

**Table S1.** GenBank accession numbers for 47 taxa included in analyses.

Taxon	GenBank Accession Numbers
<i>Acorus americanus</i>	NC_010093
<i>Agrostis stolonifera</i>	NC_008591
<i>Amborella trichopoda</i>	NC_005086
<i>Arabidopsis thaliana</i>	NC_000932
<i>Atropa belladonna</i>	NC_004561
<i>Brachypodium distachyon</i>	NC_011032
<i>Buxus microphylla</i>	NC_009599
<i>Calycanthus floridus</i>	NC_004993
<i>Ceratophyllum demersum</i>	NC_009962
<i>Citrus sinensis</i>	NC_008334
<i>Coffea arabica</i>	NC_008535
<i>Cucumis sativus</i>	NC_007144
<i>Daucus carota</i>	NC_008325
<i>Dioscorea elephantipes</i>	NC_009601
<i>Drimys granadensis</i>	NC_008456
<i>Elaeis oleifera</i>	EU016883-EU016962
<i>Eucalyptus globulus</i>	NC_008115
<i>Glycine max</i>	NC_007942
<i>Gossypium hirsutum</i>	NC_007944
<i>Hordeum vulgare</i> subsp. <i>vulgare</i>	NC_008590
<i>Illicium oligandrum</i>	NC_009600
<i>Ipomoea purpurea</i>	NC_009808
<i>Lactuca sativa</i>	NC_007578
<i>Lemna minor</i>	NC_010109
<i>Lolium perenne</i>	NC_009950
<i>Manihot esculenta</i>	NC_010433
<i>Medicago truncatula</i>	NC_003119
<i>Morus indica</i>	NC_008359
<i>Musa acuminata</i>	EU016983-EU017063
<i>Nicotiana tabacum</i>	NC_001879
<i>Nuphar advena</i>	NC_008788
<i>Oryza sativa</i>	NC_001320
<i>Oryza nivara</i>	NC_005973
<i>Panax schinseng</i>	NC_006290
<i>Pelargonium X hortorum</i>	NC_008454
<i>Phalaenopsis aphrodite</i>	NC_007499
<i>Platanus occidentalis</i>	NC_008335
<i>Populus trichocarpa</i>	NC_008235
<i>Ranunculus macranthus</i>	NC_008796
<i>Saccharum officinarum</i>	NC_006084
<i>Solanum tuberosum</i>	NC_008096
<i>Sorghum bicolor</i>	NC_008602
<i>Spinacia oleracea</i>	NC_002202
<i>Triticum aestivum</i>	NC_002762
<i>Typha latifolia</i>	GU195652
<i>Vitis vinifera</i>	NC_007957
<i>Yucca schidigera</i>	DQ069337-DQ069702, EU016681-EU016700
<i>Zea mays</i>	NC_001666

**Table S2.** List of 73 Genes.

Gene Name	Taxa With Missing Data
<i>atpA</i>	None
<i>atpB</i>	None
<i>atpE</i>	None
<i>atpF</i>	None
<i>atpH</i>	None
<i>atpI</i>	None
<i>ccsA</i>	None
<i>clpP</i>	None
<i>cemA</i>	None
<i>matK</i>	None
<i>ndhA</i>	None
<i>ndhB</i>	None
<i>ndhC</i>	None
<i>ndhD</i>	None
<i>ndhE</i>	None
<i>ndhF</i>	None
<i>ndhG</i>	None
<i>ndhH</i>	None
<i>ndhI</i>	None
<i>ndhJ</i>	None
<i>ndhK</i>	None
<i>petA</i>	None
<i>petB</i>	None
<i>petD</i>	None
<i>petG</i>	None
<i>petL</i>	None
<i>petN</i>	None
<i>psaA</i>	None
<i>psaB</i>	None
<i>psaC</i>	None
<i>psaI</i>	None
<i>psaJ</i>	None
<i>psbA</i>	None
<i>psbB</i>	None
<i>psbC</i>	None
<i>psbD</i>	None
<i>psbE</i>	None
<i>psbF</i>	None
<i>psbH</i>	None
<i>psbI</i>	None
<i>psbJ</i>	None
<i>psbK</i>	None
<i>psbL</i>	None
<i>psbM</i>	None
<i>psbN</i>	None
<i>psbT</i>	None
<i>psbZ</i>	None
<i>rbcl</i>	None

<i>rpl14</i>	None
<i>rpl16</i>	None
<i>rpl2</i>	None
<i>rpl20</i>	None
<i>rpl22</i>	<i>Glycine, Gossypium, Medicago</i>
<i>rpl23</i>	<i>Spinacia</i>
<i>rpl32</i>	<i>Populus</i>
<i>rpl33</i>	None
<i>rpl36</i>	None
<i>rpoA</i>	<i>Pelargonium</i>
<i>rpoB</i>	None
<i>rpoC1</i>	None
<i>rpoC2</i>	None
<i>rps11</i>	None
<i>rps12</i>	None
<i>rps14</i>	None
<i>rps15</i>	None
<i>rps16</i>	<i>Dioscorea, Medicago, Populus</i>
<i>rps18</i>	None
<i>rps19</i>	None
<i>rps2</i>	None
<i>rps3</i>	None
<i>rps4</i>	None
<i>rps7</i>	None
<i>rps8</i>	None

**Table S3.** Likelihood ratio test results comparing a null model (M0), where  $dN/dS$  was averaged and fixed across all taxa, was compared to alternative models (M2 = H1 or H2). The H1 model allowed for two values of  $dN/dS$  across the tree; 1)  $dN/dS$  for the lineage leading to the grasses and 2)  $dN/dS$  for all other taxa. The H2 model allowed for three values of  $dN/dS$  across the tree; 1)  $dN/dS$  for the lineage leading to the grasses, 2)  $dN/dS$  for all other monocot branches, and 3)  $dN/dS$  for all other angiosperms.  $P$ -values generated using a Chi-square test were corrected for multiple comparisons. For model H1 and gene *psaI*, the likelihood score was not improved, and statistics are shown as “na”.

Model	gene	-lnL Mo	-lnL M2	2(M2M0)	chisquare	Holm's	significant	FDR	significant
H1	<i>atpA</i>	14549.4607	14544.9208	9.0797	0.0026	0.1809	no	0.0443	yes
H1	<i>atpB</i>	12547.8069	12547.1893	1.2353	0.2664	1.0000	no	0.5402	no
H1	<i>atpE</i>	4033.4731	4030.4754	5.9954	0.0143	0.8893	no	0.0821	no
H1	<i>atpF</i>	5277.3253	5277.3222	0.0061	0.9376	1.0000	no	0.9972	no
H1	<i>atpH</i>	1542.0753	1542.0751	0.0002	0.9874	1.0000	no	0.9972	no
H1	<i>atpI</i>	6359.2398	6357.7713	2.9370	0.0866	1.0000	no	0.2642	no
H1	<i>ccsA</i>	11800.0174	11799.3355	1.3639	0.2429	1.0000	no	0.5065	no
H1	<i>cemA</i>	5862.5762	5861.0988	2.9548	0.0856	1.0000	no	0.2642	no
H1	<i>clpP</i>	7103.8350	7103.8349	0.0001	0.9925	1.0000	no	0.9972	no
H1	<i>matK</i>	23794.7348	23794.4198	0.6299	0.4274	1.0000	no	0.6567	no
H1	<i>ndhA</i>	12652.9298	12650.1543	5.5509	0.0185	1.0000	no	0.0821	no
H1	<i>ndhB</i>	5793.8304	5791.0280	5.6047	0.0179	1.0000	no	0.0821	no
H1	<i>ndhC</i>	2981.2663	2981.1833	0.1660	0.6837	1.0000	no	0.9146	no
H1	<i>ndhD</i>	16309.8368	16306.4283	6.8170	0.0090	0.5869	no	0.0721	no
H1	<i>ndhE</i>	3058.3244	3058.2114	0.2259	0.6346	1.0000	no	0.8740	no
H1	<i>ndhF</i>	30438.7639	30438.6034	0.3209	0.5710	1.0000	no	0.8174	no
H1	<i>ndhG</i>	6271.6461	6271.6178	0.0566	0.8119	1.0000	no	0.9560	no
H1	<i>ndhH</i>	12550.3051	12550.3051	0.0000	0.9972	1.0000	no	0.9972	no
H1	<i>ndhI</i>	4436.6864	4436.6732	0.0263	0.8711	1.0000	no	0.9936	no
H1	<i>ndhJ</i>	4386.0366	4386.0365	0.0000	0.9950	1.0000	no	0.9972	no
H1	<i>ndhK</i>	5904.5070	5904.4545	0.1048	0.7461	1.0000	no	0.9382	no
H1	<i>petA</i>	9670.6219	9670.2174	0.8091	0.3684	1.0000	no	0.6437	no
H1	<i>petB</i>	4257.0730	4254.3278	5.4903	0.0191	1.0000	no	0.0821	no
H1	<i>petD</i>	3677.1806	3676.9641	0.4330	0.5105	1.0000	no	0.7606	no
H1	<i>petG</i>	675.0865	673.6535	2.8661	0.0905	1.0000	no	0.2642	no
H1	<i>petL</i>	941.2063	940.4492	1.5144	0.2185	1.0000	no	0.4764	no
H1	<i>petN</i>	484.3396	484.3022	0.0747	0.7846	1.0000	no	0.9390	no
H1	<i>psaA</i>	16402.1928	16402.1926	0.0004	0.9844	1.0000	no	0.9972	no
H1	<i>psaB</i>	15517.1720	15517.0961	0.1519	0.6967	1.0000	no	0.9146	no
H1	<i>psaC</i>	1949.7068	1949.3530	0.7077	0.4002	1.0000	no	0.6567	no
H1	<i>psaI</i>	860.7205	861.6385	1.8359	na	na	na	na	na
H1	<i>psaJ</i>	1267.7475	1267.3462	0.8026	0.3703	1.0000	no	0.6437	no
H1	<i>psbA</i>	6046.1035	6045.3574	1.4922	0.2219	1.0000	no	0.4764	no
H1	<i>psbB</i>	11988.6020	11987.6421	1.9199	0.1659	1.0000	no	0.4055	no
H1	<i>psbC</i>	9127.9229	9123.8353	8.1751	0.0042	0.2845	no	0.0443	yes
H1	<i>psbD</i>	6798.9338	6793.0655	11.7366	0.0006	0.0435	yes	0.0149	yes
H1	<i>psbE</i>	1515.8372	1514.3620	2.9505	0.0858	1.0000	no	0.2642	no
H1	<i>psbF</i>	661.7862	660.5838	2.4048	0.1210	1.0000	no	0.3270	no
H1	<i>psbH</i>	2290.1614	2290.1141	0.0947	0.7583	1.0000	no	0.9382	no
H1	<i>psbI</i>	779.2557	778.9404	0.6307	0.4271	1.0000	no	0.6567	no
H1	<i>psbJ</i>	967.1450	967.1075	0.0749	0.7843	1.0000	no	0.9390	no
H1	<i>psbK</i>	1950.1508	1949.1106	2.0803	0.1492	1.0000	no	0.3890	no
H1	<i>psbL</i>	530.6139	529.6575	1.9129	0.1666	1.0000	no	0.4055	no
H1	<i>psbM</i>	798.3743	795.5476	5.6533	0.0174	1.0000	no	0.0821	no
H1	<i>psbN</i>	729.9069	728.1722	3.4694	0.0625	1.0000	no	0.2282	no
H1	<i>psbT</i>	579.4653	578.6692	1.5920	0.2070	1.0000	no	0.4723	no
H1	<i>psbZ</i>	1380.5466	1380.4795	0.1342	0.7141	1.0000	no	0.9146	no
H1	<i>rbcl</i>	13090.2899	13087.5170	5.5458	0.0185	1.0000	no	0.0821	no

H1	<i>rpl14</i>	3532.0618	3530.6242	2.8753	0.0899	1.0000	no	0.2642	no
H1	<i>rpl16</i>	4036.8670	4036.4912	0.7515	0.3860	1.0000	no	0.6553	no
H1	<i>rpl2</i>	4251.3534	4250.7981	1.1105	0.2920	1.0000	no	0.5761	no
H1	<i>rpl20</i>	4368.6150	4368.5967	0.0365	0.8485	1.0000	no	0.9832	no
H1	<i>rpl22</i>	2242.1238	2242.1225	0.0026	0.9594	1.0000	no	0.9972	no
H1	<i>rpl23</i>	1335.0728	1332.0024	6.1409	0.0132	0.8322	no	0.0821	no
H1	<i>rpl32</i>	1658.1920	1658.0653	0.2535	0.6146	1.0000	no	0.8629	no
H1	<i>rpl33</i>	2568.0421	2567.6349	0.8144	0.3668	1.0000	no	0.6437	no
H1	<i>rpl36</i>	1011.7678	1011.3041	0.9273	0.3356	1.0000	no	0.6437	no
H1	<i>rpoA</i>	9781.2767	9780.8495	0.8544	0.3553	1.0000	no	0.6437	no
H1	<i>rpoB</i>	30165.9992	30165.6902	0.6180	0.4318	1.0000	no	0.6567	no
H1	<i>rpoC1</i>	20343.7118	20339.5421	8.3394	0.0039	0.2677	no	0.0443	yes
H1	<i>rpoC2</i>	47295.7462	47294.8620	1.7683	0.1836	1.0000	no	0.4323	no
H1	<i>rps11</i>	3965.4299	3962.9663	4.9272	0.0264	1.0000	no	0.1072	no
H1	<i>rps12</i>	1794.6132	1790.8260	7.5744	0.0059	0.3907	no	0.0540	no
H1	<i>rps14</i>	2754.6162	2754.6117	0.0090	0.9245	1.0000	no	0.9972	no
H1	<i>rps15</i>	3304.1684	3296.2534	15.8300	0.0001	0.0050	yes	0.0025	yes
H1	<i>rps16</i>	1211.5081	1209.1641	4.6880	0.0304	1.0000	no	0.1167	no
H1	<i>rps18</i>	1333.8792	1333.8092	0.1400	0.7083	1.0000	no	0.9146	no
H1	<i>rps19</i>	3263.3710	3259.2186	8.3048	0.0040	0.2689	no	0.0443	yes
H1	<i>rps2</i>	7026.9111	7026.5764	0.6695	0.4132	1.0000	no	0.6567	no
H1	<i>rps3</i>	7918.0843	7918.0798	0.0090	0.9242	1.0000	no	0.9972	no
H1	<i>rps4</i>	5364.2260	5364.0360	0.3800	0.5376	1.0000	no	0.7849	no
H1	<i>rps7</i>	1908.6501	1907.3857	2.5289	0.1118	1.0000	no	0.3138	no
H1	<i>rps8</i>	4995.5458	4992.2170	6.6575	0.0099	0.6319	no	0.0721	no
H2	<i>atpA</i>	14549.4607	14532.7850	33.3514	0.0000	0.0000	yes	0.0000	yes
H2	<i>atpB</i>	12547.8069	12544.2441	7.1256	0.0284	1.0000	no	0.0900	no
H2	<i>atpE</i>	4033.4731	4023.6062	19.7337	0.0001	0.0034	yes	0.0005	yes
H2	<i>atpF</i>	5277.3253	5275.6055	3.4395	0.1791	1.0000	no	0.3632	no
H2	<i>atpH</i>	1542.0753	1539.4663	5.2179	0.0736	1.0000	no	0.1733	no
H2	<i>atpI</i>	6359.2398	6359.0661	0.3473	0.8406	1.0000	no	0.8766	no
H2	<i>ccsA</i>	11800.0174	11797.2087	5.6175	0.0603	1.0000	no	0.1572	no
H2	<i>cemA</i>	5862.5762	5847.7158	29.7208	0.0000	0.0000	yes	0.0000	yes
H2	<i>clpP</i>	7103.8350	7086.7854	34.0993	0.0000	0.0000	yes	0.0000	yes
H2	<i>matK</i>	23794.7348	23793.5300	2.4097	0.2997	1.0000	no	0.4698	no
H2	<i>ndhA</i>	12652.9298	12651.6282	2.6031	0.2721	1.0000	no	0.4514	no
H2	<i>ndhB</i>	5793.8304	5787.4545	12.7519	0.0017	0.1021	no	0.0089	yes
H2	<i>ndhC</i>	2981.2663	2980.6888	1.1549	0.5613	1.0000	no	0.6504	no
H2	<i>ndhD</i>	16309.8368	16308.6911	2.2914	0.3180	1.0000	no	0.4805	no
H2	<i>ndhE</i>	3058.3244	3057.2951	2.0586	0.3573	1.0000	no	0.5114	no
H2	<i>ndhF</i>	30438.7639	30438.1756	1.1766	0.5553	1.0000	no	0.6504	no
H2	<i>ndhG</i>	6271.6461	6270.5146	2.2629	0.3226	1.0000	no	0.4805	no
H2	<i>ndhH</i>	12550.3051	12547.2463	6.1177	0.0469	1.0000	no	0.1269	no
H2	<i>ndhI</i>	4436.6864	4436.6056	0.1616	0.9224	1.0000	no	0.9484	no
H2	<i>ndhJ</i>	4386.0366	4380.9524	10.1683	0.0062	0.3531	no	0.0266	yes
H2	<i>ndhK</i>	5904.5070	5903.8403	1.3333	0.5134	1.0000	no	0.6247	no
H2	<i>petA</i>	9670.6219	9669.4261	2.3916	0.3025	1.0000	no	0.4698	no
H2	<i>petB</i>	4257.0730	4256.3556	1.4348	0.4880	1.0000	no	0.6038	no
H2	<i>petD</i>	3677.1806	3676.3617	1.6377	0.4409	1.0000	no	0.5707	no
H2	<i>petG</i>	675.0865	672.5666	5.0399	0.0805	1.0000	no	0.1836	no
H2	<i>petL</i>	941.2063	939.7702	2.8722	0.2378	1.0000	no	0.4277	no
H2	<i>petN</i>	484.3396	484.0245	0.6302	0.7297	1.0000	no	0.7951	no
H2	<i>psaA</i>	16402.1928	16401.2526	1.8804	0.3906	1.0000	no	0.5379	no
H2	<i>psaB</i>	15517.1720	15517.1369	0.0702	0.9655	1.0000	no	0.9655	no
H2	<i>psaC</i>	1949.7068	1940.4938	18.4261	0.0001	0.0064	yes	0.0007	yes
H2	<i>psal</i>	860.7205	859.3596	2.7219	0.2564	1.0000	no	0.4353	no
H2	<i>psaJ</i>	1267.7475	1266.9391	1.6167	0.4456	1.0000	no	0.5707	no
H2	<i>psbA</i>	6046.1035	6044.9009	2.4051	0.3004	1.0000	no	0.4698	no
H2	<i>psbB</i>	11988.6020	11987.1999	2.8042	0.2461	1.0000	no	0.4277	no
H2	<i>psbC</i>	9127.9229	9122.2454	11.3550	0.0034	0.2019	no	0.0167	yes
H2	<i>psbD</i>	6798.9338	6796.2360	5.3956	0.0674	1.0000	no	0.1695	no
H2	<i>psbE</i>	1515.8372	1514.3125	3.0495	0.2177	1.0000	no	0.4182	no
H2	<i>psbF</i>	661.7862	661.2720	1.0285	0.5979	1.0000	no	0.6820	no
H2	<i>psbH</i>	2290.1614	2289.7760	0.7707	0.6802	1.0000	no	0.7639	no

H2	<i>psbI</i>	779.2557	778.5143	1.4829	0.4764	1.0000	no	0.5996	no
H2	<i>psbJ</i>	967.1450	963.3114	7.6672	0.0216	1.0000	no	0.0752	no
H2	<i>psbK</i>	1950.1508	1949.3305	1.6406	0.4403	1.0000	no	0.5707	no
H2	<i>psbL</i>	530.6139	530.3754	0.4770	0.7878	1.0000	no	0.8335	no
H2	<i>psbM</i>	798.3743	796.8982	2.9521	0.2285	1.0000	no	0.4277	no
H2	<i>psbN</i>	729.9069	728.9223	1.9693	0.3736	1.0000	no	0.5244	no
H2	<i>psbT</i>	579.4653	577.1776	4.5754	0.1015	1.0000	no	0.2245	no
H2	<i>psbZ</i>	1380.5466	1380.2856	0.5219	0.7703	1.0000	no	0.8269	no
H2	<i>rbcL</i>	13090.2899	13086.2545	8.0709	0.0177	0.9723	no	0.0679	no
H2	<i>rpl14</i>	3532.0618	3528.4254	7.2729	0.0263	1.0000	no	0.0874	no
H2	<i>rpl16</i>	4036.8670	4029.8772	13.9797	0.0009	0.0571	no	0.0056	yes
H2	<i>rpl2</i>	4251.3534	4251.3009	0.1050	0.9489	1.0000	no	0.9620	no
H2	<i>rpl20</i>	4368.6150	4366.4803	4.2693	0.1183	1.0000	no	0.2540	no
H2	<i>rpl22</i>	2242.1238	2238.2266	7.7944	0.0203	1.0000	no	0.0741	no
H2	<i>rpl23</i>	1335.0728	1331.9818	6.1820	0.0455	1.0000	no	0.1269	no
H2	<i>rpl32</i>	1658.1920	1656.7839	2.8162	0.2446	1.0000	no	0.4277	no
H2	<i>rpl33</i>	2568.0421	2566.1449	3.7943	0.1500	1.0000	no	0.3128	no
H2	<i>rpl36</i>	1011.7678	1010.9565	1.6225	0.4443	1.0000	no	0.5707	no
H2	<i>rpoA</i>	9781.2767	9780.2168	2.1198	0.3465	1.0000	no	0.5059	no
H2	<i>rpoB</i>	30165.9992	30137.2868	57.4247	0.0000	0.0000	yes	0.0000	yes
H2	<i>rpoC1</i>	20343.7118	20333.9383	19.5471	0.0001	0.0037	yes	0.0005	yes
H2	<i>rpoC2</i>	47295.7462	47278.7657	33.9610	0.0000	0.0000	yes	0.0000	yes
H2	<i>rps11</i>	3965.4299	3945.2198	40.4201	0.0000	0.0000	yes	0.0000	yes
H2	<i>rps12</i>	1794.6132	1787.7233	13.7798	0.0010	0.0621	no	0.0057	yes
H2	<i>rps14</i>	2754.6162	2751.9772	5.2779	0.0714	1.0000	no	0.1733	no
H2	<i>rps15</i>	3304.1684	3300.8594	6.6180	0.0366	1.0000	no	0.1067	no
H2	<i>rps16</i>	1211.5081	1208.1935	6.6291	0.0363	1.0000	no	0.1067	no
H2	<i>rps18</i>	1333.8792	1333.5584	0.6416	0.7256	1.0000	no	0.7951	no
H2	<i>rps19</i>	3263.3710	3255.6861	15.3698	0.0005	0.0290	yes	0.0031	yes
H2	<i>rps2</i>	7026.9111	7021.3363	11.1496	0.0038	0.2200	no	0.0173	yes
H2	<i>rps3</i>	7918.0843	7905.6840	24.8005	0.0000	0.0003	yes	0.0000	yes
H2	<i>rps4</i>	5364.2260	5362.5587	3.3346	0.1888	1.0000	no	0.3724	no
H2	<i>rps7</i>	1908.6501	1904.2218	8.8568	0.0119	0.6683	no	0.0484	yes
H2	<i>rps8</i>	4995.5458	4994.9441	1.2034	0.5479	1.0000	no	0.6504	no

Supplementary Fig S1. Gene map of the *Typha latifolia* plastid genome. Thick lines on the inner circle indicate the extent of inverted repeats (IRa and IRb). Numbers on the inner circle show coordinates in kb. Genes on the outside of the map are transcribed in the clockwise direction, and genes on the inside are transcribed in the counterclockwise direction. Genes containing introns are indicated with an asterisk.





Supplementary Fig. S2. Alignment of *accD*, *ycf1*, and *ycf2* in Poales (*Typha* + 9 grass genomes).

accD:1  
→

61007 61017 61027 61037 61047  
**60998:** TCATCTATTGTATTTTCATCAAATAGGGGAGGGGGCAGGAAGACTCTATG **Typha**

---

accD:1  
→

61057 61067 61077 61087 61097  
**61048:** GAAAAATGGTGGTTCAATTCTATGTTCTCTAATGAGAAGTTAGAACATAG **Typha**

---

accD:1  
→

61107 61117 61127 61137 61147  
**61098:** GTGTGGTCTAAGTAAATCAATGGAAAGTCTTGATAGTATTGGGCATACCA **Typha**

---

accD:1  
→

61157 61167 61177 61187 61197  
**61148:** GTGGAAGTGAAGAACCCATTCTAAATGATACGAAGAAAAAATTCTCTGGT **Typha**

---

accD:1  
→

61207 61217 61227 61237 61247  
**61198:** TGGAGTGATAGTGTGAGTTATAGTTTCAATAATGTTGATTATTTATTTGA **Typha**

---

accD:1  
→

61257 61267 61277 61287 61297  
**61248:** TATCAGGGATATGTGGAGTTTCATCTCTGATGACACTTTTTTTAGTTAAGG **Typha**

---

accD:1  
→

61307 61317 61327 61337 61347  
**61298:** ATAAGAATGGTGACAGTTATTCTGTATATTTTGATATGGAAAATCTGAGT **Typha**

---

accD:1  
→

61357 61367 61377 61387 61397  
**61348:** TTTGAGATTGATAATGATAGTTCTTTTCTGAGTGAATTAGGAAGTTTTTTT **Typha**

---

accD:1  
→

61407 61417 61427 61437 61447  
**61398:** TTCTACTTTTTTTGAATAGGGGGTCTAAGAAAAACAATCACTACTATTATC **Typha**

accD:1  
61457 61467 61477 61487 61497  
61448: ATTACATGTATGATACTCAATCTAGGTGGAATAATCACATTAATAGTTGC Typha

accD:1  
61507 61517 61527 61537 61547  
61498: ATTGATAGTTATCTTCGTTTTGAAGTCAGTATTAATAGTTCCATCTTAGG Typha

accD:1  
61557 61567 61577 61587 61597  
61548: TGGTACTGACAATTCCAGCGACTGTTACATTTATAATTTTCATTTGTACTG Typha

accD:1  
61607 61617 61627 61637 61647  
61598: AAAATGTAAGTGGTAGTGAAAGTGAAGTTCTAGTATAAGAAGTTCTAGT Typha

accD:1  
61657 61667 61677 61687 61697  
61648: ATAAGAACTAGTAAAAATGGAAGTAAGTTCAGTATAAGAGGAAGATCTAA Typha

accD:1  
61707 61717 61727 61737 61747  
61698: TGATTTAGATATAAATAAAAAATACAGACATTTATGGGTTCATGCGAAA Typha

accD:1  
61757 61767 61777 61787 61797  
61748: ATTGTTATGGATTAAATTATAAAAAATTTTTTCGGTTAAAAATGAATATT Typha

accD:1  
61807 61817 61827 61837 61847  
61798: TGTGAACAGTGTGGATATCATTTGAAAATGAGTAGTTCAGATAGAATCGG Typha

accD:1  
61857 61867 61877 61887 61897  
61848: AGTTTTGATTTGATCCGGGTACTTGGGATCCATGGATGAAGATATGGTCT Typha

accD:1  
61907 61917 61927 61937 61947  
61898: CTATGGATCCCATTGAATTTTCATTCAGAAGAGGAACCTTATAGAGATCGT Typha

accD:1  
61957 61967 61977 61987 61997  
61948: ATCGATTTTTTATCAAAGAAAGACAGGTTTAACTGAAGCTGTTCAAACGGG Typha

accD:1  
62007 62017 62027 62037 62042  
61998: CATAGGTCAATTAAATGGTATTTCTATAGCAATTGGGGTT-----ATGGA Typha  
56524: . . . . . TC . . . . . C . CT . . . . . G . GGTAT . . . . . C Oryza

accD:1  
62052 62062 62072 62082 62092  
62043: TTTTCAGTTCATGGGAGGTAGTATGGGATCGGTAGGTAGGTGAGAAAATCA Typha  
57581: . AG . . . . . G . . . . . TA . . . . . A . . . . . TT Hordeum  
56502: . . . . . CA . . . . . A . . . . . TT Lolium  
56558: C . . A . . AAGTC . AA . G . . . . . A . . . . . T . . . . . A . A . G . . . . . TT Oryza

accD:1  
62096 62106 62116 62126 62136  
62093: CCC-----GTTTGATTGAATATGCTACTAATCGATCTCTACCTGTCATT Typha  
57618: G . . CTTTGAT . . . . . A . . . . . T . TT . . TGC . . T . . . . . ACG . . . . . Hordeum  
56536: G . . CTTTGAT . . . . . C . . . . . AG . CT . TT . . CGC . . T . . . . . ACG . . . . . Lolium  
56608: GT . -----CC . . . . . G . . . . . T . TTC . CTC . . T . . . . . GCG . . . . . Oryza

accD:1  
62146 62156 62166 62176 62186  
62137: ATTGTGTGTGCTTCTGGAGGAGCACGCATGCAAGAAGGAAGTTTAAGCTT Typha  
57668: . . . . . A . . C . . . . . A . . . . . A . . T . T . T . . . . . G . . . . . T . . A . . CT . . Hordeum  
56586: . . . . . A . . C . . . . . AT . . . . . T . TAT . . A . T . . . . . T . . A . . CT . . Lolium  
56652: . . . . . A . A . . . . . A . A . . . . . T . . . . . GAG . . . . . A . . AC . . T . . Oryza

accD:1  
62196 62206 62216 62226 62236  
62187: GATGCAAATGGCTAAAATATCTTCTGCTTTATATAATTATCAATCAACTA Typha  
56702: A . . AA . . . . . A . C . . . . . A . GT . . . . . AA . . . . . CGGC . A . . . . . Oryza

accD:1  
62246 62256 62266 62276 62286  
62237: AAAAGTTATTCTATGTATCAATCCTTACATCTCCTACAACCGGTGGAGTA Typha  
56752: . . . ----G . C . . . . . Oryza

accD:1  
62296 62306 62316 62326 62336  
62287: ACAGCTAGTTTTGGGATGTTAGGAGATGTCATTATTGCTGAACCTAATGC Typha

accD:1  
62346 62356 62366 62376 62386  
62337: GTACATTGCTTTTGC GGGTAAAAGAGTAATTGAACAAACATTGAATAAGA Typha

accD:1  
62396 62406 62416 62426 62436  
62387: CAGTACCCGATGGTTCACAAGCGGCAGAGTATTTATTCCATAAAGGCTTA Typha

accD:1  
62446 62456 62466 62476 62486  
62437: TTCGACCCAATCGTACCACGTAATCCTTTAAAAGGTGTTCTGAGTGAGTT Typha

accD:1  
62496 62506 62516 62526 62536  
62487: ATTTCAGCTCCACGGCTTCTTTCCCTTGAATCAAAATCCAAGAATGAAA Typha

accD:1  
62546 62556 62566 62576 62586  
62537: GTATAGCGCCAGATTAGCTTCAGTTATTTTATTTGTAGCGAACAAGTATT Typha

ycf2:1



91883

91896

91906

91876: --TTAGGAGGAATCAA-----TGAAAGGACATCAATTC  
83772: -----A..ATATTCGGAGATGACTA.....  
82129: --CATA..AA...G..A---TCGAAAAT-ATTCC..G.T.G..AAT....  
83813: --CATA..AA...G..A---TCGAAAAT-ATTCC..G.T.G..AAT....  
82653: -----A..ATATTAGGAGATGACTA.....  
83268: --CATA..AA...G..A---TCGAAAAT-ATTCC..G.T.G..AAT....  
2680: TA..C....ATGG...ATATTCGGAGATGACTA.....  
85889: TA..C....ATGG...ATATTCGGAGATGACTA.....  
2682: --CATA..AA...G..A---TCGAAAAT-ATTCC..G.T.G..AAT....  
2658: --CATA..AA...G..A---TCGAAAAT-ATTCC..G.T.G..AAT....

**Typha**  
**Agrostis**  
**Brachypodium**  
**Hordeum**  
**Lolium**  
**Oryza**  
**Saccharum**  
**Sorghum**  
**Triticum**  
**Zea**

ycf2:1

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91917                    91927                    91937

91907: AAA-----TCCTGGATCTTCGAATTGAGAGAGATAT **Typha**  
83797: -----ACACCTCT.....C.....A.....G.. **Agrostis**  
82173: GG.GATGACTATGAAAACACCTCT.....C.....A.....G.. **Brachypodium**  
83857: GG.GATGACTATGAAAACACCTCT.....C.....A.....G.. **Hordeum**  
82678: -----ACACCTCT.....C.....A.....G.. **Lolium**  
83312: GG.GATGACTATGAAAACACCTCT.....C.....A.....G.. **Oryza**  
2718: -----AAACCTCT.C.....C.....A.....G.. **Saccharum**  
85927: -----AAACCTCT.....C.....A.....G.. **Sorghum**  
2726: GG.GATGACTATGAAAACACCTCT.-....C.....A.....G.. **Triticum**  
2702: GG.GATGACTATGAAAACACCTCT.C....C.....A.....G.C **Zea**

ycf2:1

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91947                    91961                    91971                    91981

91938: TGAGAGAGATCAAG-----AATTCTCACTATTTCTTAGATTCATGGATC **Typha**  
83831: .....G.....AATCCT.....G.....G..... **Agrostis**  
82223: .....G.....AATCCT.....T.....G..... **Brachypodium**  
83907: .....G.....AATCCT.....G.....G..... **Hordeum**  
82712: .....G.....AATCCT.....TG.....G..... **Lolium**  
83362: .....G.....C..AATCCT.....G.....G..... **Oryza**  
2752: .....G.....AATCCT.....G.....G..... **Saccharum**  
85961: .....G.....AATCCT.....G.....G..... **Sorghum**  
2775: .....G.....C..AATCCT.....G.....G..... **Triticum**  
2752: .....G.....AATCCT.....G.....G..... **Zea**

ycf2:1

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91991                    92001                    92011                    92021                    92031

91982: AAATTCGATTCAGTGGGATCTTTCACCTCACATTTTTTTTCCACCAAGAACG **Typha**  
83875: C.....T...G...CT..CTCA.AGTGAT....C.C.TT.G...AG. **Agrostis**  
82267: C.....T...G...CT..CTCA.AGTGAT....C.C.TT.G...AG. **Brachypodium**  
83951: C.....T...G...CT..CTCA.AGTGAT....C.C.TT.G...AG. **Hordeum**  
82756: C.....T...G.A.CT..CTCA.AGTGAT....C.C.TT.G...AG. **Lolium**  
83406: C.....T...G...CT..CTCA.AGTGAT....C.C.TT.G...AG. **Oryza**  
2796: C.....T...G...CT..C.CA.AGTGAT....C.C.TT.G...AG. **Saccharum**  
86005: C.....T...G...CT..C.CA.AGTGAT....C.C.TT.G...AG. **Sorghum**  
2819: C.....T...G...CT..CTCA.AGTGAT....C.C.TT.G...AG. **Triticum**  
2796: C.....T...G...CT..C.CA.AGTGAT....C.C.TT.G...AG. **Zea**

ycf2:1

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92041                    92051                    92061                    92071                    92081

92032: TTTTATGAAACTCTTTGACCCCGAATTTGGAGTATCCTACTTTCACGTG **Typha**

ycf2:1

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92091                    92101                    92111                    92121                    92131

92082: ATTCACAGGGTTCAACAAGCAATCGATATTTACGATCAAAGGTGTAGTA **Typha**

ycf2:1

----->

92141                    92151                    92161                    92171                    92181

92132: CTGCTTGTAGTAGCGGTCCTTATATCTCGTATTAACAATCGAAAGATGGT **Typha**

ycf2:1  
92191 92201 92211 92221 92231  
92182: CGAAAGAAAAATCTCTATTTGATGGGCCTTCTTCCTATACCTATGAATT Typha

ycf2:1  
92241 92251 92261 92271 92281  
92232: CCATTGGACCCAGAAATGAGACATTGGAAGAATCTTTTTGGTCTTCCAAT Typha

ycf2:1  
92291 92301 92311 92321 92331  
92282: ATCAATAGGTTGATTGTTTCGCTCCTGTATCTTCCAAAAGGGAAAAATAT Typha

ycf2:1  
92341 92351 92361 92371 92381  
92332: TTCTGAGAGTTGTTTCATGGATCCGCAAGAGATTACTTGGGTTCTCCCAA Typha

ycf2:1  
92391 92401 92411 92421 92431  
92382: TAAATAAAAAGTGTATCATGCGGAGTTCGCGGTGGTGGAGGAACCAGATC Typha

ycf2:1  
92441 92451 92461 92471 92481  
92432: GGAAAAAGAGGGATTTTTGTTGTAAGATATCTAATGAAACCGTAGCTGG Typha

ycf2:1  
92491 92501 92511 92521 92531  
92482: AATTGAGATCTCATTCAAAGAGAAAGATAGCAAATATCTGGAGTTTATTT Typha

ycf2:1  
92541 92551 92561 92571 92581  
92532: TTTTATCCTATATGGATGATCCGATCCGCAAGGACCATGATTGGGAATTG Typha

ycf2:1  
92591 92601 92611 92621 92631  
92582: TTTGATCGTCTTCTCCGAGGAAGAAGCGAAACATAATCAACTTGAATTC Typha

ycf2:1  
92641 92651 92661 92671 92681  
92632: GAGACAGCTATTTCGAAATCTTAGGGAAAGACTTGATTTGTTATCTCATGT Typha



ycf2:1  
92691 92701 92711 92721 92731  
92682: CTGCTTTTTCGTGAAAAAAGACCAATTGAAGGGAAGGGTTTCTTCAAACAA Typha

ycf2:1  
92741 92751 92761 92771 92781  
92732: CAAGGAGCTGAGGCAACTATTCAATCAAATGATATTGAGCATGTTTCCCA Typha

ycf2:1  
92791 92801 92811 92821 92831  
92782: TCTCTTCTCGAGAAACAAGTGGGGTATTTCTTTGCAAAATTGTGCTCAAT Typha

ycf2:1  
92841 92851 92861 92871 92881  
92832: TTCATATGTGGCAATTCCGCCAAGATCTCTTCATTAGTTGGGGAAAGAAT Typha

ycf2:1  
92891 92901 92911 92921 92931  
92882: CAGCACGAATCGGATTTTTTTGAGGAACGTATCAAGAGAGAATTTGATTTG Typha

ycf2:1  
92941 92951 92961 92971 92981  
92932: GTTAGACAATGTGTGGTTGGGAAACAAGGATCGGTTTTTTTAGCAAGGTAC Typha

ycf2:1  
92991 93001 93011 93021 93031  
92982: GGAATGTATTTGTCAAATATTCAATATGATTTCTACAAGATCTATTTTCGTT Typha

ycf2:1  
93041 93051 93061 93071 93081  
93032: CAAGTAACGGATTCTAGCCAATTGAAAGGATCTTCTGATCAGTTCATAGA Typha

ycf2:1  
93091 93101 93111 93121 93131  
93082: TCATTTTCGATTCCATTAGAAATGAGGATTCAGAATATCACACATTGATCG Typha

ycf2:1  
93141 93151 93161 93171 93181  
93132: ATCAAACAGAGATTTCAGCAACTAAAAGAAAGATCGATTCTTTGGGATCCT Typha

ycf2:1  
93191 93201 93211 93221 93231  
93182: TCCTTTCTTCAAACGGAAGGAACAGAGATAGAATCAGATCGATTCCCGAA Typha

ycf2:1  
93241 93251 93261 93271 93281  
93232: ATGCCTTTTTTGGATCTTCCCTCAATGTCCC GGCTATTACGGAACGTGAGA Typha

ycf2:1  
93291 93301 93311 93321 93331  
93282: AGCAGATGAATAATCATCTGCTTCCGGAAGAAATCGAAGAATTTCTTGGG Typha

ycf2:1  
93341 93351 93361 93371 93381  
93332: AATCCTACAAGATCAATTCGTTCTTTTTTCTCTGACAGATGGTCAGAACT Typha

ycf2:1  
93391 93401 93411 93421 93431  
93382: TCATCTGGGTTCGAATCCTACTGAGAGGTCCACTAGAGATCAGAAATTTT Typha

ycf2:1  
93441 93451 93461 93471 93481  
93432: TGAAGAAAAACAAGATGTTTCTTTTGTCCCTTCCAGGCGATCGGAAAAT Typha

ycf2:1  
93491 93501 93511 93521 93531  
93482: AAAGAAATGGTTGATACATTC AAGATAATTACGTATTTACAAAAACCGT Typha

ycf2:1  
93541 93551 93561 93571 93581  
93532: CTCAATTCATCCTATTTTCATCAGATCCGGGATGTGATATGGTTCCGAAGG Typha

ycf2:1  
93591 93601 93611 93621 93631  
93582: ATGAATCGGATATGATGGACAGTTCCAATAAGATTTTCATTTGAACAAA Typha

ycf2:1  
93641 93651 93661 93671 93681  
93632: AATCCATTTTTGGATTTATTTTCATCTATTCATGACCGGAACAAAGGGGG Typha

ycf2:1  
93691 93701 93711 93721 93731  
93682: ATACACGTTACACCACGATTTTGAATCAGAAGAGAGATTTCAAGAAATGG Typha

ycf2:1  
93741 93751 93761 93771 93781  
93732: CAGATCTATTCACTCTATCAATAACCGAGCCGGATCTGGTGTATCATAGG Typha

ycf2:1  
93791 93801 93811 93821 93831  
93782: GGATTTTCCTTTTCTATTGATTCCTACAGGTTGGATCAAAAAAATTCCT Typha

ycf2:1  
93841 93851 93861 93871 93881  
93832: GAATGAGGTATTCAACTCCAGAGATGAATCGAAAAAGAAATCTTTATTGG Typha

ycf2:1  
93891 93901 93911 93921 93931  
93882: TTCTACCTCCTTTTTTATGAAGAGAATGAATCTTTTTATCGAAGGATC Typha

ycf2:1  
93941 93951 93961 93971 93981  
93932: AGAAAAAATCGGTCCGGATCCACTGCGGGAATGATTTGGAAGATTCAA Typha

ycf2:1  
93991 94001 94011 94021 94031  
93982: ACTAAAAACAGCGGTATTTGCTAGCAACAACATAATGGAGGCAGTCAATC Typha

ycf2:1  
94041 94051 94061 94071 94081  
94032: AATATAGATTGATCCGAAATCTGATTCAAATCCAATATAGCACCTATGGG Typha

ycf2:1  
94091 94101 94111 94121 94131  
94082: TACATAAGAAATGTATCGAATCGATTCTTTTAAATGAATAGATCCGATCG Typha

ycf2:1  
94141 94151 94161 94171 94181  
94132: CAACTTCGAATATGGAATTCAAAGGGGTCAAATAGGAAATGATACTCTGA Typha

ycf2:1  
94191 94201 94211 94221 94231  
94182: ATCATATAACTATAATGAAATATACGATCAACCAACATTTATCGAATTTG Typha

ycf2:1  
94241 94251 94261 94271 94281  
94232: AAAAAGAGTCAGAAGAAATGGTTTGATCCTCTTATTTCTCGAACCGAGAG Typha

ycf2:1  
94291 94301 94311 94321 94331  
94282: ATCCATGAATCGGGATCCTGATGCATATAGATATAAAATGGTCCAATGGGA Typha

ycf2:1  
94341 94351 94361 94371 94381  
94332: CCAAGAATTTCCAGGAACATTTGGAAGATTTTCGTTTCTGAACAGAAGAAG Typha

ycf2:1  
94391 94401 94411 94421 94431  
94382: CGTTTTCAAGTAGTGTTCGATCGATTACGTATTAATCAATATTCGATTGA Typha

ycf2:1  
94441 94451 94461 94471 94481  
94432: TTGGTCCGAGGCTATCGACAAACAAGATTTGTCTAAGTCACTTCGTTTCT Typha

ycf2:1  
94491 94501 94511 94521 94531  
94482: TTTTGTCCAAGTCACTTCTCTTTTTGTCCAAGTCACTTCCCTTTTTGTCC Typha

ycf2:1  
94541 94551 94561 94571 94581  
94532: AAGTCACTTCCCTTTTCTTTGTGAGTATCGGGAATATCCCCATTCATAG Typha

ycf2:1  
94591 94601 94611 94621 94631  
94582: GTCCGAGATCCACATCTATGAATTGAAAGGTCCGAATGATCAACTCCGCA Typha

ycf2:1  
94641 94651 94661 94671 94681  
94632: ATCAGTTGTTAGAATCAATAGGTGTTCAAATCGTTCATTTGAATAAATTG Typha

ycf2:1  
94691 94701 94711 94721 94731  
94682: AAACCC<sup>↓</sup>TTCT<sup>↓</sup>TATTGGATGATCATGATACT<sup>↓</sup>TCCCAAAGACCGAAAT<sup>↓</sup>TCT<sup>↓</sup>T Typha

ycf2:1  
94741 94751 94761 94771 94781  
94732: GATCAATGGAGGAACAATAT<sup>↓</sup>TCCCAT<sup>↓</sup>TTTT<sup>↓</sup>TGTTCAAAAAGATACCAAAGT<sup>↓</sup> Typha

ycf2:1  
94791 94801 94811 94821 94831  
94782: GGATGATTGACTCAT<sup>↓</sup>TCCAGACTAGAAAATAATCGCAGGAAATCCTTTGAT<sup>↓</sup> Typha

ycf2:1  
94841 94851 94861 94871 94881  
94832: AACACGGATTCCAAT<sup>↓</sup>TTTT<sup>↓</sup>CAATGATATCCCATGATCGAGACAAT<sup>↓</sup>TGGCT<sup>↓</sup> Typha

ycf2:1  
94891 94901 94911 94921 94931  
94882: GAATCCC<sup>↓</sup>GTGAAACCAT<sup>↓</sup>TTCCATAGAAAG<sup>↓</sup>TTCATTGATAT<sup>↓</sup>TTCT<sup>↓</sup>TTTTTATA<sup>↓</sup> Typha

ycf2:1  
94941 94951 94961 94971 94981  
94932: AAGCAAATCGACT<sup>↓</sup>TTCGATT<sup>↓</sup>CCTTGAATGATCCACATCACT<sup>↓</sup>TCTGGTTCTAT<sup>↓</sup> Typha

ycf2:1  
94991 95001 95011 95021 95031  
94982: TGTAACAAAAGAT<sup>↓</sup>TCCCT<sup>↓</sup>TTTT<sup>↓</sup>TATGTGGAAAAGACCCGTATCCATAATTA<sup>↓</sup> Typha

ycf2:1  
95041 95051 95061 95071 95081  
95032: TGATCTTACATATGGACAAT<sup>↓</sup>TCC<sup>↓</sup>TCAATATCTTGTTCAT<sup>↓</sup>TCGCAACAAAA<sup>↓</sup> Typha

ycf2:1  
95091 95101 95111 95121 95131  
95082: TATTTTCT<sup>↓</sup>TTTGTGCGTCCGGTAAAAA<sup>↓</sup>AACATAT<sup>↓</sup>TTTT<sup>↓</sup>TTTGGAGAGAGAG<sup>↓</sup> Typha

ycf2:1  
95141 95151 95161 95171 95181  
95132: ACTATTTCC<sup>↓</sup>CAATCGAGT<sup>↓</sup>CACAGGTATCTAACATAT<sup>↓</sup>TCATACCTAACGA<sup>↓</sup> Typha

ycf2:1  
95191 95201 95211 95221 95231  
95182: TTTTCCACAAAGTGGTGACGAAACGTATAACTTGTACAAATCTTTCCATT Typha

ycf2:1  
95241 95251 95261 95271 95281  
95232: TTCCAATTTCGATCCGATCCATTTCGTTTCGTAGAGCTATTTACTCGATCGCA Typha

ycf2:1  
95291 95301 95311 95321 95331  
95282: GACATTTCCGCAACACCTCTAACAGAGGAACAAATAGTCAATTTTGAAAG Typha

ycf2:1  
95341 95351 95361 95371 95381  
95332: AACTTATTGTCAGCCTCTTTCAGATATGAATCTATCTGATTCAGAAGGGA Typha

ycf2:1  
95391 95401 95411 95421 95431  
95382: AGAACTTGCATCAGTATCTCAGTTTCAATTCAAACATGGGTTTGATTCAC Typha

ycf2:1  
95441 95451 95461 95471 95481  
95432: ACTCCATGTTCTGAGAAATATTTACCATCCGAAAGAGGAAAAACGGAG Typha

ycf2:1  
95491 95501 95511 95521 95531  
95482: TCTTTGTCTAAAGAAATGCGTTGAGAAACGGCAGATGTATAGAACCCTTC Typha

ycf2:1  
95541 95551 95561 95571 95581  
95532: AACGAGATAGTGCTTTTTTCAAATCTCTCAAATGGAATCTGTTCCAAACA Typha

ycf2:1  
95591 95601 95611 95621 95631  
95582: TATATGCCATGGTTCCTTACTTCGACAGGGTGCAAATATCTAAATTTTCCAC Typha

ycf2:1  
95641 95651 95661 95671 95681  
95632: CCTTTTAGATACTTTTTTCAGACCCATTGCCGATACTAAGTAGCAGTCCAA Typha

ycf2:1  
95691 95701 95711 95721 95731  
95682: AATTTGTATCCATTTTTTCATGATATTATGCATGGATCAGATATATCATGG Typha

ycf2:1  
95741 95751 95761 95771 95781  
95732: TCAATTCCCTCAGAAGATTCTTCCACAACGGACTCTGATAAGTGAGATTTTC Typha

ycf2:1  
95791 95801 95811 95821 95831  
95782: GAGTAAGTGTTTACAGAATCTTCTTCTGTCCGAAGAAATGATTCATCGAA Typha

ycf2:1  
95841 95851 95861 95871 95881  
95832: ATAATGAGTCACCCGTTCCATTGATATGGACACATCTGAGATCAACAAAT Typha

ycf2:1  
95891 95901 95911 95921 95931  
95882: GCTCGGGAGTTCTCTATTCAATCCTTTTCCTTCTTCTTGTGCTGGATA Typha

ycf2:1  
95941 95951 95961 95971 95981  
95932: TCTCGTTCGTATACATTTTCTCTTCGTTTCCCGAGCCTCTAGTGAGTTAC Typha

ycf2:1  
95991 96001 96011 96021 96031  
95982: AGACAGAGTTAGAAAAGATAAAAATCTTTGATGATTCATCATAACATGATT Typha

ycf2:1  
96041 96051 96061 96071 96081  
96032: GAGTTGCGAAAACCTTCTGGATAGGTATCCTACATCTGAACTGAATTCTTT Typha

ycf2:1  
96091 96101 96111 96121 96131  
96082: CTGGTTAAAGAATCTCTTTCTAGTTGCTCTGGAACAATTAGGAGATTCTC Typha

ycf2:1  
96141 96151 96161 96171 96181  
96132: TGGAAGAAATACGGGGTCTTGCTTCTGGTGGCAACATGCTATTGGGTGGT Typha

ycf2:1

96191      96201      96211      96221      96231

96182: GGTCCCGCTTATGGGGTCAAATCAATACGTTCTAAGAAGAAATATTTGAA **Typha**

ycf2:1

96241      96251      96261      96271      96281

96232: TAGCAATCTCATCGATCTCATAAGTATCATACCAAATCCCATCAATCGAA **Typha**

ycf2:1

96291      96301      96311      96321      96331

96282: TCAC'TTTTTCGAGAAATACGAGACATCTAAGTCGTACAAGTAAAGGGATC **Typha**

ycf2:1

96341      96351      96361      96371      96381

96332: TATTCA'TTGATAAGAAAAAGAAAAACGTGAACGGTGATTGGATTGATGA **Typha**

ycf2:1

96391      96401      96411      96421      96431

96382: TAAAATAGAATCCTGGGTCGCGAACAGTGATTTCGATTGATGACGAAGAAA **Typha**

ycf2:1

96441      96451      96461      96471      96481

96432: GAGAAT'TCTTGGTTCAGT'TCTCCACCTTAACGACAGAAAAAAGATTGAT **Typha**  
 83868: ..G... **Agrostis**  
 82260: ..G... **Brachypodium**  
 83944: ..G... **Hordeum**  
 82749: ..G... **Lolium**  
 83399: ..G... **Oryza**  
 85837: ..G... **Saccharum**  
 85998: ..G... **Sorghum**  
 83160: ..G... **Triticum**  
 85141: ..G... **Zea**

ycf2:1

96491      96501      96511      96525

96482: CAAAT'TCTATTGAGTCTGACTCATAGTGATCATTTATC-----AAAGAA **Typha**  
 83874: .C.....C..TTTAGC..... **Agrostis**  
 82266: .C.....C..TTTAGC..... **Brachypodium**  
 83950: .C.....C..TTTAGC..... **Hordeum**  
 82755: .C.....A.....C..TTTAGC..... **Lolium**  
 83405: .C.....C.....C..TTTAGC..... **Oryza**  
 85843: .C.....C.....C..TTTAGC..... **Saccharum**  
 86004: .C.....C.....C..TTTAGC..... **Sorghum**  
 83166: .C.....C.....C..TTTAGC..... **Triticum**  
 85147: .C.....C.....C..TTTAGC..... **Zea**



ycf2:1

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	96535	96545	96555	96565	96575	
96526:	TGACTCTGGTTATCAAATGATTGAACAACCGGGATCAATTTACTTACGAT					<b>Typha</b>
83924:	...CT.....G.....C.....T...					<b>Agrostis</b>
82316:	...CT.....G.....C.....T...					<b>Brachypodium</b>
84000:	...CT.....G.....C.....C.....T...					<b>Hordeum</b>
82805:	...CT.....G.....C.....T...					<b>Lolium</b>
83455:	...CT.....G.....CG.....T...					<b>Oryza</b>
85893:	...CT.....G.....A.....C.....T...					<b>Saccharum</b>
86054:	...CT.....G.....A.....C.....T...					<b>Sorghum</b>
83216:	...CT.....G.....CG.....T...					<b>Triticum</b>
85197:	...CT.....G.....A.....C.....T...					<b>Zea</b>

ycf2:1

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	96585	96595	96605	96615	96625	
96576:	ACTTAGTTGACATTCATAAAAAAGTATCTAATGAGTTATGAGTTCAATAGA					<b>Typha</b>
83974:	..C.....G...G...C...G.....A.....T.....					<b>Agrostis</b>
82366:	..C.....G...G...C...G.....A.....T.....					<b>Brachypodium</b>
84050:	..C.....G...G...C...G.....A.....T.....					<b>Hordeum</b>
82855:	..C.....G...G...C...G...C...A.....T.....					<b>Lolium</b>
83505:	..C.....G...C...G.....A.....T.....					<b>Oryza</b>
85943:	..C.....GC...C...G.....A.....T.....					<b>Saccharum</b>
86104:	..C.....GC...C...G.....A.....T.....					<b>Sorghum</b>
83266:	..C.....G...C...G.....A.....T.....					<b>Triticum</b>
85247:	..C.....GC...C...G.....A.....T.....					<b>Zea</b>

ycf2:1

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	96635	96645	96655	96665	96675	
96626:	TCCTGTTTAGCAGAAAGACGGATATTCCTTGCTCATTATCAGACAATCAC					<b>Typha</b>
84024:	...CC.....T.....					<b>Agrostis</b>
82416:	...C.....T.....					<b>Brachypodium</b>
84100:	...C.....T.....					<b>Hordeum</b>
82905:	...CC.....CT.....					<b>Lolium</b>
83555:	...C.....T.....					<b>Oryza</b>
85993:	...C.....T.....					<b>Saccharum</b>
86154:	...C.....T.....					<b>Sorghum</b>
83316:	...C.....T.....					<b>Triticum</b>
85297:	..T..C.....T.....					<b>Zea</b>

ycf2:1

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	96685	96695	96705	96715	96725	
96676:	TTATTCACAAACCTCGTGTGGGGCTAATAGTTTTTCATTTCCCATCTCATG					<b>Typha</b>
84074:	.....C.....A.....C.....A.....					<b>Agrostis</b>
82466:	.....C.....C.....A.....					<b>Brachypodium</b>
84150:	.....C.....A.....C.....A.....					<b>Hordeum</b>
82955:	.....					<b>Lolium</b>
83594:	.....C.....A.....C.....A.....G.					<b>Oryza</b>
86043:	.....C.....C.....A.....					<b>Saccharum</b>
86204:	.....C.....C.....A.....					<b>Sorghum</b>
83355:	.....C.....A.....C.....A.....G.					<b>Triticum</b>
85347:	.....C.....C.....A.....					<b>Zea</b>

ycf2:1

96735      96745      96755      96765      96775

96726: GAAAACCCTTTTCGCTCCGCCTTAGCCCTATCCCCTTCTAGGGGTATTTTA      **Typha**  
84124: .....T .....----- .....  
82516: .....T .....----- .....  
84200: .....T .....----- .....  
82964: .....T .....----- .....  
83644: .....T .....T .....----- .....  
86093: .....T .....----- .....  
86254: .....T .....----- .....  
83405: .....T .....T .....----- .....  
85397: .....T .....----- .....  
**Agrostis**  
**Brachypodium**  
**Hordeum**  
**Lolium**  
**Oryza**  
**Saccharum**  
**Sorghum**  
**Triticum**  
**Zea**

ycf2:1

96785      96795      96805      96815      96825

96776: GTAATAGGTTCTATAGGAACTGGACGATCCCTATTTGGTCAAATACCTAGC      **Typha**  
84165: ..GC .....A .....  
82557: ..G .....A .....A .....  
84241: ..G .....A .....A .....  
83005: ..G .....A .....A .....  
83685: ..G .....AT .....  
86134: ..G .....A .....A .....  
86295: ..G .....A .....A .....  
83446: ..G .....AT .....A .....  
85438: ..G .....A .....A .....  
**Agrostis**  
**Brachypodium**  
**Hordeum**  
**Lolium**  
**Oryza**  
**Saccharum**  
**Sorghum**  
**Triticum**  
**Zea**

ycf2:1

96835      96845      96855      96865      96875

96826: GACAAACTCCTATGTTCCCTTTCATTACGGTATTTCCGAACAAGTTCCTGG      **Typha**  
84215: ..A...T.A.G..T .....A .....  
82607: ..A...T.A.G..T .....A .....  
84291: ..A...T.A.G..T .....A .....  
83055: ..A...T.A.G..T .....G.A .....  
83735: ..A...T.....T .....A .....  
86184: ..A...T.....T .....A .....  
86345: ..A...T.....T .....A .....  
83496: ..A...T.....T .....A .....  
85488: ..A...T.....T .....A .....  
**Agrostis**  
**Brachypodium**  
**Hordeum**  
**Lolium**  
**Oryza**  
**Saccharum**  
**Sorghum**  
**Triticum**  
**Zea**

ycf2:1

96885      96895      96905      96915      96925

96876: ATGACAAGCCTAAAGGTTATCTTATTGATGATATCGATATTGATGATAGT      **Typha**

ycf2:1

96935      96945      96955      96965      96975

96926: GACGATATCGATATTGATGATCGTGACGATATCGATATTGATGATAGTGA      **Typha**

ycf2:1

96985      96995      97005      97015      97025

96976: CGATATTGATGATGACCTTGATACGGAGCTGCTAACTATGACGAATGTGC      **Typha**

ycf2:1  
 →

97035      97045      97055      97065      97075  
 ↓            ↓            ↓            ↓            ↓

**97026:** TAACTATGTATATGACGCCGAAAATAGACCGATTTGATATCACCCTTCAA **Typha**

ycf2:1  
 →

97085      97095      97105      97115      97125  
 ↓            ↓            ↓            ↓            ↓

**97076:** TTCGAATTAGCAAAAGCAATGTCTCCTTGCATAATATGGATTCCAAACAT **Typha**

ycf2:1  
 →

97135      97145      97155      97165      97175  
 ↓            ↓            ↓            ↓            ↓

**97126:** TCATGATCTGTATGTGAATGAGTCGAATTACTTATCCCTCGGTCTATTAG **Typha**

ycf2:1  
 →

97185      97195      97205      97215      97225  
 ↓            ↓            ↓            ↓            ↓

**97176:** AGAACTATCTCTCCAGGGATTGTGAAAGATGTTCCACTAGAAATATTCTT **Typha**

ycf2:1  
 →

97235      97245      97255      97265      97275  
 ↓            ↓            ↓            ↓            ↓

**97226:** GTTATTGCTTCGACTCATATTTCCCAAAAAGTGGATCCCGCTCTAATAGC **Typha**

ycf2:1  
 →

97285      97295      97305      97315      97325  
 ↓            ↓            ↓            ↓            ↓

**97276:** TCCGAATAAAATTAAATACATGCATTAAGATACGAAGGCTTCTTATTCCAC **Typha**  
**84236:**                                    . . . . . G . . . . . G . . . . .  
**82628:**                                    . . . . . G . . . . . G . . . . . **Brachypodium**  
**84312:**                                    . . . . . G . . . . . G . . . . . **Hordeum**  
**83076:**                                    . . G . . . . G . . . . G . . . . . **Lolium**  
**83756:**                                    . . . . . G . . . . . G . . . . . **Oryza**  
**86205:**                                    . . . . . G . . . . . G . . . . . **Saccharum**  
**86366:**                                    . . . . . G . . . . . G . . . . . **Sorghum**  
**83517:**                                    . . . . . G . . . . . G . . . . . **Triticum**  
**85509:**                                    . . . . . G . . . . . G . . . . . **Zea**

ycf2:1  
 →

97340      97350      97360      97370  
 ↓            ↓            ↓            ↓

**97326:** AACAA-----CGAAAGCACATTTTTCATTCATTCATATACTAGGGGATTTT **Typha**  
**84265:** . . G . . ----- . . . . . C . . . . . . . . . . . T . . T **Agrostis**  
**82657:** . . G . . ----- . . . . . C . . . . . . . . . . . T . . T **Brachypodium**  
**84341:** . . G . . ----- . . . . . C . . . . . . . . . . . T . . T **Hordeum**  
**83105:** . . G . . ----- . . . . . C . . . . . . . . . . . T . . T **Lolium**  
**83785:** . . G . . AAGAA . . . . . C . . . . . . . . . . . G . . T . . T **Oryza**  
**86234:** . . G . . ----- . . . . . C . . . . . . . . . . . T . . T **Saccharum**  
**86395:** . . G . . ----- . . . . . C . . . . . . . . . . . T . . T **Sorghum**  
**83546:** . . G . . AAGAA . . . . . C . . . . . . . . . . . G . . T . . T **Triticum**  
**85538:** . . G . . ----- . . . . . C . . . . . . . . . . . T . . T **Zea**

ycf2:1

97380 97390 97400 97410 97420  
 97371: ACTTGGAAAAGAAAATGTTCCATACTAACGGATTTCGGGTCCCTAACCATG  
 84310: .....C.....A.....A.....C.  
 82702: ....A.....C.....AA.....G.A.....C.  
 84386: .....C.....A.....A.....C.  
 83150: .....C.....G.....A.....A.....C.  
 83835: .....C.....A.....A.....C.  
 86279: .....C.....A.....A.....C.  
 86440: .....C.....A.....A.....C.  
 83596: .....C.....A.....A.....C.  
 85583: .....C.....A.....A.....C.

**Typha**  
**Agrostis**  
**Brachypodium**  
**Hordeum**  
**Lolium**  
**Oryza**  
**Saccharum**  
**Sorghum**  
**Triticum**  
**Zea**

ycf2:1

97430 97440 97450 97460 97470  
 97421: GGTTCCAATGCACGAGATCTTGTAGCACTTATCAATGAGGCCCTATCAAT  
 84360: A.G...G...T.....G...C.....C..  
 82752: A...G...T.....G...C.....C..  
 84436: A...G...T.....G...C.....C..  
 83200: A...G...T.....A...G...C.....C..  
 83885: A...G...T.....G...C.....G..  
 86329: A...G...T.....G...C.....C..  
 86490: A...G...T.....G...C.....C..  
 83646: A...G...T.....G...C.....G..  
 85633: A...G...T.....G...C.....C..

**Typha**  
**Agrostis**  
**Brachypodium**  
**Hordeum**  
**Lolium**  
**Oryza**  
**Saccharum**  
**Sorghum**  
**Triticum**  
**Zea**

ycf2:1

97480 97490 97500 97510 97520  
 97471: TAGTATTACACAGAAGAAATCAATTATAGAAACTAATACAATTAGATCAG  
 84410: .....C...T.....C.....AA.....T..  
 82802: .....C...T.....C.....AA.....T.A  
 84486: .....C...T.....C...C.....AA.....T..  
 83250: .....C...T.....C...-A...AA.....T..  
 86379: .....C...T.....C.....T..  
 86540: .....C...T.....C.....T..  
 85683: .....C...T.....C.....T..

**Typha**  
**Agrostis**  
**Brachypodium**  
**Hordeum**  
**Lolium**  
**Saccharum**  
**Sorghum**  
**Zea**

ycf2:1

97530 97540 97550 97560 97570  
 97521: CTCTTCATAGACAAACTTGGGATTTGCGATCCCAGGTAAGATCGGTTTCAG  
 84460: .....G.....G..A.....C..G..  
 82852: .....T.G.....G..A.....C..G..  
 84536: .....G.....G..A.....C..G..  
 83299: .....G.....G..A.....C..G..  
 86429: .....G.....G..A..A...C...C..G..  
 86590: .....G.....G..A..A...C...C..G..  
 85733: .....G.....G..A..A...C...C..G..

**Typha**  
**Agrostis**  
**Brachypodium**  
**Hordeum**  
**Lolium**  
**Saccharum**  
**Sorghum**  
**Zea**

ycf2:1

→

97580      97590      97600      97610      97620

97571: GATCATGGGATCCTTTTCTATCAGATAGGAAGGGCTGTTGCACAAAATGT **Typha**

84510: .....C.....G.....C...T.....AG **Agrostis**

82902: .....C.T.....G.....C...T.....AG **Brachypodium**

84586: .....C.....G.....C...T.....AG **Hordeum**

83349: .....C.....G.....C...T.....AG **Lolium**

86479: .....C.....G...A.C...T.....AG **Saccharum**

86640: .....C.....G...A.C...T.....AG **Sorghum**

85783: .....C.....G...A.C...T.....AG **Zea**

ycf2:1

→

97634      97644      97654

97621: ACTT-----CTAAGTAATTGCCCATAGATCCTATATCTATCTAT----- **Typha**

84560: ....-----A.....AA.....C.....----- **Agrostis**

82952: ....-----A.....AA.....AT.A----- **Brachypodium**

84636: ....A-----.....AA.....-----ATAA **Hordeum**

83399: ....-----A.....AA.....C.....----- **Lolium**

86529: ....CTACTT.....AA.....----- **Saccharum**

86690: ....-----.....AA.....----- **Sorghum**

85833: ....-----.....AA.....----- **Zea**

ycf2:1

→

97668      97678      97688      97698

97661: --ATGAAGAAGAAATCATGTAAGGAAGGGATTCTTATTTGTACAAATG-- **Typha**

84594: --.A...G.C...G...T...G..C..G..T..C...GC...A.- **Agrostis**

82990: --.A...G.CG..G..C...C..G..T..C...GC...A.- **Brachypodium**

84675: AG..A...G.C...G..C...C..G..T..C...GC...A.- **Hordeum**

83433: --.A...G.C...G..C...C..G..T..C...GC...A.A **Lolium**

86575: --.A...G.C...G..C...C..C..T..C...GC...C.- **Saccharum**

86730: --.A...G.C...G..C...C..C..T..C...GC...C.- **Sorghum**

85873: --.A...G.C...G..C...C..C..T..C...GC...C.- **Zea**

ycf2:1

→

97713      97723      97733      97743      97753

97708: ----GTACTTTCGAAC TTGGAACGAGCATGAAGAAATTAACGATACTTCTT **Typha**

84641: ----.....G.....G..... **Agrostis**

83037: ----.....G.....G..... **Brachypodium**

84724: ----.....G.....G..... **Hordeum**

83481: AAAG.....T.G.....G..... **Lolium**

86622: ----.....G.....G..... **Saccharum**

86777: ----.....G.....G..... **Sorghum**

85920: ----.....G.....G..... **Zea**

ycf2:1

→

97763      97773      97783      97793      97803

97754: TATCTTTTGAGTTGTTCTGCCGATCGGTCGCTCAAGATCTTTGGTCTTC **Typha**

84687: .C.....T.....G.....C.T.C...G..... **Agrostis**

83083: .C.....C...T..A..G...C.T.C...G..... **Brachypodium**

84770: .C.....T.....G...C.T.C...G..... **Hordeum**

83531: .C.....TC...T.....G...C.T.C...G..... **Lolium**

86663: .C.....T.....G...C.....G..... **Saccharum**

86823: .C.....T.....G...C.....G..... **Sorghum**

85966: .C.....T.....G...C.....GT..... **Zea**

ycf2:1

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97808            97818            97828            97838            97848

97804: A-----CCCGGACCCGATGAAAAAATTGGATCACTTCTTATGGATTCGT    **Typha**  
84737: C-----..T..A.....G.....G.....T.C...C    **Agrostis**  
83133: C-----..T..A.....G.....G.....C...C    **Brachypodium**  
84820: C-----..T..A.....G.....G.....T.C...C    **Hordeum**  
83581: CCCTGG..T..A.....G.....G.....T.C...C    **Lolium**  
86713: C-----.....A.....G--..G..G.....C...C    **Saccharum**  
86873: C-----.....A.....G--..G..G.....C...C    **Sorghum**  
86016: C-----.....A.....G--..G..G.....C...C    **Zea**

ycf2:1

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97858                            97872            97882            97892

97849: TGAGAATGATTCTGATC-----TAGTTCATGGCCTATTAGAAGTAGAAG    **Typha**  
84782: .C.....TC..TATCTA.....A.....    **Agrostis**  
83178: .C.....TC..TATCTA.....    **Brachypodium**  
84865: .C.....TC..TATCTA.....    **Hordeum**  
83631: .C.....TC..TATCTA.....    **Lolium**  
86756: .C.....TC..TATCTA.....    **Saccharum**  
86916: .C.....TC..TATCTA.....    **Sorghum**  
86059: .C.....-...TC..TATCTA.....    **Zea**

ycf2:1

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97902            97912            97922            97932            97942

97893: GCGCTCTGGTAGGATCCTCACGTACAGAAAAAGATTGCAGTCAGTTTGAT    **Typha**  
84832: .T.....GCA....T..CG.....G.....    **Agrostis**  
83228: .T.....GCA....T..CG.....G.....    **Brachypodium**  
84915: .T.....GCA....T..CG.....G.....    **Hordeum**  
83681: .T.....GCA....T..CG.....C..G.....    **Lolium**  
86806: .T.....GCA....T..CG.....G.G.....    **Saccharum**  
86966: .T.....GCA....T..CG.....G.G.....    **Sorghum**  
86108: .T.....GCA....T..CG.....G.G.....    **Zea**

ycf2:1

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97952            97962            97972            97982            97992

97943: AATAATCGAGTGACATTACTTCTTCGGTCCGAACCAAGGAATCAGTTAGA    **Typha**  
84882: .....C.....TG.....C.....    **Agrostis**  
83278: .....C.....G.....C.....    **Brachypodium**  
84965: ...G.....G.....T.....T...T...    **Hordeum**  
83731: .....C.....G.....C.....    **Lolium**  
86856: .....C.....G.....C.....    **Saccharum**  
87016: .....C.....G.....C.....    **Sorghum**  
86158: .....C.....G.....C.....    **Zea**

ycf2:1

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98002            98012            98022            98032            98042

97993: TATGATGCAAAATGGATCTTGTTCATCGTTGATCAGAGATTTCTATATG    **Typha**  
84932: A...T.TTG.....A.....C..T.....G...G.....    **Agrostis**  
83328: A...T.TTG.....A.....C..T.....G...G.....    **Brachypodium**  
85015: A...T.TTG.....A.....C..T.....G...G.....    **Hordeum**  
83781: A...T.TTG.....A.....C..T.....G...G.....    **Lolium**  
86906: A...T.TTG.....A.....C..T...T..G.-.G.....    **Saccharum**  
87066: A...T.TTG.....A.....C..T...T..G.-.G.....    **Sorghum**  
86208: A...T.TTG.....A.....C..T...T..G.-.G.....    **Zea**

ycf2:1

	98052	98062	98072	98082	98092	
	↓	↓	↓	↓	↓	
84982:	AAAAATACGAATCGGAGTTTGAAGAAGGGGAAGGAGCCGTCGACCCGCAA					<b>Typha</b>
83378:	.....GT.....A.....A.C...ATGC..A.A...G..					<b>Agrostis</b>
85065:	.....GT.....A.....A.C...ATGC..A.A...G..					<b>Brachypodium</b>
83831:	.....GT.....A.....A.C...ATGC..A.A...G..					<b>Hordeum</b>
86955:	.....GT.....A.....A.C...ATGC..A.A...G..					<b>Lolium</b>
87115:	.....GT.....A.....A.C...ATGC..A.A...G..					<b>Saccharum</b>
86257:	.....GT.....A.....A.C...ATGC..A.A...G..					<b>Sorghum</b>
						<b>Zea</b>

ycf2:1

	98102	98110	98120	98130	98140	
	↓	↓	↓	↓	↓	
85028:	CAGATAGAGG--CGGATTTATTCAATCACATAGTTTGGGCTCCTAGAATA					<b>Typha</b>
83424:	.T.C.....AA..A...--.....AG...AC.....					<b>Agrostis</b>
85111:	.T.C.....AA..A...--.....AG...AC.....					<b>Brachypodium</b>
83877:	.T.C.....AA.TA...--.....AG...AC.....					<b>Hordeum</b>
87001:	.T.C.....AA..A...--.....AG...AC.....					<b>Lolium</b>
87161:	.T.C.....AA..A...--.....AG...AC.....					<b>Saccharum</b>
86303:	.T.C.....AA..A...--.....AG...AC.....					<b>Sorghum</b>
						<b>Zea</b>

ycf2:1

	98150	98160	98170	98180	
	↓	↓	↓	↓	
85076:	TGGCGCCTTTGCGGCACTCTATTTGATTGTATCGAAAGGCCCACTGAA--				<b>Typha</b>
83472:	.....C...G.A..A.....C.				<b>Agrostis</b>
85159:	.....C...G.A..A.....C.				<b>Brachypodium</b>
83925:	.....C...G.A..A.....C.				<b>Hordeum</b>
87049:	..G...C...G.A..A.....C.GG..C...TA.G....TA				<b>Lolium</b>
87209:	..G...C...G.A..A.....C.GG..C...TA.G....TA				<b>Saccharum</b>
86351:	..G...C...G.A..A.....C.GG..C...TA.G....TA				<b>Sorghum</b>
					<b>Zea</b>

ycf2:1

	98194	98208	98218	98228	
	↓	↓	↓	↓	
87099:	----TTGGGATTTCCC-----TATTGGGCCGGGTCATTTCTGGGGCAAGC				<b>Typha</b>
87259:	TGAC.G.....T..TATGGG.....AG.....				<b>Saccharum</b>
86401:	TGAC.G.....T..TATGGG.....AG.....				<b>Sorghum</b>
					<b>Zea</b>

ycf2:1

98229:	GGAT-----	<b>Typha</b>
87140:	A...TAAAGAGGATGAGTTGTCTAGAGACTGCATTTATTTCGAATTATTTTC	<b>Saccharum</b>
87300:	A...TAAAGAGGATGAGTTGTCTAGAGACTGCATTTATTTCGAATTATTTTC	<b>Sorghum</b>
86442:	A...TAAAGAGGATGAGTTGTCTAGAGACTGCATTTATTTCGAATTATTTTC	<b>Zea</b>

ycf2:1  
 →

98237 98247 98257 98267 98277

98233: -----CATTTATCATAAAGAGGATGAGCTTCAAGAGAATGATTCGGAGTT  
 87190: TGGTAT.....A...GG...G.G.....C.....C..  
 87350: TGGTAT.....A...GG...G.G.....C.....C..  
 86492: TGGTAT.....A...GG...G.G.....C.....C..

**Typha**  
**Saccharum**  
**Sorghum**  
**Zea**

ycf2:1  
 →

98287 98297 98307 98317 98327

98278: CTTGCAAAGGGGAACCATGCAGTACCAGACACGAGATAGATCTTCCAAAG  
 87240: .....G..T....A.....T.....T.....  
 87400: .....G..T....A.....T.....T.....  
 86542: .....G..T....A.....T.....T.....

**Typha**  
**Saccharum**  
**Sorghum**  
**Zea**

ycf2:1  
 →

98337 98347 98357 98367 98377

98328: AACAAAGGCTTTTTTCGAATAAGCCAATTCATTTGGGACCCGCGGATCCA  
 87290: ..G.....G.....T.-.....  
 87450: ..G.....G.....T.-.....  
 86592: ..G.....G.....TT--.....

**Typha**  
**Saccharum**  
**Sorghum**  
**Zea**

ycf2:1  
 →

98387 98397 98407 98417 98427

98378: TTCTTTTTTCCTATTCAAAGATCAGCCCTTTGTCTCTGTGTTTTTCACGTCG  
 87339: .....G.....  
 87499: .....G.....  
 86640: .....G.....

**Typha**  
**Saccharum**  
**Sorghum**  
**Zea**

ycf2:1  
 →

98437 98441 98451 98461

98428: AGAATTCCTTTCG-----AGATGAAGAGATGTCAAAGGGGCTTATTACT-  
 87389: .....AGATGA.....G.....C.....G...CA  
 87549: .....AGATGA.....G.....C.....G...CA  
 86690: .....AGATGA.....G.....C.....G...CA

**Typha**  
**Saccharum**  
**Sorghum**  
**Zea**

ycf2:1  
 →

98475 98485 98495 98505 98515

98471: -TCCC----AAACAAATCCTCCTACATCTATATATAAACGCTGGTTCATC  
 87439: G.A..TGGAG..A...G.....A.CA...GGC..GCAA.....C.  
 87599: G.A..TGGAG..A...G.....A.CA...GGC..GCAA.....C.  
 86740: G.A..TGGAG..A...G.....A.CA...GGC..GCAA.....C.

**Typha**  
**Saccharum**  
**Sorghum**  
**Zea**


ycf2:1  
 →

98525 98529 98539 98549 98559

98516: AAGAATACGCAAG-----AAAAGCACTTCGAATTGTTGATTCATCGCCA  
 87489: .G..G.....AAAGGC.....A.....AG.....T.GGAATG  
 87649: .G..G.....AAAGGC.....A.....AG.....T.GGAATG  
 86790: .G..G.....AAAGGC.....A.....A.....T.GGAATG

**Typha**  
**Saccharum**  
**Sorghum**  
**Zea**




ycf2:1  


98569            98576            98586                            98603

98560: GAGATGGCTTAGAACC---AATAGTTCATTATCTAAT---GGATCTTTCC  
87539: .GA....GC.....CTGGG.TC...C....A....TAAT.G.....T.  
87699: .GA....GC.....CTGGG.TC...C....A....TAAT.G.....T.  
86840: .GA....GC.....CTGGGCTC...C....A....TAAT.G.....T.


**Typha**  
**Saccharum**  
**Sorghum**  
**Zea**

ycf2:1  


98613            98623            98633            98643            98653

98604: GTTCTAATACTCTATCCGAGAGTTATCAGTATTTATCAAATCTGTTCCCTA  
87589: A.....C.....G....G.....  
87749: A.....C.....G....G.....  
86890: A.....C.....G....G.....


**Typha**  
**Saccharum**  
**Sorghum**  
**Zea**

ycf2:1  


98663            98673            98683            98693            98699

98654: TCTAACGGAACGCTATTGGATCAAATGACAAAGACATTGTT----GAGAA  
87639: .....G...CC.....TGTG.....  
87799: .....G...CC.....TGTG.....  
86940: .....G...CC.....TGTG.....


**Typha**  
**Saccharum**  
**Sorghum**  
**Zea**

ycf2:1  


98709            98719            98729            98739            98749

98700: AGAGATGGCTTTTCCCGGATGAAATGAAACATTTGATTCATGTAACAGGA  
87689: ....G.....C...TG.....  
87849: ....G.....C...TG.....  
86990: ....G.....C...TG.....

**Typha**  
**Saccharum**  
**Sorghum**  
**Zea**

ycf2:1  


98759            98769            98779            98789            98799

98750: GAAAGATTTCCCATTCCTTAGCCGTAAAGATATGTGGCCATGAAAAAGGG  
87739: .....C.....  
87899: .....C.....  
87040: .....C.....

**Typha**  
**Saccharum**  
**Sorghum**  
**Zea**

← ycf1:1

130200      130210      130220      130230      130240

130191: TATTTAATTAATTAATTAAGTAATTCCTTAAGTAATTCATAATCGTGGATA  
 34797: -----C...A...-----G...T.....  
 35162: -----C...GA...-----G...T.....  
 34739: -----C...A...-----G...T.....  
 34805: -----C...A...-----G...T.....  
 114649: -----C...A...-----G...T.....  
 119169: -----C...A...-----G...T.....  
 119259: -----C...A...-----G...T.....  
 34476: -----C...A...-----G...T.....  
 118400: -----C...A...-----G...T.....

**Typha**  
**Agrostis**  
**Brachypodium**  
**Hordeum**  
**Lolium**  
**Oryza**  
**Saccharum**  
**Sorghum**  
**Triticum**  
**Zea**

← ycf1:1

130250      130260      130270      130280      130290

130241: CATATGTATCCTTAACATATTGAAACGACTGCCATTATTGGTATCAAACC  
 34826: ...C.....C.....T.....C.....  
 35191: ...C.....C.....T.....C.....  
 34768: ...C.....C.....T.....C.....  
 34834: ...C.....C.....T.....C.....  
 114678: ...C.....C.....A.....C.....  
 119198: ...C.....C.....C.....C.....  
 119288: ...C.....C.....C.....C.....  
 34505: ...C.....C.....T..T.....C.....  
 118429: ...C.....C.....C.....C.....

**Typha**  
**Agrostis**  
**Brachypodium**  
**Hordeum**  
**Lolium**  
**Oryza**  
**Saccharum**  
**Sorghum**  
**Triticum**  
**Zea**

← ycf1:1

130300      130310      130320      130330      130340

130291: AATAGCGATTCATACAAGCTAAATCTTCTAATCGGTAATTGGGCCAAAGA  
 34876: .....T.....G.....AA.GG-.....  
 35241: .....AA.GG-.....C---  
 34818: .....AA.GG-.....  
 34884: .....AA.GG-.....  
 114728: .....T.....AA.GG-.....  
 119248: .....A.....G.....AA.GG-.....  
 119338: .....A.....G.....AA.GG-..T.....  
 34555: .....AA.GG-.....  
 118479: .....A...C.....G.....AA.GG-.....

**Typha**  
**Agrostis**  
**Brachypodium**  
**Hordeum**  
**Lolium**  
**Oryza**  
**Saccharum**  
**Sorghum**  
**Triticum**  
**Zea**

← ycf1:1

	130350	130360	130370	130380	130390	
130341:	AAAAATTTGCATTTAATGAATTTATTTACATCTGTATTAAAATACTTGTC					<b>Typha</b>
34922:	-----C.....T..G..A.....G.CG...G.					<b>Agrostis</b>
35287:	-----T..G..A.....G.CG...G.					<b>Brachypodium</b>
34864:	-----T..G..A.....G.CG...G.					<b>Hordeum</b>
34930:	-----T..G..A.....G.CG..C.G.					<b>Lolium</b>
114774:	-----T..G..A.....G.CG...G.					<b>Oryza</b>
119294:	-----T..G..A.....G.CG...GT					<b>Saccharum</b>
119384:	-----T..G..A.....G.CG...GT					<b>Sorghum</b>
34601:	-----T..G..A.....G.CG...G.					<b>Triticum</b>
118525:	-----T..G..A.....G.CG...GT					<b>Zea</b>

← ycf1:1

	130400	130410	130420	130430	130440	
130391:	CTCATTCAAAAATTTTCCAGAGTTTCTTATGTTGTTTTTCATTGCAAAATA					<b>Typha</b>
34959:	..G...TCG....G.....TA.....G					<b>Agrostis</b>
35324:	..G...TC....G.....TA.....G					<b>Brachypodium</b>
34901:	..G...TCG....G.....TA.....G					<b>Hordeum</b>
34967:	..G...TCG....G.....TA.....G					<b>Lolium</b>
114811:	..G...TCG....G.....T.....A.....G					<b>Oryza</b>
119331:	..G...TCG....G.....T.....G					<b>Saccharum</b>
119421:	..G...TCG....G.....T.....G					<b>Sorghum</b>
34638:	..G...TCG....G.....TA.....G					<b>Triticum</b>
118562:	..G...TCG....G.....T.....G					<b>Zea</b>

← ycf1:1

	130450	130460	130474	130484	
130441:	ATGGATTTCTCTCCATACCATTCCAAT-----TATGAGAATTGAAACAA				<b>Typha</b>
35009:	...G.C..CT...G..A.T.....TACGAG..C.....G.C				<b>Agrostis</b>
35374:	.C..G.C..CT...G..A.T.....TACGAG..C.....G.G				<b>Brachypodium</b>
34951:	...G.C..CT...A.T.....TACGAG..C.....G.C				<b>Hordeum</b>
35017:	...G.C..CT...G..A.T.....TACGAG..C.....G.C				<b>Lolium</b>
114861:	.....C..CT...G..A.T.....TACGAG..C.....G.C				<b>Oryza</b>
119381:	.....C..CT...G..A.T.....TACGAG..C.....G.C				<b>Saccharum</b>
119471:	.....C..CT...G..A.T.....TACGAG..C.....G.C				<b>Sorghum</b>
34688:	...G.C..CT...G..A.T.....TACGAG..C.....G.C				<b>Triticum</b>
118612:	.....C..CT...G..A.T.....TACGAG..C.....G.C				<b>Zea</b>

← ycf1:1

	130494	130504	130514	130520	130530	
130485:	ATTTAAATTTCTCAATTTCTCTACGACGTCTAGG----AGATAGCATATGTT					<b>Typha</b>
35059:	..G.....G.....AGAT.....A...T..					<b>Agrostis</b>
35424:	..G.....A.....G.....AGAT.....A...T..					<b>Brachypodium</b>
35001:	..A..T....A.....G.....TAGAT.....A...T..					<b>Hordeum</b>
35067:	..G.....G.....AGAT.....A...T..					<b>Lolium</b>
114911:	..G.....G.....AGAT.....A...T..					<b>Oryza</b>
119431:	..G.....G.....AGAT...C.A...T..					<b>Saccharum</b>
119521:	..G.....G.....AGAT...C.A...T..					<b>Sorghum</b>
34738:	..G.....G.....TAGAT.....-----					<b>Triticum</b>
118662:	..G.....G.....AGATG...C.A...T..					<b>Zea</b>

← ycf1:1

	130540	130550	130560	130570	130580	
130531:	CAGGAACAAGGAAATCATAATAATTTGTGTTTCCATTTACAACCATATTG					<b>Typha</b>
35109:	.....A.....G..G...C.T.C.C..T...C..T.....TC.-					<b>Agrostis</b>
35474:	.....A.....GG..G...C.T.C.C..T...C..T.....TCC-					<b>Brachypodium</b>
35051:	.....A.....G..G...C.T.C.C..T...C..T.T...TCC-					<b>Hordeum</b>
35117:	.....A...A.G..G...C.T.C.C..T...C..T.....TCC-					<b>Lolium</b>
114961:	.....A...C..G..G...C.T.C.C..T...C..T.....TCC-					<b>Oryza</b>
119481:	.....A.....G..G...C.T.T.C..T...C..T.....TCC-					<b>Saccharum</b>
119571:	.....A.....G..G...C.T.T.C..T...C..T.....TCC-					<b>Sorghum</b>
34777:	-----A.....G..G...C.T.C.C..T...C..T.T...TCC-					<b>Triticum</b>
118712:	.....A.....G..G...C.T.T.C..T...C..T.....TCC-					<b>Zea</b>

← ycf1:1

	130590	130600	130610	130620	130630	
130581:	TCATATGGTGTAATGGATTTATCAAAATTATTCTTATCAACATTTTTTTTC					<b>Typha</b>
35158:	-----C..CT.C..C..C.-----...G.T.C-----...CC..					<b>Agrostis</b>
35523:	-----C..CT.C..C..C.-----...G.T.C-----...C...					<b>Brachypodium</b>
35100:	-----C..CT.C..C..C.-----...G.T.C-----...C...					<b>Hordeum</b>
35166:	-----C..CT.C..C..C.-----...G.T.C-----...C..A					<b>Lolium</b>
115010:	-----C..CT.C..C-----...C.-----					<b>Oryza</b>
119530:	-----C..CT.C..C-----...C.-----					<b>Saccharum</b>
119620:	-----C..CT.C..C-----...C.-----					<b>Sorghum</b>
34822:	-----C..CT.C..C..C.-----...G.T.C-----...C...					<b>Triticum</b>
118761:	-----C..CT.C..C-----...C.-----					<b>Zea</b>

← ycf1:1

	130640	130650	130660	130670	130680	
130631:	TTTTATGCATTTTTTATTAGTTTTAGTTTGGTACTTATTCTTCTCGCCCA					<b>Typha</b>
35190:	...A..C.-----A...C.A.....A.-----					<b>Agrostis</b>
35555:	...A...-----A...C.A.....A.-----					<b>Brachypodium</b>
35132:	...A...-----A...C.A.....A.-----					<b>Hordeum</b>
35198:	...A...-----A...C.A.....A.-----					<b>Lolium</b>
115024:	-----C.T...TCTTT.					<b>Oryza</b>
119545:	-----C.T...TCTTT.					<b>Saccharum</b>
119635:	-----C.T...TCTTT.					<b>Sorghum</b>
34854:	...A...-----A...C.A.....A.-----					<b>Triticum</b>
118776:	-----C.T...TCTTT.					<b>Zea</b>

← ycf1:1

	130690	130700	130710			
130681:	ATGAGATACTTATTGTTTGATAGAGAAGAAATTTT-----					<b>Typha</b>
35215:	C.A...-.TCC...TC.CA.AGT.ATG...-----					<b>Agrostis</b>
35580:	..A...-.TC...TC.CA.AGT.ATG...-----					<b>Brachypodium</b>
35157:	..A...-.TCC...TC.CA.AGT.ATG...-----					<b>Hordeum</b>
35223:	..A...-.TCC...TC.CA.AGT.ATG...-----					<b>Lolium</b>
115045:	..CA...GC...A.....T...TCC...CTCAAAGTAATGGAAA					<b>Oryza</b>
119566:	..CA...GC...A.....T...TCC...CTCAAAGTAATGGAAA					<b>Saccharum</b>
119656:	..CA...GC...A.....T...TCC...CTCAAAGTAATGGAAA					<b>Sorghum</b>
34879:	..A...-.TCC...TC.CA.AGT.ATG...-----					<b>Triticum</b>
118797:	..CA...GC...A.....T...TCC...CTCAAAGTAATGGAAA					<b>Zea</b>

← ycf1:1

	130725	130735	130745	130755	130765	
130716:	CCATCCCTTTT	TATAGATAGAC	GAAATTGGTTC	GATAATCAATAT	TCCTTT	<b>Typha</b>
35245:	....T.--.C	.....-..T.G	..A.....-.	A....GC....	G.ACC	<b>Agrostis</b>
35610:	....T.--.C	.....-.....	A...C...CA	....GC....	ACC	<b>Brachypodium</b>
35187:	....T.--.C	.....-.....	A.....A...	GC....	ACC	<b>Hordeum</b>
35253:	....T.--.C	.....-.....	A.....A...	CC....	ACC	<b>Lolium</b>
115095:	..T.T.--.C	.....-.....	A.....A...	GC....	ACC	<b>Oryza</b>
119616:	....T.--.C	.....-.....	A.....A...	GC....	ACC	<b>Saccharum</b>
119706:	....T.--.C	.....-.....	A.....A...	GC....	ACC	<b>Sorghum</b>
34909:	....T.--.C	.....-.....	A.....A...	GC....	ACC	<b>Triticum</b>
118847:	....T.--.C	.....-.....	A.....A...	GC....	ACC	<b>Zea</b>

← ycf1:1

	130779	130789	130799	130808		
130766:	TTTTA-----	TTAATTGTGGA	AGAGCTAGATCT	TTTCTGAATCA-	GCATT	<b>Typha</b>
35291:	.....-----	GGT..C..-..	A..TG.T.C..	G.GAAG...GT	.....	<b>Agrostis</b>
35652:	.....-----	GGT..C..-..	A..TG.T.C..	G.GAAG...GT	.....	<b>Brachypodium</b>
35229:	.....-----	GGT..C..-..	A..TG.T.C..	G.GAAG...GT	.....	<b>Hordeum</b>
35295:	.....-----	GGT..C..-..	A..TG.T.C..	G.GAAG...GT	.....	<b>Lolium</b>
115137:	.....-----	GGT..C..-..	A..TG.T.C..	G.GAAG...GT	.....	<b>Oryza</b>
119658:	....GGTTT	TAGGT..C..-..	A..TG.T.C..	G.GAAG...GT	.....	<b>Saccharum</b>
119748:	....GGTTT	TAGGT..C..-..	A..TG.T.C..	G.GAAG...GT	.....	<b>Sorghum</b>
34951:	.....-----	GGT..C..-..	A..TG.T.C..	G.GAAG...GT	.....	<b>Triticum</b>
118889:	....GGTTT	TAGGT..C..-..	A..TG.T.C..	G.GAAG...GT	.....	<b>Zea</b>

← ycf1:1

	130818	130834	130844	130849		
130809:	ACATCCAGATG	GCATCTCT----	CCTCTTTGAAT	CGAGGATATA----	GC	<b>Typha</b>
35334:	T.CGT..A..T	.GGA..C----	GT.T..C..G	.C.T.....	-----A.	<b>Agrostis</b>
35695:	T..GT..A..T	.GA..CGTTTGT	T...C.G..C	T.....	-----A.	<b>Brachypodium</b>
35272:	T..GT..A..T	.GA..C----	GT.T..C..G	.C.T.....	ATATAA.	<b>Hordeum</b>
35338:	T..GT..A..T	.GGA..C----	GT.T...G..C	T.....	-----	<b>Lolium</b>
115180:	T..GT..C..T	.GA..C----	GT.T...G..C	T.....	-----A.	<b>Oryza</b>
119707:	T..GT..C..T	.GA..C----	GT.T..C..G	.C.T.....	-----A.	<b>Saccharum</b>
119797:	T..GT..C..T	.GA..C----	GT.T..C..G	.C.T.....	-----A.	<b>Sorghum</b>
34994:	T..GT..A..T	.GA..C----	GT.T..C..G	.C.T.....	ATATAA.	<b>Triticum</b>
118938:	T..GT..C..T	.GA..C----	GT.T...G..C	T.....	-----A.	<b>Zea</b>

← ycf1:1

	130859	130866	130876	130886	130896	
130850:	AATTTCCTTT	TGGATTT---	ATCAGTCTAAG	TAAGAGGCAAT	AGACCTTGA	<b>Typha</b>
35375:	C.AA.TGGG	....CCTCC	.C.C..T..GC	....AAG	.....	<b>Agrostis</b>
35740:	C.AA.TGGA	....C.TCC	.C.C..T..GC	....AAG	.....	<b>Brachypodium</b>
35318:	C.AA.TGGA	A...C.TCC	.C.T..T..GC	....AAG	.....	<b>Hordeum</b>
35377:	--AA.TGGG	....CCTCC	.C.C..T..GC	....AAG	.....	<b>Lolium</b>
115221:	C.AA.TGGA	....C.TCC	.C.C..T..GC	....AAG	.....	<b>Oryza</b>
119748:	C.AA.TGGA	....C.TCC	.C.C..T..GC	....AAG	.....	<b>Saccharum</b>
119838:	C.AA.TGGA	....C.TCC	.C.C..T..GC	....AAG	.....	<b>Sorghum</b>
35040:	C.AA.TGGA	A...C.TCC	.C.T..T..GC	....AAG	.....	<b>Triticum</b>
118978:	C.AA.TGGA	....C.TCC	.C.C..T..GC	....AAG	.....	<b>Zea</b>

← ycf1:1

130906      130916      130926      130936      130946

**130897:** TATTATTGATCATTCTTTGATTCAAGGAGTCATCCCATCTTAATTGAAAA **Typha**

← ycf1:1

130956      130966      130976      130986      130996

**130947:** AGGAAATATTTTTTAAGGAAGAAATCCAGTTCTGCTTCCTTGCTTTTCTT **Typha**

← ycf1:1

131006      131016      131026      131036      131046

**130997:** GGATTGTTTTTTTTTTTTTACCTTTTTTTAAGGTCTGATCTCACATAATCTT **Typha**

← ycf1:1

131056      131066      131076      131086      131096

**131047:** CTTCTATATATTTTTTTTTTGTTCCTTTTCGTAGATATGATCTAAAATTT **Typha**

← ycf1:1

131106      131116      131126      131136      131146

**131097:** ACTTGGGTCTGTTGTTTCGTTTTTTTTGTTGGTTGGAATTTTCCAATTTAAG **Typha**

← ycf1:1

131156      131166      131176      131186      131196

**131147:** ATATTTTTTTTTTTTTTATGTTGATGTTTTTACTTTGACTTTTTTTTTTCAT **Typha**

← ycf1:1

131206      131216      131226      131236      131246

**131197:** AAATAGAAGAATTTAAAAGAAGCAATTTGATTGGTATAATCCATGGTTTA **Typha**

← ycf1:1

131256      131266      131276      131286      131296

**131247:** ATCTTATATGTATCAAAAAGTAGCACAAATTCGGAAAGAACCAAGGTTTC **Typha**

← ycf1:1

131306      131316      131326      131336      131346

**131297:** TAGATTTGCTACGGTACGATAAACACTTTCCTTGATTCATCCCATCCAAT **Typha**

← ycf1:1

131356      131366      131376      131386      131396

**131347:** CAAAAAGTGTTTTTTTTTATTGGATTGATTGATTTCTTGATCAATTGTG **Typha**

← ycf1:1

131406      131416      131426      131436      131446

**131397:** AGAGACAAAATATCTTTATTTTGCAATTGGTTTTTTTATTTTTTTGTCAGT **Typha**

← ycf1:1

131456      131466      131476      131486      131496

**131447:** CTTAGTATTTTTATCGATTTTGGTACCGATATGTCTATCGATCCAGGTCT **Typha**

← ycf1:1

131506      131516      131526      131536      131546

**131497:** CAATATCAATATTTTTCTAAGACAAAACCGAGAATTCTACAGTCAAAA **Typha**

← ycf1:1

131556      131566      131576      131586      131596

**131547:** TATTTTCTATCTAGATTTTTATGGGTATCAATAATATATCCTTCTTCTAG **Typha**

← ycf1:1

131606      131616      131626      131636      131646

**131597:** ATAATCACTAATAGCCATACTTACCAATACATAAAAATGATTCGGGTTTTA **Typha**

← ycf1:1

131656      131666      131676      131686      131696

**131647:** GTATATTGAAATTATATGGAAATTTTTGACCTAAATTCATATATTCATGT **Typha**

← ycf1:1

131706      131716      131726      131736      131746

**131697:** GATAAAAGATCATATCTGTAGTGTTTTTTCAATTTTTCTTTTTGACTTTT **Typha**

← ycf1:1

131756      131766      131776      131786      131796

**131747:** CAATGAATCCGCTGCATAGTAATTTTCTTTCACGTAATGAATTAATTGGT **Typha**

← ycf1:1

131806      131816      131826      131836      131846

**131797:** TTTTTTCTTTTTTATATGAATCCAATTTAATTGAGTCTTTTTTTTTCGAATC **Typha**

← ycf1:1

131856      131866      131876      131886      131896

**131847:** GTACAACGTTGATTGATTCTATTTTCGCCATTTTTGTGGTACTAATCGGAC **Typha**

← ycf1:1

131906      131916      131926      131936      131946

**131897:** CCATTTGGTCTGAGATAAAATTGTATTGATAATGACCCTTTAACCAGTTTT **Typha**

← ycf1:1

131956      131966      131976      131986      131996

**131947:** TCCATTCAATTATTCCAGACTTATCAACTTTCTTATGTCTTGATTTGGAA **Typha**

← ycf1:1

132006      132016      132026      132036      132046

**131997:** TCAAATATTCGCGTGTATACAAAAATCCTTGATTTTCTCCTTAATAAA **Typha**

← ycf1:1

132056      132066      132076      132086      132096

**132047:** AGGATAGGTTCTGTGATATTGAAGTAGAGATTTCAAGTGATACTTTTTTAA **Typha**

← ycf1:1

132106      132116      132126      132136      132146

**132097:** GTAATTGGGTTTGTGATAAATTTAAAAAATACATATGCTTGGGACAAGGAA **Typha**

← ycf1:1

132156      132166      132176      132186      132196

**132147:** GATAAGTCGGTTGAATTATTACTAATATTAGTATTAGAAAACGACTT **Typha**

← ycf1:1

132206      132216      132226      132236      132246

**132197:** TTTTTTAGTGGAAAAAAGTTCATTGTATTTTGATCTATTTTCATCAATTC **Typha**

← ycf1:1

132256      132266      132276      132286      132296

**132247:** CTTCTTCATTTGTTTCATCGTTGTAATAGATTCATTAAATTTTTTTTTTT **Typha**

← ycf1:1

132306      132316      132326      132336      132346

**132297:** GTTGATTCAAAGAAAAGTTGTGAATTTTTTCTCGGAATATTAATCATGCA **Typha**

← ycf1:1

132356      132366      132376      132386      132396

**132347:** TAGGAAGATATCTCTATAGATTTTATCAATGAAAGATTTTCAGAAAATAAT **Typha**



← ycf1:1

132406      132416      132426      132436      132446

**132397:** GTGATTTACGTAGTAATCGGATACTTTTTCTTTTGAATACCTGCTCAATA **Typha**

← ycf1:1

132456      132466      132476      132486      132496

**132447:** TGTTCCTCTGATTCCGATCTTTTACCATCATAAGTTAGAACTACTTTTTTT **Typha**

← ycf1:1

132506      132516      132526      132536      132546

**132497:** CTTGTCTTTTGTGATTTCTTCTATTTGATTCCTGATTGTGATTGCTCGAT **Typha**

← ycf1:1

132556      132566      132576      132586      132596

**132547:** CAGAAAGATCTTTCATTTTTTTTTCTATGAGTGAATAATTTGTCCAATTC **Typha**

← ycf1:1

132606      132616      132626      132636      132646

**132597:** ATAGATCGGATTTGAATGGTTCGATTCACCAATAATTGTATTATTTATTTT **Typha**

← ycf1:1

132656      132666      132676      132686      132696

**132647:** GTAATCTTTTCTATTTTCATCCGGTTTATATACTTTCACCTTGCGCAATT **Typha**

← ycf1:1

132706      132716      132726      132736      132746

**132697:** CAAATAAGAAAATTGGGTTTACTTTTTTCAACTTCCTTCATTATTCGTTTT **Typha**

← ycf1:1

132756      132766      132776      132786      132796

**132747:** ATAACTGGAECTATTTTGATGATCCATTTTGTTTTTTCTTTTGAACTTT **Typha**

← ycf1:1

132806      132816      132826      132836      132846

**132797:** TAGAAGTTGAAAAATTTTTTTTTTACTTGTCTAATTTTTTTTTTCGAGTT **Typha**

← ycf1:1

132856      132866      132876      132886      132896

**132847:** CTTTATAAATAGGTTCAAAAAAGGAAGGTCTTTTTCGTGGACTTCCAAAA **Typha**

← ycf1:1

132906      132916      132926      132936      132946

**132897:** GGCAGTTCGGCTTCCATTCCCAAACGTGTTAAAAACAAAAATTATCTTT **Typha**

← ycf1:1

132956      132966      132976      132986      132996

**132947:** TTTTCCTTTTTTTTTTCATTTGATCCGTAGGATGAGATCCTATTTTAGATT **Typha**

← ycf1:1

133006      133016      133026      133036      133046

**132997:** TAGATCTTCGCCAAGGTTGAAGGCAGAAAGGAAATAGAATCTTTATCTGA **Typha**

← ycf1:1

133056      133066      133076      133086      133096

**133047:** ATACCGTCTGTTAACCAATCTTTGGGAAATCTGTTTCTGATAATTGAAC **Typha**

← ycf1:1

133106      133116      133126      133136      133146

**133097:** ACCATTATAAGTGCATTTAACATGCATTTCTCTATTCCAATCTTTCAAAT **Typha**

← ycf1:1

133156      133166      133176      133186      133196

**133147:** CTTCATACCATTCGGGGAATTGGAATAATAACATACGGCCAATATTTTTTA **Typha**

← ycf1:1

133206      133216      133226      133236      133246

**133197:** GCTATTATCAATGAAGGAAGTACAATGTATTTTCTAAGAAAAGATTGGGT **Typha**

← ycf1:1

133256      133266      133276      133286      133296

**133247:** TACTAACATTTAAACCTTTATTGTTTGAGCAAATATAATGCTATCCCAAG **Typha**

← ycf1:1

133306      133316      133326      133336      133346

**133297:** TTTCTGATATTGTTATCCGTTCCTTTTCCCTCTTTTTTCTCTTCGTTTTTT **Typha**

← ycf1:1

133356      133366      133376      133386      133396

**133347:** TTCTCCTTTTCTCTTGTCTCTTCCTGCCTCAAATGCGAAATTTGCAATTC **Typha**

← ycf1:1

133406 133416 133426 133436 133446  
133397: TGGTTC<sup>6</sup>TTT<sup>6</sup>C<sup>6</sup>TT<sup>6</sup>CACCGAACCCCTAAAAATACGATTCATCATTTCATAGA **Typha**

← ycf1:1

133456 133466 133476 133486 133496  
133447: TATCAAAAAGAAGAAAAAAAAAATGTTTTGTCTATTTCGATCTAAGAAAAGT **Typha**

← ycf1:1

133506 133516 133526 133536 133546  
133497: GGGGAATGCACATTTGCTTGAAACATTTCCCAAATAACTGTTTTACGTCT **Typha**

← ycf1:1

133556 133566 133576 133586 133596  
133547: TTGAGCACGCATGGAGCCTTTTATTATATCCCGACGATAATCAGATTGTT **Typha**

← ycf1:1

133606 133616 133626 133636 133646  
133597: GCGAGTAACGTATCAAAGCCACCTCTCCGCTTGATCACTAGTATCAGTA **Typha**

← ycf1:1

133656 133666 133676 133686 133696  
133647: TTAATAGTATTTGTAGTAGTAATAGAATTGGTATTCTGATCATTATCAGT **Typha**

← ycf1:1

133706 133716 133726 133736 133746  
133697: ATAAATTACTACGCGTTTGGCTTTTCTTGAACGAATTTCTGGATCTCCG **Typha**

← ycf1:1

133756 133766 133776 133786 133796  
133747: TAGATTCTTCGTCATTTTCTTCCTCCTCTTCCTCCAAATCATCGCTCAAT **Typha**

← ycf1:1

133806 133816 133826 133836 133846  
133797: TTGTACGACCATCGAGAAACCTTTTTACTGATTTCTTCTATTCCATTAGA **Typha**

← ycf1:1

133856 133866 133876 133886 133896  
133847: TTTTTTTCTAATTGTTTGATCATTTAGATCAGTTGTAATTACATCGAATA **Typha**

← ycf1:1

133906      133916      133926      133936      133946

**133897:** GAAATTTCAAAGACTTTTGCTCGAGTTTCGAACTCAATTC TTGTTTGGTCC **Typha**

← ycf1:1

133956      133966      133976      133986      133996

**133947:** GTCAATAAAGAATATTTTTTCAAATGAAAATTAGATGTGGGTTCAAAACA **Typha**

← ycf1:1

134006      134016      134026      134036      134046

**133997:** AAATTCATTGATTGAGGTTAAGGAATTACCAATATAATTCAGTAATGATT **Typha**

← ycf1:1

134056      134066      134076      134086      134096

**134047:** CCCTATCAAGCGGATTC TTTTGATCTTTCAATTTTCTAGAATAATGAGAA **Typha**

← ycf1:1

134106      134116      134126      134136      134146

**134097:** TTATTAGCAAGTAGTCCATAAATC TTATTTATCCAATAGATTTCTATGGA **Typha**

← ycf1:1

134156      134166      134176      134186      134196

**134147:** ATCTTCCGTATCCGTAGAAAGGGATTAAATC ATTTATGGTTGTATTTGAAT **Typha**

← ycf1:1

134206      134216      134226      134236      134246

**134197:** AGTATTTTTTTTATTGTTCCACGACATGGTCCATTCAAAAAGGGGTCATAC **Typha**

← ycf1:1

134256      134266      134276      134286      134296

**134247:** GTTTTGGGCAAGTATTC TTGTTTCATTTTCATCATTGCATAATCTGCTTCT **Typha**

← ycf1:1

134306      134316      134326      134336      134346

**134297:** TTTTTCGAGTACATCTAGAGCAATAAATTCCTTTTCTTTTCTAGAGCTT **Typha**

← ycf1:1

134356      134366      134376      134386      134396

**134347:** TTGTTTCGATTTATCAACTCATTGTTCAAGTTGTACTTTTTTTGTTTCATTG **Typha**

← ycf1:1

134406      134416      134426      134436      134446

134397: GTATAAACCCAATAATTATACTGGTCTTCGTGAGATAATTTTTCTGTTCT **Typha**

← ycf1:1

134456      134466      134476      134486      134496

134447: ATGCAAAGACATTTTTTTGTCTATCATTTTCATAAAAAGTCGATAAACTAG **Typha**

← ycf1:1

134506      134516      134526      134536      134546

134497: TTGGATATGTAAAAGATATGATTTGTTTTCCATCACTTGGGCATGTATAA **Typha**

← ycf1:1

134556      134566      134576      134586      134596

134547: AAAAAATATTTGTGACATTTTCATTTTCGTATAGCATTTTCAAATCGATTATT **Typha**

← ycf1:1

134606      134616      134626      134636      134646

134597: TTTTATATATCGCGATGGACGATTCCATCTTTTATAATCAAAAAGAAAAG **Typha**

← ycf1:1

134656      134666      134676      134686      134696

134647: TAACAAAAGTTTTTCAAACCAGAAATAAGCCTTTTCATTTTTATCTTCT **Typha**

← ycf1:1

134706      134716      134726      134736      134746

134697: TTAAGTCTTCTCAATTCCCAATTATCTTGATAGGTATCAAGATAAGAATC **Typha**

← ycf1:1

134756      134766      134776      134786      134796

134747: TTCGTAAACTGGGCTATCTTTATAGGATGTCTCTTTAAATTGAAAGTGGA **Typha**

← ycf1:1

134806      134816      134826      134836      134846

134797: ATTCATCCTTTGTTTTTTCCCTTCCATTCACCTCGGATCTCTTCTGTTTCA **Typha**

← ycf1:1

134856      134866      134876      134886      134896

134847: TCTATTTTGTCCAGATCCTCTTTTCTTCCGAATAAAGGGAAGGGTCTTC **Typha**

← ycf1:1

134906      134916      134926      134936      134946

**134897:** TTCGGTGGATCCCTCTTGTTCCCTGTTTAGTCTCCTTCGTTTCGGAAGTTG **Typha**

← ycf1:1

134956      134966      134976      134986      134996

**134947:** TTTCTACATCGCTTTCTTCCTCACTTTCTCCCCTTTCTTCTGTTTCTGAG **Typha**

← ycf1:1

135006      135016      135026      135036      135046

**134997:** GTTTCTTTTCAGTTTCTTAGTGACAATAGGCGACGGCATTCTGCCTAAATA **Typha**

← ycf1:1

135056      135066      135076      135086      135096

**135047:** GTAGACACAGGTGATAAATAAGAGAATACTAAAAATTCGAGCCATAGAAT **Typha**

← ycf1:1

135106      135116      135126      135136      135146

**135097:** TTCTCAATTCTGACACAAGGTACTTATTAGATCGAATAGAATGATTTTGC **Typha**

← ycf1:1

135156      135166      135176      135186      135196

**135147:** CGTATCCAGAATAATACCAATCCAACCCATTTTCATGAATAAAATGTGACC **Typha**

← ycf1:1

135206      135216      135226      135236      135246

**135197:** AATTAACCAACCAACAAAAC TACTTGTTTACAAATAACATCTTGTGTTGTC **Typha**

← ycf1:1

135256      135266      135276      135286      135296

**135247:** ATCGAAACATATAAATGTTGACTAATCTGGCTAACGTTGAACTTGGTAAA **Typha**

← ycf1:1

135306      135316      135326      135336      135346

**135297:** ATGAAATGGTTGAATAAATTGAAAAATGAGATTATTCAGGAATACACATTG **Typha**

← ycf1:1

135356      135366      135376      135386      135396

**135347:** AATGCTGAGATTACGCATTGAATTTCTGGTAGTAGATCCATAATCCAAAA **Typha**

ycf1:1

135406 135416 135426 135436 135446  
 135397: AGTTTTTGTGATTGTTCCAGAAGAAATGAAACAAAAGATACGGTAGAACT

**Typha**

ycf1:1

135456 135466 135476 135486 135496  
 135447: AGGACAGTTATTGTATGAGGTCTACCCAATGCTAGATGCAGAGGGCGCATA  
 117027: . . . . . A . . . . . TAG . . .  
 35780: . . . . . A . . . . . T . G . . .  
 117029: . . . . . A . . . . . T . G . . .  
 115379: . . . . . A . . . . . T . G . . .  
 115261: . . . . . . . . . . . T . G . . .  
 119788: . . . . . . . . . . . T . G . . .  
 119878: . . . . . . . . . . . T . G . . .  
 115428: . . . . . A . . . . . T . G . . .  
 119018: . . . . . T . G . . .

**Typha**  
**Agrostis**  
**Brachypodium**  
**Hordeum**  
**Lolium**  
**Oryza**  
**Saccharum**  
**Sorghum**  
**Triticum**  
**Zea**

ycf1:1

135506 135516 135526 135536 135541  
 135497: ATAGATCGATATGAACATCATGAGCTGTCCCGTAATAAAAACC-----AGT  
 117045: . . . . . G . . . . . C . . . A . . . G . . . --GCC . . .  
 35798: . . . . . G . . . . . C . . . A . . . G . . . --GCC . . .  
 117047: . . . . . G . . . . . C . . . A . . . G . . . --GCC . . .  
 115397: . . . . . G . . . . . C . . . A . . . G . . . CCACC . . .  
 115279: . . . . . G . . . . . C . . . A . . . G . . . --ACC . . G  
 119806: . . . . . G . . . . . C . . . A . . . G . . . --GCC . . .  
 119896: . . . . . G . . . . . C . . . A . . . G . . . --GCC . . .  
 115446: . . . . . G . . . . . C . . . A . . . G . . . T . --GCC . . .  
 119036: . . . . . G . . . . . C . . . A . . . G . . . --GCC . . .

**Typha**  
**Agrostis**  
**Brachypodium**  
**Hordeum**  
**Lolium**  
**Oryza**  
**Saccharum**  
**Sorghum**  
**Triticum**  
**Zea**

ycf1:1

135551 135561 135571 135581 135591  
 135542: TGTGCTGATACCTCCTTCTCGGTTCTTCTTCCATAACCCGAGCTCGGA  
 117093: A . . C . . GA . . T . . . . . ----- . . C . . T . . A . . A . T . .  
 35846: A . . C . . GA . . T . C . . . . . ----- . . C . . T . . A . . A . T . .  
 117095: A . . C . . AA . . T . . . . . ----- . . C . . T . . A . . A . T . .  
 115447: A . . C . . GA . . T . . . . . ----- . . C . . T . . A . . A . T . .  
 115327: A . . C . . GA . . T . . . . . ----- . . C . . T . . A . . A . T . .  
 119854: A . . C . . GA . . T . . . . . ----- . . C . . . . . A . . A . T . .  
 119944: A . . C . . GA . . T . . . . . ----- . . C . . . . . A . . A . T . .  
 115494: A . . C . . GA . . T . . . . . ----- . . C . . T . . A . . A . T . .  
 119084: A . . C . . GA . . T . . . . . ----- . . C . . . . . A . . A . T . .

**Typha**  
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**Triticum**  
**Zea**

ycf1:1

←

135601            135611            135621            135631            135641

135592: GAAGGAAGAGATAAGAGGGCCCTATGGAGAATGTGGTCAGAAATCCATAA

117132: ... A . . . . . TC . . . . . A . . . . . T . . . . .

35885: ... A . . . . . TC . . . . . G . . . . . T . . . . .

117134: ... A . . . . . TC . . . . . A . . . . . A . . . . .

115486: ... A . . . . . TC . . . . . A . . . . . T . . . . .

115366: ... A . . . . . TC . . . . . A . C . . . . . C . . . . .

119893: ... A . . . . . TC . . . . . A . . . . .

119983: ... A . . . . . TC . . . . . A . . . . .

115533: ... A . . . . . TC . . . . . A . . . . . A . . . . .

119123: ... A . . . . . TC . . . . . A . . . . .

**Typha**

**Agrostis**

**Brachypodium**

**Hordeum**

**Lolium**

**Oryza**

**Saccharum**

**Sorghum**

**Triticum**

**Zea**

ycf1:1

←

135651            135661            135671            135681            135691

135642: TAGAGTCCGACCACAACGACCGAATTTATTATCTTCATGCATAAGGATAA

117182: . A . . . . . C . . C . . ---CG . . A . ACT

35935: . A . . . . . C . . . . . ---CG . . A . ACT

117184: . . . . . T . A . . . . . C . . . . . ---CG . . A . ACT

115536: . A . . . . . C . . . . . ---CG . . A . ACT

115416: . . . . . G . A . . . . . C . . . . . ---CG . . A . ACT

119943: . A . . . . . C . . . . . ---CG . . A . ACT

120033: . A . . . . . C . . . . . ---CG . . A . ACT

115583: . A . . . . . C . . . . . ---CG . . A . ACT

119173: . A . . . . . C . . . . . ---CG . . A . ACT

**Typha**

**Agrostis**

**Brachypodium**

**Hordeum**

**Lolium**

**Oryza**

**Saccharum**

**Sorghum**

**Triticum**

**Zea**

ycf1:1

←

135701            135710            135720            135728

135692: -----TAGATTACCTA-GTAGAAAAGATTTCAAAATCAT--CACA

117229: ----- . . . C . . TA . -A . . . . . T . . . . . GG . . TG

35982: ----- . . . C . . TA . -A . G . . . . . G . . . . . GG . . TG

117231: ----- . . . C . . TA . -A . . . . . G . . . . . GG . . TG

115583: ----- . . . C . . TA . -A . . . . . T . . . . . GG . . TG

115463: ----- . . . C . . TA . - . . . . . G . . . . . GG . . TG

119990: TAGACTACTT . . . C . . T . A . . . . . G . . . . . GG . . TG

120080: TAGACTACTT . . . C . . T . A . . . . . G . . . . . GG . . TG

115630: ----- . . . C . . TA . -A . . . . . G . . . . . GG . . TG

119220: TAGACTACTT . . . C . . T . A . . . . . G . . . . . GG . . TG

**Typha**

**Agrostis**

**Brachypodium**

**Hordeum**

**Lolium**

**Oryza**

**Saccharum**

**Sorghum**

**Triticum**

**Zea**