

## QUALITY OF SEED IN RELATION TO POSITION OF SEED IN THE PODS OF COWPEA

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### ABSTRACT

Quality estimation of the seeds of cowpea cv Co<sub>2</sub> collected from different positions of the seed in the pods were made. The estimations viz; seed size, weight, germination and vigour of the seeds collected from the distal and other portions did not vary widely excepting the reduced vigour of the seedlings of smaller sized seed. The distal and seeds recorded higher germination and lower vigour compared to others.

The location of seed formation on the plant and the condition in which the seed development and maturation takes place create heterogeneity in the quality. The differential nutrient supply of the mother plant to the pods and seed located in different positions will also induce variability in seed quality. Ovcharov and Kizilova(1966) studied the seed characters viz; seed size, weight and germinability of cowpea seeds collected from different positions of the plant and reported the presence of variability in seed quality of the seeds from different positions. Hence, studies were made with the seeds extracted from different positions of the pods of the cowpea cv Co<sub>2</sub> to explore the extent of variability in seed quality due to placement of seeds in the pod.

### MATERIAL AND METHODS

From a seed crop of cowpea Co<sub>2</sub>, pods were collected at maturity. The locules in each pod varied from 1 to

20. Seeds were collected after numbering the locules from the distal end, locule wise separately and seed quality estimations viz; single seed weight, seed length, and width seed thickness, seed germination, root and shoot length, drymatter production and vigour index were made as per the ISTA Rules (1976) for the seed collected loculewise and the data statistically analysed by CRBD.

### RESULTS AND DISCUSSION

The observations on seed weight length and breadth, thickness of seed, germination root and shoot length, dry matter production and vigour differed significantly due to position of the seed in a pod. The seed weight varied from 158.9 mg to 126 mg, the breadth from 62.75 mm to 56.8 mm and thickness from 44.9 to 39.5 mm irrespective of the position of the seed in the pod. The seeds of the distal end recorded lower values compared to other seeds and among the other seed definite trend could

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TABLE : Influence of position of a seed in a pot on its weight (mg), length (mm), breadth (mm), thickness (mm), germinability (%), root length (cm) and shoot length (cm), dry matter production (mg) and vigour indices of seedlings in Cowpea cv. CO-2

	Locule Number																					
	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>	S <sub>5</sub>	S <sub>6</sub>	S <sub>7</sub>	S <sub>8</sub>	S <sub>9</sub>	S <sub>10</sub>	S <sub>11</sub>	S <sub>12</sub>	S <sub>13</sub>	S <sub>14</sub>	S <sub>15</sub>	S <sub>16</sub>	S <sub>17</sub>	S <sub>18</sub>	S <sub>19</sub>	S <sub>20</sub>	SB <sub>d</sub>	CD
Seed Weight	147.5	155.2	158.0	158.9	139.2	155.6	143.1	144.6	139.4	140.8	136.6	148.5	144.0	140.3	142.9	133.8	137.2	136.5	132.7	126.0	2.63	5.49**
Seed Length	94.70	95.25	95.65	96.50	94.85	95.75	95.25	93.40	91.00	93.70	92.20	89.90	89.40	89.00	90.05	89.50	88.50	87.00	87.50	84.10	0.80	1.67**
Seed Breadth	60.00	60.50	61.75	62.25	59.55	62.50	61.15	60.30	62.75	58.80	61.80	59.80	58.90	58.40	60.80	59.90	58.95	57.70	57.30	56.80	0.93	1.94**
Seed Thickness	41.60	43.72	42.95	43.60	42.85	43.60	42.20	42.50	42.90	43.95	41.30	42.54	44.90	43.15	42.90	42.40	42.35	42.05	40.90	39.50	0.81	1.70**
Germination	95.0 (77.08)	93.5 (75.33)	93.5 (75.33)	95.8 (78.11)	96.3 (78.84)	96.8 (79.62)	96.0 (78.46)	95.3 (77.42)	95.0 (77.08)	95.5 (77.75)	96.0 (78.46)	96.3 (78.46)	99.3 (85.21)	99.3 (85.21)	96.3 (78.46)	97.0 (80.32)	98.0 (81.87)	99.3 (85.11)	100.0 (90.00)	100.0 (90.00)	1.12	2.34**
Root length	23.30	27.00	25.00	24.60	26.00	25.15	25.80	26.20	24.80	25.55	25.15	25.65	25.85	25.40	25.80	25.25	25.70	23.90	23.70	20.20	1.73	3.61**
Shoot Length	28.85	31.40	31.70	32.10	34.10	32.60	29.20	31.00	32.00	32.00	32.15	33.60	33.10	30.80	32.30	31.10	31.65	29.15	28.85	28.30	0.76	1.59**
Dry matter Production	638	651	641	663	610	670	645	636	638	634	643	662	624	618	648	604	584	570	577	565	13.40	28.02**
Vigour Index	63.27	64.56	60.85	61.91	57.02	62.81	62.13	61.77	61.25	60.34	61.09	63.22	59.86	59.43	63.37	58.59	57.18	56.57	57.70	56.45	1.11	2.32**

(Figures in parentheses are transformed values)

not be observed though the seeds from the middle position recorded higher values than the stock basal and styler ones. Sullivan et al. (1979) in groundnut and Halsted (1917) in soyabean recorded heavier seeds at basal and due to greater mobilisation of metabolites during seed development. Chandrasekaran (1979) and Varatharajan (1979) reported higher germination of the seeds of the distal end than those from the other regions. However Krishnaprasad (1980) and Sullivan et al. (1979) could observe no difference in germination due to position of seed in the fruit. Seed vigour was high in seeds collected from the middle and the proximal portion of a pod. This may be due to the deposition of more metabolites in seeds formed in the middle of the pods. In the present study, the

increase in seed germination and decrease of seed vigour of seeds of the distal end may be due to adequacy of mobilisation of reserves for germination above, and it could not compensate for further growth of the seedling which resulted in lesser vigour.

It is concluded that the seeds of cowpea cv Co2 at different positions in the pod did not vary in physical and physiological conditions. However the seeds of the distal end was somewhat inferior in quality compared to the seeds of the other positions.

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