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Research Notes

## **Influence of organic sources of nutrients on seed quality characteristics of groundnut (*Arachis hypogaea* L.) Var. TMV 7**

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Seed is a vital input for agriculture and seed quality plays an important role in germination and field stand. The European Union regulation 2092/91 for organic agriculture, stipulates that seeds and planting materials for organic farming should be organically produced. Information on the quality aspects of organically produced seeds is scanty. Hence, the study was undertaken to assess the seed quality characteristics of organically produced groundnut seeds.

In order to assess the seed quality characteristics, seeds were collected from the following treatmental plots handled with different organic sources for nutrients and raised during *rabi* (irrigated), 2003 and *kharif* (rainfed), 2004 at Oilseeds Research Station, Tindivanam. The treatment details are as follows: T<sub>1</sub> - Composted poultry manure, T<sub>2</sub> - Composted pressmud, T<sub>3</sub> - Vermicompost, T<sub>4</sub> - Farm yard manure, T<sub>5</sub> - T<sub>1</sub> + Panchakavya (3%) spray on 25 and 35 DAS, T<sub>6</sub> - T<sub>2</sub> + Panchakavya (3%) spray on 25 and 35 DAS, T<sub>7</sub> - T<sub>3</sub> + Panchakavya (3%) spray on 25 and 35 DAS, T<sub>8</sub> - T<sub>4</sub> + Panchakavya (3%) spray on 25 and 35 DAS, T<sub>9</sub> - Recommended package of practice (NPK @ 17:34: 54 kg ha<sup>-1</sup> for irrigated and 10:10:45 kg ha<sup>-1</sup> for rainfed crop), T<sub>10</sub> - Control. The N content of Composted poultry manure, Composted press mud, Vermicompost and Farm yard manure were 3.0, 1.5, 3.0 and 0.5 per cent, respectively and the quantity applied was 567,1139,567

and 3400 kg ha<sup>-1</sup> for irrigated and 334,670,334 and 2000 kg ha<sup>-1</sup> for rainfed crops. Gypsum was applied in bands for all the treatments except for T<sub>10</sub> @ 200 kg ha<sup>-1</sup> as basal and 200 kg ha<sup>-1</sup> on 45 DAS. The kernels were treated with *Trichoderma viridi* @ 4 g kg<sup>-1</sup> followed by slurry treatment with rhizobial culture @ 5 g kg<sup>-1</sup> and dried under shade and sown. Recommended practices were followed. The seed quality parameters *viz.* oil content (Sadasivam and Manickam, 1996), Protein content (Ali-Khan and Youngs, 1973) Root, length (cm), Shoot length (cm), Dry matter production of seedlings (g/10 seedlings), vigour index (Abdul Baki and Anderson, 1973) and field emergence per cent were evaluated at the Department of Seed Science and Technology, Coimbatore.

Germination of the seeds from various treatments was ranged from 92 to 96 per cent. Application of different organic nutrients did not show any influence on germination. The seeds obtained from the plots applied with composted pressmud showed enhanced oil content (49.6 and 47.8 per cent for *rabi* (irrigated), 2003 and *kharif* (rainfed), 2004, respectively) and protein content (22.6 and 24.2 per cent for *rabi* (irrigated), 2003 and *kharif* (rainfed), 2004, respectively) at par with recommended dose of fertilizer applied plots in both *rabi* (irrigated), 2003 and *kharif* (rainfed), 2004 (Table 1). Since pressmud contained relatively higher phosphorus,

**Table 1. Effect of organics on seed quality parameters of groundnut var. TMV 7.**

Treatment	Rabi 2003			Kharif 2004		
	Oil content content (%)	Protein content (%)	Germination (%)	Oil content content (%)	Protein content (%)	Germination (%)
T <sub>1</sub> - Composted poultry manure	49.1	22.3	94 (75.82)	47.3	23.8	96 (78.47)
T <sub>2</sub> - Composted pressmud	49.6	22.6	96 (78.47)	47.8	24.2	96 (78.47)
T <sub>3</sub> - Vermicompost	48.4	21.8	94 (75.82)	47.6	23.6	94 (75.82)
T <sub>4</sub> - Farmyard manure	48.6	21.6	94 (75.82)	47.2	23.4	94 (75.82)
T <sub>5</sub> - T <sub>1</sub> + Panchakavya (3%) spray on 25 & 35 DAS	48.2	21.4	94 (75.82)	46.8	23.1	92 (73.57)
T <sub>6</sub> - T <sub>2</sub> + Panchakavya (3%) spray on 25 & 35 DAS	49.4	22.4	96 (78.47)	47.4	24.0	96 (75.82)
T <sub>7</sub> - T <sub>3</sub> + Panchakavya (3%) spray on 25 & 35 DAS	48.6	21.7	92 (73.57)	47.1	23.2	92 (73.57)
T <sub>8</sub> - T <sub>4</sub> + Panchakavya (3%) spray on 25 & 35 DAS	48.2	21.6	92 (73.57)	47.4	23.8	94 (75.84)
T <sub>9</sub> - Recommended fertilizer dose	49.6	22.6	92 (75.82)	47.9	24.6	96 (78.42)
T <sub>10</sub> - Control	47.8	21.2	92 (73.57)	46.1	22.8	92 (73.52)
Mean	48.8	21.9	94 (75.68)	47.3	23.7	94 (75.93)
SEd	0.52	0.01	3.87	0.61	0.88	2.07
CD (P=0.05)	1.09	0.31	NS	1.29	1.85	NS

(Figures in parentheses are transformed (Arcsine) value)

**Table 2. Effect of organics on seed quality parameters of groundnut var. TMV 7.**

Treatment	Rabi 2003			Kharif 2004		
	Drymatter production (g seedlings <sup>-10</sup> )	Vigour index	Field emergence (%)	Drymatter production (g seedlings <sup>-10</sup> )	Vigour index	Field emergence (%)
T <sub>1</sub> - Composted poultry manure	3.12	293	88 (69.73)	3.10	298	90 (71.57)
T <sub>2</sub> - Composted pressmud	3.16	304	92 (73.57)	3.16	303	92 (73.57)
T <sub>3</sub> - Vermicompost	3.13	300	88 (69.73)	3.15	296	88 (69.73)
T <sub>4</sub> - Farmyard manure	3.03	285	88 (69.73)	3.03	285	88 (69.73)
T <sub>5</sub> - T <sub>1</sub> + Panchakavya (3%) spray on 25 & 35 DAS	2.98	280	86 (68.03)	2.95	271	86 (68.03)
T <sub>6</sub> - T <sub>2</sub> + Panchakavya (3%) spray on 25 & 35 DAS	3.14	301	92 (73.57)	3.12	300	92 (73.57)
T <sub>7</sub> - T <sub>3</sub> + Panchakavya (3%) spray on 25 & 35 DAS	2.96	272	88 (69.73)	2.86	263	88 (69.73)
T <sub>8</sub> - T <sub>4</sub> + Panchakavya (3%) spray on 25 & 35 DAS	2.92	269	88 (69.73)	2.78	261	86 (68.03)
T <sub>9</sub> - Recommended fertilizer dose	3.28	315	92 (73.57)	3.29	316	94 (75.84)
T <sub>10</sub> - Control	2.82	259	86 (68.03)	2.72	250	86 (68.03)
Mean	3.05	288	89 (70.54)	3.02	284	89 (70.78)
SEd	0.11	3.38	0.54	0.11	3.54	0.65
CD (P=0.05)	0.24	7.51	1.14	0.23	7.44	1.37

(Figures in parentheses are transformed (Arcsine) value)

potassium and sulphur (Patiram and Singh, 1993) this might have contributed for higher oil content. Pressmud also found to increase the up take of sulphur and phosphorus (data not recorded), which are directly involved in the oil synthesis particularly for the formation of phospholipids and esterification of fatty acid which might have contributed to increased oil content (Kawakye, 1988). Drymatter production of seedling is the manifestation of the physiological efficiency of the germinating seed, which depends on the seed vigour (Heydecker, 1972). The drymatter production of seedlings differed significantly in both the season (Table 2). Higher drymatter production of 3.29 g was recorded in seeds collected from the plots applied with recommended fertilizers followed by 3.16 g composted pressmud applied plots, which was at par with composted pressmud and panchakavya applied plots. Lower dry matter production was recorded in control plots.

The vigour is usually characterized by the weight of the seedlings after a period of growth (Quails and Cooper, 1968; Dasgupta and Austenson, 1973) and it is essentially a physiological phenomenon influenced by the reserve metabolites, enzyme activities and growth regulators. Vigour index value, which is the totality of germination and seedling growth, has been regarded as a good index to measure the vigour of seeds (Abdul Baki and Anderson, 1973). In the present study, maximum vigour index of 316 was recorded for T<sub>9</sub> treatment followed by 303 in T<sub>2</sub>.

The field emergence is the ultimate measure of seed vigour (Tonkan, 1969). Higher field emergence of 92 per cent was recorded in composted pressmud applied plots in both the seasons and it might be due to the beneficial

effects of composted pressmud. Thus the application of composted pressmud increased the seed quality parameters in groundnut during both *rabi* (irrigated), 2003 and *kharif* (rainfed), 2004.

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