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RESEARCH ARTICLE

Orobanche infestation in Indian *Brassica juncea* L. in Ajmer districts of Rajasthan and its management

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ABSTRACT : *Orobanche aegyptiaca* started to emerge above ground 40 DAS of Indian mustard. Significant difference was observed in number of *Orobanche* shoots m^{-2}, fresh and dry weight of *Orobanche* shoots m^{-2} and visual control of *Orobanche* in mustard crop due to different treatments. At 60DAS, treatments T_3, T_7, T_8 and T_9 were observed most effective with no shoots, fresh weight and dry weight of *Orobanche* m^{-2}, hence, providing 100 per cent control of *Orobanche* at 65DAS of mustard. At 90DAS, 120DAS and harvest, treatment T_9 was found statistically at par with T_7 and T_8 in reducing the number, fresh and dry weight of *Orobanche* shoots, hence, providing the maximum visual control at 95, 125DAS and at harvest, respectively. Increasing the application of nitrogen in mustard decreased the population, fresh weight and dry weight of *Orobanche* and increased the control of *Orobanche* in T_9 over T_8 probably because of detrimental effect of the nitrogenous fertilizers on the parasitic infestation. A significant difference in plant height and dry matter accumulation $plant^{-1}$ of mustard was observed due to different treatments. The plant height and dry matter accumulation $plant^{-1}$ in treatment T_9 *i.e.* 125 per cent of recommended fertilizer + foliar spray of glyphosate at 25 and 50g ha^{-1} + 1.0% solution of $(NH_4)_2SO_4$ at 25 and 55DAS, respectively was higher due to higher dose of N and P and excellent control of *Orobanche* during its life cycle. Different treatments resulted in significant difference in crop growth rate of Indian mustard from sowing upto 130DAS and thereafter it remained non-significant. Among different treatments, 125 per cent of recommended fertilizer + foliar spray of glyphosate at 25 and 50g ha^{-1} + 1.0% solution of $(NH_4)_2SO_4$ at 25 and 55DAS, respectively (T_9) resulted in highest CGR which might be due to better control of *Orobanche* coupled with beneficial effects of higher dose of N and P on mustard at active vegetative stages as a result of enhancement in cell multiplication, cell elongation and cell expression in the plant body which ultimately increased the CGR. Among the different treatments, number of primary branches at harvest stage were found maximum in treatment T_9 which was at par with treatment T_7 but significantly higher over rest of the treatments. Number of siliquae $plant^{-1}$ at harvest stage were recorded maximum in treatment T_9 which was at par with treatment T_7 but significantly higher over rest of the treatments. T_9 recorded maximum number of siliquae because higher nutrients help in more number of branches, mainly the secondary branches and resulting higher number of siliquae $plant^{-1}$ at higher dose of fertilizers. Similarly, number of siliquae $branch^{-1}$ were maximum under 125 per cent of recommended fertilizer + foliar spray of glyphosate at 25 and 50g ha^{-1} + 1.0% solution of $(NH_4)_2SO_4$ at 25 and 55DAS, respectively (T_9) which was significantly superior over all other treatments. Maximum siliqua length (cm) and 1,000-grain weight (g) was observed with 125 per cent of recommended fertilizer + foliar spray of glyphosate at 25 and 50 g ha^{-1} + 1.0% solution of $(NH_4)_2SO_4$ at 25 and 55DAS, respectively (T_9) which was at par with foliar spray of glyphosate at 25 and 50g ha^{-1} + 1.0% solution of $(NH_4)_2SO_4$ at 25 and 55DAS, respectively (T_7) and superior over all other treatments. Similarly, grains $siliqua^{-1}$ were recorded maximum in treatment T_9 which was found statistically at par with T_2, T_3, T_6, T_7 and T_8 and significantly higher than other treatments. Grain yield and biological yield of Indian mustard varied