



RESEARCH NOTE

Residual effect of pre and post emergence herbicides and fertility levels on succeeding crops after soybean

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Herbicides proved important tool in modern farming systems. With the intense farming practice and multiple cropping, the paucity of agricultural labour is seen. Their peak demand for a short period, inaccessible field conditions during crop seasons also encourages using herbicides in modern farming. But continuous application of herbicides in intense cropping systems may leads to it's residue accumulation in the soil. This persistence of a herbicide may limit the choice of succeeding crops. Therefore, residual studies are essential to determine the feasibility of any herbicide. *Rabi* sorghum, bajra, barley and ragi are the important succeeding crops grown after soybean in South Saurashtra region. Therefore, the present study about residual effect of pre and post emergence herbicides and fertility levels in succeeding crops after soybean was undertaken at Instructional Farm of Junagadh Agricultural University, Junagadh during *Kharif* season of 2006.

Eighteen treatment combinations comprising six levels of weed management practices as main plot treatments *viz.*, W_1 - Pre-emergence pendimethalin @

0.5 kg ha⁻¹ + HW and IC at 30 DAS, W_2 - Post-emergence quizalofop-ethyl @ 40 g ha⁻¹ at 25 DAS + HW and IC at 45 DAS, W_3 - Post-emergence imazethapyr @ 75 g ha⁻¹ at 25 DAS + HW and IC at 45 DAS, W_4 - 2 HW + 2 IC at 20 and 40 DAS, W_5 - Weed free upto 60 DAS through hand weeding and W_6 - Unweeded control and three levels of fertilizers as sub plot treatments *viz.*, F_1 - 20:40:20 kg N:P₂O₅:K₂O ha⁻¹ F_2 - 30:60:30 kg N:P₂O₅:K₂O ha⁻¹ F_3 - 40:80:40 kg N:P₂O₅:K₂O ha⁻¹ were tried in Split Plot Design with three replications. The soil of the experimental plot was low in available nitrogen, medium in available phosphorus and high in available potash. Pre-emergence application of pendimethalin herbicide was done after 24 hours of sowing of soybean and post pre-emergence application of herbicide quizalofop-ethyl and imazethapyr was done after 25 days after sowing. The succeeding crops *Rabi* sorghum, bajra, barley and ragi were sown after harvesting of soybean within a week. The biometric observation about germination percentage of succeeding crops was done after 10 days of sowing. Plant height

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Table 1 : Residual effect of weed control practices and fertility levels on succeeding crops after soybean

Treatments	Succeeding crops											
	Rabi sorghum			Bajra			Barley			Ragi		
	Germination %	Plant height (cm)	Dry matter (g)	Germination %	Plant height (cm)	Dry matter (g)	Germination %	Plant height (cm)	Dry matter (g)	Germination %	Plant height (cm)	Dry matter (g)
Weed management practices												
W ₁	90.80	20.50	21.61	90.80	21.49	18.36	91.20	22.23	18.92	89.42	20.50	23.07
W ₂	88.80	18.70	19.32	88.72	21.99	17.63	89.22	21.62	18.17	88.46	20.22	22.57
W ₃	90.07	19.16	20.16	90.48	22.28	18.04	90.69	22.13	18.87	89.02	20.36	22.80
W ₄	92.08	20.91	21.22	92.07	23.39	18.62	91.39	22.58	19.08	89.87	21.23	23.09
W ₅	94.08	21.72	21.50	93.08	23.73	19.14	92.04	22.81	19.44	90.96	21.57	23.33
W ₆	93.08	22.43	21.74	94.08	24.87	19.19	92.69	23.49	20.20	91.67	22.24	23.82
C.D. (P= 0.05)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fertility levels (kg N:P₂O₅:K₂O ha⁻¹)												
F ₁	90.63	20.02	20.33	90.45	22.34	17.94	90.28	22.17	18.59	89.01	20.67	22.78
F ₂	91.52	20.59	20.82	91.57	22.67	18.61	91.28	22.27	19.06	90.09	20.94	22.96
F ₃	92.29	21.11	21.13	92.59	23.86	18.94	92.06	22.99	19.69	90.60	21.46	23.59
C.D. (P= 0.05)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

NS= Non-significant

and dry matter production data were recorded after 30 days of sowing.

The data presented in Table 1 indicated no significant difference among the different treatments combinations. The germination percentage, plant height and dry matter production were not affected by the application of different herbicides as well as fertilizers. This might be due to timely degradation of all applied herbicides (Chhatrala, 2005). The results clearly indicates that the herbicides and fertilizers applied to soybean crop does not have any phytotoxic effect on the succeeding crops like *Rabi* sorghum, bajra, barley and ragi. These crops can be safely sown as succeeding crop after harvesting of *Kharif* soybean along with pendimethalin, quizalofop-ethyl and imazethapyr. The results concludes that these herbicides were safer to grow *Rabi* sorghum, bajra, barley and ragi after soybean. These findings are in agreement with the results obtained by Patel *et al.* (1992); Singh *et al.* (1996); Subramaniyan *et al.* (1998) and Jaykumar *et al.* (2003).

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