

Supplementary Material

Supplementary File1: Details of Sequencing Metrics for 80 Ryegrass Cultivars, along with Ploidy, Species, and Breeder Information

Supplementary Table 1. Sequencing Metrics for 80 Ryegrass Cultivars, along with Ploidy, Species, and Breeder Information

Sample	Ploidy	Species	Coverage	Total seqs (M)	Reads Mapped (M)	Mapped Prop (%)	Paired Prop	Breeder
1 24Seven Edge	Diploid	<i>Lolium perenne</i> L.	203.23	16.9	16.8	99.41%	96.80%	DLF ^c
2 24Seven Happe	Diploid	<i>Lolium perenne</i> L.	202.44	16.7	16.6	99.40%	97.00%	DLF ^c
3 4Front NEA2	Tetraploid	<i>Lolium perenne</i> L.	87.49	8	7.9	98.75%	96.20%	Barenbrug Australia
4 Alto AR37	Diploid	<i>Lolium perenne</i> L.	494.28	40.8	40.6	99.51%	96.20%	Barenbrug Australia
5 Ansa AR1	Diploid	<i>Lolium perenne</i> L.	179.54	14.7	14.5	98.64%	96.90%	DLF ^c
6 Ansa Happe	Diploid	<i>Lolium perenne</i> L.	250.25	20.5	20.3	99.02%	97.10%	DLF ^c
7 Arrow AR1	Diploid	<i>Lolium perenne</i> L.	590.28	49.1	48.7	99.19%	96.50%	Barenbrug Australia
8 AusVic Nil	Diploid	<i>Lolium perenne</i> L.	230.87	19.2	19.1	99.48%	96.90%	Vicseeds
9 Avalon AR1	Diploid	<i>Lolium perenne</i> L.	202.26	16.8	16.7	99.40%	97.30%	AGF Seeds
10 Avalon Nil	Diploid	<i>Lolium perenne</i> L.	205.81	17.1	17	99.42%	97.10%	AGF Seeds
11 Award WT	Diploid	<i>Lolium perenne</i> L.	300.51	24.8	24.6	99.19%	96.10%	Upper Murray Seeds
12 BanquetII Endo5	Tetraploid	<i>Lolium x boucheanum</i>	218.67	17.9	17.8	99.44%	97.20%	DLF ^c
13 Barberia Nil	Diploid	<i>Lolium multiflorum</i> Lam.	213.19	18	17.9	99.44%	96.20%	Barenbrug Australia
14 Base AR1	Tetraploid	<i>Lolium perenne</i> L.	256.11	21.5	21.3	99.07%	95.90%	DLF ^c
15 Base AR37	Tetraploid	<i>Lolium perenne</i> L.	134.46	11.1	11	99.10%	96.80%	DLF ^c
16 Bealey NEA2	Tetraploid	<i>Lolium perenne</i> L.	268.84	22.2	22	99.10%	96.80%	Barenbrug Australia
17 BL001 ^b	Diploid	<i>Lolium</i> ssp.	571.58	47.2	46.9	99.36%	95.90%	Breeding line
18 BL002 ^b	Diploid	<i>Lolium</i> ssp.	736.96	60.8	60.5	99.51%	96.30%	Breeding line
19 BL003 ^b	Diploid	<i>Lolium</i> ssp.	545.74	45.4	45.1	99.34%	96.40%	Breeding line
20 BL004 ^b	Diploid	<i>Lolium</i> ssp.	718.18	59.8	59.5	99.50%	96.20%	Breeding line
21 BL005 ^b	Diploid	<i>Lolium</i> ssp.	565.65	46.7	46.5	99.57%	96.60%	Breeding line
22 BL006 ^b	Diploid	<i>Lolium</i> ssp.	621.03	51.7	51.3	99.23%	96.20%	Breeding line
23 BL007 ^b	Diploid	<i>Lolium</i> ssp.	468.99	38.7	38.5	99.48%	96.30%	Breeding line
24 BL008 ^b	Diploid	<i>Lolium</i> ssp.	697.13	58	57.6	99.31%	96.60%	Breeding line
25 BL009 ^b	Diploid	<i>Lolium</i> ssp.	513.46	42.4	42.1	99.29%	95.60%	Breeding line
26 BL010 ^b	Diploid	<i>Lolium</i> ssp.	389.35	32.4	32	98.77%	96.00%	Breeding line
27 BL011 ^b	Diploid	<i>Lolium</i> ssp.	549.73	45.4	44.9	98.90%	96.00%	Breeding line
28 BL012 ^b	Tetraploid	<i>Lolium</i> ssp.	640.79	53.4	53.2	99.63%	96.30%	Breeding line
29 BL013 ^b	Diploid	<i>Lolium</i> ssp.	460.13	38	37.7	99.21%	96.40%	Breeding line
30 BL014 ^b	Tetraploid	<i>Lolium</i> ssp.	385.51	32.1	31.9	99.38%	96.20%	Breeding line

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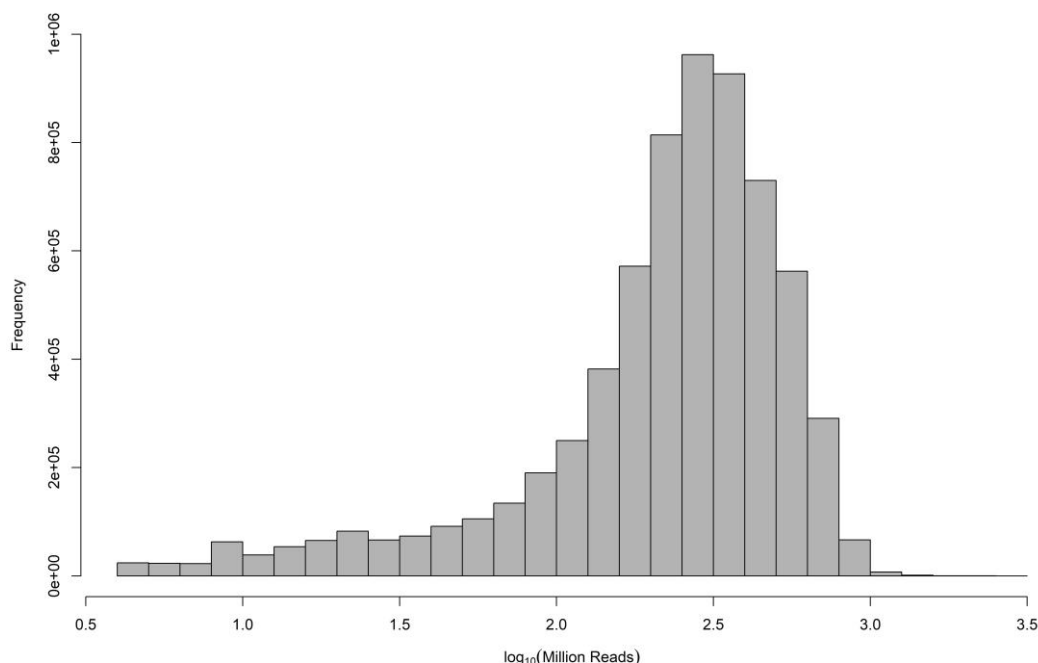
31	BL015 ^b	Tetraploid	<i>Lolium</i> ssp.	543.29	44.9	44.5	99.11%	95.60%	Breeding line
32	BL016 ^b	NA	<i>Lolium perenne</i> L.	546.97	45.2	44.9	99.34%	96.20%	Breeding line
33	BL017 ^b	Diploid	<i>Lolium multiflorum</i> Lam.	579.81	48.4	48	99.17%	95.20%	Breeding line
34	Bolton WT	Diploid	<i>Lolium perenne</i> L.	276.64	22.8	22.6	99.12%	97.10%	AGF Seeds
35	Boomer Nil	Diploid	<i>Lolium perenne</i> L.	213.53	17.6	17.4	98.86%	97.00%	Valley Seeds
36	Camel Nil	Diploid	<i>Lolium perenne</i> L.	308.37	25.7	25.5	99.22%	97.10%	Valley Seeds
37	Endure WT	Tetraploid	<i>Lolium perenne</i> L.	399.34	33.2	32.9	99.10%	96.90%	GrasslanzTechnology
38	Excess AR1	Diploid	<i>Lolium perenne</i> L.	190.2	15.7	15.6	99.36%	96.90%	DLF ^c
39	Excess AR37	Diploid	<i>Lolium perenne</i> L.	228.32	19	18.9	99.47%	97.00%	DLF ^c
40	Expo AR37	Diploid	<i>Lolium perenne</i> L.	301.72	24.9	24.7	99.20%	96.90%	DLF ^c
41	Extreme AR1	Diploid	<i>Lolium perenne</i> L.	159.88	13.3	13.2	99.25%	96.90%	DLF ^c
42	Fitzroy WT	Diploid	<i>Lolium perenne</i> L.	298.51	24.6	24.4	99.19%	97.00%	DLF ^c
43	Governor AR1	Diploid	<i>Lolium perenne</i> L.	216.24	18	17.9	99.44%	96.80%	Barenbrug Australia
44	Halo AR37	Tetraploid	<i>Lolium perenne</i> L.	253.07	20.9	20.7	99.04%	96.90%	DLF ^c
45	Helix AR1	Diploid	Festulolium hybrids	19.2	1.6	1.6	100%	96.10%	Cropmark Seeds Limited
46	Impact2 NEA2	Diploid	<i>Lolium</i> x boucheanum	225.34	18.6	18.4	98.92%	96.60%	Barenbrug Australia
47	Jeta AR1	Tetraploid	<i>Lolium</i> x boucheanum	159.46	13.2	13.1	99.24%	96.60%	DLF ^c
48	Jumbuck Nil	Diploid	<i>Lolium perenne</i> L.	576.84	47.2	46.9	99.36%	95.70%	Upper Murray Seeds
49	Kamo AR37	Diploid	<i>Lolium perenne</i> L.	499.49	41.2	40.9	99.27%	96.50%	DLF ^c
50	Kidman AR1	Diploid	<i>Lolium perenne</i> L.	265.48	21.9	21.7	99.09%	97.00%	Barenbrug Australia
51	Kingsgate WT	Diploid	<i>Lolium perenne</i> L.	570.08	47.4	47.1	99.37%	96.00%	DLF ^c
52	Kingston WT	Diploid	<i>Lolium perenne</i> L.	242.79	20.7	20.6	99.52%	97.10%	DLF ^c
53	Legion AR37	Diploid	<i>Lolium perenne</i> L.	462.17	38.2	37.8	98.95%	95.90%	DLF ^c
54	Matrix WT	Diploid	<i>Lolium perenne</i> L.	286.89	23.9	23.7	99.16%	96.70%	Cropmark Seeds Limited
55	Maxsyn NEA12	Diploid	<i>Lolium perenne</i> L.	513.46	42.4	42	99.06%	96.10%	Barenbrug Australia
56	Maxsyn NEA4	Diploid	<i>Lolium perenne</i> L.	102.19	8.5	8.5	100%	96.70%	Barenbrug Australia
57	Meridian AR1	Diploid	<i>Lolium perenne</i> L.	158.87	13.1	13	99.24%	96.80%	Barenbrug Australia
58	Munch Nil	Tetraploid	<i>Lolium perenne</i> L.	557.19	46.4	46.1	99.35%	95.70%	Upper Murray Seeds
59	Ohau AR37	Tetraploid	<i>Lolium</i> x boucheanum	227.18	18.8	18.6	98.94%	96.60%	DLF ^c
60	One50 AR1	Diploid	<i>Lolium perenne</i> L.	468.43	39	38.8	99.49%	95.80%	DLF ^c
61	One50 AR37	Diploid	<i>Lolium perenne</i> L.	247.17	20.4	20.2	99.02%	97.10%	DLF ^c
62	One50 WT	Diploid	<i>Lolium perenne</i> L.	117.78	9.8	9.7	98.98%	96.60%	DLF ^c
63	Perun Nil	Tetraploid	Festulolium hybrids	491.2	40.8	40.6	99.51%	95.90%	DLF ^c
64	Platform AR37	Diploid	<i>Lolium perenne</i> L.	265.31	22.1	21.8	98.64%	96.00%	DLF ^c
65	Platinum Nil	Diploid	<i>Lolium perenne</i> L.	209.54	17.3	17.2	99.42%	97.20%	Valley Seeds
66	Prospect AR37	Diploid	<i>Lolium perenne</i> L.	255.89	21.3	21.2	99.53%	96.90%	DLF ^c
67	Rely AR1	Diploid	<i>Lolium perenne</i> L.	526.21	43.4	43.1	99.31%	95.50%	DLF ^c
68	Request AR37	Diploid	<i>Lolium perenne</i> L.	263.42	21.9	21.8	99.54%	97.00%	DLF ^c

69	Revolution AR1	Diploid	<i>Lolium perenne</i> L.	514.07	42.8	42.5	99.30%	95.70%	Cropmark Seeds Limited
70	Reward Endo5	Tetraploid	<i>Lolium perenne</i> L.	186.57	15.4	15.3	99.35%	96.70%	DLF ^c
71	Rohan NEA2	Diploid	<i>Lolium perenne</i> L.	599.84	49.9	49.5	99.20%	96.10%	Barenbrug Australia
72	Samson WT	Diploid	<i>Lolium perenne</i> L.	298.24	24.6	24.4	99.19%	97.00%	DLF ^c
73	SFHustle AR1	Diploid	<i>Lolium perenne</i> L.	193.57	16.1	16	99.38%	96.80%	AGF Seeds
74	Shogun NEA12	Tetraploid	<i>Lolium x boucheanum</i>	150.67	12.6	12.5	99.21%	96.50%	Barenbrug Australia
75	Tyson NEA4	Diploid	<i>Lolium perenne</i> L.	387.87	32	31.8	99.38%	95.90%	Barenbrug Australia
76	Ultra AR1	Diploid	<i>Festulolium</i> hybrids	451.37	37.3	37.1	99.46%	95.80%	Cropmark Seeds Limited
77	Victoca Nil	Diploid	<i>Lolium perenne</i> L.	321.54	26.5	26.3	99.25%	97.20%	Tasglobal Seeds Pty Ltd.
78	Victorian ^a WT	Diploid	<i>Lolium perenne</i> L.	276.73	22.8	22.6	99.12%	97.10%	NA ^a
79	Viscount NEA2	Tetraploid	<i>Lolium perenne</i> L.	265.23	21.9	21.7	99.09%	97.10%	Barenbrug Australia
80	WintasII	Diploid	<i>Lolium multiflorum</i> Lam.	288.83	24.1	24	99.59%	96.40%	Tasglobal Seeds Pty Ltd.
Average				350.81	29.08	28.87	99.27%	96.50%	

^a Victorian is a perennial ryegrass native to south-east Australia.

^b BLxxx are breeding lines, which are commercially confidential and not publicly available. The authors of this paper are not authorized to share the information.

^c DLF: DLF Seeds Australia/ PGG Wrightson Seeds (Australia) Pty Limited/ Grasslands Innovation Limited.



Supplementary Figure 1. Histogram of the number of reads at each locus after normalisation across all sequenced ryegrass samples. The x-axis represents the log10 of million reads, and the y-axis represents the frequency of occurrences. The distribution peaks around a log10 of 2.5, indicating around 316 million reads.