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Effect of 2-chloroethyl-trimethyl ammonium chloride on yield and quality of mustard (*Brasssica juncea*)

G. H. GUROO AND B. A. PATEL

Department of Agronomy, College of Agriculture, Gujarat Agricultural University, Dantiwada Campus, Sardar Khrushinagar 385 506

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A field experiment was conducted during the winter season (*rabi*) of 1986–87 at Sardar Khrushinagar, to study the effect of 2-chloroethyl-trimethyl ammonium chloride (Chloromequat) on yield and quality of mustard [*Brassica juncea* (L.) Czernj. & Cosson]. The trial was laid in randomized block design with 4 replications. Soil was loamy sand, low in organic matter (0.42%), low in available nitrogen (246 kg/ha), medium in available phosphorus (44 kg/ha), high in potash (254 kg/ha), with pH 8.3. The treatments comprised combinations of 4 levels of chloromequat (250, 500, 750 and 1,000 ppm), 2 spray frequencies (single spray 30 days after sowing and 3 sprays 30, 45 and 60 days after sowing) and the 2 controls (no spray and water spray only). Thirum-treated seeds were sown on 29 October 1986 and harvested on 17 February 1987. Crop was uniformally fertilized with 80 kg N and 40 kg of P_2O_5/ha through urea and diammonium phosphate. Half of N and full dose of P was applied basal 1 day before sowing in furrows, opened 45 cm apart and remaining half dose of N was top-dressed in 2 equal splits on 17 November 1986 and 19 December 1986 just before irrigation.

Significant differences were observed for plant height, number of branches/plant, number of pods/plant, total nutrient uptake and seed yield due to all chloromequat treatments compared with the control. The highest seed yield of 24.17 q/ha was owing to the treatment of chloromequat 1,000 ppm in single spray, being 27.34% more than yield of the control (18.98 q/ha). The reason may be the antiauxinic and antigibberellic activity, increase in photosynthesis, translocation of photosynthates towards reproductive organs, conversion of carbohydrates to amino acids, increase in auxinoxidase activity, less water absorption, decrease in cation-exchange capacity of roots and cumulative increase in yield attributes. These treatments did not cause significant difference for 1,000-seed weight, oil content, dry-matter yield and harvest index.

The treatments single spray and 3 sprays were statistically at par, though an increasing trend was observed due to increasing levels of chloromequat.

Chloromequat @ 1,000 ppm in single spray was superior to all treatments in all the respects, but was non-economical due to high cost investment. However, the treatment chloromeuat @ 250 ppm in 3 sprays gave an optimum yield (21.48 q/ha), which was significantly superior to the control with maximum net profit of Rs 11,083/ha, i.e. more than 4% compared with

Table 1. Effect of chloromequat on yield and quality of 'Varuna' mustard

Treatment	Plant height (cm)	Branches/ plant	Pods/ plant	1,000-seed weight (g)	Seed yield (q/ha)	Oil content (%)	Total nutrient uptake			Net realization (Rs)
							N (kg/ha)	P_2O_5	K_2O	
No spray	176.20	24	359	4.87	18.98	40.05	89.21	21.72	139.88	10,662
Water spray	178.25	25	358	4.86	18.98	40.05	90.15	21.09	140.17	10,640
250 ppm in single spray	168.85	33	420	4.86	21.02	40.12	98.96	19.57	128.46	10,783
500 ppm in single spray	168.40	34	421	5.08	21.39	40.15	102.65	19.14	122.87	9,746
750 ppm in single spray	164.35	35	437	5.13	21.94	40.17	107.97	16.86	106.45	8,835
1,000 ppm in single spray	163.95	41	463	5.03	24.17	40.22	123.98	16.58	95.27	9,100
250 ppm in 3 sprays	167.35	35	435	5.09	21.48	40.17	103.98	15.96	117.48	11,083
500 ppm in 3 sprays	163.80	37	442	4.91	22.04	40.22	111.13	18.42	106.45	10,179
750 ppm in 3 sprays	165.55	35	435	5.12	21.94	40.20	104.38	17.53	105.61	8,813
1,000 ppm in 3 sprays	162.25	38	445	4.97	22.20	40.20	112.54	15.98	91.23	7,909
CD (P = 0.05)	3.89	3.78	21.58	NS	1.26	NS	3.77	0.87	7.68	
CV (%)	2.38	11.50	5.20	4.43	6.09	0.32	3.74	5.06	6.88	

the control (Rs 10,662/ha). Therefore a practice of spraying chloromequat @ 250 ppm in 3 sprays (30, 45 and 60 days after sowing) of 'Varuna' mustard could be used for obtaining maximum net profit with optimum yield.

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Effect of nitrogen and farmyard manure levels on growth and yield of summer groundnut (*Arachis hypogaea*)

V. V. CHAWALE, G. M. BHARAD, S. K. KOHALE AND M. B. NAGDEVE

Watershed Management Research Unit, Punjabrao Krishi Vidyapeeth, Akola, Maharashtra 444 104

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A field experiment was conducted during May 1990 at Akola, to study the effect of nitrogen and farmyard manure on growth and yield of summer groundnut (*Arachis hypogaea* L.). The soil was silty clay loam, containing 0.61% total nitrogen, 16.7 and 378.5 kg/ha of available P_2O_5 and K_2O respectively with pH 7.3. Three levels of N (0, 15 and 30 kg/ha) and 2 levels of farmyard manure (0 and 10 tonnes/ha) were replicated 4 times and laid out in factorial randomized block design. Irrigation was scheduled daily on the basis of pan evaporation and applied with microsprinkler system. The seed of groundnut variety 'TAG 24' was sown on 21 February 1990. A common dose of 30 kg P_2O_5/ha and 30 kg K_2O/ha was applied at sowing.

Application of N did not significantly affect dry-matter accumulation in shoot as well as in root at harvest, yield attributes such as gynophores, undeveloped pods, developed pods and dry-matter accumulation in pods/plant at harvest (Table 1). The results confirm the findings of Patel *et al.* (1988). Dry-pod yield per hectare decrease significantly due to N application. Nitrogen application did not influence the yield attributes favourably, resulting in reduced yield of dry pods. However, yield of dry haulms was significantly increased due to N application, indicating more vegetative growth with N. The 100-kernel weight was higher with N application @ 15 kg/ha than no N treatment. Dahatonde (1982) also reported the similar results.

The dry pod and haulm yields were significantly influenced by farmyard manure application. Significant increase in length of main shoot, branches/plant, dry-matter in roots, gynophores and developed pods/plant due to farmyard manure application might have favourably influenced the pod yield. Increased in dry-haulm yield may probably be due to enhanced vegetative growth. However, shelling (%) and 100-kernel