

## Abstract

In order to examine of multi-species weed competition on chickpea (*Cicer arietinum* L.) cultivars yield and yield components an experiment as an interval mapping was carried out in the researching field of Mashhad University during 2012. Treatments were two levels of weed management (control and non-control) and five levels of chickpea cultivar (MCC439, MCC510, MCC361, MCC358 and MCC252). For per chickpea cultivar, 30 destructive quadrates and 15 non-destructive quadrates in control field and non-control field (450 quadrats totally), were sampled at third week after emergence of chickpea and end of season, were sampled was carried out at third week after emergence of chickpea and end of season. density of weed species was separately counted and leaf area index and dry matter of all species were separately measured. For researching of vicinity effects and estimating the coefficients of vicinity each species (chickpea cultivars and weeds), between density, dry matter, relative leaf area and relative leaf ratio as the independent variable and weight, weight reciprocal and Ln of individual plant weight as the dependent variable, multiple linear function were fitted. Then, because of high standard errors in the results, instead of multiple linear regression, stepwise-backward regression was used. Results showed that reciprocal weight of single plant and dry matter had high correlation for yield loss and coefficients of competition (average of  $R^2$  for five cultivars were 0.94). also, based on equation coefficients, Lambsquarter had the most facilitator effect (negative coefficients), and Barnyardgrass, Jimson weed and Bindweed had the most lower effect (positive coefficients) respectively. positive effect of weeds on yield of chickpea was due to inhibition effects of them on weeds that had inhibition vigorous effect on chickpea. Differences between genotypes and the interaction of genotype and weed control were significant. In comparison of cultivars, MCC439 had the highest ( $159.27 \text{ g.m}^{-2}$ ) and MCC358 had the lowest ( $55.57 \text{ g.m}^{-2}$ ) Economical Yield on non-control field. Under control condition, these cultivars had the highest ( $243.7 \text{ g.m}^{-2}$ ) and the lowest ( $152.37 \text{ g.m}^{-2}$ ) amount of Economical Yield, respectively. It seems that the chickpea deci type (MCC439) higher yield than the other four cultivars, rather than correspond with competitive ability, associated with high yield potential.

**Keywords:** Chickpea, Multi-species competition, Reciprocal weight of single plant, Relative leaf area, Stepwise-backward regression, Vicinity