

Effect of times of weed controls, row spacing and density on growth and yield of cumin

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In order to investigate the time effects of weed control; row spacing and density on growth and yield of cumin (*Cumin cyminum*) an experiment was conducted at the university of Ferdowsi Pardis Field, in a split plot design with 24 treatments and 4 replication per treatment. The growth analysis were also studied. Weed control had significantly increased the yield of cumin seeds. The yield of cumin in one time weed control was twice as weedy check. However, there were no significant differences between one two and three times weed control. The correlation between weed biomass and yield of cumin were negatively high ($r = -0.998$). There no significant differences between row spacings. The yield of cumin increased as the plant population/m² increased. The results of growth analysis showed that leaf area index (LAI) and crop growth rate (CGR) increased with density and times of weed control.

Net assimilation rate (NAR) decreased as plant population increased, but NAR increased as time of weed control increased. Since reproductive organs of cumin do photosynthesis, LAI and CGR was maximum at reproductive stage. Relative growth rate (RGR) and leaf area ratio decreased in growing season. Increasing yield at high density is because of increasing LAI and CGR. The overall results indicates that under irrigated condition cumin planted with population density of 120 plants /m² 40 cm row spacing and one time weed control may be recommended for the Mashhad area.