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EFFECT OF DIFFERENT PICKINGS ON THE STORABILITY OF CHILLI SEEDS*

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The quality of seeds of chilli Co 1 and Co 2 from the different pickings evaluted initially and after 12 months of storage had indicated the superiority of seeds from second and third pickings in Chilli Co 1 and fifth, fourth and third pickings in chili Co 2 in respect to 100-seed weight, viability and vigour as compared to the seeds from other pickings. The differences in quality of seed from different pickings could be attributed to the differences in the canopy of the cultivars at different stages of growth and development of the plant, incident light and temperature and relative humidity of the micro-climate obtainable at the fruiting zone and the on set of senescence during the last phase of plant life. This situation had meaningfully revealed that the quality of the seeds from early pickings and late pickings was largely influenced by the interaction between the genotype and envi.omental conditions that prevail during their maturation.

Information on the relative storability of seeds from different pickings had not been generated. The published results concerned only with the immediate effect of different pickings on the germinability and vigour of seeds. Murthy and Murthy (1961) observed maximum percentage of germination in seeds extracted from the pods of first flush followed by th se of second one. They further observed, that there was a progressive decline from second to fourth picking in seed sprouting energy, mean pod and seed weight and seed percentage, and had therefore, concluded that for obtaining good quality seeds the ftuits from the first picking, if not, the second picking should be used. Petrov (1965) reported that the best seed was obtained from ripe fruits on the lower portion of the plants. Gikalo (1966) observed that the seeds from fruits formed on the main stem and on the first and second order branches were distinguished by a high absolute weight and high germination. It also gave rise to plants which were earlier, more productive and more resistant to diseases. Girkova-Dordievska (1967) reported that most fruits were obtained from the third and fourth tiers of the plants, fruits from the lowest tier were the heaviest. The fruit weight decreased with the height of the tier. A positive association between seed yield and

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seed quality on one hand and eariiness of harvest on the other was determined (Anon., 1979). Sri ramachandra Murthy (1979) reported that the pods from first three pickings were preferable for the extraction of good seed with high germination percentage in the first two pickings followed by third picking. Therefore, the present study was undertaken to evaluate the storability of chilli seeds from different pickings.

METERIALS AND METHODS

Red ripe fruits of chilli Co 1 (V_1) and Co. 2 (V_2) were picked at an intetval of 10 days starting from 1.7,80; the fruits thus obtained from different dates were serially designated as PK_1 to PK_6. The seeds of fruits from different pickings were sun-dried for eight hour, cleaned in a pneumatic seed sorter. The seeds from each picking were stored for 12 months under ambient conditions in paper bags. The seeds were evaluated for germinability and vigour at the beginning (P_0) and at the termination of storage (P_{12}) respectively by the standard germination test (Anon, 1976) and the field emergence potentials, seedling growth measurements such as root and shoot length and the vigour index (Abdul-Baki and Anderson 1973). The 100-seed weight was determined following the International seed Testing Rules (Anon. 1976).

RESULTS AND DISCUSSION

In V_1 seeds from PK_2 recorded high 100-seed weight of 481 mg which was on par with 463 mg recorded by the seeds from PK_3; the 100-seed weight of other pickings ranged from 392-439 mg. In V_2 seeds from PK_4 recorded high 100-seed weight of 519 mg which was on par with the 100-seed weight of 509, 482 and 480 mg recorded, respectively by the seeds from PK_3, PK_2 and PK_6. The seeds from PK_1 and PK_5 recorded 100-seed weights of 472 and 464 mg, respectively.

The seeds of V_1 of V_1 from PK_2 and PK_6 recorded significantly high and low germination percentages of 98 and 88 respectively. The seeds of V_2 from PK_5 and PK_1 recorded significantly high and low germination percentages of 98 and 89 per cent, respectively.

In V_1, seeds from PK_2 recorded high field emergence percentages of 88 which was on par with the field emergence percentages of 87 and 85 recorded by the seeds from PK_3 and PK_1; the field emergence percentages of seeds from other pickings ranged from 78 to 83. In V_2, seeds from PK_5, recorded the high field emergence percentage of 88 which was on par with the field emergence percentage of 86 recorded by the seeds from PK_4, the field emergence percentage of seeds from other pickings ranged from 77 to 80.

The differences in root length of seedlings were not significant. In V_1, the shoot length of 10.6 cm

Effect of different pickings on the storability of Chilli seeds

a. 100-Seed Weight (mg)

	V_1	V_2	Mean
PK_1	439	472	455
PK_2	481	482	481
PK_3	463	509	486
PK_4	418	519	468
PK_5	405	454	434
PK_6	392	480	436
Mean	433	475	

b. Germination [%]

	V_1			V_2		
	P_0	P_{15}	Mean	P_0	P_{15}	Mean
PK_1	97(82.3)	92(73.9)	95(78.1)	94(78.0)	84(66.4)	89(71.2)
PK_2	100(90.0)	96(80.7)	98(85.4)	96(78.5)	92(73.7)	94(76.1)
PK_3	99(86.2)	93(75.2)	96(80.7)	97(82.3)	95(77.5)	96(79.9)
PK_4	97(84.5)	89(71.0)	93(77.8)	99(86.7)	99(77.5)	97(82.1)
PK_5	97(84.5)	84(66.5)	91(75.5)	100(90.0)	96(78.7)	98(84.4)
PK_6	95(76.9)	80(63.7)	88(70.3)	95(77.2)	92(73.9)	94(75.6)
Mean	98(84.1)	89[71.9]	94(78.0)	97[81.8]	92[74.6]	95[78.2]

	P x PK	V x PK
SE	11.7	1.32
CD	4.07	3.75

Effect of different pickings on the storability of Chilli seeds

A. Shoot length (cm)

B. Vigour index(%)

	V_1			V_2			V_3			V_4		
	P_0	P_{15}	Mean	P_0	P_{15}	Mean	P_0	P_{15}	Mean	P_0	P_{15}	Mean
PK_1	11.00	8.87	9.93	9.93	8.00	8.96	2034	1510	1772	1851	1347	1599
PK_2	10.93	9.90	10.42	10.43	8.00	9.22	2020	1885	1953	1926	1472	1699
PK_3	11.67	9.60	10.63	11.76	9.10	10.42	2080	1791	1936	2035	1717	1876
PK_4	11.20	9.60	10.40	10.73	8.60	9.67	1983	1630	1807	1712	1520	1716
PK_5	11.17	9.17	10.17	10.50	8.73	9.62	1945	1377	1661	1960	1673	1817
PK_6	10.30	8.77	9·54	11.17	8.93	10.05	1919	1358	1639	2024	1593	1809
Mean	110.4	9.32	10.18	10.75	8.56	9.66	1997	1592	1794	1951	1554	1753

	V x PK	V x PK
SE	0.26	17.0
CD	0.75	55.5

Effec' of different pickings on the storability of Chilli seeds

C. Field emergence [%]

	V_1			V_2			V_1			V_2		
	P_0	P_{12}	Mean	P_0	P_{12}	Mean	P_0	P_{12}	Mean	P_0	P_{12}	Mean
PK_1	90[71.6]	80[63.7]	85[67.7]	85[67.3]	72[57.4]	79[62.3]	9.93	7.73	8.83	9.73	8.00	8.87
PK_2	92[73.2]	84[65.9]	88[69 6]	89[70.6]	78[62.0]	84[66.3]	9.27	9.73	9.50	9.63	8.00	8.82
PK_3	92[73.4]	82[65.0]	87[69.2]	85[67.2]	68[55.6]	77[61.4]	9.13	9.60	9.37	9.17	9.00	9.08
PK_4	90[71.6]	66[54.3]	78[62.8]	91[72.6]	81[64.2]	86[68.4]	9.17	8.67	8.92	8.57	7.40	7.98
PK_5	89[70.6]	76[60.3]	83[65.5]	94[76.4]	82[64.9]	88[70.6]	9.37	7.23	8.30	9.10	8.70	8.90
PK_6	89[70.7]	70[56.9]	80[63.8]	86[68.2]	74[59.4]	80[63.8]	9.70	8.30	9.00	10.17	8.40	9.28
Mean	90[71.8]	76[61,0]	84[66.4]	88[70.4]	76[60.6]	82[65.5]	9.43	8.54	8 99	9.39	8.25	8.82

d. Root length [cm]

	P x PK	V x PK
SE	1.10	NS
CD	3.15	

recorded by the seedling from the seed of PK3 was on par with the seedlings from the seeds of PK2 , PK5 and PK1 which ranged from 9.93 to 10.42 cm In V2 , seedling from the seed from PK3 produced 10 42 cm long shoot that was on par with 10.05 cm long shoot produced by the seedling from PK6 ; the shoot length recorded by the seedlings from the seeds of other pickings ranged from 8.96 cm to 9.67 cm.

In V1 , the seed from PK2 recorded high vigour index value, of 1953 which however was on par with the vigour index value of seeds from other pickings, ranging from 1639 to 1807. In V2 , the seeds from PK3 and PK1 recorded high and low vigour indices of 1876 and 1599, respectively

The storage studies conducted with the seeds obtained from different pickings indicated that in V1 , the seeds from PK2 and PK3 were superior to the seeds from other pickings in respect to 100-seed weight, germination and field emergence potential, root and shoot length of seedlings and seed vigour, obviously due to the fact that these were obtained from the fruits that had developed on the first and second-order branches when the plants were in vigourous growth and development.

High quality seeds obtainable from the chilli fruits borne on the main, second and third order branches were reported by Sriramachandra murthy, (1979). The seeds from the later pickings were inferior to those from the earlier pickings since they were obtained from fruits developed on the higher order branches coincident with ageing and senescnce of the plant when the balanced partitioing of assimilates between the vegetative and reproductive sinks could not be achieved. This situation could have been caused due to inadequate accumulation of storage reserves in late formed seeds, as meaningfully revealed by relatively low values recorded in respect to most of the seed quality parameters evaluated initially and at the end of the storage period. In V2 the seeds from PK5 ,PK4 and PK3 fand stored were found to be relatively better in respect to germination.

Field emergence and vigour potentia's than those from the fruits of other pickings. The quality of the seeds from the fruits of PK1 and PK2 was presumably affected by the unfavourable microclimate obtainable at the lower portion of the plant due to the dense sub globose canopy characteristic of this cultivar in contrast to the lax and inverted pyramidose canopy of V1 . High relative humidity and low temperature of micro-climate obtainable at the lower zone of the crop canopy hastening the process of deterioration in seeds after they have attained physiological maturity could be witnessed in the studies of Sankaran (1975). Howard and Yamaguchi (1957)

reported that in capsicum the rate of fruit development was chiefly influenced by the temperature and the time required for a fruit to develop was quite unpredictable; hence the chronological age might not reflect the true maturity of seeds. According to Cochran (1941), besides the temperature and untrition, the light intensity also influenced the fruit ripening.

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