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Investigation of Indigo (*Indigofera tinctoria* L.) and Roselle (*Hibiscus sabdariffa* L.) Intercropping Effect on Weed Density

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Abstract

Intercropping is one of the most effective methods to achieve a sustainable agriculture system. In order to investigate the effect of intercropping indigo (*Indigofera tinctoria* L.) and roselle (*Hibiscus sabdariffa* L.) on yield and weed biomass, an experiment based on a randomised completely design with three replications, was conducted on the South Kerman Agricultural and Natural Resource Research and Education Center, Iran, in 2014. Treatments were different plant densities of indigo and roselle in an additive and replacement intercropping system: 100:100, 100:50, 50:100, 50:50 and monoculture of indigo and roselle, respectively. The results showed that a maximum yield of roselle (1114 kg ha^{-1}) is obtained at the 100:100 intercropping ratio showing a 29.3 % higher yield as compared to roselle in mone culture. The density of the weed Amaranth (*Amarantus* sp.) in the 100:100, 50:100 and 100:50 ratios of indigo and roselle, was 57.4 %, 81.5 % and 70.4 % lower as found in the Roselle mono culture, respectively. Maximum plant density of the weed Cyprus (*Cyprus* sp.) was found in both indigo and roselle mono cultures as well as in the 50:50 intercropping. Plant density of further weeds in 100:100, 100:50, 50:100 and 50:50 ratios were 77.7, 48.2, 51.9 and 44.4 % lower as found in the roselle mono culture. Weed biomass in the 100:100, 50:100 and 100:50 ratios was 25.4, 16.0 and 23.4 % less than in the roselle mono culture and its lowest amount (84 g m^2) was encountered in the 100:100 system. It seems that the mono cultures and the 50:50 intercropping of indigo and roselle offered the best ecological niche for weed development; all other intercropping ratios seem to repress weed development.

Keywords: Indigo, intercropping, roselle, weed density

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