



Evaluation of brinjal (*Solanum melongena* L.) genotypes for various growth and yield characters

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Abstract

Field experiment was carried out during the kharif and rabi season of July 2019 and January 2020 at Venanallur village located in Ariyalur district, Tamil Nadu. The research work was under taken with hundred and twelve genotypes of brinjal. The experiment was laid out in a randomized block design with three replications. The study revealed higher significant differences for most of the traits. Selection of superior parents is a crucial element for crop improvement programme. Mean performance showed that Annamalai recorded highest plant height (103.33 cm) and CO2 registered the highest number of branches plant⁻¹ (14.33). The genotype IC-112315 recorded the earliest to first flowering (36.62 days) and the genotype IC-383119 registered the maximum number of flowers plant⁻¹(87.29). The genotype IC- 136461 recorded more number of fruits plant⁻¹ (30.32), whereas the genotype PLR-2 had the highest fruit set percentage (64.93). Genotype IC- 136249 recorded the maximum fruit length (15.20 cm). The maximum fruit girth (21.75 cm) and average fruit weight (61.19 g) was observed in Elavambadi mullu kathiri. The maximum total number of pickings was observed in Annamalai (11.81). The more number of seeds per fruit was registered in IC-089900 (670.76) and maximum 100 seed weight was recorded in Vikravantii (0.45 g). The genotype IC-136461 recorded the highest fruit yield plant⁻¹ (3.00 kg). Stability of these genotypes can be assessed and utilized for further crop improvement breeding programme.

Keywords: brinjal, genotypes, mean performance, growth, yield

Introduction

Brinjal (*Solanum melongena* L.) also known as eggplant or aubergine belongs to Solanaceae family. This crop is grown in India and other parts of the World. In India, it occupies an area of 0.73 M ha with the production of 128.0 M tons and productivity of 17.5 M tons ha⁻¹ (NHB, 2018) [5]. It is grown mainly for its tender and immature fruits utilised in culinary preparations. Fruits serve as rich source of nutrients in terms of carbohydrates, proteins, fibres and vitamins like thiamine, niacin, pantothenic acid and folacin as well as minerals like calcium, iron, potash, zinc, copper and manganese. Furthermore various parts of the plants are used in preparing decoction for curing ailments such as diabetes, leprosy, cholera, asthenia and haemorrhoids. Further, it is proven in ISM as cure to heart disease and control blood pressure (Okon *et al.*, 2010) [6]. There are many traditional varieties, land races and cultivars of brinjal with distinct morphological characters that are found in the Indian sub-continent. Hence a large indigenous biodiversity exists in the crop and significant variation has been found in vegetative and reproductive characters. Attractive fruit colour and shape increases the marketable preference of the consumers. Phenols, hairiness and prickles of leaves are associated with resistance to pests. There is a lot of variability among the brinjal genotypes in India. Evaluation of per se performance is a possible way to genetic improvement of the crop. Considering the above point, current study was conducted to evaluate the growth and yield attributing characters of brinjal genotypes.

Materials and Methods

Field investigations were carried out at a village called Venanallur located in Ariyalur District during July-December, 2019 and March-July, 2020. The experiment was

laid out in a randomized block design with three replications. The material consists of 112 genotypes out of which seventy five genotypes were collected from NBPGR, New Delhi, thirty landraces from Cuddalore, Villupuram, Erode, Ariyalur, Puducherry, Pudukkottai, Namakkal, Karaikkal and Vellore District, four varieties from Agricultural Institutes *viz.*, Tamil Nadu Agricultural University and Annamalai University, two varieties from a private seed company (Saadhana agro seeds and Indo-American Hybrid Seeds Pvt. Ltd) and one variety from a National Institute (IIHR, Bangalore). Forty five days old seedlings were transplanted at a spacing of 60 × 60 cm to maintain 25 plants in each genotype in each replication. All the standard cultivation practices were followed to maintain healthy crops. Observations were recorded for 13 quantitative growth and yield characters in both the seasons and the data were compiled; pooled (Panse and Sukhatme 1984) and the statistical analysis work was done through “AGRISTAT” software.

Results and Discussion

Success in crop improvement lies in the selection of superior parents. In this regard, 112 genotypes assembled from different geographical locations were evaluated for 13 quantitative characters and scores were given based on their significance over general mean. The results of the present investigation based on growth and yield parameters are depicted in table 1. Plant height is considered as one of the most important traits for growth and vigour of plants. Among the 112 genotypes the highest mean plant height was recorded in Annamalai (103.33 cm) followed by IC-136181 (101.40 cm) and the lowest mean value was recorded in IC-136292 (64.62 cm). Similar findings have been reported by Barcha Tripathy *et al.* (2017) [2] in brinjal.

Number of branches plant⁻¹ is another yield increasing trait in brinjal. The genotype CO2 recorded maximum number of branches (14.33) followed by IC-136249 (13.40), whereas minimum mean value was recorded in Bhavani (5.00). Number of branches plant⁻¹ has been mainly found to be related and apical dominance and also influenced by genetic makeup of treatments. A similar result has been revealed earlier by Vidhya *et al.* (2015) [9].

In brinjal early estimation is an advantageous character for selecting breeding lines for commercial importance. The earliest days to first flowering was recorded in IC-112315 (36.62 days) followed by CO2 (40.17 days) and IC-136366 recorded late flowering (61.97 days). A similar result of earliness in flowering was reported by Kant *et al.* (2013). The more number of flowers plant⁻¹ was observed in IC-383119 (87.29) and the less number of flowers are produced in Elavambadi mullu kathiri (36.93). The maximum number of fruits plant⁻¹ was recorded in IC-136461 (30.32) and IC-136249 (30.31) respectively. IC-144525 (10.70) recorded minimum number of fruits plant⁻¹. The highest fruit set percentage was recorded in PLR-2 (64.93) followed by CO2 (62.68) and lowest in IC-361838 (16.12). Similar results have been reported by Vidhya *et al.* (2015) [9]. IC-136249 had the highest fruit length (15.20 cm) and IC-136188 recorded the lowest fruit length (6.05 cm). The maximum fruit girth was observed in Elavambadi mullu kathiri (21.75 cm) followed by IC-136349 (19.66 cm) and minimum in Karnataka brinjal (4.50 cm). In the present findings, the higher pericarp thickness may be due to higher fruit girth. These findings are in consonance with Dubey and Akhilesh, (2012) [3]. The highest average fruit weight was recorded in Elavambadi mullu kathiri (61.19 g). This was followed by IC-136148 (58.64 g) and IC-112341 (54.60

g). The lowest mean average fruit weight was recorded in IC-89910 (24.66 g). Similar findings have been reported by Solaimana *et al.* (2015) [8] in brinjal.

Total number of pickings and number of fruits plant⁻¹ are important parameters which directly contribute towards the total yield. The maximum total number of pickings was recorded in Annamalai (11.81). This was followed by IC-394902 (11.14) and the minimum number of pickings was recorded in Bhavani (4.11). IC-089900 recorded the maximum number of seeds per fruit (670.76) and the minimum value was recorded in IC-089888(124.60). The maximum 100 seed weight (0.45 g) was recorded in Vikravandi -1, whereas the minimum was observed in Ujala Brinjal (0.23 g). IC-136461(1.41 kg plant⁻¹) registered the highest fruit yield plant⁻¹. This was followed by IC-136461 (3.00 kg plant⁻¹) and IC-13649 (2.86 kg plant⁻¹). Green Round (0.52 kg plant⁻¹) registered the lowest fruit yield plant⁻¹. Yield is a complex character and is determined by many genes and is largely influenced by environmental conditions. The varietal differences always play an important role in the determination of yield. These findings are in agreement with the results obtained by Akpan *et al.* (2016) [1]. The study indicated presence of good variation among the brinjal genotypes. Thus, effective selections can be practiced for earliness, yield and other traits. Genotypes with higher mean value for particular traits can also be utilized for hybridization programme. IC-112315, Annamalai, IC-136182 were identified as early types. IC-136249, Elavambadi, IC-136461, IC-136093, IC-394902, PLR2, CO2, Arka Harishita produced significantly higher fruit length and girth, average fruit weight, total number of pickings, number of fruits plant⁻¹, fruit yield plant⁻¹ and hence they can be recommended for commercial cultivation.

Table 1: Mean performance of brinjal genotypes for growth and yield attributing characters

Genotypes	Plant Height (cm)	No. of Branches per plant	Days to first flowering	No. of flowers per plant	No. of fruits per plant	Fruit set %	Fruit length (cm)	Fruit girth (cm)	Avg. fruit weight (g)	Total No of Picking	No. of seeds per fruits	100 seeds weight	Fruit Yield per plant
IC-136366	80.60	11.07	63.01	44.74	28.62	63.96	7.21	13.62	43.81	6.64	150.28	0.33	1.90
IC-386589	77.87	7.45	52.18	60.42	21.72	35.94	7.33	11.93	39.23	7.04	267.61	0.32	1.44
IC-136452	85.43	6.703	51.55	65.01	17.26	26.86	7.14	11.64	37.22	5.73	493.10	0.35	0.99
IC-136268	81.51	10.22	44.25	59.15	15.28	25.83	8.72	13.91	44.92	6.08	315.07	0.31	1.27
IC-136061	81.14	6.72	54.20	57.52	19.95	34.82	7.25	11.57	36.25	6.54	295.28	0.32	1.49
IC-112315	83.47	12.76	36.62	52.38	27.75	52.97	10.17	11.68	44.67	10.10	206.27	0.37	2.79
IC-089905	80.14	8.61	55.25	59.94	20.58	34.34	7.14	12.36	38.08	8.42	423.09	0.36	1.81
IC-144515	71.62	8.81	52.32	59.17	17.86	30.19	8.92	14.36	40.81	6.57	531.74	0.31	1.30
IC-136303	67.43	7.89	53.13	52.39	17.96	34.33	6.21	9.42	41.56	5.81	279.27	0.29	1.31
IC-136231	68.76	7.23	53.27	51.57	15.60	30.26	9.79	7.34	36.55	6.14	367.27	0.38	1.11
IC-136546	77.73	8.74	53.40	43.87	21.74	49.58	7.91	11.92	39.36	8.02	345.69	0.31	1.43
IC-89910	84.66	7.78	53.43	49.61	18.03	36.49	6.30	8.25	24.66	8.57	252.44	0.29	1.50
IC-136188	75.47	8.39	53.23	54.16	18.76	34.80	6.05	14.14	39.76	6.14	244.93	0.26	1.15
IC-144527-C	77.66	6.89	52.56	54.88	14.76	27.01	7.13	10.89	34.88	6.36	234.54	0.30	1.06
IC-089888	77.40	7.93	53.08	46.09	20.47	44.47	6.35	10.68	37.85	7.07	124.60	0.30	1.28
IC-136182	83.14	11.57	48.64	56.68	29.56	52.18	10.21	15.20	46.09	9.74	346.12	0.28	2.56
IC-136299	75.29	6.56	52.93	52.71	18.06	34.28	8.83	10.33	44.24	6.81	360.18	0.35	1.30
IC-089875	67.47	8.14	52.30	53.66	18.58	34.90	9.05	13.75	48.65	6.81	584.25	0.36	1.19
IC-144525	68.66	7.82	52.79	46.83	10.79	23.16	9.02	13.71	42.77	4.58	305.74	0.34	0.61
IC-136184	67.62	10.14	55.06	61.57	18.11	29.88	8.86	12.42	33.03	4.25	345.81	0.26	1.27
IC-136017	85.80	12.52	50.51	47.08	30.14	54.52	14.56	8.01	39.41	10.18	206.47	0.29	2.71
IC-136308	68.47	8.49	53.73	46.14	17.97	38.97	9.97	14.01	42.00	6.05	392.03	0.31	1.18
IC-136461	91.32	11.64	42.70	45.39	30.32	57.72	10.31	14.45	47.16	9.92	259.04	0.35	3.00
IC-089876-C	87.77	9.16	54.32	46.87	12.58	28.03	12.69	12.10	43.65	4.39	302.20	0.38	0.81
IC-136181	101.4	10.81	49.86	45.93	28.33	61.68	10.16	12.74	50.16	9.51	260.70	0.34	2.69
IC-136300	68.46	7.48	50.24	62.57	19.87	32.39	8.55	11.67	39.11	6.75	437.29	0.34	1.34

IC-136349	72.85	10.49	54.25	60.37	16.85	29.62	13.93	19.66	53.11	5.44	367.98	0.28	1.27
IC-136148	73.25	7.81	55.65	64.91	17.95	27.74	13.95	14.89	58.64	6.04	266.83	0.31	1.31
IC-136249	66.76	13.40	50.09	48.00	30.31	63.16	15.20	9.60	41.72	10.41	231.39	0.34	2.86
IC-136196	68.10	7.30	54.66	55.24	15.44	28.06	12.68	7.93	42.59	5.44	296.05	0.41	1.07
IC-089900	67.80	7.60	51.77	57.41	14.75	26.54	6.84	12.09	32.33	5.32	670.76	0.41	1.08
IC-136177	76.92	8.43	54.31	56.28	16.95	30.31	10.35	6.61	32.04	5.80	307.57	0.26	1.15
IC-136222	79.39	9.73	52.51	74.93	19.87	26.57	8.03	12.81	38.06	6.66	139.34	0.27	1.27
IC-136290	82.58	8.91	52.70	65.88	14.29	21.69	8.21	5.19	35.21	6.96	525.49	0.32	0.93
IC-136006	78.46	10.52	55.04	64.99	20.41	31.42	14.93	7.74	49.82	7.02	292.37	0.34	1.56
IC-137751	88.01	9.19	45.06	65.08	18.66	28.67	9.58	6.35	39.71	10.40	293.84	0.27	1.94
IC-136309	87.36	9.37	55.48	66.92	15.02	22.53	8.18	6.36	39.95	8.10	292.49	0.30	1.28
IC-90795	77.83	8.19	55.71	64.71	17.77	27.48	9.17	13.93	42.07	7.14	273.72	0.28	1.52
IC-136455	69.10	8.16	53.42	69.79	17.89	25.65	13.91	14.80	51.66	6.21	453.46	0.31	1.17
IC-136266	66.65	7.97	55.60	69.14	19.92	28.82	14.98	5.78	39.19	6.98	380.45	0.32	1.46
IC-136093	88.10	12.99	41.37	37.36	26.13	58.44	13.18	14.11	48.19	10.21	311.61	0.33	2.66
IC-446655	72.30	11.39	54.74	56.80	18.23	33.30	9.01	12.69	46.64	6.14	463.21	0.33	1.18
IC-203589	68.81	7.21	55.38	67.64	16.03	23.95	12.52	9.84	37.73	5.81	270.74	0.35	1.08
IC-136307	74.10	8.06	54.39	66.36	14.21	21.58	10.28	12.39	39.26	4.98	285.71	0.28	1.02
IC-136258	87.47	10.81	56.67	74.60	16.28	21.89	10.19	15.41	46.69	5.61	300.62	0.34	1.06
IC-446654	64.62	12.62	61.97	75.90	20.22	28.89	9.04	12.98	39.55	7.36	468.91	0.31	1.49
IC-136292	85.18	7.85	54.38	68.91	20.26	29.37	8.55	13.00	38.03	8.08	230.66	0.33	1.63
IC-136296	73.34	8.75	57.42	69.38	20.89	30.10	10.34	13.00	46.80	8.41	382.03	0.33	1.74
IC-136251	74.65	7.42	58.09	72.37	20.71	28.67	11.73	12.73	41.96	7.11	172.64	0.31	1.48
IC-144575	78.17	8.47	53.09	64.76	20.09	31.04	8.36	5.54	30.55	8.22	415.74	0.35	1.68
IC-112991	71.32	13.07	55.35	67.47	16.95	25.29	9.54	9.19	41.31	7.86	360.83	0.39	1.33
IC-345335	78.58	7.39	54.41	75.58	16.09	16.66	8.17	9.97	35.88	5.47	341.19	0.35	0.97
IC-136189	80.65	9.38	53.73	72.19	17.92	24.91	8.58	10.29	38.22	6.14	255.71	0.42	0.83
IC-136311	78.72	11.12	53.49	71.93	19.51	27.12	8.58	15.61	40.96	6.77	262.16	0.36	1.23
IC-112341	84.55	10.10	52.44	75.95	16.98	22.30	11.96	13.51	54.60	7.73	330.07	0.36	1.21
IC-154517	85.63	10.75	51.45	76.69	19.52	25.56	12.05	9.25	37.69	6.66	232.77	0.33	1.38
IC-111074	72.62	9.27	53.47	56.64	17.74	18.47	9.56	12.81	50.81	6.31	390.32	0.36	1.15
IC-136018	73.94	9.92	53.49	66.27	19.66	21.02	9.99	12.62	43.88	6.71	475.75	0.34	1.31

Table 2

Genotypes	Plant Height (cm)	No. of Branches per plant	Days to first flowering	No. of flowers per plant	No. of fruits per plant	Fruit set %	Fruit length (cm)	Fruit girth (cm)	Avg. fruit weight (g)	Total No of Picking	No. of seeds per fruits	100 seeds weight	Fruit Yield per plant
IC-212426	77.73	8.87	54.48	68.81	13.17	19.18	9.02	6.40	32.52	4.62	425.81	0.33	0.74
IC-136297	68.43	7.21	53.77	67.20	13.78	17.17	11.54	5.87	39.35	4.77	269.69	0.32	0.88
IC-322352	82.87	8.34	52.89	73.79	21.23	28.81	10.16	7.10	36.51	7.47	351.57	0.34	1.58
IC-382587	75.53	6.50	52.42	66.20	13.43	20.45	14.27	8.08	43.38	4.77	514.56	0.37	1.06
IC-361838	78.13	10.28	51.89	80.82	12.98	16.12	7.56	5.98	39.61	4.58	337.21	0.32	0.79
IC-383119	81.39	9.66	54.75	87.29	14.25	17.55	9.17	9.03	35.18	4.95	321.63	0.25	0.92
IC-216794	85.40	8.92	55.91	69.13	13.23	19.15	8.46	18.11	51.62	4.47	541.65	0.43	0.83
IC-394902	94.36	6.16	48.29	39.67	28.81	72.70	10.48	9.09	48.61	11.14	274.16	0.34	2.76
IC-344674	89.62	6.89	52.92	66.13	16.59	25.19	9.70	6.56	40.07	5.84	310.72	0.33	0.67
IC-334660	86.33	12.34	48.53	71.38	14.89	20.86	10.71	8.11	52.70	5.26	362.89	0.37	0.99
IC-427008	83.48	12.78	51.64	69.18	20.36	29.35	7.51	12.04	47.29	8.39	328.77	0.41	1.71
IC-355370	75.58	12.14	55.32	73.29	14.49	19.76	9.20	15.88	44.54	4.99	354.42	0.41	0.99
IC-411485	74.99	8.13	52.98	68.04	19.82	29.13	7.91	8.44	35.18	7.79	545.37	0.44	1.54
IC-422585	68.39	10.63	52.76	64.93	19.08	29.46	9.30	10.27	33.10	7.54	213.40	0.24	1.43
IC-345590	78.25	8.52	54.89	67.33	13.85	20.58	9.25	11.90	41.66	4.87	219.67	0.31	0.88
IC-427029	77.19	6.88	54.33	65.44	14.96	23.13	9.66	11.87	40.53	5.31	196.58	0.28	0.95
IC-545862	85.52	9.52	51.66	67.57	17.38	25.73	9.02	9.11	38.20	6.39	240.88	0.36	0.81
CO ₂	78.83	14.33	40.17	38.66	24.25	62.68	8.43	16.21	48.46	10.33	195.52	0.32	2.51
PLR-1	72.58	8.53	52.99	76.25	21.08	30.56	7.50	12.90	44.94	6.76	232.46	0.35	1.44
PLR-2	99.46	11.83	44.59	37.94	24.62	64.93	9.43	13.09	48.37	11.01	333.15	0.35	2.50
Annamalai	103.33	12.63	45.99	46.09	23.70	51.53	13.85	8.09	50.75	11.81	350.81	0.32	2.40
Arka Harshitha	93.21	8.97	45.56	40.63	22.96	56.63	14.40	8.15	51.57	8.82	266.77	0.35	1.86
Elavambadi	87.25	10.85	47.49	36.93	21.54	58.33	12.37	21.75	61.19	8.36	377.35	0.39	1.79
Namakkal Local	79.80	12.55	53.69	66.73	14.98	22.52	8.46	12.89	32.70	7.44	247.68	0.32	1.11
Kalanchipatti	73.78	7.17	52.57	65.82	19.96	30.35	12.74	7.39	37.20	8.89	244.55	0.33	1.87
Utha Nilam	72.53	10.00	54.29	66.64	20.93	30.62	9.45	6.61	36.87	7.33	360.68	0.35	1.61
Ujala Brinjal	78.05	9.22	53.14	66.94	18.19	26.41	9.20	7.80	37.25	6.27	227.88	0.23	1.19
Udha Brinjal	71.38	7.02	52.88	60.76	14.51	23.88	13.61	7.98	36.73	7.27	417.93	0.36	1.04
Urundai	77.36	8.56	50.10	63.85	16.80	26.85	8.92	8.16	34.50	5.69	159.09	0.24	1.08

Adarvaripachai	71.43	8.79	54.13	67.44	15.61	23.14	9.63	10.25	34.18	6.67	143.94	0.36	1.04
Udumalai Samba	70.15	12.38	53.24	71.82	21.53	30.07	11.08	8.84	40.15	8.14	355.98	0.35	1.74
Purple Round	68.21	13.26	53.43	68.01	18.47	27.16	10.77	14.80	45.27	9.63	263.35	0.33	1.77
Karnataka	61.55	9.54	54.84	72.46	17.91	24.68	13.50	4.50	32.70	6.21	233.39	0.27	1.11
Paramathi Local	66.40	6.93	50.80	66.44	19.63	29.56	9.70	12.24	44.47	6.69	306.96	0.41	1.31
Varipachai	70.74	9.25	51.55	69.79	17.85	25.57	9.36	9.70	39.10	6.31	176.03	0.33	1.12
Thengaithittu	68.07	9.39	58.86	64.32	15.95	40.27	9.74	10.95	42.91	6.36	486.79	0.39	1.01
Gandarvakottai	69.50	6.81	51.56	68.32	17.35	25.57	8.74	7.26	35.75	6.90	343.84	0.29	0.76
Kallipattu-1	67.60	9.55	51.80	64.71	14.43	22.32	7.21	8.42	42.85	7.38	411.23	0.32	1.06
Kallipattu-2	72.57	9.48	54.37	61.82	13.50	22.20	7.15	5.37	39.45	8.11	291.48	0.34	1.03
Vikravandi-1	73.30	8.98	52.44	70.08	15.06	21.48	7.86	7.61	35.67	7.20	347.39	0.45	1.08
Vikravandi-2	78.46	9.79	52.17	79.50	18.92	23.83	9.45	6.61	45.16	6.53	437.38	0.30	1.25
Villupuram	73.12	7.89	53.14	80.60	12.47	15.51	9.35	12.51	41.25	5.46	314.64	0.29	0.68
Bhavani	73.62	5.00	53.61	70.40	11.67	16.56	12.72	9.53	42.15	4.11	509.86	0.35	0.68
Mathavidupatti	73.32	7.95	51.58	73.36	15.17	20.68	10.98	13.97	42.56	6.44	430.94	0.37	0.98
Panruti	67.44	8.03	52.31	68.29	15.50	22.75	9.19	10.17	33.48	5.66	308.82	0.26	0.98
Naanamedu -1	72.42	6.53	53.59	64.24	16.15	25.15	8.32	11.03	38.55	5.55	228.75	0.26	1.02
Naanamedu -2	67.33	7.95	52.42	68.02	18.02	26.56	7.54	9.83	42.23	7.12	244.31	0.29	1.21
Sevathapatti	74.97	9.01	52.30	68.90	12.97	18.91	8.20	10.58	41.03	4.64	239.85	0.27	0.77
Paravai Local	78.55	7.32	52.58	67.99	14.01	20.64	12.2	14.96	52.58	4.91	412.01	0.41	0.68
Green Round	73.66	9.43	50.99	57.66	12.33	21.38	9.10	12.99	35.65	4.28	274.56	0.34	0.52
Parur-1	69.23	9.98	51.50	63.19	20.49	32.47	10.56	12.77	41.70	6.70	359.89	0.29	1.37
Balaxvibhara	73.89	8.11	53.11	69.53	15.27	22.02	9.09	8.08	36.25	6.01	339.92	0.34	0.91
Round	100.1	8.10	49.33	38.38	23.57	61.40	10.56	10.12	46.34	6.12	218.75	0.25	1.58
Indam RB 63	68.11	7.97	54.76	51.26	18.46	37.21	10.78	12.07	36.62	8.03	357.42	0.35	1.36
Mean	77.13	9.18	52.49	63.09	18.41	31.19	9.83	10.90	41.42	6.89	324.41	0.33	1.35
S.Ed	2.16	0.42	1.23	3.75	0.82	2.46	0.35	0.43	1.28	0.85	14.76	0.02	0.11
CD (5%)	4.27	0.83	2.43	7.40	1.63	4.86	0.70	0.84	2.53	1.67	29.12	0.03	0.22

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