Indian J. Plant Physiol., Vol. 12, No. 2, (N.S.) pp. 153-161 (April-June, 2007)

SENSITIVITY ANALYSIS OF ERUCIC ACID FREE CULTIVARS OF RAPESEED-MUSTARD UNDER NUTRIENT APPLICATION

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Received on 16 Oct., 2006, Revised on 30 June, 2007

SUMMARY

A field experiment was conducted on three better performing cultivars of rapeseed-mustard selected on the basis of seed yield and fatty acid composition of oil. The cultivars included two erucic acid free, viz. *Brassica napus* L. cv. Hyola PAC-401 and *Brassica juncea* L. Czern. & Coss. cv. TERI (0E) M21-Swarna and one locally popular high yielding, *Brassica juncea* L. Czern. & Coss. cv. Rohini as a check. These were grown with the five graded combinations of soil-applied N (urea) and P (diammonium phosphate), viz. (i) 0 kg N +0 kg P ha^{-1}, (N_0P_0) (ii) $N_{30}P_{10}$, (iii) $N_{60}P_{20}$, (iv) $N_{90}P_{30}$ and (v) $N_{120}P_{40}$, along with 30 kg K ha^{-1}. Growth and physiological and biochemical parameters were studied at 45 and 60 days after sowing and yield characteristics and fatty acid composition of oil, at harvest. Application of $N_{90}P_{30}$ proved best for most of the parameters studied. For example, this treatment increased net assimilation rate by 98.7%, seed yield by 78.6% and oil yield by 72.7% over N_0P_0 (control). Cultivar Hyola PAC-401, followed by TERI (0E) M21-Swarna, proved best particularly on the basis of high seed and oil yield and low erucic acid content. The oil of Hyola PAC-401 and TERI (0E) M21-Swarna contained almost negligible erucic acid (0.40% and 0.59% respectively) compared with that of Rohini (35.5%). Interaction $N_{90}P_{30}$ x Hyola PAC-401 proved best for most parameters.

***Key words*: Erucic acid free rapeseed-mustard, fatty acid composition, growth, nutrient application, yield**

INTRODUCTION

The oleiferous Brassicas are important source of edible oil in many countries including India. However, these crops have very high content of a human unfriendly fatty acid (erucic acid), hence evolved or introduced erucic acid free cultivars are of great importance. Like other crops, for Brassicas also, fertilizers particularly N and P constitute an essential input in modern agriculture and they help in realizing their high productivity and profitability in most cropping systems of both developed and developing nations. Nevertheless, it has been observed that the maximum response to N diminishes and to P increases with elevation (Gorfu *et al*. 2003). It is, therefore, highly desirable to study the effect of graded combinations of N and P on the performance of erucic acid free genotypes of rapeseed-mustard.

MATERIALS AND METHODS

A factorial randomized field experiment was conducted on erucic acid free cultivars of rapeseed-mustard at the Farm-cum-Botanical Garden of the Aligarh Muslim University, Aligarh (27 ^{0} 52' N latitude, 78 ^{0}51' E longitude and 187 .45 m altitude), India. The soil of the experimental field was a sandy loam with pH (1:2) – 7.4, E.C. (1:2)-0.65 dS m^{-1}, available N-181 kg N ha-$^{-1}$, P-22 kg P ha-$^{-1}$ and K-308 kg K ha^{-1}. Three

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cultivars of rapeseed-mustard (two erucic acid free, viz. *Brassica napus* L. cv. Hyola PAC-401 and *Brassica juncea* L. Czern. & Coss. cv. TERI (0E) M21-Swarna and one the best performing high yielding, *Brassica juncea* L. Czern. & Coss. cv. Rohini as a check) were grown with five graded combinations of soil-applied N and P in 10 m^2 plots. The N, P and K combinations along with a uniform 30 kg K ha^{-1} included (i) 0 kg N+ 0 kg P ha^{-1} (N_0P_0), i.e. control, (ii) $N_{30}P_{10}$, (iii) $N_{60}P_{20}$, (iv) $N_{90}P_{30}$ and (v) $N_{120}P_{40}$. Sources of N, P and K were urea, diammonium phosphate and murate of potash respectively. However, the amount of N in diammonium phosphate was kept in mind while calculating urea. Half dose of N and full of P and K were applied at the time of sowing. The remaining half dose of N was top-dressed after 30 days after sowing (DAS). There were three replicates for each treatment. The experimental field was irrigated thrice and weeding was undertaken twice. Performance of the crop was assessed in terms of shoot length $plant^{-1}$, leaf number $plant^{-1}$, area $leaf^{-1}$, leaf area index, fresh weight $plant^{-1}$, dry weight $plant^{-1}$, net assimilation rate, leaf carbonic anhydrase activity and leaf NPK content at 45 and 60 DAS and pods $plant^{-1}$, seeds pod^{-1}, 1000-seed weight, seed yield, oil content, oil yield and fatty acid composition of oil at harvest.

Leaf area was determined by the gravimetric method and leaf area index, according to Watson (1958). Net assimilation rate was calculated using the formula of Milthorpe and Moorby (1979). Carbonic anhydrase activity was measured by adopting the method of Dwivedi and Randhawa (1974). Leaf N and P content was estimated according to Lindner (1944) and Fiske and Subba Row (1925) respectively. Leaf K content was estimated with the help of a flame photometer. Oil was extracted with the Soxhlet apparatus using petroleum ether as a solvent. Oil yield was computed on the basis of seed yield and oil percentage. Fatty acid composition of oil was determined by adopting the method of Kaushik and Agnihotri (1997). The data were analyzed statistically by Gomez and Gomez (1984).

RESULTS AND DISCUSSION

The combined application of N and P improved shoot length $plant^{-1}$, leaf number $plant^{-1}$, area $leaf^{-1}$, leaf area index, fresh weight $plant^{-1}$and dry weight $pant^{-1}$ at both stages (45 and 60 DAS), with $N_{90}P_{30}$ proving optimum (Table 1). Such beneficial effect of the external supply of combined N and P on growth parameters of mustard has also been reported by Mohammad and Khan (1997). A normal soil contains all essential nutrients. However, the relative availability of nutrients influences the growth and development of plants. Continuous cropping may deplete the soil of its available nutrients particularly the more heavily-demanded N, P and K. Such soils could not properly nourish successive crops without addition of sufficient quantity of these nutrients (Miller and Donahue 1990, Marschner 2002). Thus, addition of basal N and P resulted in better performance of the rapeseed-mustard crop. The promoting effect of N and P on growth of rapeseed-mustard, like other plants may be explained on the basis of the fact that N is a constituent of biologically important molecules, such as amino acids, purines, pyrimidines, enzymes, coenzymes, structural proteins and chlorophyll. Similarly, P is also an important component of many metabolically important molecules, such as sugar phosphates, nucleotides, nucleic acids, phospholipids and coenzymes (Marschner 2002). The N and P are involved directly or indirectly in the production and enlargement of new cells and tissues which in turn are responsible for increase in shoot length (Table 1), leading to better exposure of leaves for harvesting solar energy as well as for larger leaf area and leaf area index of treated plants (Table 1). These responses are expectedly reflected in the enhanced fresh and dry weight of treated plants (Table 1). The increase in net assimilation rate (Table 2) also contributed to observed enhancement in biomass production mentioned above. This cumulative contribution of growth parameters towards fresh as well as dry matter accumulation is also brought out by correlation studies as there was a positive correlation with leaf number $plant^{-1}$, area $leaf^{-1}$, leaf area index and net assimilation rate (Table 4). The data (Table 2) showed that the carbonic anhydrase activity and leaf N and P content increased with combined application of N and P at both stages, with $N_{90}P_{30}$ proving optimum. Similar ameliorating effect of applied N and P on carbonic anhydrase activity and leaf N and P content has been reported by Mohammad *et al*. (1997) and Mohammad (2000, 2004). The spectacular effect of applied N and P on this enzyme could be expected as,

Table 1. Effect of graded combinations of soil-applied N and P on growth parameters of three cultivars of rapeseed-mustard (mean of three replicates)

Treatments (T)	Cultivars (C)	Shoot length (cm)		Leaf number plant^{-1}		Area leaf^{-1} (cm^2)		Leaf area index		Fresh weight (g plant^{-1})		Dry weight (g plant^{-1})	
		45	**60**	**45**	**60**	**45**	**60**	**45**	**60**	**45**	**60**	**45**	**60**
N_o P_o	Rohini	82.51	119.63	20.66	28.00	34.18	56.29	3.20	4.17	98.21	242.31	13.21	19.19
	Hyola PAC -401	51.28	87.43	19.33	28.33	49.58	91.88	4.15	5.45	104.66	282.89	12.62	21.30
	TERI(0E) M21-Swarna	88.62	131.10	22.66	33.33	35.56	45.11	3.22	4.23	182.00	249.27	12.67	21.99
	Mean	74.13	112.72	20.88	29.89	39.77	64.42	3.52	4.61	128.29	258.15	12.83	20.82
$N_{30}P_{10}$	Rohini	87.93	121.43	22.33	32.66	37.82	57.82	3.61	4.51	113.33	259.42	16.32	21.23
	Hyola PAC -401	56.81	89.30	21.00	31.00	54.20	93.21	4.35	5.56	124.00	302.27	15.69	22.68
	TERI(0E) M21-Swarna	95.39	131.90	24.66	37.33	41.96	47.65	3.43	4.35	204.33	271.81	17.57	23.89
	Mean	80.04	114.21	22.66	33.66	44.66	66.22	3.80	4.80	147.22	277.83	16.53	22.60
$N_{60}P_{20}$	Rohini	91.23	124.10	25.00	35.66	41.21	61.25	3.79	4.59	130.00	277.28	18.51	22.90
	Hyola PAC -401	59.21	91.66	22.33	33.66	63.84	95.61	4.77	5.71	135.33	330.65	17.28	23.95
	TERI(0E) M21-Swarna	98.28	136.23	26.00	39.66	43.69	52.47	3.89	4.49	236.00	291.56	19.29	24.72
	Mean	82.90	117.33	24.44	36.33	49.58	69.77	4.15	4.93	167.11	299.83	18.36	28.85
$N_{90}P_{30}$	Rohini	97.05	125.53	28.66	37.33	46.63	65.19	4.15	4.72	149.00	327.83	21.01	24.24
	Hyola PAC -401	65.86	94.07	24.00	35.33	67.81	98.71	4.94	5.81	150.33	362.07	23.59	25.76
	TERI(0E) M21-Swarna	107.37	141.83	28.00	42.33	47.78	56.61	4.08	4.67	265.00	327.52	21.71	25.17
	Mean	90.09	120.48	26.89	38.33	54.07	73.50	4.39	5.06	188.11	339.14	22.10	25.06
$N_{120}P_{40}$	Rohini	90.26	127.40	30.33	35.66	40.98	67.12	3.82	4.62	144.60	301.55	18.45	25.21
	Hyola PAC -401	55.05	94.40	23.66	32.66	59.77	102.33	4.43	5.75	145.33	333.85	19.59	25.41
	TERI(0E) M21-Swarna	103.25	136.39	27.33	39.66	40.46	59.28	3.71	4.45	246.33	317.61	18.77	26.08
	Mean	82.85	119.39	27.11	35.99	47.07	76.24	3.99	4.94	178.75	317.67	18.94	25.57
CD at 5%	T	7.32	7.61	1.75	2.07	2.78	3.02	0.50	0.22	8.56	15.28	0.61	0.73
	C	5.67	5.89	1.35	1.60	2.15	2.33	0.39	0.17	6.63	11.84	0.47	0.56
	T x C	12.68	13.19	3.03	3.59	4.82	5.23	0.87	0.39	14.82	26.48	1.07	1.27

like other enzymes, it is nitrogenous in nature and therefore depends upon N for its production, with P having indirect effect on synthesis of this enzyme. The increase in leaf N and P content might be due to their proper supply to the soil.

Perusal of data (Table 3) revealed that pods plant^{-1}, seeds pod^{-1}, seed yield, oil content and oil yield increased with increasing levels of N and P up to $N_{90}P_{30}$. The ameliorative effect of soil-applied N and P over no-nutrient control corroborates broadly the findings of Hatmode *et al.* (2001), Kumar *et al.* (2001) and Rathod *et al.* (2001). The improved leaf area of the treated plants together with efficient carbon assimilation enable them to produce larger quantities of photosynthates as is also borne out by the higher dry weight of the treated plants (Table 1). The increased carbonic anhydrase activity and leaf NPK content elicited a positive response with regard to various growth characteristics to the application of N and P enhanced the dry matter production (Tables 1 and 2). Expectedly, the sequence of events led to a positive effect on the treated plants.

Table 2. Effect of graded combinations of soil-applied N and P on physio-biochemical parameters of three cultivars of rapeseed-mustard (mean of three replicates)

Treatments (T)	Cultivars (C)	Net assimilation rate (g m^{-2} leaf area day^{-1})	Carbonic anhydrase [µmol CO_2 kg^{-1} (leaf fm) s^{-1}]		Leaf N content (%)		Leaf P content (%)		Leaf K content (%)	
		45-60	45	60	45	60	45	60	45	60
N_o P_o	Rohini	2.89	121	168	3.46	4.08	0.205	0.201	3.21	4.46
	Hyola PAC-401	3.01	151	213	3.61	4.14	0.211	0.238	3.28	4.56
	TERI (0E) M21-Swarna	3.06	135	174	3.66	4.21	0.207	0.232	3.61	4.61
	Mean	2.98	135	185	3.58	4.14	0.208	0.223	3.36	4.54
$N_{30}P_{10}$	Rohini	3.11	145	178	3.49	4.15	0.217	0.277	3.32	4.60
	Hyola PAC-401	2.96	173	226	3.63	4.18	0.229	0.248	3.36	4.67
	TERI (0E) M21-Swarna	3.88	155	188	3.69	4.27	0.220	0.288	3.68	4.62
	Mean	3.31	157	197	3.60	4.20	0.222	0.271	3.45	4.63
$N_{60}P_{20}$	Rohini	4.19	169	188	3.59	4.23	0.223	0.290	3.46	4.70
	Hyola PAC-401	5.02	191	230	3.66	4.38	0.237	0.297	3.59	4.79
	TERI (0E) M21-Swarna	3.61	177	192	3.73	4.36	0.227	0.242	3.78	4.77
	Mean	4.27	179	203	3.66	4.32	0.229	0.276	3.61	4.75
$N_{90}P_{30}$	Rohini	5.69	188	194	3.57	4.42	0.236	0.316	3.53	4.74
	Hyola PAC-401	5.88	211	236	3.70	4.47	0.246	0.320	3.67	4.95
	TERI (0E) M21-Swarna	6.21	196	201	3.76	4.47	0.239	0.325	3.82	4.80
	Mean	5.92	198	210	3.68	4.45	0.240	0.320	3.67	4.81
$N_{120}P_{40}$	Rohini	5.28	193	188	3.53	4.54	0.230	0.337	3.61	4.85
	Hyola PAC-401	5.99	207	223	3.68	4.49	0.241	0.352	3.73	4.90
	TERI (0E) M21-Swarna	5.97	182	190	3.75	4.54	0.237	0.347	3.94	4.88
	Mean	5.74	194	200	3.65	4.52	0.236	0.345	3.76	4.87
CD at 5%	T	0.37	2	4	0.04	0.05	NS	0.015	NS	NS
	C	0.27	2	3	0.03	0.04	NS	NS	NS	NS
	Tx C	0.61	4	7	0.07	0.09	NS	0.027	NS	NS

NS : Non-significant

This sustained increase in yield attributes itself culminated expectedly in the maximization of seed yield (Table 3). Correlation studies also showed an interdependence of seed yield on yield parameters (Table 4).

Data on fatty acid composition (Table 5) showed that most of fatty acids studied increased with the application of N and P over no-nutrient control. These findings are broadly in accordance with those of Sotomayer (1977), Thakral *et al.* (1995), Joshi *et al.* (1998) and Jan *et al.* (2002). It is interesting to note that almost nil increase in erucic acid (0.49%) and no increase in linolenic acid due to the highest seed yield giving treatment $N_{90}P_{30}$ compared to no-nutrient control are plus point for human consumption as high percentage of these fatty acids in the oil deteriorates its nutritional quality.

The data (Table 1) revealed that the maximum height and leaf number were recorded in TERI (0E) M21-Swarna, area $leaf^{-1}$, leaf area index and fresh weight $plant^{-1}$ in Hyola PAC-401 and dry weight $plant^{-1}$ in TERI (0E) M21-Swarna or Hyola PAC-401 particularly at 60 DAS. The minimum height and leaf number were registered in Hyola PAC-401, area $leaf^{-1}$ and leaf area index in TERI (0E) M21-Swarna and fresh and dry

Table 3. Effect of graded combinations of soil-applied N and P on yield parameters of three cultivars of rapeseed-mustard (mean of three replicates)

Treatments (T)	Cultivars (C)	Pods plant^{-1}	Seeds pod^{-1}	1000-seed weight (g)	Seed yield (kg ha^{-1})	Oil content (%)	Oil yield (kg ha^{-1})
N_o P_o	Rohini	122.33	10.41	1.88	802.52	35.92	288.27
	Hyola PAC -401	297.00	24.60	1.76	951.32	34.36	326.88
	TERI(0E) M21-Swarna	274.33	12.12	1.98	881.63	35.82	315.80
	Mean	231.22	15.71	1.87	878.49	35.36	310.31
N_{30} P_{10}	Rohini	128.66	12.15	2.13	1138.48	35.44	403.47
	Hyola PAC -401	344.00	26.37	2.11	1269.72	33.59	426.51
	TERI(0E) M21-Swarna	284.66	13.39	2.19	1201.71	35.22	423.24
	Mean	252.44	17.30	2.14	1203.30	34.75	417.74
$N_{60}P_{20}$	Rohini	223.00	13.23	2.53	1389.43	34.83	483.94
	Hyola PAC -401	366.66	27.35	2.51	1451.43	33.17	481.46
	TERI(0E) M21-Swarna	321.00	14.08	2.63	1426.81	34.76	495.96
	Mean	303.55	18.22	2.56	1422.55	34.25	487.12
N_{90} P_{30}	Rohini	243.33	14.67	2.96	1501.21	34.69	520.76
	Hyola PAC -401	401.66	27.35	2.68	1608.21	33.82	543.90
	TERI(0E) M21-Swarna	345.33	14.87	2.96	1598.71	33.96	542.93
	Mean	330.11	18.96	2.87	1569.37	34.15	535.86
$N_{120}P_{40}$	Rohini	219.33	12.54	2.52	1284.46	33.24	426.96
	Hyola PAC -401	262.33	28.55	2.42	1430.93	32.55	465.76
	TERI(0E) M21-Swarna	259.66	13.28	2.61	1355.12	34.50	467.53
	Mean	247.11	18.12	2.52	1356.83	33.43	453.41
CD at 5%	T	11.36	1.36	NS	103.85	NS	20.34
	C	8.80	1.05	NS	80.44	NS	15.75
	T x C	19.67	2.36	NS	179.87	NS	35.23

NS : Non-significant

weight plant^{-1}in Rohini. Similar genotype variations in growth parameters have also been reported by Mohammad *et al*. (1984), Kunelius and Sanderson (1990), Shukla and Kumar (1993), Ahmad *et al*. (1999), Aly *et al*. (1999), Tahoun *et al*. (1999) and Zaheer *et al*. (1999) working on cultivars of rapeseed-mustard other than those selected for the present study. The superior dry weight of cultivars seems to be the cumulative effect of various growth parameters. The difference in cultivars in terms of growth parameters could be ascribed to the variation in their genetic make up. The high value for net assimilation rate and carbonic anhydrase activity in Hyola PAC-401 and N content in TERI (0E) M21-Swarna observed at the two growth stages (Table 2) could be ascribed to the variation in the genetic make up of cultivars. Variations in these parameters have also been reported by Shukla and Kumar (1993), Khan (1994) and Alvi *et al*. (2000) working on other cultivars of rapeseed-mustard. The observed higher values for most yield parameters in Hyola PAC-401 and lowest values for these parameters in Rohini (Table 3) could be ascribed to the variation in their genetic make up. Data obtained in similar studies undertaken by Mohammad *et al.* (1984), Kunelius and Sanderson (1990), Wright *et al*. (1995), Aly *et al*. (1999) and Tahoun *et al*. (1999), working on other cultivars of rapeseed-mustard, have also highlighted similar inherent differences.

Table 4. Correlation coefficient (r) values of different pairs of characteristics

Characteristics	Sampling stages/ duration (DAS)	Fresh weight plant^{-1} Sampling stages (DAS) 45	Fresh weight plant^{-1} Sampling stages (DAS) 60	Dry weight plant^{-1} Sampling stages DAS 45	Dry weight plant^{-1} Sampling stages DAS 60	Seed yield
Shoot length	45	0.940	–	0.992	–	0.964
	60	–	0.988	–	0.667	0.911
Leaf number plant^{-1}	45	0.979	–	0.914	–	0.876
	60	–	0.947	–	0.763	0.998
Area leaf^{-1}	45	0.922	–	0.972	–	0.977
	60	–	0.899	–	0.587	0.771
Leaf area index	45	0.931	–	0.969	–	0.980
	60	–	0.965	–	0.732	0.993
Fresh weight plant^{-1}	45	–	–	–	–	0.952
	60	–	–	–	–	0.929
Dry weight plant^{-1}	45	–	–	–	–	0.978
	60	–	–	–	–	0.771
Net assimilation rate	45-60	0.958	0.967	0.892	0.543	0.827
Carbonic anhydrase activity	45	0.996	–	0.953	–	0.941
	60	–	0.918	–	0.710	0.993
Nitrogen content	45	0.961	–	0.943	–	0.958
	60	–	0.918	–	0.596	0.793
Phosphorus content	45	0.992	–	0.975	–	0.958
	60	–	0.887	–	0.516	0.792
Potassium content	45	0.941	–	0.840	–	0.832
	60	–	0.916	–	0.715	0.857
Pods plant^{-1}		0.721	0.742	0.817	0.643	0.844
Seeds pod^{-1}		0.963	0.938	0.981	0.758	0.998
1000-seed weight		0.974	0.971	0.980	0.740	0.976

Significant at 5% (r value = 0.878)
Significant at 1% (r value = 0.959)

The fatty acid composition of the oil of various cultivars substantiates the superiority of Hyola PAC-401, followed by TERI (0E) M21-Swarna, as these had the higher content of oleic and linoleic acid and the minimum percentage of linolenic and erucic acid (Table 5). Similar differences in fatty acid composition in cultivars of rapeseed-mustard have also been noted by Ahuja *et al*. (1984), Thakral *et al*. (1995), Tahoun *et al*. (1999), Ahmad and Abdin (2000) and Kumar *et al*. (2002). The variation in fatty acid composition could also be ascribed to the variation in their genetic make up. In view of the almost negligible (0.40-0.59%) content of erucic acid, both Hyola PAC-401 and TERI (0E) M21-Swarna seem to be suitable from the point of view of human nutrition.

Table 5. Effect of graded combinations of soil-applied N and P on fatty acid content (% of total fatty acids) in oil of rapeseed-mustard (mean of three replicates).

Treatments (T)	Cultivars (C)	Palmitic acid	Stearic acid	Oleic acid	Linoleic acid	Linolenic acid	Erucic acid
$N_o P_o$	Rohini	3.46	1.29	21.14	12.45	8.46	35.32
	Hyola PAC -401	4.53	1.53	57.29	15.07	7.54	0.23
	TERI(0E) M21-Swarna	4.48	1.47	39.60	38.13	10.26	0.36
	Mean	4.16	1.43	39.34	21.88	8.75	11.97
$N_{30} P_{10}$	Rohini	3.48	1.39	21.28	13.20	8.28	35.49
	Hyola PAC -401	4.67	1.63	58.08	15.46	7.66	0.31
	TERI(0E) M21-Swarna	4.59	1.60	42.20	38.46	10.37	0.47
	Mean	4.25	1.54	40.52	22.37	8.77	12.09
$N_{60} P_{20}$	Rohini	3.92	1.52	21.42	13.42	8.53	35.62
	Hyola PAC -401	4.74	1.68	58.66	15.67	7.79	0.38
	TERI(0E) M21-Swarna	4.66	1.68	40.71	38.99	10.44	0.62
	Mean	4.44	1.63	40.26	22.69	8.92	12.21
$N_{90} P_{30}$	Rohini	3.84	1.58	21.68	13.82	8.75	36.06
	Hyola PAC -401	4.85	1.70	58.71	16.21	7.94	0.50
	TERI(0E) M21-Swarna	4.74	1.72	41.47	39.78	10.57	0.71
	Mean	4.48	1.67	40.62	23.27	9.08	12.42
$N_{120} P_{40}$	Rohini	3.94	1.66	21.75	14.24	8.97	35.13
	Hyola PAC -401	4.91	1.79	58.88	16.31	7.87	0.60
	TERI(0E) M21-Swarna	4.82	1.77	41.57	39.60	10.69	0.79
	Mean	4.56	1.74	40.73	23.38	9.17	12.17
CD at 5%	T	0.11	0.07	1.35	0.26	NS	0.25
	C	0.09	0.05	1.04	0.20	NS	0.19
	T x C	0.20	0.12	2.33	0.45	NS	0.42

NS : Non-significant

ACKNOWLEDGEMENTS

The authors are grateful to the Aligarh Muslim University, Aligarh for providing the research facilities and the National Research Centre on Rapeseed-Mustard, Bharatpur for supplying the seeds.

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