



Influence of Weed Flora and Herbicides on Rice (*Oryza sativa* L.) Ecosystem

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Abstract

Most of the people consumes rice in Asian countries. According to cultivated conditions of rice, it has classified into different ecosystems like irrigated medium land, rainfed low land and rainfed upland. As per cultivation practices of rice, weed composition as well as density. According to different growing ecosystems of rice during critical period of crop weed competition are different. Weed affects crop growth like plant height, leaf area, leaf area index and plant dry matter etc. and yield parameters as well as grain yield. Application of herbicides at different dosage reduces weed population and enhances crop yield. There are some detrimental effects of herbicides on soil microflora.

Keywords: growth, herbicide, rice, soil microbes, weed, yield

In world more than 60% people prefer rice as their staple food, where as it is 90% only in Asia (Mohanty 2013). Mahapatra *et al.* 2012 mentioned that rice cultivated area can be divided into various ecologies based on topography of the land and hydrology viz. irrigated medium land (45%), rainfed low land (39%) and rainfed upland (16%). In India rice is a traditional crop in Eastern zone and out of 61.3% rice area in that area 20% is rainfed upland, 28.5% is medium land and 51.5% is rainfed low land. In case of low land rice puddling is done for transplanting or wet seeding method of cultivation. In many rice growing ecosystem of India, major weeds are *Echinochloa crusgalli*, *Echinochloa colona* and *Sacciolepis sp.* and these mimic with rice crop. As weeds compete with crops for resources, so they are major biological constraints for reduction of rice yield and quality (Kumar and Ladha 2011; Rao and Nagamani

2013). There is wide range of rice yield reduction due to weeds and it is about 15-76% ((Singh *et al.* 2004; Mondal *et al.* 2005; Rao and Nagamani 2010; Mishra *et al.* 2012; Mandal *et al.* 2013), whereas according to (Duary *et al.* 2004; Kolay 2007) the factors affecting this yield reduction are type of rice culture, variety, weed species and density, planting spacing, cropping season, fertilizer application rate, time and duration of weed infestation, climate and environmental conditions. Rao *et al.*, 2007) reported that if we compare different methods of rice cultivation, percentage rice yield reduction is more in direct seeded rice than transplanted rice. Following to the above statement Ramzan (2003) has mentioned that

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