RESEARCH PAPER

Production potential of [*Glycine max* (L.) Merrill] under different weed management practices

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ABSTRACT : The results of experiment reveal that pre-emergence application of pendimethalin 0.75kg ha^{-1} + hand weeding 30DAS resulted the lowest density of monocot (3.41m^{-2}), dicot (3.15m^{-2}) and total weeds (4.59m^{-2}) 50DAS compared to weedy check (6.80, 6.01 and 9.05m^{-2}), respectively. Integration of pre-emergence herbicides with hand weeding or their sequential use with post-emergence herbicides was found significantly superior in controlling the weed density 50DAS compared to their corresponding application alone. All the weed control treatments were also found significantly superior in reducing dry matter of monocot; dicot and total weeds compared to weedy check 75DAS. Minimum total weed dry matter 75DAS was observed under weed free (146kg ha^{-1}) closely followed by pre-emergence application of pendimethalin 0.75kg ha^{-1} + hand weeding 30DAS (431.7kg ha^{-1}) compared to weedy check (1884.5kg ha^{-1}). Weed control efficiency 75DAS observed maximum under weed free treatment in which crop was kept weed free upto 50 days (92.18%) which is closely followed by pre-emergence application of pendimethalin 0.75kg ha^{-1} + hand weeding 30DAS (76.96%) and weed index was also recorded the lowest under pre-emergence application of pendimethalin 0.75kg ha^{-1} + hand weeding 30DAS (3.17%). Uptake of N and P by weeds at harvest was found significantly lower with all the weed control treatments compared to weedy check. The minimum uptake of N (2.78kg ha^{-1}) and P (0.40kg ha^{-1}) was recorded with weed free treatment closely followed by pre-emergence application of pendimethalin 0.75kg ha^{-1} + hand weeding 30DAS with the respective uptake values as 8.17 and 1.18kg ha^{-1}. All the weed control treatments significantly tended to increase plant height, dry matter accumulation, branches plant^{-1} and leaf area of soybean over weedy check. Weed free treatment recorded the highest plant dry matter (32.20g plant^{-1}) at harvest closely followed by pre-emergence application of pendimethalin 0.75kg ha^{-1} + hand weeding 30DAS (31.05g plant^{-1}) and two hand weeding (30.65g plant^{-1}). Weed free treatment recorded maximum number of branch plant^{-1}, number of pods plant^{-1}, pod length and seed index which was closely followed by pre-emergence application of pendimethalin 0.75kg ha^{-1} + hand weeding 30DAS and these treatments were found statistically at par to each other in this regard. Weed free upto 50 days treatment resulted in maximum seed yield (1421kg ha^{-1}) which was statistically at par with pre-emergence application of pendimethalin 0.75kg ha^{-1} + hand weeding 30 DAS (1376kg ha^{-1}) and two hand weeding 15 and 30DAS (1321kg ha^{-1}). A like seed yield, haulm yield (3100kg ha^{-1}), biological yield (4521kg ha^{-1}) and harvest index (31.43%) were also recorded maximum under weed free treatment which were closely followed by pendimethalin 0.75kg ha^{-1} PE + hand weeding 30DAS. The maximum uptake of total nitrogen (143.78kg ha^{-1}) and phosphorus (15.63kg ha^{-1}) by the crop was significantly more in weed free check closely followed by pre-emergence application of pendimethalin 0.75kg ha^{-1} + hand weeding 30DAS and these treatments were found statistically at par to each other in this regard and the minimum being recorded under weedy check with the respective value of 52.32 and

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