EFFECT OF POST-EMERGENCE HERBICIDE IMAZETHAPYR ON PHENOLOGICAL AND AGRONOMIC TRAITS IN CHICKPEA BREEDING LINES

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Chickpea is sensitive to herbicides and manual weeding is currently the only option for weed control in many developing countries in arid and semi-arid regions of the world. The farmers in these countries need herbicide-tolerant varieties to use post-emergence herbicides to control weeds. In this direction, a study was conducted with 21 breeding lines at four locations in India (Patancheru, Bijapur, Nandyal and Sehore) during post-rainy season of 2014-15. The trial was conducted under field conditions in RBD with four replications in both control (hand weeding) and sprayed (herbicide: Imazethapyr @ 750 ml/ha) treatments. The herbicide was sprayed 30 days after sowing. Herbicide effect was studied on phenological (days to flowering and maturity) and agronomic (number of primary and secondary branches, plant height, seed yield, 100-seed weight and harvest index) traits. The results indicated that time to flowering and maturity was delayed up to 16.5 and 18.5 days, respectively. Herbicide had no effect on primary branches, while the number of secondary branches was increased up to 12. Plant height was severely reduced by 18cm. The reduction in seed yield was observed up to 49%, whereas 100-seed weight was increased across locations. Location-specific superior lines (Nandyal: ICCIL 04016, ICCIL 04004, ICCV 10114; Patancheru: ICCIL 04007; Bijapur: ICCV 04516, ICCV 10, ICCV 97105, ICCIL 01026, ICCV 09106; Sehore: ICCV 08102) were identified. These lines can be used as potential sources for developing herbicide tolerant varieties in chickpea. Weed management through herbicides is economical and facilitates minimum tillage methods, which help preserve topsoil.

Keywords: Chickpea, herbicide tolerance, Imazethapyr, phenology, agronomical traits