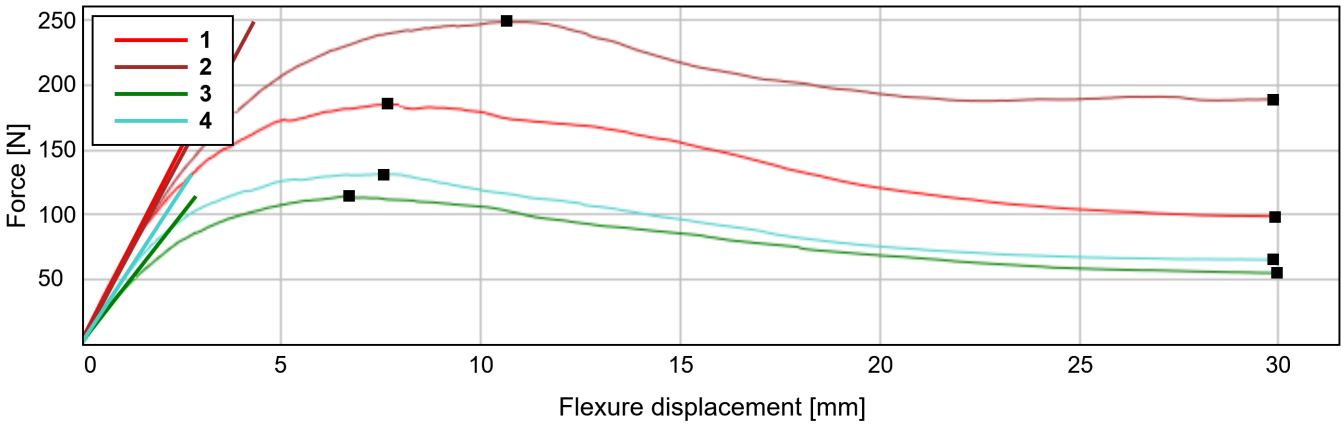
To determine material properties contribution to stalk flexural stiffness

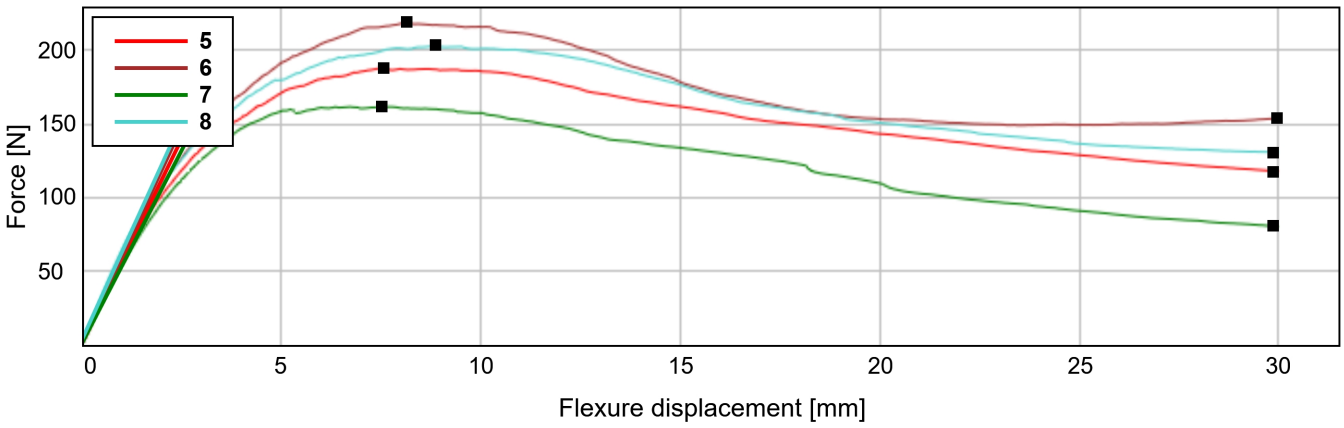
3-Point Bend Testing Protocol for Maize Stalks
Erin Sparks Lab
University of Delaware

Rate 1	1.50 mm/s
Operator	Irene Ikiriko

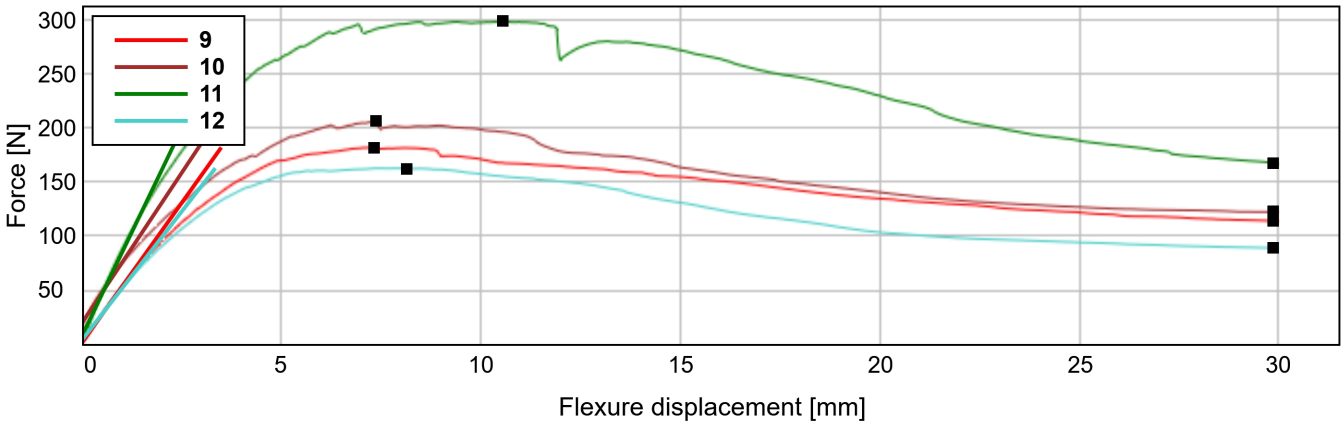
Specimen 1 to 4



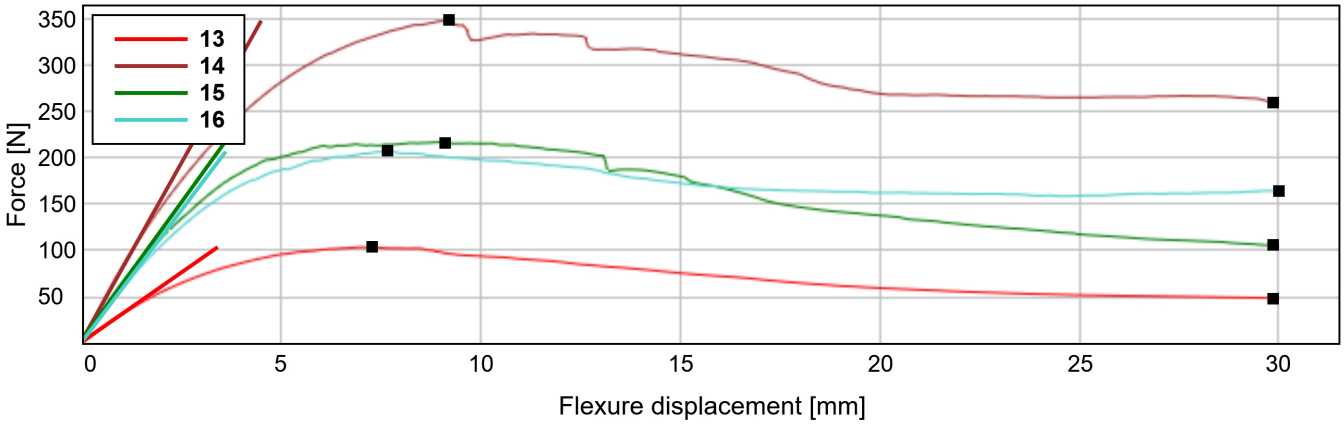
Specimen 5 to 8



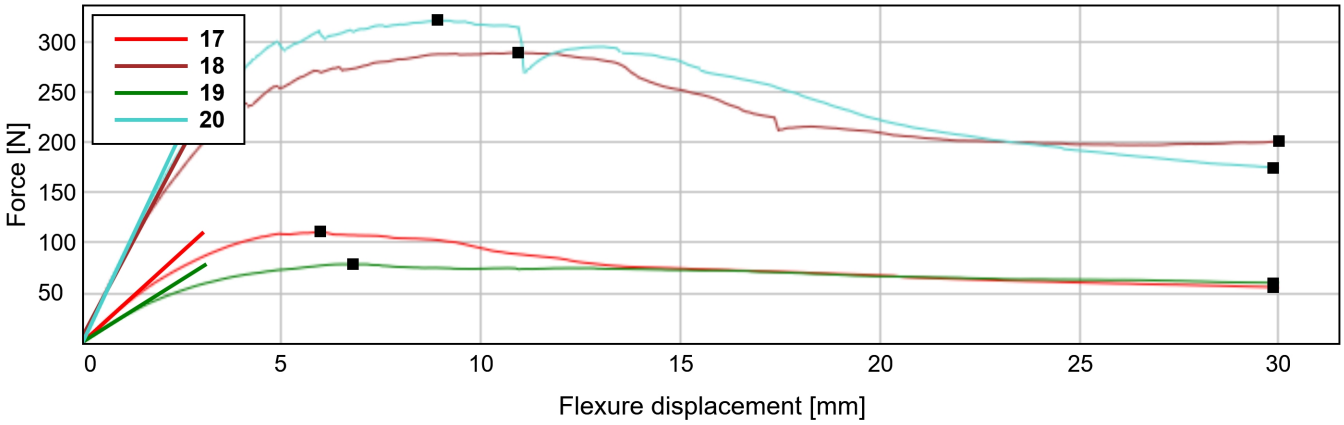
Specimen 9 to 12



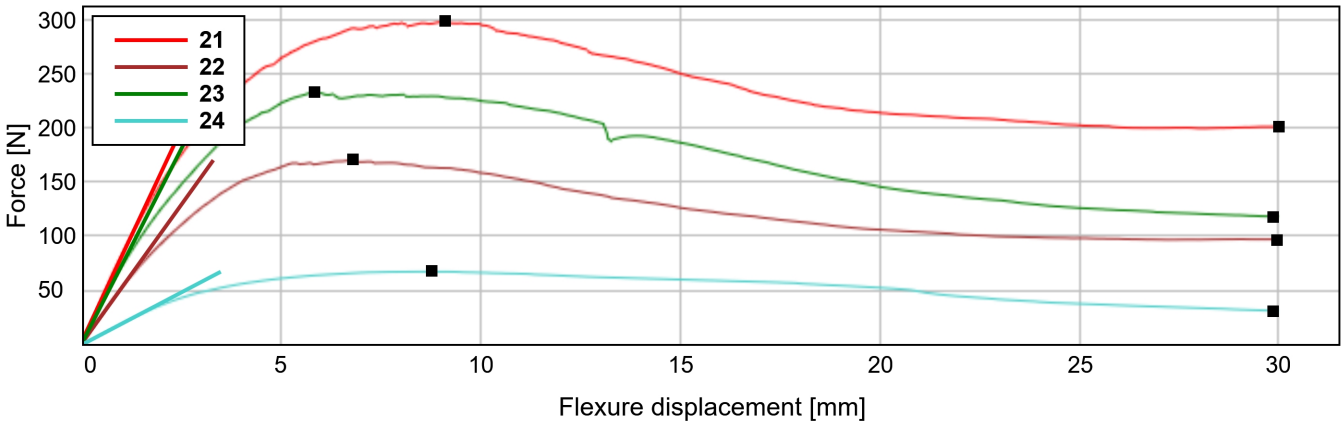
Specimen 13 to 16



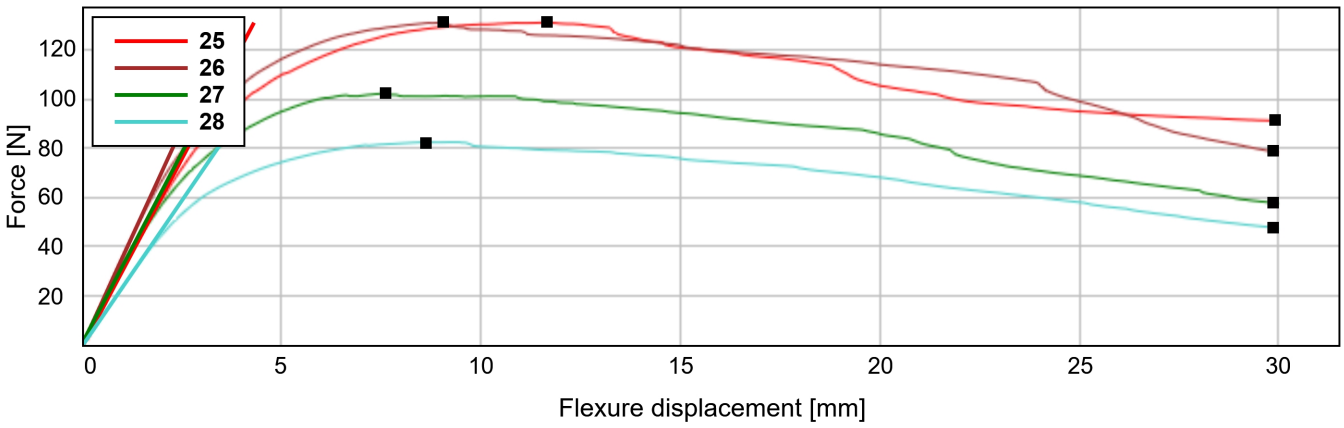
Specimen 17 to 20



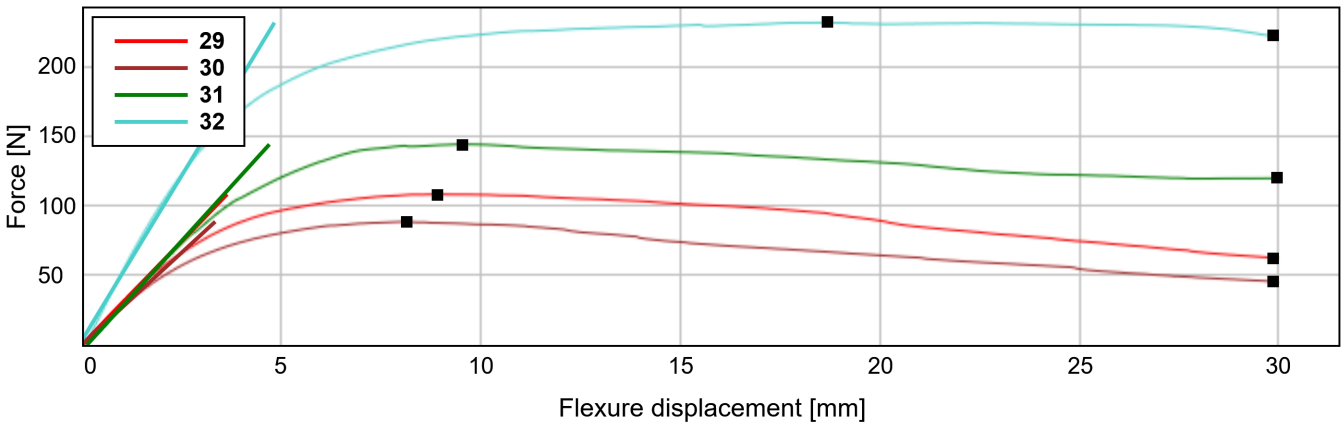
Specimen 21 to 24

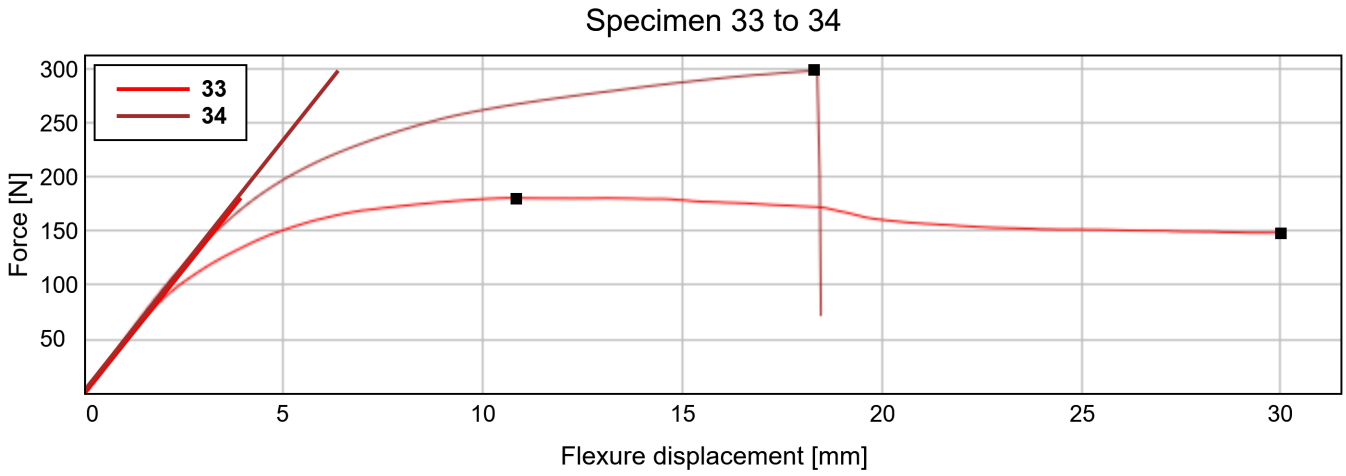


Specimen 25 to 28



Specimen 29 to 32





	Genotype	Plant Number	Plot Number
1	B73	1	345
2	B73	6	345
3	B73	2	345
4	B73	3	345
5	B73	3	347
6	B73	1	347
7	B73	2	347
8	B73	4	347
9	B73	7	347
10	CML258	6	226
11	CML258	1	226
12	CML258	2	226
13	CML258	12	226
14	CML258	9	226
15	CML258	1	228
16	CML258	2	228
17	CML258	3	228
18	CML258	4	228
19	CML258	5	228
20	CML258	6	228
21	CML258	7	228
22	CML258	10	228
23	CML258	11	228
24	Mo17	10	446
25	Mo17	11	446
26	Mo17	1	446
27	Mo17	12	446

	Genotype	Plant Number	Plot Number
28	Mo17	4	446
29	Mo17	14	446
30	Mo17	9	446
31	Mo17	4	448
32	Mo17	3	448
33	Mo17	7	448
34	Mo17	1	448

	Whorl Number (use field-based numbering - top down)	Root Sample Number	Vertical Specimen Diameter [mm]
1			21.24
2			24.38
3			17.92
4			19.31
5			22.18
6			23.18
7			18.22
8			23.02
9			21.72
10			22.20
11			23.88
12			20.25
13			17.15
14			23.87
15			21.27
16			21.94
17			18.53
18			23.37
19			18.02
20			24.12
21			24.93
22			20.32
23			21.80
24			13.90
25			16.65
26			15.86
27			16.05
28			14.80
29			15.56

	Whorl Number (use field-based numbering - top down)	Root Sample Number	Vertical Specimen Diameter [mm]
30			15.00
31			19.11
32			19.45
33			18.68
34			20.53

	Horizontal Specimen Diameter [mm]	Specimen Length [mm]	Force at Break (Standard) [N]
1	25.22	300.00	98.69
2	27.71	300.00	188.83
3	21.31	300.00	55.03
4	22.75	300.00	65.37
5	26.36	300.00	118.03
6	26.43	300.00	153.74
7	22.15	300.00	80.78
8	27.84	300.00	130.86
9	25.82	300.00	114.22
10	25.36	300.00	122.43
11	28.82	300.00	167.88
12	23.72	300.00	89.14
13	19.71	300.00	48.73
14	27.55	300.00	259.78
15	24.80	300.00	105.52
16	24.12	300.00	164.49
17	19.77	300.00	55.81
18	27.80	300.00	201.36
19	20.83	300.00	60.26
20	27.58	300.00	175.36
21	28.28	300.00	201.38
22	22.47	300.00	97.06
23	24.92	300.00	118.14
24	17.90	300.00	30.96
25	20.73	300.00	91.16
26	20.68	300.00	78.61
27	19.54	300.00	57.84
28	18.36	300.00	47.78
29	20.03	300.00	62.67
30	18.66	300.00	45.45

	Horizontal Specimen Diameter [mm]	Specimen Length [mm]	Force at Break (Standard) [N]
31	21.70	300.00	119.79
32	25.94	300.00	221.97
33	24.05	300.00	148.47
34	23.60	300.00	298.54

	Displacement at Break (Standard) [mm]	Flexure displacement at Break (Standard) [mm]	Maximum Force [N]
1	80.61	29.93	185.34
2	78.28	29.87	248.92
3	49.85	29.96	114.27
4	48.27	29.87	131.19
5	44.72	29.87	188.25
6	46.39	29.96	218.64
7	48.28	29.87	161.80
8	44.02	29.87	202.86
9	45.90	29.87	182.16
10	45.21	29.85	206.23
11	44.21	29.87	298.60
12	48.10	29.85	162.96
13	50.55	29.87	103.68
14	43.94	29.87	348.08
15	46.38	29.87	217.05
16	46.11	30.00	206.82
17	49.41	29.87	110.81
18	44.69	30.00	289.72
19	50.06	29.87	78.87
20	43.29	29.87	321.62
21	43.90	29.99	298.50
22	46.95	29.96	170.31
23	45.37	29.87	234.11
24	54.61	29.87	67.10
25	49.33	29.93	130.97
26	51.09	29.87	130.89
27	51.75	29.87	102.37
28	55.38	29.87	82.49
29	52.34	29.87	108.33
30	54.68	29.87	88.66
31	50.39	29.96	144.11

	Displacement at Break (Standard) [mm]	Flexure displacement at Break (Standard) [mm]	Maximum Force [N]
32	48.32	29.87	231.44
33	49.62	30.00	180.67
34	38.11	18.32	298.54

	Flexure displacement at Maximum Force [mm]	Maximum Slope (Automatic) [N/mm]
1	7.67	59.56
2	10.64	57.21
3	6.71	39.30
4	7.55	47.13
5	7.58	55.45
6	8.12	58.17
7	7.49	52.31
8	8.87	59.26
9	7.31	51.74
10	7.35	55.54
11	10.55	76.73
12	8.13	47.59
13	7.25	30.06
14	9.20	76.74
15	9.08	59.46
16	7.67	56.95
17	5.99	36.19
18	10.91	74.61
19	6.77	25.00
20	8.93	84.45
21	9.08	78.54
22	6.80	51.37
23	5.84	72.15
24	8.78	19.39
25	11.66	30.54
26	9.05	35.27
27	7.61	30.92
28	8.63	23.63
29	8.90	29.67
30	8.15	26.38
31	9.56	31.46
32	18.71	47.22

	Flexure displacement at Maximum Force [mm]	Maximum Slope (Automatic) [N/mm]
33	10.85	46.15
34	18.32	46.52