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Effect of weed control practices on nutrient content of maize (*Zea Mays* L.)

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ABSTRACT

The field investigation was carried out during two consecutive kharif seasons of 2023–24 and 2024–25 at the Agricultural Research Farm, Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya, Chitrakoot, Satna (M.P.) to evaluate the effect of various weed control practices on the nitrogen, phosphorus and potassium content in grain and stover of maize (*Zea mays* L.). Results revealed that among the weed management options, the maximum nitrogen, phosphorus and potassium contents in both grain and stover were recorded under the weed-free check, registering pooled values of 1.61% N, 0.47% P and 0.59% K in grain and 0.65% N, 0.25% P and 1.63% K in stover. Among the herbicidal treatments, Atrazine @ 500 g ha⁻¹ PE fb mesotrione + atrazine @ 300 g ha⁻¹ at 25–30 DAS and Pyroxasulfone @ 127 g ha⁻¹ PE fb tembotrione @ 120 g ha⁻¹ at 25–30 DAS recorded the highest macro-nutrient content, both achieving pooled values of 1.59%, 0.47% and 0.59% N, P and K in grain, while 0.65% N, 0.25% P and 1.62% K in stover and 1.59% N, 0.47% P and .08% K in grain and stover respectively. Conversely, the significantly lowest nutrient contents across both experimental years and on a pooled basis were observed under the Weedy check (*T*₁), recording pooled values of 1.48% N, 0.43% P and 0.51% K in grain and 0.56% N, 0.22% P and 1.49% K in stover, followed by Pyroxasulfone @ 127 g ha⁻¹ PE fb halosulfuron methyl @ 67 g ha⁻¹ at 25–30 DAS (*T*₉). Systematic weed suppression during critical crop growth stages effectively minimized crop-weed competition, thereby improving root absorption efficiency and facilitating greater translocation of N, P and K into grain and stover.

Keywords: Nitrogen content, Phosphorus content, Potassium content, Herbicides

Introduction

Maize (*Zea mays* L.) is a major cereal crop globally and in India high. Its productivity and quality are strongly influenced by weed interference, particularly during the early growth stages when crop-weed competition for soil nutrients is most critical (Kakade *et al.*, 2016) [1]. Weeds compete directly with maize for essential macronutrients like nitrogen (N), phosphorus (P) and potassium (K), often absorbing a higher proportion of available nutrients than the crop itself under unmanaged conditions, leading to severe "nutrient drain" (Sanketh, 2021) [2].

Efficient weed control options including timely hand weeding, pre- and post-emergence herbicide applications and integrated weed management strategies significantly reduce weed density and dry biomass (Sardaret *et al.*, 2020) [3]. This reduction minimizes nutrient depletion by weeds and enhances nutrient availability and uptake by the maize crop (Samanth *et al.*, 2015) [4]. Proper weed management promotes greater accumulation of nitrogen, phosphorus and potassium in maize grain and stover compared to unweeded controls, contributing to better nutrient partitioning toward yield components (Kumar *et al.*, 2017) [5]. Conversely, unmanaged weed growth leads to severe crop-weed competition, resulting in reduced nutrient content in grain and stover, lower crop yield and poor nutrient use efficiency (Malviya *et al.*, 2007) [6].

Under the agro-ecological conditions of the Kymore Plateau region of Central India (Chitrakoot, Satna, M.P.), characterized by a semi-arid sub-tropical climate, sandy loam soils and distinct seasonal weed flora, nutrient losses due to weed competition pose a major constraint to maize production. However, region-specific information on the effect of various pre- and post-emergence herbicide combinations and hand weeding practices on the nutrient content of maize remains limited. Understanding nutrient dynamics under different weed management practices is essential for optimizing input efficiency and ensuring sustainable crop production. Hence, a study was under taken to assess the effect of weed management practices on nitrogen, phosphorus and potassium content in grain and stover of maize.

Materials and Methods

A field experiment was conducted over two consecutive *kharif* seasons (2023–24 and 2024–25) at the Agricultural Research Farm, Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya, Chitrakoot, Satna, Madhya Pradesh. Situated within the Kymore Plateau region of Northern M.P., the site lies at 25°10' N latitude and 80°52' E longitude, with an elevation of 190 to 210 m above mean sea level. The experimental soil

possessed a sandy loam texture and demonstrated neutral pH (7.42, in two year). Soil fertility analysis revealed a low organic carbon level (0.44% and 0.47%) along with low available nitrogen (213.96 kg/ha and 198.28 kg/ha). Available phosphorus was recorded in the higher range (42.86 kg/ha and 43.56 kg/ha), whereas available potassium remained at medium levels (231.96 kg/ha and 228.32 kg/ha) across the respective trial years. Throughout the crop cycle (June through March), total seasonal precipitation reached 972 mm during 2023–24 and 847 mm in 2024–25.

The treatment combinations consisted of twelve weed management options applied to maize, namely T₁: weedy check, T₂: weed-free check, T₃: Atrazine @ 500 g ha⁻¹ PE + hand weeding at 25-30 DAS, T₄: Pyroxasulfone @ 127 g ha⁻¹ PE + hand weeding at 25-30 DAS, T₅: Atrazine @ 500 g ha⁻¹ PE fb Halosulfuron methyl @ 67 g ha⁻¹ at 25-30 DAS, T₆: Atrazine @ 500 g ha⁻¹ PE fb Tembotrione @ 120 g ha⁻¹ at 25-30 DAS, T₇: Atrazine @ 500 g ha⁻¹ PE fb Topramezone @ 25 g ha⁻¹ at 25-30 DAS, T₈: Atrazine @ 500 g ha⁻¹ PE fb Mesotrione + Atrazine @ 300 g ha⁻¹ at 25-30 DAS, T₉: Pyroxasulfone @ 127 g ha⁻¹ PE fb Halosulfuron methyl @ 67 g ha⁻¹ at 25-30 DAS, T₁₀: Pyroxasulfone @ 127 g ha⁻¹ PE fb Tembotrione @ 120 g ha⁻¹ at 25-30 DAS, T₁₁: Pyroxasulfone @ 127 g ha⁻¹ PE fb Topramezone @ 25 g ha⁻¹ at 25-30 and T₁₂: Pyroxasulfone @ 127 g ha⁻¹ PE fb Mesotrione + Atrazine @ 300 g ha⁻¹ at 25-30 DAS. These twelve treatments were evaluated in a randomized block design (RBD) replicated three times.

The maize (cv. JM – 216) was sown on 19 July 2023 and 16 July 2024 at a row spacing of 60 cm in furrows apart with seed rate 20 kg ha⁻¹. After 15 DAS in the first year and 12 DAS in the second year, the plant spacing of maize was maintained at 20 cm apart with thinning and gap filling operations. The maize crop was fertilized at 120: 60: 30 kg N: P₂O₅: K₂O ha⁻¹. Half quantity of N + full quantity of P₂O₅ and K₂O was basally applied in furrows at sowing and the remaining half nitrogen was applied in two equal split doses as top dressing at 21 and 46 DAS during 2023-24 and at 20 and 44 DAS during 2024-25. The maize crop was harvested on 20 October 2023 and 11 October 2024 during two consecutive years. The nitrogen, phosphorus and potassium content in grain and stover of maize at harvest was estimated by adopting the Kjeldahl method using the KEL PLUS nitrogen estimation system for nitrogen, the Colorimetric (Spectrophotometer) method for phosphorus as described by Jackson (1973) [7] and the Flame photometer method for potassium as described by Jackson (1973) [7]. Analysis of variance technique as prescribed to randomized block design and valid conclusions were drawn as suggested by Fisher *et al.* (1967) [8]. The treatment differences were tested for significance by 'F' test and for the data in which the treatment effects were significant, the appropriate standard error of mean $SE_m \pm$ and the critical difference (CD) were worked out at 5% level of significance.

Result and Discussion

Nitrogen content (%) in grain and straw of maize

Nitrogen content in grain of maize was significantly improved with the use of all weed control treatments over the weedy check plot on the basis of pooled data. It was recorded significantly higher under Weed-free check viz. 1.62% (2023–24), 1.59% (2024–25) and 1.61% (pooled) followed by Atrazine @ 500 g ha⁻¹ PE fb Mesotrione + Atrazine @ 300 g ha⁻¹ at 25–30 DAS viz. 1.61% (2023–24), 1.58% (2024–25), 1.59% (pooled) and Pyroxasulfone @ 127 g ha⁻¹ PE fb Tembotrione @ 120 g ha⁻¹ at 25–30 DAS viz. 1.61% (2023–24), 1.57% (2024–25), 1.59% (pooled) respectively. Conversely, the lowest nitrogen content in grain was recorded under Weedy check viz. 1.51% (2023–24), 1.45% (2024–25) and 1.48% (pooled). The nitrogen content in stover of maize was significantly enhanced with all weed control treatments as compared to the weedy check on the basis of pooled data. It was found significantly maximum under Weed-free

check i.e. 0.61% (2023–24), 0.70% (2024–25) and 0.65% (pooled) followed by Atrazine @ 500 g ha⁻¹ PE fb Mesotrione + Atrazine @ 300 g ha⁻¹ at 25–30 DAS i.e. 0.60% (2023–24), 0.69% (2024–25) and 0.65% (pooled) and Pyroxasulfone @ 127 g ha⁻¹ PE fb Tembotrione @ 120 g ha⁻¹ at 25–30 DAS viz. 0.60% (2023–24), 0.68% (2024–25) and 0.64% (pooled). Meanwhile, the lowest nitrogen content in stover was observed under Weedy check i.e. 0.54% (2023–24), 0.59% (2024–25) and 0.56% (pooled). This was due to the effective control and systematic suppression of weeds throughout the critical growth stages, which significantly reduced crop-weed competition for space, moisture, light and nutrients. The lower weed density and higher weed control efficiency in the weed-free check and Sequential herbicidal treatments—particularly Atrazine @ 500 g ha⁻¹ PE fb Mesotrione + Atrazine @ 300 g ha⁻¹ at 25–30 DAS and Pyroxasulfone @ 127 g ha⁻¹ PE fb Tembotrione @ 120 g ha⁻¹ at 25–30 DAS facilitated unhindered root expansion and better soil nutrient availability. This enhanced the root absorption capacity and nutrient uptake efficiency of maize, thereby promoting vigorous vegetative development, higher dry matter accumulation and greater translocation and accumulation of nitrogen into the developing grain and stover tissue. Conversely, heavy weed infestation in the weedy check caused severe nutrient competition, resulting in restricted plant growth and lower tissue nitrogen content. These findings are in close conformity with the results reported by Gul *et al.* (2015) [9].

Phosphorous content (%) in grain and straw of maize

Various weed management treatments significantly improved the phosphorus content in grain of maize over the weedy check plot on the basis of pooled data. It was recorded significantly higher under Weed-free check viz. 0.48% (2023–24), 0.47% (2024–25) and 0.47% (pooled) followed by Atrazine @ 500 g ha⁻¹ PE fb Mesotrione + Atrazine @ 300 g ha⁻¹ at 25–30 DAS and Pyroxasulfone @ 127 g ha⁻¹ PE fb Tembotrione @ 120 g ha⁻¹ at 25–30 DAS viz. 0.48% (2023–24), 0.46% (2024–25), 0.47% (pooled) and 0.48% (2023–24), 0.46% (2024–25), 0.47% (pooled), respectively. Conversely, the lowest phosphorus content in grain was recorded under Weedy check viz. 0.44% (2023–24), 0.41% (2024–25) and 0.43% (pooled). The phosphorus content in stover of maize was significantly enhanced with all weed control treatments as compared to the weedy check on the basis of pooled data. It was found significantly maximum under Weed-free check i.e. 0.24% (2023–24), 0.26% (2024–25) and 0.25% (pooled) followed by Atrazine @ 500 g ha⁻¹ PE fb Mesotrione + Atrazine @ 300 g ha⁻¹ at 25–30 DAS i.e. 0.24% (2023–24), 0.26% (2024–25) and 0.25% (pooled) and Pyroxasulfone @ 127 g ha⁻¹ PE fb Tembotrione @ 120 g ha⁻¹ at 25–30 DAS viz. 0.24% (2023–24), 0.25% (2024–25) and 0.25% (pooled). Meanwhile, the lowest phosphorus content in stover was observed under Weedy check i.e. 0.21% (2023–24), 0.22% (2024–25) and 0.22% (pooled). The improvement in phosphorus concentration within both grain and stover under effective weed management practices can be attributed to the successful elimination of crop-weed competition during critical growth stages. In the weed-free check and superior herbicidal treatments notably Atrazine @ 500 g ha⁻¹ PE fb Mesotrione + Atrazine @ 300 g ha⁻¹ at 25–30 DAS and Pyroxasulfone @ 127 g ha⁻¹ PE fb Tembotrione @ 120 g ha⁻¹ at 25–30 DAS, the timely control of weeds prevented the depletion of soil moisture and bioavailable nutrients. Consequently, the maize crop developed a more extensive root system and robust vegetative structure, facilitating higher absorption of native and applied phosphorus from the soil solution. This optimized nutrient uptake directly supported primary physiological processes, energy transfer and efficient translocation of phosphorus compounds into sink tissues during reproductive development. Conversely, unmanaged weed growth in the weedy check severely restricted root growth and soil nutrient availability, leading to diminished tissue phosphorus levels. These results are in close agreement with the findings reported by Srinivasan *et al.* (2024) [10].

Potassium content (%) in grain and straw of maize

Potassium content in grain of maize was significantly influenced by different weed management practices, showing a marked improvement across all weed control treatments compared to the weedy check on a pooled data basis. The highest accumulation was registered in the Weed-free check, recording 0.58% (2023–24), 0.61% (2024–25) and 0.59% (pooled), which was closely followed by Atrazine @ 500 g ha⁻¹ PE fb Mesotrione + Atrazine @ 300 g ha⁻¹ at 25–30 DAS viz. 0.58% (2023–24), 0.60% (2024–25), 0.59% (pooled) and Atrazine @ 500 g ha⁻¹ PE + hand weeding at 25–30 DAS viz. 0.57% (2023–24), 0.58% (2024–25), 0.58% (pooled), respectively. Conversely, the lowest potassium content in grain was recorded under Weedy check viz. 0.54% (2023–24), 0.49% (2024–25) and 0.51% (pooled). Regarding potassium content in stover of maize, all herbicidal and manual weed management treatments proved significantly superior over the unweeded control based on the pooled results. The maximum values were observed under Weed-free check i.e. 1.64% (2023–24), 1.62% (2024–25) and 1.63% (pooled) followed by Atrazine @ 500 g ha⁻¹ PE fb Mesotrione + Atrazine @ 300 g ha⁻¹ at 25–30 DAS i.e. 1.63% (2023–24), 1.60% (2024–25) and 1.62% (pooled) and Pyroxasulfone @ 127 g ha⁻¹ PE fb Tembotrione @ 120 g ha⁻¹ at 25–30 DAS viz. 1.63% (2023–24), 1.60% (2024–25) and 1.61% (pooled). Meanwhile, the lowest potassium content in stover was observed under Weedy check i.e. 1.52% (2023–24), 1.46% (2024–25) and 1.49% (pooled). The significant enhancement in potassium content in maize grain and stover under weed-free and sequential herbicidal treatments was primarily due to the effective suppression of weed competition for soil

moisture and nutrients. Mitigating crop-weed interference allowed for unrestricted root extension, enabling enhanced potassium absorption from the root zone. This unimpeded nutrient uptake promoted superior vegetative vigor and dry matter production, which in turn facilitated efficient partitioning and accumulation of potassium into plant tissues. Conversely, high weed density in the weedy check severely restricted nutrient availability, resulting in lower tissue potassium concentrations. These findings are in close agreement with the results reported by Deshmukhet *et al.* (2008) [11].

Conclusion

Thus, it can be concluded that the pre-emergence application of Atrazine @ 500 g ha⁻¹ PE fb mesotrione + atrazine @ 300 g ha⁻¹ at 25–30 DAS, as well as Pyroxasulfone @ 127 g ha⁻¹ PE fb tembotrione @ 120 g ha⁻¹ at 25–30 DAS, were found to be the most effective herbicidal treatments for achieving efficient weed suppression, minimizing crop-weed competition and significantly enhancing the nitrogen, phosphorus and potassium concentrations in both grain and stover of maize, remaining statistically at par with the weed-free check.

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Table 1. Effect of weed control treatments on nitrogen content in grain and stover of maize plant

Treatment Symbol	Treatment	Nitrogen content in grain (%)			Nitrogen content in stover (%)		
		2023-24	2024-25	Pooled	2023-24	2024-25	Pooled
T ₁	Weedy check	1.51	1.45	1.48	0.54	0.59	0.56
T ₂	Weed-free check	1.62	1.59	1.61	0.61	0.70	0.65
T ₃	Atrazine @ 500 g ha ⁻¹ PE + hand weeding at 25-30 DAS	1.60	1.56	1.58	0.59	0.67	0.63
T ₄	Pyroxasulfone @ 127 g ha ⁻¹ PE + hand weeding at 25-30 DAS	1.56	1.51	1.54	0.57	0.63	0.60
T ₅	Atrazine @ 500 g ha ⁻¹ PE fb halosulfuron methyl @ 67 g ha ⁻¹ at 25-30 DAS	1.55	1.50	1.52	0.56	0.62	0.59
T ₆	Atrazine @ 500 g ha ⁻¹ PE fb tembotrione @ 120 g ha ⁻¹ at 25-30 DAS	1.59	1.55	1.57	0.59	0.66	0.63
T ₇	Atrazine @ 500 g ha ⁻¹ PE fb topramezone @ 25 g ha ⁻¹ at 25-30 DAS	1.57	1.52	1.55	0.58	0.64	0.61
T ₈	Atrazine @ 500 g ha ⁻¹ PE fb mesotrione + atrazine @ 300 g ha ⁻¹ at 25-30 DAS	1.61	1.58	1.59	0.60	0.69	0.65
T ₉	Pyroxasulfone @ 127 g ha ⁻¹ PE fb halosulfuron methyl @ 67 g ha ⁻¹ at 25-30 DAS	1.53	1.47	1.50	0.55	0.60	0.58
T ₁₀	Pyroxasulfone @ 127 g ha ⁻¹ PE fb tembotrione @ 120 g ha ⁻¹ at 25-30 DAS	1.61	1.57	1.59	0.60	0.68	0.64
T ₁₁	Pyroxasulfone @ 127 g ha ⁻¹ PE fb topramezone @ 25 g ha ⁻¹ at 25-30	1.55	1.50	1.52	0.56	0.61	0.59
T ₁₂	Pyroxasulfone @ 127 g ha ⁻¹ PE fb mesotrione + atrazine @ 300 g ha ⁻¹ at 25-30 DAS	1.59	1.55	1.57	0.59	0.66	0.62
	SE _m ±	0.009	0.013	0.008	0.004	0.006	0.008
	CD (P = 0.05)	0.027	0.038	0.022	0.012	0.018	0.024

(continued on next page)

Table 2. Effect of weed control treatments on phosphorous content in grain and stover of maize plant

Treatment Symbol	Treatment	Phosphorous content in grain (%)			Phosphorous content in stover (%)		
		2023-24	2024-25	Pooled	2023-24	2024-25	Pooled
T ₁	Weedy check	0.44	0.41	0.43	0.21	0.22	0.22
T ₂	Weed-free check	0.48	0.47	0.47	0.24	0.26	0.25
T ₃	Atrazine @ 500 g ha ⁻¹ PE + hand weeding at 25-30 DAS	0.47	0.46	0.46	0.23	0.25	0.24
T ₄	Pyroxasulfone @ 127 g ha ⁻¹ PE + hand weeding at 25-30 DAS	0.46	0.44	0.45	0.22	0.24	0.23
T ₅	Atrazine @ 500 g ha ⁻¹ PE fb halosulfuron methyl @ 67 g ha ⁻¹ at 25-30 DAS	0.45	0.43	0.44	0.22	0.23	0.23
T ₆	Atrazine @ 500 g ha ⁻¹ PE fb tembotrione @ 120 g ha ⁻¹ at 25-30 DAS	0.47	0.45	0.46	0.23	0.25	0.24
T ₇	Atrazine @ 500 g ha ⁻¹ PE fb topamezone @ 25 g ha ⁻¹ at 25-30 DAS	0.46	0.44	0.45	0.23	0.24	0.23
T ₈	Atrazine @ 500 g ha ⁻¹ PE fb mesotrione + atrazine @ 300 g ha ⁻¹ at 25-30 DAS	0.48	0.46	0.47	0.24	0.26	0.25
T ₉	Pyroxasulfone @ 127 g ha ⁻¹ PE fb halosulfuron methyl @ 67 g ha ⁻¹ at 25-30 DAS	0.45	0.42	0.43	0.21	0.23	0.22
T ₁₀	Pyroxasulfone @ 127 g ha ⁻¹ PE fb tembotrione @ 120 g ha ⁻¹ at 25-30 DAS	0.48	0.46	0.47	0.24	0.25	0.25
T ₁₁	Pyroxasulfone @ 127 g ha ⁻¹ PE fb topamezone @ 25 g ha ⁻¹ at 25-30	0.45	0.43	0.44	0.22	0.23	0.23
T ₁₂	Pyroxasulfone @ 127 g ha ⁻¹ PE fb mesotrione + atrazine @ 300 g ha ⁻¹ at 25-30 DAS	0.47	0.45	0.46	0.23	0.25	0.24
	SE _m ±	0.004	0.003	0.002	0.002	0.002	0.001
	CD (P = 0.05)	0.011	0.009	0.007	0.005	0.005	0.003

Table 3. Effect of weed control treatments on potassium content in grain and stover of maize plant

Treatment Symbol	Treatment	Potassium content in grain (%)			Potassium content in stover (%)		
		2023-24	2024-25	Pooled	2023-24	2024-25	Pooled
T ₁	Weedy check	0.54	0.49	0.51	1.52	1.46	1.49
T ₂	Weed-free check	0.58	0.61	0.59	1.64	1.62	1.63
T ₃	Atrazine @ 500 g ha ⁻¹ PE + hand weeding at 25-30 DAS	0.57	0.58	0.58	1.62	1.58	1.60
T ₄	Pyroxasulfone @ 127 g ha ⁻¹ PE + hand weeding at 25-30 DAS	0.56	0.53	0.55	1.57	1.52	1.55
T ₅	Atrazine @ 500 g ha ⁻¹ PE fb halosulfuron methyl @ 67 g ha ⁻¹ at 25-30 DAS	0.55	0.52	0.54	1.56	1.51	1.54
T ₆	Atrazine @ 500 g ha ⁻¹ PE fb tembotrione @ 120 g ha ⁻¹ at 25-30 DAS	0.57	0.57	0.57	1.61	1.57	1.59
T ₇	Atrazine @ 500 g ha ⁻¹ PE fb topamezone @ 25 g ha ⁻¹ at 25-30 DAS	0.56	0.55	0.55	1.58	1.54	1.56
T ₈	Atrazine @ 500 g ha ⁻¹ PE fb mesotrione + atrazine @ 300 g ha ⁻¹ at 25-30 DAS	0.58	0.60	0.59	1.63	1.60	1.62
T ₉	Pyroxasulfone @ 127 g ha ⁻¹ PE fb halosulfuron methyl @ 67 g ha ⁻¹ at 25-30 DAS	0.55	0.50	0.52	1.54	1.48	1.51
T ₁₀	Pyroxasulfone @ 127 g ha ⁻¹ PE fb tembotrione @ 120 g ha ⁻¹ at 25-30 DAS	0.58	0.59	0.58	1.63	1.60	1.61
T ₁₁	Pyroxasulfone @ 127 g ha ⁻¹ PE fb topamezone @ 25 g ha ⁻¹ at 25-30	0.55	0.52	0.53	1.56	1.50	1.53
T ₁₂	Pyroxasulfone @ 127 g ha ⁻¹ PE fb mesotrione + atrazine @ 300 g ha ⁻¹ at 25-30 DAS	0.57	0.56	0.56	1.61	1.56	1.58
	SE _m ±	0.004	0.004	0.014	0.013	0.015	0.010
	CD (P = 0.05)	0.011	0.004	0.042	0.039	0.043	0.028

References

- Kakade SU, Deshmukh JP, Thakare SS, Solanke MS. Efficacy of pre and post emergence herbicides in maize. Indian Journal of Weed Science. 2016;52(2):143-146.
- Sanketh GD. Bio-Efficacy of New Generation Herbicides in Chickpea. M.Sc. Thesis. Hyderabad: Department of Agronomy, College of Agriculture, Professor Jayashankar Telangana State Agricultural University; 2021.

3. Sardar S, Patra M, Mandal B, Patra BC. An overview on problems and prospects of transplanted maize with special reference to India. *Journal of Applied and Natural Science*. 2020;12(1):59–65.
4. Samanth TK, Dhir BC, Mohanty B. Weed growth, yield components, productivity, economics and nutrient uptake of maize (*Zea mays* L.) as influenced by various herbicide applications under rainfed conditions. *Indian Journal of Weed Science*. 2015;2(1):79–83.
5. Kumar B, Prasad S, Mandal D, Kumar R. Influence of integrated weed management practices on weed dynamics, productivity and nutrient uptake of rabi maize (*Zea mays* L.). *International Journal of Current Microbiology and Applied Sciences*. 2017;6(4):1431–1440.
6. Malviya A, Singh B. Weed dynamics, productivity and economics of maize (*Zea mays*) as affected by integrated weed management under rainfed condition. *Indian journal of Agronomy*. 2007;52(4):321–324.
7. Jackson ML. *Soil Chemical Analysis*. New Delhi: Prentice Hall of India Pvt. Ltd.; 1973:106–203.
8. Fisher RA, Yates F. *Statistical Tables for Biological, Agricultural, and Medical Research*. London: Oliver and Boyd; 1967.
9. Gul S, Khanday BA. Influence of fertility levels and weed management practices on yield and yield attributes of rainfed maize. *Scientific Research and Essays*. 2015;10(24):659–663.
10. Srinivasan K, Muraliathanari P. Impact of weed management strategies on weeds and nutrient uptake of maize. *Indian Journal of Agronomy*. 2024;69(4):391–396.
11. Deshmukh LS, Jathure RS, Raskar SK. Studies on nutrient and weed management in kharif maize under rainfed conditions. *Indian Journal of Weed Science*. 2008;40(1–2):87–89.

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