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Evaluation of parents and hybrids for quality and shelf life attributes in muskmelon (*Cucumis melo* L.)

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Abstract
An experiment was conducted at College of Horticulture, Anantharajupeta, Dr. YSR Horticultural University during Kharif 2021 to evaluate 18 single direct crosses developed from 6 lines and 3 testers through line x tester mating design along with two checks. Among all the crosses, two crosses *i.e.*, SEL-4 x SEL-9 and SEL-3 x SEL-8 recorded highest means for maximum traits. The cross SEL-4 x SEL-9 recorded maximum means for total sugars, reducing sugars, β-carotene, and low titrable acidity. For characters like, TSS, shelf life, fruit firmness, physiological loss in weight, polygalacturonase and pectin methyl esterase SEL-3 x SEL-8 was the best performer among all other crosses. Vitamin c, was recorded highest in SEL-5 x SEL-8 and rind thickness in SEL-5 x SEL-9.

Keywords: Shelf life, fruit firmness, physiological loss in weight, polygalacturonase

Introduction
Muskmelon is an annual crop with climbing, creeping or trailing vines and highly crosspollinate crop originated in Asia (Sebastian *et al*., 2010) [5] with chromosome number 2n=2x=24. In India muskmelon is cultivated in around 61'000 ha cultivated area with 1368'000 MT production (Annon., 2019-20) [1]. It is also grown in Uttar Pradesh, Punjab, Bihar and parts of Andhra Pradesh, Tamil Nadu and Karnataka for dessert purposes. Muskmelon is monoecious in nature, it offers significant variation between different genotypes in terms of in the number of fruits, fruit weight, colour, shape, size, flavour and sweetness which can be improved by genetics and plant breeding. A systematic study of the extent of variation in the native germplasm is therefore highly justified not only in order to increase the yield potential but also for high-quality characteristics in this crop. Hence, this experiment was carried out to improve characters like, shelf life, total sugars and firmness.

Material and Methods
The experiment was carried out during kharif 2021 at College of Horticulture, Anantharajupeta, Dr. YSR Horticultural University, Andhra Pradesh. The parents included in the experiment are SEL-1, SEL-2, SEL-3, SEL-4, SEL-5, SEL-6, SEL-7, SEL-8 and SEL-9 and 18 F_1 hybrids which were developed through line x tester mating design along with two checks (Kundan and Arka Siri). These parents and hybrids along with checks were evaluated during 2020-2021 kharif. The experiment was laid out in Randomized block design with three replications and management practices were followed according to the recommendations of Dr. YSR Horticultural University. The observations were recorded for individuals and statistical analysis were carried out and the results were described below.

Results and Discussion
The mean performances of parents (6 lines and 3 testers), 18 hybrids along with 2 checks were discussed below.

1. Total soluble solids (° Brix)
For total soluble solids, the higher mean value is desirable. The mean values of total soluble solids ranged from 7.40 (SEL-3) to 11.70 (SEL-5) in lines with an average of 8.61. Between the lines, the highest means were noted in SEL-5 (11.70) followed by SEL-4 (8.70) and the lowest means were observed in SEL-3 (7.40) followed by SEL-2 (7.70). In testers, total soluble solids ranged from 4.40 in SEL-7 to 9.90 in SEL-9 with an average of 7.27.

Among hybrids, it ranged from 6.00 in SEL-1 x SEL-8 to 12.50 in SEL-3 x SEL-8 with an average of 9.08. In hybrids, the highest values were recorded for SEL-3 x SEL-8 (12.50) followed by SEL-4 x SEL-9 (12.10) whereas, the lowest values were reported for TSS content in SEL-1 x SEL-8 (6.00) followed by SEL-2 x SEL-9 (6.10). Among the two checks, Arka Siri (11.70) showed the highest total soluble solids compared to Kundan (9.80) and are similar to the findings of Tomar *et al*. (2008) [6] and Indraja *et al*. (2020) [2] in muskmelon.

2. Vitamin-C (mg/100g)

For vitamin-C content, a higher mean value is desirable. The mean values of vitamin-C ranged from 11.50 (SEL-4) to 42.27 (SEL-5) in lines with an average of 22.06. In lines, the highest mean values were recorded in SEL-5 (42.27) followed by SEL-1 (27.70) and the lowest mean values were observed in SEL-4 (11.50) followed by SEL-6 (13.47). In testers, vitamin-C ranged from 11.23 in SEL-7 to 16.20 in SEL-9 with an average of 13.04. Among hybrids, it ranged from 10.43 in SEL-1 x SEL-7 to 54.20 in SEL-5 x SEL-8 with an average of 23.15. For vitamin c content, the highest mean values were recorded for SEL-5 x SEL-8 (54.20) followed by SEL-2 x SEL-8 (40.37) whereas, the lowest mean values were reported for SEL-1 x SEL-7 (10.43) followed by SEL-1 x SEL-9 (10.60). Among the two checks, Arka Siri (25.97) showed the highest vitamin - C compared to Kundan (14.33). The same results were obtained by Indraja *et al*. (2020) [2] in muskmelon.

3. Total sugars (%)

For total sugars, the higher mean value is desirable. The mean values of total sugars ranged from 3.05 (SEL-4) to 5.40 (SEL-5) in lines with an average of 4.07. Among the lines, maximum means were noted in SEL-5 (5.40) followed by SEL-2 (4.61) and minimum means were noted in SEL-4 (70.00) followed by SEL-6 (72.00). In testers, total sugars ranged from 1.87 in SEL-7 to 4.37 in SEL-9 with an average of 3.32. Among hybrids, it ranged from 2.17 in SEL-4 x SEL-7 to 7.08 in SEL-4 x SEL-9 with an average of 4.51. The highest values were recorded for SEL-4 x SEL-9 (7.08) followed by SEL-3 x SEL-8 (6.74) whereas, the lowest values were reported for SEL-4 x SEL-7 (2.17) followed by SEL-2 x SEL-7 (2.69). Among the two checks, Arka Siri (5.48) showed the highest total sugars compared to Kundan (5.06). Similar findings were reported by Indraja *et al*. (2020) [2] in muskmelon.

4. Reducing sugars (%)

For reducing sugars, a higher mean value is desirable. The mean values of reducing sugars ranged from 4.16 (SEL-4) to 5.38 (SEL-2) in lines with an average of 4.76. Between the lines, the highest mean values were noted in SEL-2 (5.38) followed by SEL-5 (5.24) and the lowest mean values were noted in SEL-4 (4.16) followed by SEL-6 (4.32). In testers, reducing sugars ranged from 2.98 in SEL-7 to 5.72 in SEL-9 with an average of 4.09. Among hybrids, it ranged from 4.51 in SEL-4 x SEL-7 to 8.34 in SEL-4 x SEL-9 with an average of 6.49. For reducing sugars, the highest mean values were recorded for SEL-4 x SEL-9 (8.34) followed by SEL-3 x SEL-8 (8.12) whereas, the lowest mean values were reported for SEL-4 x SEL-7 (4.51) followed by SEL-2 x SEL-7 (4.56). Among the two checks, Kundan (7.48) showed the highest reducing sugars compared to Arka Siri (6.01) and similar findings were recorded by Omprasad *et al*. (2021) in muskmelon.

5. Titrable acidity (%)

For titrable acidity**,** the lower mean value is desirable. The mean values of titrable acidity ranged from 0.05 (SEL-4) to 0.19 (SEL-3) in lines with an average of 0.09. Among the lines, maximum means were noted in SEL-3 (0.19) followed by SEL-2 (0.10) and minimum means were noted in SEL-4 (0.05) followed by SEL-5 (0.06). In testers, titrable acidity ranged from 0.10 in SEL-9 to 0.26 in SEL-7 with an average of 0.15. Among hybrids, it ranged from 0.08 in SEL-4 x SEL-9 to 0.31 in SEL-3 x SEL-7 with an average of 0.18. The highest values were recorded in SEL-3 x SEL-7 (0.31) followed by SEL-2 x SEL-8 (0.30) whereas, the lowest values were reported for SEL-4 x SEL-9 (0.08) followed by SEL-3 x SEL-8 (0.09). Among the two checks, Arka Siri (0.16) showed the lowest titrable acidity compared to Kundan (0.23). Janghel *et al*. (2018) [3] and Indraja *et al*. (2020) [2] in muskmelon also reported the same.

6. β-carotene (µg/g)

For β- carotene**,** the higher mean value is desirable. The mean values of β- carotene ranged from 1.60 (SEL-1) to 8.40 (SEL-3) in lines with an average of 4.12. In lines, the highest mean values were noted in SEL-3 (8.40) followed by SEL-5 (5.40) and the lowest mean values were noted in SEL-1 (1.60) followed by SEL-4 (1.80). In testers, β- carotene ranged from 3.83 in SEL-7 to 5.53 in SEL-9 with an average of 4.59. Among hybrids, it ranged from 1.17 in SEL-1 x SEL-7 to 10.00 in SEL-4 x SEL-9 with an average of 3.89. The highest values for β- carotene were recorded in SEL-4 x SEL-9 (10.00) followed by SEL-3 x SEL-8 (8.00) whereas, the lowest values were reported for SEL-1 x SEL-7 (1.17) followed by SEL-4 x SEL-7 (1.33). Among the two checks, Arka Siri (3.40) showed the highest β-carotene compared to Kundan (2.40). Similar findings were reported by Indraja *et al*. (2020) [2] and Omprasad *et al*. (2021) [4] in muskmelon.

7. Shelf life (days) at room temperature

For shelf life**,** a higher mean value is desirable. The mean values of shelf life ranged from 3.27 (SEL-5) to 11.17 (SEL-1) in lines with an average of 6.00 and in lines, maximum means were reported in SEL-1 (11.17) followed by SEL-3 (6.47) and minimum means were noted in SEL-5 (3.27) followed by SEL-2 (3.62). In testers, shelf life ranged from 3.41 in SEL-9 to 19.08 in SEL-7 with an average of 13.32. Among hybrids, it ranged from 3.27 in SEL-6 x SEL-7 to 21.25 in SEL-3 x SEL-8 with an average of 9.01. The highest values were recorded for SEL-3 x SEL-8 (21.25) followed by SEL-3 x SEL-7 (16.52) whereas, the lowest values were reported for SEL-6 x SEL-7 (3.27) followed by SEL-2 x SEL-7 (5.20). Among the two checks, Kundan (16.30) showed the highest shelf life compared to Arka Siri (7.28). The same was reported by Omprasad *et al*. (2021) [4] in muskmelon.

8. Fruit firmness (kg/cc)

For fruit firmness**,** a higher mean value is desirable. The mean values of fruit firmness ranged from 2.40 (SEL-5) to 5.84 (SEL-1) in lines with an average of 3.45. Among the lines, the highest means were observed in SEL-1 (5.84) followed by SEL-3 (3.92) and minimum means were noted in SEL-5

(2.40) followed by SEL-2 (2.53). In testers, fruit firmness ranged from 2.45 in SEL-9 to 5.35 in SEL-7 with an average of 4.31. Among hybrids, it ranged from 2.11 in SEL-6 x SEL-7 to 11.87 in SEL-3 x SEL-8 with an average of 4.33 and among these hybrids, the highest values were recorded for SEL-3 x SEL-8 (11.87) followed by SEL-3 x SEL-7 (9.57) whereas, the lowest values were reported for SEL-6 x SEL-7 (2.11) followed by SEL-2 x SEL-7 (2.17). Among the two checks, Kundan (5.51) showed the highest fruit firmness compared to Arka Siri (2.58) and these are similar with the findings of Indraja *et al*. (2020) [2] and Omprasad *et al*. (2021) [4] in muskmelon.

9. Rind thickness (mm)

For rind thickness, a higher mean value is desirable. The mean values of rind thickness ranged from 1.13 (SEL-1) to 3.88 (SEL-3) in lines with an average of 2.20. Between the lines, maximum means were noted in SEL-3 (3.88) followed by SEL-5 (2.98) and minimum means were noted in SEL-1 (1.13) followed by SEL-4 (1.37). In testers, rind thickness ranged from 0.96 in SEL-7 to 4.67 in SEL-9 with an average of 2.27. Among hybrids, it ranged from 0.46 in SEL-5 x SEL-7 to 13.08 in SEL-5 x SEL-9 with an average of 4.17. The highest values were noted in SEL-5 x SEL-9 (13.08) followed by SEL-4 x SEL-8 (9.85) whereas, the lowest values were reported for SEL-5 x SEL-7 (0.46) followed by SEL-1 x SEL-7 (0.99). Among the two checks, Kundan (6.45) showed the highest rind thickness compared to Arka Siri (3.44) and similar to the findings of Omprasad *et al*. (2021) [4] in muskmelon.

10. Physiological loss in weight (%)

For physiological loss in weight, the lower mean value is desirable. The mean values of physiological loss in weight ranged from 1.91 (SEL-1) to 8.56 (SEL-2) in lines with an average of 1.91. In lines, the highest mean values were noted in SEL-2 (8.56) followed by SEL-5 (7.33) and minimum means were reported in SEL-1 (1.91) followed by SEL-6 (3.13). In testers, physiological loss in weight ranged from 0.57 in SEL-8 to 3.45 in SEL-9 with an average of 1.62. Among hybrids, it ranged from 0.42 in SEL-3 x SEL-8 to 5.46 in SEL-4 x SEL-7 with an average of 3.12. The highest values for physiological loss in weight were recorded by SEL-4 x SEL-7 (5.46) followed by SEL-6 x SEL-7 (4.54) whereas, the lowest values were noted in SEL-3 x SEL-8 (0.42) followed by SEL-3 x SEL-7 (0.81). Among the two checks, Kundan (2.65) showed the lowest physiological loss in weight compared to Arka Siri (3.46).

11. Polygalacturonase (µg of reducing sugars formed/g/hour)

For polygalacturonase, the lower mean value is desirable. The mean values of polygalacturonase ranged from 0.05 (SEL-1) to 0.74 (SEL-2) in lines with an average of 0.32. Among the lines, maximum means were noted in SEL-2 (0.74) followed by SEL-5 (0.42) and minimum mean values were noted in SEL-1 (0.05) followed by SEL-6 (0.09). In testers, polygalacturonase ranged from 0.04 in SEL-7 to 0.40 in SEL-9 with an average of 0.17. Among hybrids, it ranged from 0.04 in SEL-3 x SEL-8 to 0.65 in SEL-6 x SEL-8 with an average of 0.15. The highest values were recorded for polygalacturonase in SEL-6 x SEL-8 (0.65) followed by SEL-6 x SEL-7 (0.58) whereas, the lowest mean values were reported in SEL-3 x SEL-8 (0.04) followed by SEL-3 x SEL-7 (0.07). Among the two checks, Kundan (0.06) showed the lowest polygalacturonase compared to Arka Siri (0.15).

12. Pectin methyl esterase (620 nm/min/mg protein)

For pectin methyl esterase, the lower mean value is desirable. The mean values of pectin methyl esterase were ranged from 0.07 (SEL-1) to 0.86 (SEL-2) in lines with an average of 0.38 and maximum means were noted in SEL-2 (0.86) followed by SEL-5 (0.52) and minimum means were noted in SEL-1 (0.07) followed by SEL-6 (0.10). In testers, pectin methyl esterase ranged from 0.02 in SEL-7 to 0.44 in SEL-9 with an average of 0.17. Among hybrids, it ranged from 0.02 in SEL-3 x SEL-8 to 0.48 in SEL-6 x SEL-7 with an average of 0.12. The highest values were recorded for SEL-6 x SEL-7 (0.43) followed by SEL-5 x SEL-9 (0.24) whereas, the lowest values were reported for pectin methyl esterase SEL-3 x SEL-8 (0.02) followed by SEL-3 x SEL-7 (0.03). Among the two checks, Kundan (0.05) showed the lowest pectin methyl esterase compared to Arka Siri (0.12).

Table 1: Analysis of variance for quality and shelf life characters in muskmelon

Source of variation	df	Total soluble solids (° Brix)	Vitamin-C (mg/100g)	Total sugars (%)	Reducing sugars (%)	Titrable acidity (%)	β- carotene (µg/g)	Shelf life (days) at room temperature
Replications	2	0.06 **	0.26 **	0.05 **	0.06	0.04 **	0.94 **	0.04*
Treatments	26	12.04 **	456.96 **	4.57 **	7.19 **	0.02 **	15.32 **	73.56 **
Parents	8	11.79 **	324.75 **	3.03 **	2.45 **	0.01 **	12.72 **	111.28 **
Crosses	17	11.98 **	528.24 **	5.05 **	5.81 **	0.02 **	17.29 **	59.79 **
Parents vs Crosses	1	15.09 **	302.72 **	8.64 **	68.56 **	0.08 **	2.72 **	5.89 **
Line effect	5	17.31	584.00	4.87	6.77	0.01	14.36	79.32
Tester effect	2	11.66	1784.44*	9.83	2.67	0.07 **	24.07	165.01*
L x T effect	10	9.38 **	249.12 **	4.19 **	5.96 **	0.01 **	17.40 **	28.99 **
Error	52	0.01	0.05	0.01	0.32	0.00	0.01	0.01

Source of variation	df	Fruit firmness (kg/cc)	Rind thickness (mm)	Physiological loss in weight (%)	Polygalacturonase (µg of reducing sugars formed/g/hour)	Pectin methyl esterase (620 nm/min/mg protein)
Replications	2	0.05	0.02	0.34*	0.00	0.00
Treatments	26	19.83 **	32.76 **	10.45 **	0.12 **	0.13 **
Parents	8	5.73 **	5.48 **	22.76 **	0.17 **	0.25 **
Crosses	17	27.25 **	43.51 **	4.65 **	0.09 **	0.04 **
Parents vs Crosses	1	6.42 **	68.20 **	10.55 **	0.24 **	0.67 **
Line effect	5	34.74	38.19	7.73	0.21	0.04

Tester effect	2	73.62	50.89	5.35	0.01	0.07
L x T effect	10	14.23 **	44.70 **	2.97 **	0.05 **	0.03 **
Error	52	0.05	0.02	0.11	0.00	0.00

Table 2: Mean performance of lines, testers and crosses for quality and shelf life contributing characters in muskmelon

Treatments	Total soluble solids (° Brix)	Vitamin-C (mg/100g)	Total sugars (%)	Reducing sugars (%)	Titrable acidity (%)	β- carotene (µg/g)	Shelf life (days) at room temperature
Lines							
SEL-1	8.40	27.70	3.97	4.36	0.07	1.60	11.17
SEL-2	7.70	14.20	4.61	5.38	0.10	3.80	3.62
SEL-3	7.40	23.20	3.98	5.12	0.19	8.40	6.47
SEL-4	8.70	11.50	3.05	4.16	0.05	1.80	5.20
SEL-5	11.70	42.27	5.40	5.24	0.06	5.40	3.27
SEL-6	7.77	13.47	3.39	4.32	0.07	3.70	6.25
Lines mean	8.61	22.06	4.07	4.76	0.09	4.12	6.00
Testers							
SEL-7	4.40	11.23	1.87	2.98	0.26	3.83	19.08
SEL-8	7.50	11.70	3.71	3.56	0.11	4.40	17.47
SEL-9	9.90	16.20	4.37	5.72	0.10	5.53	3.41
Testers mean	7.27	13.04	3.32	4.09	0.15	4.59	13.32
Parents mean	8.16	19.05	3.82	4.54	0.11	4.27	8.44
Crosses							
SEL-1 x SEL-7	7.60	10.43	4.27	4.91	0.22	1.17	7.26
SEL-1 x SEL-8	6.00	12.53	3.87	7.11	0.10	3.70	13.35
SEL-1 x SEL -9	7.50	10.60	3.49	4.72	0.17	3.90	7.61
SEL-2 x SEL-7	7.20	36.33	2.69	4.56	0.23	3.30	5.20
SEL-2 x SEL-8	10.44	40.37	4.58	5.19	0.30	3.10	9.28
SEL-2 x SEL -9	6.10	23.20	4.17	7.29	0.22	6.40	7.36
SEL-3 x SEL-7	10.80	13.70	5.46	7.62	0.31	6.33	16.52
SEL-3 x SEL-8	12.50	43.00	6.74	8.12	0.09	8.00	21.25
SEL-3 x SEL -9	9.00	29.50	5.33	6.61	0.12	2.60	6.54
SEL-4 x SEL-7	8.50	12.43	2.17	4.51	0.25	1.33	5.42
SEL-4 x SEL-8	9.50	24.30	4.32	5.84	0.12	3.60	9.17
SEL-4 x SEL -9	12.10	16.20	7.08	8.34	0.08	10.00	7.41
SEL-5 x SEL-7	8.70	11.70	3.90	7.98	0.24	1.30	10.21
SEL-5 x SEL-8	11.90	54.20	5.58	5.02	0.11	2.51	9.33
SEL-5 x SEL -9	6.67	14.48	3.58	6.13	0.11	4.90	5.67
SEL-6 x SEL-7	9.21	16.20	3.78	6.88	0.27	2.80	3.27
SEL-6 x SEL-8	9.70	33.37	5.94	8.03	0.13	2.70	12.14
SEL-6 x SEL -9	10.00	14.20	4.22	7.95	0.14	2.30	5.23
Crosses mean	9.08	23.15	4.51	6.49	0.18	3.89	9.01
Checks							
Kundan	9.80	14.33	5.06	7.48	0.23	2.40	16.30
Arka Siri	11.70	25.97	5.48	6.01	0.16	3.40	7.28
Grand Mean	8.91	21.67	4.35	5.90	0.16	3.94	9.03
C.V.	1.14	1.01	1.73	9.56	10.91	2.09	1.09
SE (m)	0.06	0.13	0.04	0.33	0.01	0.05	0.06
C.D. (0.05)	0.17	0.36	0.12	0.92	0.03	0.14	0.16
Range Lowest	4.40	10.43	1.87	2.98	0.05	1.17	3.27
Range Highest	12.5	54.2	7.08	8.34	0.31	10.00	21.25

Table 2: Contd….

Treatments	Fruit firmness (kg/cc)	Rind thickness (mm)	Physiological loss in weight (%)	Polygalacturonase (µg of reducing sugars formed/g/hour)	Pectin methyl esterase (620 nm/min/mg protein)
Lines					
SEL-1	5.84	1.13	1.91	0.05	0.07
SEL-2	2.53	1.40	8.56	0.74	0.86
SEL-3	3.92	3.88	3.86	0.24	0.22
SEL-4	2.60	1.37	5.31	0.36	0.48
SEL-5	2.40	2.98	7.33	0.42	0.52
SEL-6	3.41	2.45	3.13	0.09	0.10
Lines mean	3.45	2.20	1.91	0.32	0.38
Testers					
SEL-7	5.35	0.96	`0.84	0.04	0.02
SEL-8	5.12	1.18	0.57	0.05	0.03
SEL-9	2.45	4.67	3.45	0.40	0.44

Testers mean	4.31	2.27	1.62	0.17	0.17
Parents mean	3.73	2.22	4.27	0.27	0.31
Crosses					
SEL-1 x SEL-7	2.53	0.99	4.38	0.08	0.06
SEL-1 x SEL-8	8.99	1.69	2.41	0.06	0.04
SEL-1 x SEL -9	2.83	2.14	2.77	0.10	0.09
SEL-2 x SEL-7	2.17	1.71	3.11	0.14	0.12
SEL-2 x SEL-8	3.22	8.41	3.02	0.07	0.05
SEL-2 x SEL -9	2.54	9.10	2.36	0.09	0.09
SEL-3 x SEL-7	9.57	8.13	0.81	0.05	0.03
SEL-3 x SEL-8	11.87	4.78	0.42	0.04	0.02
SEL-3 x SEL -9	2.53	3.79	3.32	0.12	0.14
SEL-4 x SEL-7	2.23	1.10	5.46	0.08	0.18
SEL-4 x SEL-8	3.21	9.85	3.52	0.07	0.05
SEL-4 x SEL -9	2.80	3.26	3.82	0.16	0.08
SEL-5 x SEL-7	4.95	0.46	3.57	0.07	0.06
SEL-5 x SEL-8	4.58	1.73	4.08	0.07	0.05
SEL-5 x SEL -9	2.39	13.08	3.38	0.15	0.24
SEL-6 x SEL-7	2.11	1.48	4.54	0.58	0.48
SEL-6 x SEL-8	7.29	1.20	1.89	0.65	0.04
SEL-6 x SEL -9	2.18	2.16	3.27	0.15	0.20
Crosses mean	4.33	4.17	3.12	0.15	0.12
Checks					
Kundan	5.51	6.45	2.65	0.06	0.05
Arka Siri	2.58	3.44	3.46	0.15	0.12
Grand Mean	4.13	3.62	3.35	0.19	0.17
C.V.	5.32	3.52	9.70	2.35	2.56
SE (m)	0.13	0.07	0.19	0.03	0.03
C.D. (0.05)	0.36	0.21	0.53	0.09	0.09
Range Lowest	2.11	0.46	0.42	0.04	0.02
Range Highest	11.87	13.08	8.56	0.74	0.86

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