

Short Scientific Reports

Seed Germination Studies in Black Pepper*

Black pepper (*Piper nigrum* L.) is one of the crop species with efficient vegetative and sexual reproduction. Commercial gardens are established in black pepper by planting pre-rooted stem cuttings due to the inherent genetic heterozygosity and cross-fertilized nature. However, to evolve varieties combining yield, quality and resistance to important diseases and pests by exploitation of inherent variability, seed propagation is resorted to. Seed germination studies assumes importance in the above context.

Fully ripe seeds from 40 cultivars were collected from different sources in polybags which are provided with many holes for aeration. The seeds were sown at Peruvannamuzhi Farm of Central Plantation Crops Research Institute in seed pans filled with a mixture of forest soil-sand-cowdung powder (3:1:1), kept in nursery sheds and watered regularly. Periodical observations were recorded.

The germination data of some of the common cultivars are given in Table I. The germination is hypogeal and seeds start germinating after periods ranging from 22 to 45 days in various cultivars. The earliest to germinate were the cultivars 'Palulauta' from Karnataka and 'Kottaram' from Kerala. The cultivar 'Murithothan' has taken the

maximum time for initiating germination (45 days), followed by 'Kottanadan' and 'Kalluvally' (41 days). Eight Karnataka cultivars included in the study took an average of 26 days for germination, while the cultivars from the Kerala region took on an average 33 days for initiation of germination.

The time required for completing the germination also varied greatly, 'Veluthanamban' taking 77 days and 'Nastigunda' and 'Murithothan' 72 and 71 days respectively. Twenty one out of the forty cultivars studied took more than 60 days for completing the germination, four took less than 50 days, while the others completed germination in 50-60 days.

Germination varied from 25% in a 'Kalluvally' type to 100% in 'Nastigunda'. Four cultivars gave 80% or more germination, while in 12, the germination was below 50%. Among the Kerala collections, the highest germination was given by 'Chumala' (94.1%) while among the Karnataka cultivar 'Nastigunda' gave the best germination (100%), followed by 'Palulauta' (94.1%).

Same cultivars collected from different areas showed differences in their germination capacity (Table II). In 'Arakkulamunda' the germination varied from 70.0 to 84.0%, in

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Table I. *Germination data of common pepper cultivars*

Cultivar	Seeds sown	Days to initiate germination	Days to complete germination	Germination (%)
Arakkulamunda	1500	32	62	71.4
Balancotta	1800	34	56	72.7
Cholamundi	2250	32	52	72.0
Cholakkodi	450	27	63	39.0
Cheriyakaniakkadan	700	33	61	65.0
Chumala	420	28	64	94.1
Doddigya	450	24	48	54.0
Irumaniyan	380	31	54	42.0
Jeerakamundi	1000	27	63	39.0
Kalluvally (Type 1)	800	41	64	25.0
Kalluvally (Type 2)	700	35	58	67.5
Kalluvally (Type 3)	2000	37	65	70.0
Karivilanchy	430	27	53	58.0
Kottanadan	700	41	61	51.0
Kottaram	650	22	59	56.8
Karimunda	3900	31	65	82.5
Karimkotta	500	36	55	45.8
Kurimalai	400	25	45	53.5
Kumbhakkodi	473	33	55	38.8
Kuthiravally	2350	35	55	57.4
Local (Koppa)	200	23	43	63.5
Local (Sagar)	200	31	51	43.5
Malligesara	400	24	51	50.0
Malabarkkodi	400	31	53	68.0
Malamundi	2000	31	58	63.0
Murithothan	200	45	71	36.0
Narayakkodi	2000	30	64	70.6
Nastigunda	170	34	72	100.0
Panniyur-1	4000	37	67	50.3
Palulauta	586	22	67	94.1
Perambaramunda	1400	34	52	60.0
Perumkodi	1190	30	61	53.0
Poonjaramunda	650	33	61	51.1
Thommankodi	850	30	44	66.0
Uddagare	800	26	53	55.0
Uthirancotta	1015	34	64	67.7
Valiakaniakkadan	2000	36	61	46.5
Vellamunda	450	32	50	50.0
Veluthanamban	400	28	77	42.3
Wynadan	700	38	70	27.0

Table II. *Percentage variations in germination among different collections*

Cultivar	Collections					Mean
	1	2	3	4	5	
Arakkulamunda	70.0	52.0	80.7	84.0	60.8	69.5
Balancotta	61.6	75.0	92.4	84.0	53.0	73.2
Karimunda	49.5	72.0	76.0	83.6	86.0	73.4
Kuthiravally	64.8	45.0	40.7	50.0	—	52.1
Narayakkodi	95.0	80.0	64.0	69.0	45.0	70.6
Panniyur-1	82.5	43.0	25.5	23.3	41.0	43.6

'Balancotta' 61.6 to 92.4%, in 'Karimunda' 49.5 to 86.0%, in 'Kuthiravally' 45-65%, in 'Narayakkodi' 45-95% and in 'Panniyur-1' 23.3 to 82.5%.

In the present study, the germination percentages were found to be much higher than what was reported earlier (Anonymous, 1977). In various cultivars the germination data reported earlier ranged from 0 to 43% (Table III). Probably loss of viability as a result of storage and pre emergence infection by pathogenic organisms are some of the factors responsible for such low germination.

Table III. *Pepper seed germination data in comparison with earlier report*

Cultivar	Germination percentage	
	Present	Earlier report
Balancotta	72.7	21.0; 24.0
Cheriyakaniakkadan	65.0	24.0
Chumala	94.1	1.0
Cholakkodi	39.0	17.0
Doddigya	54.1	9.0
Karimunda	82.5	30.0; 28.0; 24.0
Karivally	47.6	5.0
Karivilanchy	58.0	5.0
Kottanadan	51.0	1.0
Kumbhakkodi	38.8	2.0
Kuthiravally	57.4	0
Narayakkodi	70.7	10.0
Palulauta	94.1	6.0
Panniyur-1	50.3	13.0
Perumkodi	41.0	7.0
Uthirancotta	67.7	43.0
Veluthanamban	42.3	18.0

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REFERENCE

- ANONYMOUS, 1977. *Report. All India Co-ordinated Spices and Cashewnut Improvement Project, Central Plantation Crops Research Institute, Kasaragod 670 124, Kerala, India.*