Himachal Journal of Agricultural Research 36 (2): 241-242, 2010

Short Note

Performance of different pea genotypes under organic farming ecosystem

Sanjay Chadha, Akhilesh Sharma* and Y.S. Paul
Department of Organic Agriculture
CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur (HP)-176 062, India.
(Manuscript Received: 22.10.2010; Accepted: 08.02.2011)

Abstract

Eighteen varieties of pea including three recommended varieties for Himachal Pradesh, two edible podded varieties and remaining newly identified lines superior either in *Fusarium* wilt resistance and/or in horticultural traits were evaluated for their performance under organic farming ecosystem. The seeds were sown at 45 x 10 cm spacing in plots of size 3.0 x 1.5 m size at the Model Organic Farm of the Department of Organic Agriculture, CSK HPKV, Palampur during winter 2009. Significant differences among different genotypes were observed for all the traits studied which showed an appreciable diversity among the genotypes evaluated. The newly released variety Pb.-89 for Himachal Pradesh under inorganic farming conditions was found to be the most suitable for growing under organic farming ecosystem. The pods of Pb.-89 were thoroughly filled in, having bright green colour and gave the maximum pod yield per plant (58.69 g) and pod yield per hectare (130.28 q). DPPEP-2, an edible poded variety hold a good promise to be popularized for cultivation in hilly states like Himachal Pradesh as it gave quite high pod yield of 115.2 q/ha with 51.87 g pod yield per plant, 8.1 cm pod length and 10.33 pods per plant. DPPMFWR-4 and DPPMFWR-8, newly identified lines resistant to Fusarium wilt disease were also found quite promising as these being significantly at par with each other, yielded 110.39 and 105.57q per hectare, respectively. These two lines had the highest number of pods per plant (12.07 and 11.23) with an appreciable pod yield per plant (49.72 and 47.55 g) respectively.

Key words: Pea (*Pisum sativum* L.), varietal evaluation, organic farming.

Garden pea (*Pisum satuvum* L.) is one of the most important vegetable cash crops in Himachal Pradesh covering the maximum area 18930 hectare with production of 202621MT (Anonymous, 2008-09). The identification of genotypes with wide genetic variability and high heritability for desired characters is indeed useful in the development of new varieties with increased yield potential (Kader *et al.* 1982). Eighteen genotypes of pea including thirteen newly identified lines *viz.*, DPPMFWR-1, DPPMFWR-4, DPMFWR-8, DPPMFWR-20, DPPMFWR-27, DPPM-1, DPPMR-09-1, DPPMR-09-9, DPPM-64, DPPM-65, DPPM-72, DPPM 73-2, DPPM-74; two edible poded peas DPEPP-1 and DPEPP-2 and three recommended varieties for Himachal Pradesh viz., Azad Pea-1, Pb.-89 and Palam Priya were grown in randomized block design with three replications during winter season of 2009 at the Model Organic Farm (managed exclusively through organic practices since April 2006) of Department of Organic Agriculture, CSK HPKV, Palampur which represents mid hill zone of the state. The seeds were sown on 23rd November, 2009 at a spacing of 45 x 10 cm in plots of 3.0 x 1.5 m size. To help in early seed germination and control of different diseases, seeds were treated with CPP (Cow Pat Pit) after making slurry with 2 percent solution of molasses in such a way that seeds got a coating of the solution. Seeds were sown in the field after drying them in shade. Vermi-compost 15t/ha along with BD* 2.5t/ha was added at the time of field preparation. The observations were recorded on pod length (cm), grains/pod, pods/plant, plant height (cm), average pod weight (g), pod yield/plant (g) and pod yield (q/ha). The data were analyzed as per the standard statistical procedures. Significant differences among different genotypes were observed for all the traits studied (Table 1). Pod length varied from 6.60 (Palam Priya) to 11.83 cm (DPPM-64). DPPM-64 recorded significantly higher pod length and average pod weight/plant (7.27g) than rest of the genotypes, but it could not excell in marketable pod yield due to less number of grains per pod and number of pods per plant.

Number of grains per pod is one of the important characteristics, which determines the suitability of variety for acceptance by the consumers. The range for grains per pod varied from 4.37 (DPEPP-2) to 8.7(DPPM-1). A number

1 Department of Vegetable Science and Floriculture, CSKHPKV, Palampur

Table 1. Performance of different genotypes of pea under organic conditions

Sr. No	Genotype(s)	Pod length (cm)	Grains /pod	Pods/ plant	Plant height (cm)	Average Pod weight (g)	Pod yield/ plant (g)	Pod yield (q/ha)
1	DPPMFWR-1	7.97	7.10	9.77	55.2	4.03	39.24	87.12
2	DPPMFWR-4	7.57	7.93	12.07	82.8	4.13	49.72	110.39
3	DPMFWR-8	7.20	6.20	11.23	71.0	4.07	47.55	105.57
4	DPPMFWR-20	8.17	7.83	6.83	88.7	4.77	32.29	71.69
5	DPPMFWR-27	7.67	6.20	8.73	87.0	3.50	33.03	73.33
6	DPPM-1	8.87	8.70	7.70	78.2	3.27	25.07	55.66
7	DPPMR-09-1	8.10	5.93	7.13	68.6	5.30	39.24	86.86
8	DPPMR-09-9	8.20	8.13	10.10	78.1	4.87	49.24	109.31
9	DPPM-64	11.83	6.40	5.30	87.6	7.27	38.32	85.06
10	DPPM-65	7.93	8.00	6.17	80.8	3.97	24.35	54.06
11	DPPM-72	8.30	7.73	7.00	77.2	4.73	32.26	72.16
12	DPPM 73-2	8.13	7.27	8.67	58.8	3.59	31.23	69.31
13	DPPM-74	8.00	6.93	7.03	55.2	3.33	23.26	51.64
14	DPEPP-1	7.50	5.57	6.23	86.8	4.23	26.33	58.44
15	DPEPP-2	8.10	4.37	10.33	83.0	5.07	51.87	115.15
16	Azad Pea-1	8.10	7.43	9.47	71.9	5.25	49.83	110.62
17	Pb.- 89	8.80	8.20	9.87	58.4	5.93	58.69	130.28
18	Palam Priya	6.60	5.60	6.30	52.8	3.68	23.17	51.44
Range		6.60-11.83	4.37-8.70	5.30-12.07	52.8-88.7	3.27-7.27	23.17-58.69	51.44-130.28
G. Mean		8.17	6.97	8.34	73.45	4.5	37.48	83.23
CD (P=0.05)		1.04	0.94	2.06	15.70	1.23	14.63	31.10

of genotypes were statistically at par for grains per pod with DPPM-1 *viz.*, Pb.-89 (8.20), DPPMR-09-9 (8.13), DPPM-65 (8.00), DPPMFWR-4 (7.93) and DPPMFWR-20 (7.83). New lines DPPMFWR-4 and DPPMFWR-8, identified as resistant to fusarium wilt disease gave the highest number of pods per plant (12.07 and 11.23), respectively with appreciable pod yield per plant (49.72 and 47.55 g) and pod yield per hectare (110.39 and 105.57 q).

Among edible podded varieties, DPPEP-2 gave the highest pod yield of 115.15 q/ha with 51.87 g pod yield per plant, 8.1 cm pod length and 10.33 pods per plant. Since pods of this variety are consumed as such, it holds a good promise to be popularized for cultivation in the state.

The newly released variety Pb.-89 for Himachal Pradesh under inorganic farming conditions was found to be the most suitable for growing under organic farming ecosystem. The pods of Pb.-89 were thoroughly filled in having bright green colour and gave the maximum pod yield per plant (58.69 g) and pod yield per hectare (130.28 q).

References

Anonymous 2008-09. Department of Agriculture, HP Govt. (Personel communication).

Kader MM, Muthukrishnan CR and Irulappan I 1982. Studies on variability in amaranthus (*Amaranthus tricolor* L.) at different stages. South Indian Hort. **30 (3):** 203-06.