

QUALITY OF KERNEL IN GROUNDNUT VARIETIES TMV-2 AND TMV-9 AS INFLUENCED BY PHOSPHORUS AND POTASSIUM FERTILIZATION

Groundnut kernel is a rich source of high quality vegetable protein. Increase in the protein content of groundnut kernel due to P application was reported by Nijhawan (1962) and Puntamkar and Bathkal (1967). Bhuiya and Chawdhury (1974) reported that phosphorus fertilization increased oil content of kernels. But no significant difference in oil content due to phosphorus levels was observed by Nijhawan (1962). Potassium application enhanced the oil content of groundnut (Roy and Chatterjee, 1972). In experiments conducted in Tamil Nadu, the oil content of TMV-9 was found to be about 3 per cent more than that of TMV-2 (Muhammed *et al.*, 1973).

An experiment was conducted in the red loam soils of instructoinal Farm, College of Agriculture, Vellayani during the rabi season of 1976-77 using three levels of phosphorus (50, 75 and 100 kg P_2O_5 /ha) and three levels of potassium (25, 50 and 75 kg K_2O /ha). The soil was low in N, available P_2O_5 and K_2O . The field trial was laid out in a 2×3^2 factorial experiment partially confounding PK in one replication and PK^2 in another. The varieties tried were TMV-2, a popular improved bunch variety and TMV-9 another newly released bunch variety with the desirable quality of seed dormancy. The recommendations in the package of practices were followed in raising the crop except for the P and K fertilization. The crop was given weekly irrigations from the second week after sowing, except during the 12th week when there was sufficient rainfall. The protein content of kernel was calculated by estimating the nitrogen content using microkjeldahl method and multiplying the N value with the factor 6.25. The oil content of kernel was estimated gravimetrically by cold percolation method. (Kartha and Sethi, 1957).

The results showed that maximum protein content (27.24%) was recorded in plots given P_2O_5 at the rate of 100 kg/ha which was significantly superior to application of 75 and 50 kg P_2O_5 /ha. The least oil content was recorded in plots applied with 50 kg P_2O_5 /ha. The higher levels of phosphorus might have influenced the synthesis of protein in the kernel, because most of the cellular proteins are enzymes that catalyse individual metabolic reactions and phosphorus is a constituent of many of them (Black, 1968).

Potassium at higher levels decreased the protein content in kernel. The highest content of protein (26.99%) was observed in plots applied with 25 kg K_2O per hectare. This finding corroborates with the observations of Bhuiya and Chowdhury (1974). The kernel of TMV-2 had 0.13 per cent higher protein than TMV-9. Phosphorus levels did not show any effect on oil content of groundnut kernel. This finding is in conformity to those of Nijhawan (1962) and Puntamkar and Bathkal (1967). It was also observed that the highest level of potassium (75 kg K_2O /ha) produced 50.43 per cent oil which is 1.42 per cent more than that of the lowest level. Potassium application enhanced the oil content by activating fat producing enzymes. Increases in oil content of groundnut kernel in responses to

Table 1

Quality of groundnut kernel as influenced by graded levels of phosphorus and potassium

Treatments	Protein content in kernel (percentage)			Oil content in kernel (percentage)		
	TMV-2	TMV-9	Mean	TMV-2	TMV-9	Mean
50 kg P ₂ O ₅ /ha	26.29	26.31	26.30	48.43	50.88	49.66
75 kg P ₂ O ₅ /ha	26.72	26.56	26.64	48.58	50.90	49.74
100 kg P ₂ O ₅ /ha	27.37	27.10	27.24	48.27	50.80	42.54
'F' test	—	—	sig	—	—	N. S.
25 kg K ₂ O/ha	27.08	26.90	26.99	48.87	50.15	49.01
50 kg K ₂ O/ha	26.81	26.64	26.73	48.12	50.88	49.50
75 kg K ₂ O/ha	26.49	36.45	26.47	49.30	51.55	50.43
'F' test			sig			sig
C. D. (0.05) for P or K			0.12			0.43
Means	26.72	26.66		48.43	50.86	
'F' Test			sig			sig
C. D. (0.05) for variety			0.10			

higher doses of potassium applications were reported by Roy and Chatterjee (1972) and Bhuiya and Chowdhury (1974). TMV-9 was superior in oil content and produced 2.43 per cent more oil than TMV-2.

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സംഗ്രഹം

ഫോസ്ഫറസ്, പൊട്ടാഷ് എന്നിവ വ്യത്യസ്ത അളവുകളിൽ നൽകിയാൽ റി. എം. വി.-2, റി. എം. വി-9 എന്നീ നിലക്കടല ഇനങ്ങളുടെ പരിപ്പിലുള്ള മാംസ്യംശത്തിന്റെയും എണ്ണയുടെയും അളവിൽ ഉണ്ടാകാവുന്ന വ്യത്യാസം പരീക്ഷിച്ചുനോക്കിയതിൽ ഫോസ്ഫറസ് മാംസ്യംശത്തിന്റെ അളവു കൂട്ടുന്നതായും പൊട്ടാഷ് എണ്ണയുടെ അളവ് കൂട്ടുന്നതായും തെളിഞ്ഞു. റി. എം. വി-9 എന്ന ഇനം റി. എം. വി-2 എന്ന ഇനത്തേക്കാൾ എണ്ണ ഉല്പാദനത്തിന് വളരെ മെച്ചപ്പെട്ടതായി തെളിയുകയുണ്ടായി.

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