

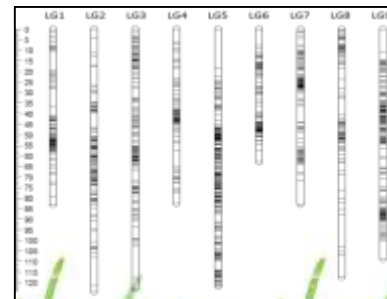
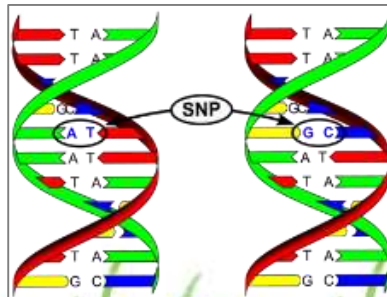


Genotyping-by-Sequencing (GBS) in St. Augustinegrass and Zoysiagrass

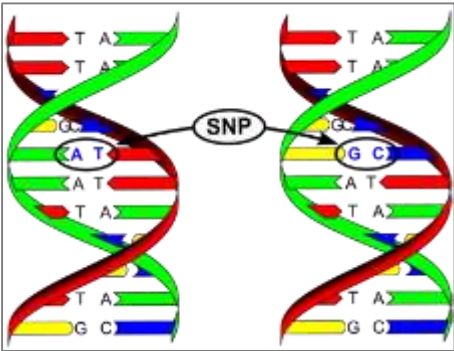
Xingwang Yu, H. McCamy P. Holloway and Susana Milla-Lewis

Turfgrass Breeding & Genetics, North Carolina State University

May-16-2017



Marker-assisted selection breeding

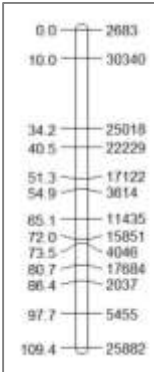
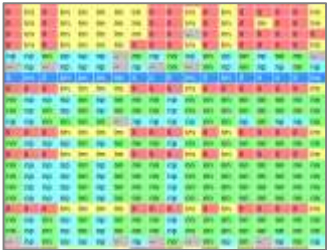
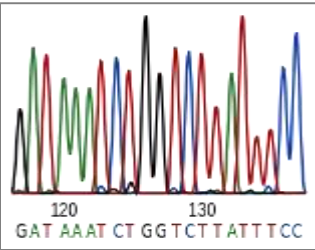


Molecular marker

Results in



Turfgrass performance



Scan markers-traits association

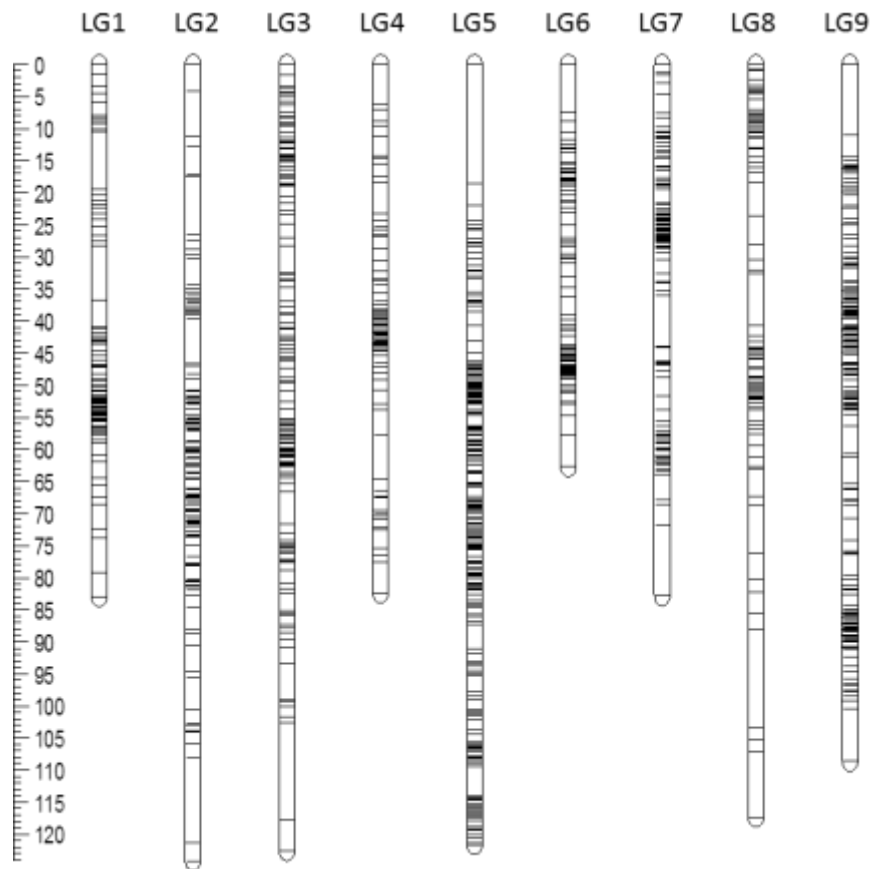


Genotyping by sequencing

Genetic map



Genetic mapping of St. Augustinegrass (“Raleigh” x “Seville”)



Linkage group	Size (cM)	Marker no.	Average distance (cM)
LG1	222.7	217	1.02
LG2	283.6	273	1.06
LG3	299.2	258	1.28
LG4	157.6	159	1.05
LG5	247.9	382	0.81
LG6	183.7	171	1.11
LG7	192.9	251	0.81
LG8	258.8	224	1.15
LG9	271.1	325	0.90
Total	2117.5	2260	1.01

First SNP-based and high density genetic map for St. Augustinegrass.

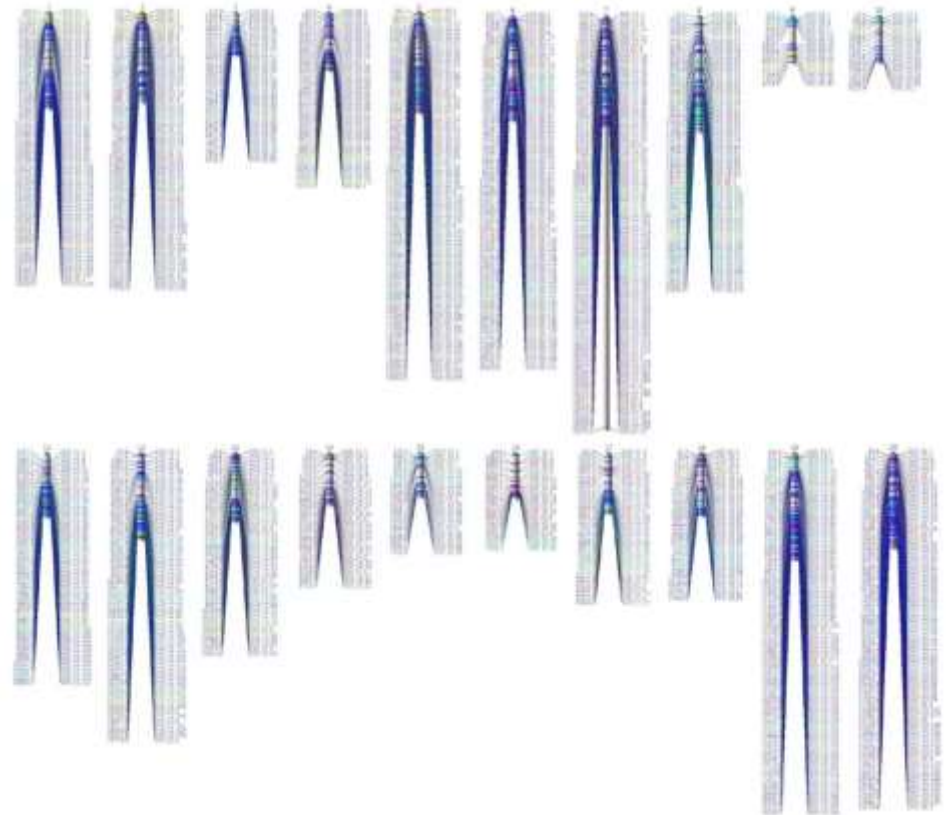
Yu et al. (2017, in preparation)



Genetic mapping of Zoysiagrass (“Meyer” x “Victoria”)

Chromosome	SNPs	SSRs	Total Markers	Coverage (cM)	Markers per cM
1	171	2	173	67.25	2.57
2	141	15	156	113.91	1.37
3	83	2	85	103.39	0.82
4	108	2	110	78.69	1.40
5	215	13	228	138.73	1.64
6	172	5	177	92.89	1.91
7	196	10	206	667.629	0.31
8	178	2	181	115.53	1.57
9	48	1	49	66.50	0.74
10	46	1	47	47.82	0.98
11	128	1	129	132.56	0.97
12	157	5	162	171.15	0.95
13	94	8	102	42.66	2.39
14	46	8	54	93.47	0.58
15	52	3	55	70.89	0.78
16	38	7	45	107.72	0.63
17	77	5	82	106.86	0.77
18	84	2	86	82.02	1.05
19	190	3	193	100.49	1.92
20	135	9	144	119.89	1.20
Total	2359	104	2463	2520.052	0.98

SNP- and SSR-based genetic mapping of Zoysiagrass.



Holloway et al. (2017, in preparation)



- ❖ Two high density genetic map for St. Augustine- and Zoysiagrass have been constructed
- ❖ Providing powerful tools for QTL mapping → scan the genome for regions of the genome that control traits of interest
- ❖ Have great value to improve the efficiency and precision of turfgrass breeding

