observed that weedy rice is spreading rapidly in lowland rice lands in the administrative district of Matara (< 300m MSL; annual rain fall 1,200 – 2,400 mm) in the Southern Sri Lanka. This study was undertaken in Maha season 2007/2008 (October – February) to estimate the soil seed bank of weedy rice with a view of designing an integrated approach for the management of weedy-rice. Study was conducted in a rice field (10 ha) in Kamburupitiya (Sapugoda) when the crop was 6 – 12 weeks old. Quadrates (0.25m²) sampling was made to estimate the density of the weedy rice plants in five randomly selected paddies. The soil seed-bank of five paddies was estimated in soil samples of 0.025m² area in two depths (0 - 10cm and 10 -20cm). The mean density of weedy rice plants was 27.82 weedy rice plants/m² (SD = 26.65) in the infested paddies. The median rice seed density in the soil was 464 seeds/m² (SD = 753, IQR = 480) in the upper 10cm depth. In the lower 10cm depth, this value was 112 seeds/m² (SD = 586, IQR = 484). This high soil seed bank emphasizes the need of the management of ungerminated weedy rice seeds in the soil before the establishment of the crop. As it is impossible to kill until the seeds are germinated, weedy rice management strategies have focused on induction of germination followed by killing techniques.

Keywords: Weedy Rice, Soil Seed Bank