Investigation the rice growth in rotation with a second crop in northern Iran

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Abstract
Since arable land is becoming limited, improving productivity and increasing cropping intensity by adopting rice cultivation with second crops in potentially irrigated areas will be required to meet the food demand of the region’s increasing population. There are many reports about rice rotation systems in many tropical Asian countries. In order to investigating the effects of second crop cultivation on growth, yield and yield components of rice, a field experiment was conducted at the Rice Research Institute of Iran-Deputy of Mazandaran (Amol) in split plot in basis of Randomized Completely Block Design with three replications during 2004 and 2005. Tarom as a traditional variety and Fajr as a improved variety were used in this research. Faba bean (Faba vulgaris), pea (Pisum sativum), lettuce (Lactuca sativa) and garlic (Allium sativum) were used as a second crop in rotation with rice. Second crop cultivation, variety and interaction between them had a significant effect on tiller number at 0.01 probability level. Results showed that rice yield after lettuce and garlic rotation was lower than with faba bean, pea and fallow rotation. These results indicated that rice varieties had different reaction to second crop cultivation. For example, Tarom variety in rotation with lettuce and garlic had higher yield deficiency than Fajr variety. These results suggested that lettuce and garlic can not be a permanent second crop in paddy field. According to results, pea and faba bean in rotation with rice for the best performance of yield attributes of rice varieties were recommended.

Key words: garlic, growth, rice, second crop, yield