

**Table S1: Seed count for both male and females of different ages for the lines used**

Age	CTL1.2	CTL1.18	CTL2.4	COL3-4/20	3158	CTL4.7	3162	CTL5.17
40 ♂	1548	1844	884	1803	2369	910	2049	1912
40 ♀	1765	2205	1490	1797	4076	1966	3362	1163
45 ♂	1586	2019	1791	3223	3224	2282	3248	1729
45 ♀	2417	2630	1363	4536	5028	2409	5076	3054
50 ♂	1115	1243	1181	2783	2707	1306	2335	1330
50 ♀	865	991	1738	2676	3129	1442	2347	1353
55 ♂	1425	1072	486	2290	3565	977	2764	1027
55 ♀	2550	1880	918	3533	5057	2694	4203	1109

**Table S1:** The total seed counts for each sex, age and line, based on the pooling of data provided in Tables S2-S9

**Table S2: Seed count of four different category in each replicate for line Col3-4/20**

<b>COL3-4/20 40 ♂</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	18	22	31	53	31	56			
Green	23	18	35	51	22	65			
Both	55	65	113	133	85	216			
None	80	88	124	141	104	174			
<b>Total</b>	<b>176</b>	<b>193</b>	<b>303</b>	<b>378</b>	<b>242</b>	<b>511</b>			
<b>COL3-4/20 40 ♀</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	9	25	10	8	14	31			
Green	9	19	22	12	10	26			
Both	105	243	148	129	126	213			
None	100	224	140	119	118	205			
<b>Total</b>	<b>223</b>	<b>511</b>	<b>320</b>	<b>268</b>	<b>268</b>	<b>475</b>			
<b>COL3-4/20 45 ♂</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	46	36	14	34	46	68	15	90	30
Green	55	45	17	38	39	74	20	93	37
Both	168	151	65	86	105	169	49	262	98
None	162	164	54	99	124	200	54	313	103
<b>Total</b>	<b>431</b>	<b>396</b>	<b>150</b>	<b>257</b>	<b>314</b>	<b>511</b>	<b>138</b>	<b>758</b>	<b>268</b>
<b>COL3-4/20 45 ♀</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	29	24	14	25	18	4	31	38	16
Green	25	35	9	27	21	6	27	42	18
Both	288	324	130	290	292	55	254	292	160
None	270	319	134	280	259	57	253	309	161
<b>Total</b>	<b>612</b>	<b>702</b>	<b>287</b>	<b>622</b>	<b>590</b>	<b>122</b>	<b>565</b>	<b>681</b>	<b>355</b>
<b>COL3-4/20 50 ♂</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	31	73	137	30	53	20			
Green	24	64	173	30	42	27			
Both	77	205	375	107	105	72			
None	79	267	455	123	134	80			
<b>Total</b>	<b>211</b>	<b>609</b>	<b>1140</b>	<b>290</b>	<b>334</b>	<b>199</b>			
<b>COL3-4/20 50 ♀</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9

Red	32	16	18	19	21	16			
Green	31	12	20	25	19	14			
Both	317	160	243	176	181	135			
None	278	190	241	181	185	146			
<b>Total</b>	<b>658</b>	<b>378</b>	<b>522</b>	<b>401</b>	<b>406</b>	<b>311</b>			
<b>COL3-4/20 55 ♂</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	14	19	16	29	34	80	69	19	18
Green	16	23	19	22	40	62	61	15	20
Both	53	47	65	82	78	184	142	89	90
None	65	49	85	85	79	185	141	106	89
<b>Total</b>	<b>148</b>	<b>138</b>	<b>185</b>	<b>218</b>	<b>231</b>	<b>511</b>	<b>413</b>	<b>229</b>	<b>217</b>
<b>COL3-4/20 55 ♀</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	6	28	32	8	26	9	12	12	14
Green	5	20	19	14	31	12	13	21	15
Both	86	236	200	107	298	121	159	362	162
None	94	216	193	119	313	119	156	132	158
<b>Total</b>	<b>191</b>	<b>500</b>	<b>444</b>	<b>248</b>	<b>668</b>	<b>261</b>	<b>340</b>	<b>527</b>	<b>354</b>

**Table S3: Seed count of four different category in each replicate for line 3158**

<b>3158 40 ♂</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	38	37	44	46	51	137			
Green	20	37	36	32	47	130			
Both	72	103	106	81	123	319			
None	100	104	125	105	142	299			
<b>Total</b>	<b>230</b>	<b>281</b>	<b>311</b>	<b>264</b>	<b>363</b>	<b>885</b>			
<b>3158 40 ♀</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	35	32	51	19	71	44			
Green	23	27	41	28	73	48			
Both	280	276	248	221	446	357			
None	242	284	257	236	405	332			
<b>Total</b>	<b>580</b>	<b>619</b>	<b>597</b>	<b>504</b>	<b>995</b>	<b>781</b>			
<b>3158 45 ♂</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	104	33	12	9	44	58	12	73	36
Green	123	38	12	10	50	49	14	74	46
Both	338	104	49	32	144	165	43	214	96
None	352	101	38	32	148	180	34	198	116
<b>Total</b>	<b>919</b>	<b>278</b>	<b>111</b>	<b>83</b>	<b>386</b>	<b>452</b>	<b>103</b>	<b>559</b>	<b>294</b>
<b>3158 45 ♀</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	26	46	8	83	49	13	12	30	7
Green	34	32	9	72	59	14	25	41	8
Both	224	352	94	515	379	123	199	281	73
None	216	354	102	545	371	126	153	294	59
<b>Total</b>	<b>500</b>	<b>784</b>	<b>213</b>	<b>1215</b>	<b>858</b>	<b>276</b>	<b>389</b>	<b>646</b>	<b>147</b>
<b>3158 50 ♂</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	28	33	141	38	77	31			
Green	45	25	136	38	61	32			
Both	105	79	402	111	188	85			
None	109	116	421	107	202	97			

<b>Total</b>	<b>287</b>	<b>253</b>	<b>1100</b>	<b>294</b>	<b>528</b>	<b>245</b>			
<b>3158 50 ♀</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	34	12	33	26	22	35			
Green	27	04	42	41	20	17			
Both	296	60	319	360	133	206			
None	313	75	315	383	151	205			
<b>Total</b>	<b>670</b>	<b>157</b>	<b>709</b>	<b>810</b>	<b>326</b>	<b>463</b>			
<b>3158 55 ♂</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	19	80	55	91	30	38	66	60	10
Green	28	82	41	87	29	46	75	47	19
Both	43	185	129	264	106	128	235	167	55
None	39	227	120	270	102	140	219	191	46
<b>Total</b>	<b>129</b>	<b>574</b>	<b>345</b>	<b>712</b>	<b>267</b>	<b>352</b>	<b>595</b>	<b>465</b>	<b>130</b>
<b>3158 55 ♀</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	14	78	81	13	16	71	4	11	39
Green	18	59	80	11	10	52	6	12	34
Both	153	492	469	116	155	434	77	100	234
None	138	438	467	136	148	452	80	101	258
<b>Total</b>	<b>323</b>	<b>1067</b>	<b>1097</b>	<b>276</b>	<b>329</b>	<b>1009</b>	<b>167</b>	<b>224</b>	<b>565</b>

**Table S4: Seed count of four different category in each replicate for line 3162**

<b>3162 40 ♂</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	18	17	38	40	21	48			
Green	17	30	37	44	22	66			
Both	87	74	156	146	103	234			
None	114	89	178	133	116	221			
<b>Total</b>	<b>236</b>	<b>210</b>	<b>409</b>	<b>363</b>	<b>262</b>				
<b>3162 40 ♀</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	41	48	41	28	70	58			
Green	32	52	44	29	70	54			
Both	233	207	198	158	343	304			
None	197	200	212	118	342	283			
<b>Total</b>	<b>503</b>	<b>507</b>	<b>495</b>	<b>333</b>	<b>825</b>	<b>699</b>			
<b>3162 45 ♂</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	29	40	19	29	31	25	73	47	33
Green	27	30	27	24	31	32	61	51	39
Both	106	146	83	94	106	115	233	202	135
None	123	172	105	129	127	112	237	228	147
<b>Total</b>	<b>285</b>	<b>388</b>	<b>234</b>	<b>276</b>	<b>295</b>	<b>284</b>	<b>604</b>	<b>528</b>	<b>354</b>
<b>3162 45 ♀</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	64	67	19	60	65	16	39	51	8
Green	67	34	20	58	73	18	33	56	12
Both	350	284	106	399	408	93	238	288	66
None	317	284	96	383	347	108	195	292	62
<b>Total</b>	<b>798</b>	<b>669</b>	<b>241</b>	<b>900</b>	<b>893</b>	<b>235</b>	<b>505</b>	<b>687</b>	<b>148</b>
<b>3162 50 ♂</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	17	35	70	35	42	39			
Green	25	37	51	34	39	33			

Both	89	120	200	155	153	179			
None	88	159	208	170	169	188			
<b>Total</b>	<b>219</b>	<b>351</b>	<b>529</b>	<b>394</b>	<b>403</b>	<b>439</b>			
<b>3162 50 ♀</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	30	17	48	15	21	30			
Green	30	11	48	13	24	28			
Both	165	104	292	103	178	186			
None	143	126	281	116	167	171			
<b>Total</b>	<b>368</b>	<b>258</b>	<b>669</b>	<b>247</b>	<b>390</b>	<b>415</b>			
<b>3162 55 ♂</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	56	17	26	15	60	23	20	26	14
Green	67	14	20	5	67	26	17	28	16
Both	209	82	83	63	191	95	95	135	65
None	248	113	105	86	234	88	129	163	63
<b>Total</b>	<b>580</b>	<b>226</b>	<b>234</b>	<b>169</b>	<b>552</b>	<b>232</b>	<b>261</b>	<b>352</b>	<b>158</b>
<b>3162 55 ♀</b>	R1	R2	R3	R4	R5	R6	R7	R8	R9
Red	17	117	20	29	51	59	14	23	41
Green	9	111	16	42	21	58	9	19	43
Both	76	553	95	269	115	194	83	137	282
None	73	506	112	262	155	138	76	123	232
<b>Total</b>	<b>175</b>	<b>1287</b>	<b>243</b>	<b>602</b>	<b>342</b>	<b>449</b>	<b>182</b>	<b>302</b>	<b>598</b>

**Table S5: Seed count of four different category in each replicate for line CTL1.2**

<b>CTL1.2 40 ♂</b>	R1	R2	R3
Red	77	83	73
Green	87	66	83
Both	184	137	181
None	137	187	253
<b>Total</b>	<b>485</b>	<b>473</b>	<b>590</b>
<b>CTL1.2 40 ♀</b>	R1	R2	R3
Red	137	69	41
Green	154	74	51
Both	321	149	121
None	318	177	153
<b>Total</b>	<b>930</b>	<b>469</b>	<b>366</b>
<b>CTL1.2 45 ♂</b>	R1	R2	R3
Red	142	129	40
Green	140	132	25
Both	228	215	50
None	211	214	60
<b>Total</b>	<b>721</b>	<b>690</b>	<b>175</b>
<b>CTL1.2 45 ♀</b>	R1	R2	R3
Red	166	101	85
Green	164	94	75
Both	408	244	240
None	399	235	206
<b>Total</b>	<b>1137</b>	<b>674</b>	<b>606</b>
<b>CTL1.2 50 ♂</b>	R1	R2	R3

Red	68	46	63
Green	58	48	57
Both	109	88	145
None	128	138	167
<b>Total</b>	<b>363</b>	<b>320</b>	<b>432</b>
<b>CTL1.2 50 ♀</b>	R1	R2	R3
Red	35	39	38
Green	30	34	44
Both	83	56	124
None	110	157	115
<b>Total</b>	<b>258</b>	<b>286</b>	<b>321</b>
<b>CTL1.2 55 ♂</b>	R1	R2	R3
Red	90	86	63
Green	87	99	70
Both	151	160	125
None	158	196	140
<b>Total</b>	<b>486</b>	<b>541</b>	<b>398</b>
<b>CTL1.2 55 ♀</b>	R1	R2	R3
Red	194	141	60
Green	185	141	65
Both	381	336	142
None	454	295	156
<b>Total</b>	<b>1214</b>	<b>913</b>	<b>423</b>

**Table S6: Seed count of four different category in each replicate for line CTL1.18**

<b>CTL1.18 40 ♂</b>	R1	R2	R3
Red	51	64	68
Green	38	62	67
Both	139	278	273
None	251	268	285
<b>Total</b>	<b>479</b>	<b>672</b>	<b>693</b>
<b>CTL1.18 40 ♀</b>	R1	R2	R3
Red	29	17	36
Green	19	23	56
Both	355	214	375
None	347	244	490
<b>Total</b>	<b>750</b>	<b>498</b>	<b>957</b>
<b>CTL1.18 45 ♂</b>	R1	R2	R3
Red	67	77	36
Green	54	65	44
Both	231	357	208
None	252	407	221
<b>Total</b>	<b>604</b>	<b>906</b>	<b>509</b>
<b>CTL1.18 45 ♀</b>	R1	R2	R3
Red	23	31	15
Green	25	38	26
Both	371	486	327
None	421	453	414

<b>Total</b>	<b>840</b>	<b>1008</b>	<b>782</b>
<b>CTL1.18 50 ♂</b>	R1	R2	R3
Red	45	21	32
Green	33	20	36
Both	169	170	154
None	176	222	165
<b>Total</b>	<b>423</b>	<b>433</b>	<b>387</b>
<b>CTL1.18 50 ♀</b>	R1	R2	R3
Red	18	11	27
Green	12	14	24
Both	164	93	128
None	171	128	201
<b>Total</b>	<b>365</b>	<b>246</b>	<b>380</b>
<b>CTL1.18 55 ♂</b>	R1	R2	R3
Red	30	34	32
Green	26	43	33
Both	111	172	137
None	132	182	147
<b>Total</b>	<b>299</b>	<b>431</b>	<b>342</b>
<b>CTL1.18 55 ♀</b>	R1	R2	R3
Red	39	36	7
Green	24	26	11
Both	428	282	128
None	430	292	86
<b>Total</b>	<b>921</b>	<b>636</b>	<b>232</b>

**Table S7: Seed count of four different category in each replicate for line CTL2.4**

<b>CTL2.4 40 ♂</b>	R1	R2	R3
Red	52	14	19
Green	42	12	18
Both	231	48	49
None	277	53	69
<b>Total</b>	<b>602</b>	<b>127</b>	<b>155</b>
<b>CTL2.4 40 ♀</b>	R1	R2	R3
Red	56	20	20
Green	51	35	13
Both	373	170	123
None	378	126	125
<b>Total</b>	<b>858</b>	<b>351</b>	<b>281</b>
<b>CTL2.4 45 ♂</b>	R1	R2	R3
Red	65	52	25
Green	64	45	34
Both	338	242	141
None	384	256	145
<b>Total</b>	<b>851</b>	<b>595</b>	<b>345</b>
<b>CTL2.4 45 ♀</b>	R1	R2	R3
Red	48	22	19
Green	56	35	21

Both	299	152	137
None	305	138	131
<b>Total</b>	<b>708</b>	<b>347</b>	<b>302</b>
<b>CTL2.4 50 ♂</b>	R1	R2	R3
Red	49	26	35
Green	40	14	40
Both	208	68	165
None	258	97	181
<b>Total</b>	<b>555</b>	<b>205</b>	<b>421</b>
<b>CTL2.4 50 ♀</b>	R1	R2	R3
Red	31	45	35
Green	34	40	28
Both	265	277	227
None	264	283	219
<b>Total</b>	<b>594</b>	<b>645</b>	<b>509</b>
<b>CTL2.4 55 ♂</b>	R1	R2	R3
Red	5	17	15
Green	10	19	18
Both	47	81	71
None	43	86	74
<b>Total</b>	<b>105</b>	<b>203</b>	<b>178</b>
<b>CTL2.4 55 ♀</b>	R1	R2	R3
Red	16	22	26
Green	24	19	23
Both	119	134	142
None	112	127	154
<b>Total</b>	<b>271</b>	<b>302</b>	<b>345</b>

**Table S8: Seed count of four different category in each replicate for line CTL4.7**

<b>CTL 4.7 40 ♂</b>	R1	R2	R3
Red	35	35	35
Green	37	36	38
Both	94	84	110
None	173	112	121
<b>Total</b>	<b>339</b>	<b>267</b>	<b>304</b>
<b>CTL 4.7 40 ♀</b>	R1	R2	R3
Red	46	18	26
Green	31	30	27
Both	314	292	258
None	386	299	259
<b>Total</b>	<b>777</b>	<b>619</b>	<b>570</b>
<b>CTL 4.7 45 ♂</b>	R1	R2	R3
Red	71	110	91
Green	100	100	86
Both	251	326	256
None	278	348	265
<b>Total</b>	<b>700</b>	<b>884</b>	<b>698</b>
<b>CTL 4.7 45 ♀</b>	R1	R2	R3
Red	19	29	52
Green	24	30	54

Both	268	308	539
None	268	301	517
<b>Total</b>	<b>579</b>	<b>668</b>	<b>1162</b>
<b>CTL 4.7 50 ♂</b>	R1	R2	R3
Red	48	58	38
Green	50	57	49
Both	182	179	130
None	141	211	163
<b>Total</b>	<b>421</b>	<b>505</b>	<b>380</b>
<b>CTL 4.7 50 ♀</b>	R1	R2	R3
Red	27	15	15
Green	24	22	17
Both	255	201	138
None	292	219	160
<b>Total</b>	<b>598</b>	<b>457</b>	<b>387</b>
<b>CTL 4.7 55 ♂</b>	R1	R2	R3
Red	19	35	42
Green	26	38	50
Both	96	132	150
None	79	140	170
<b>Total</b>	<b>220</b>	<b>345</b>	<b>412</b>
<b>CTL 4.7 55 ♀</b>	R1	R2	R3
Red	45	47	30
Green	36	46	37
Both	425	446	345
None	450	457	330
<b>Total</b>	<b>956</b>	<b>996</b>	<b>742</b>

**Table S9: Seed count of four different category in each replicate for line CTL5.17**

<b>CTL 5.17 40 ♂</b>	R1	R2	R3
Red	58	67	31
Green	65	61	40
Both	299	311	147
None	323	329	181
<b>Total</b>	<b>745</b>	<b>768</b>	<b>399</b>
<b>CTL 5.17 40 ♀</b>	R1	R2	R3
Red	12	10	8
Green	9	8	9
Both	221	149	160
None	233	167	177
<b>Total</b>	<b>475</b>	<b>334</b>	<b>354</b>
<b>CTL 5.17 45 ♂</b>	R1	R2	R3
Red	56	57	26
Green	70	61	31
Both	283	272	151
None	295	271	156
<b>Total</b>	<b>700</b>	<b>661</b>	<b>364</b>
<b>CTL 5.1745 ♀</b>	R1	R2	R3
Red	44	20	22
Green	41	16	23

Both	739	310	444
None	585	341	469
<b>Total</b>	<b>1409</b>	<b>687</b>	<b>958</b>
<b>CTL 5.17 50 ♂</b>	R1	R2	R3
Red	43	20	31
Green	58	29	37
Both	196	150	168
None	220	193	185
<b>Total</b>	<b>517</b>	<b>392</b>	<b>421</b>
<b>CTL 5.17 50 ♀</b>	R1	R2	R3
Red	13	9	9
Green	12	10	12
Both	311	142	185
None	308	143	199
<b>Total</b>	<b>644</b>	<b>304</b>	<b>405</b>
<b>CTL 5.17 55 ♂</b>	R1	R2	R3
Red	20	25	27
Green	27	32	35
Both	82	145	172
None	123	152	187
<b>Total</b>	<b>252</b>	<b>354</b>	<b>421</b>
<b>CTL 5.17 55 ♀</b>	R1	R2	R3
Red	10	10	6
Green	19	11	8
Both	221	170	128
None	227	163	136
<b>Total</b>	<b>477</b>	<b>354</b>	<b>278</b>

**Table S10: Recombination frequencies in the progeny of a cross between parents of CO detector line and wild type Columbia plants of different ages (CTL1.2)**

Cross	Recombination frequencies (R)/Seeds per replicate (S)			Mean CO Rate
	R1/S1	R2/S2	R3/S3	
CTL1.2 40 X Col 40	31.29/930	30.49/469	25.14/366	28.9733
Col 40 X CTL1.2 40	29.02/485	28.93/473	26.4/590	28.1167
CTL1.2 45 X Col 45	25.19/1137	25.52/674	25.36/606	25.3567
Col 45 X CTL1.2	31.22/721	30.89/690	29.55/175	30.5533

45				
CTL1.2 50 X Col 50	33.81/258	31.5/286	26.45/321	30.5867
Col 50 X CTL1.2 50	39.11/363	37.82/320	37.14/432	38.0233
CTL1.2 55 X Col 55	34.71/1214	29.38/913	27.77/423	30.62
Col 55 X CTL1.2 55	36.42/486	34.1/541	33.14/398	34.5533
<b>Comparison between different groups</b>				
Cross			P Value	Significance
CTL1.2 40 X Col 40-CTL1.2 45 X Col 45			0.9997	NS
CTL1.2 40 X Col 40-CTL1.2 50 X Col 50			0.4889	NS
CTL1.2 40 X Col 40-CTL1.2 55 X Col 55			0.9874	NS
CTL1.2 45 X Col 45-CTL1.2 50 X Col 50			0.7912	NS
CTL1.2 45 X Col 45-CTL1.2 55 X Col 55			0.8774	NS
CTL1.2 50 X Col 50-CTL1.2 55 X Col 55			0.0911	NS
Col 40 X CTL1.2 40- Col 45 X CTL1.2 45			0.0610	NS
Col 40 X CTL1.2 40- Col 50 X CTL1.2 50			1.0000	NS
Col 40 X CTL1.2 40- Col 55 X CTL1.2 55			0.3682	NS
Col 45 X CTL1.2 45- Col 50 X CTL1.2 50			0.5130	NS
Col 45 X CTL1.2 45- Col 55 X CTL1.2 55			0.5435	NS
Col 50 X CTL1.2 50- Col 55 X CTL1.2 55			0.3787	NS
CTL1.2 40 X Col 40- Col 40 X CTL1.2 40			0.9858	NS
CTL1.2 45 X Col 45- Col 45 X CTL1.2 45			<0.01	**
CTL1.2 50 X Col 50- Col 50 X CTL1.2 50			0.0837	NS
CTL1.2 55 X Col 55- Col 55 X CTL1.2 55			0.3576	NS

**Table S11: Recombination frequencies in the progeny of a cross between parents of CO detector line and wild type Columbia plants of different ages (CTL1.18)**

Cross	Recombination frequencies (R)/Seeds per replicate (S)			Mean CO Rate
	R1/S1	R2/S2	R3/S3	
CTL1.18 40 X Col 40	6.4/750	8.03/498	9.6/957	8.01
Col 40 X CTL1.18 40	5.71/479	6.85/672	5.24/693	5.93
CTL1.18 45 X Col 45	8.22/840	10.16/1008	9.19/782	9.19
Col 45 X CTL1.18	6.84/604	9.75/906	7.76/509	8.12

45				
CTL1.18 50 X Col 50	18.58/365	18.75/246	19.49/380	18.94
Col 50 X CTL1.18 50	20.03/423	15.67/433	15.72/387	17.14
CTL1.18 55 X Col 55	18.44/921	16.42/636	17.43/323	17.43
Col 55 X CTL1.18 55	18.73/299	17.87/431	18.3/342	18.3
<b>Comparison between different groups</b>				
Cross			P Value	Significance
CTL1.18 40 X Col 40-CTL1.18 45 X Col 45			0.4502	NS
CTL1.18 40 X Col 40-CTL1.18 50 X Col 50			0.9375	NS
CTL1.18 40 X Col 40-CTL1.18 55 X Col 55			1.0000	NS
CTL1.18 45 X Col 45-CTL1.18 50 X Col 50			0.0556	NS
CTL1.18 45 X Col 45-CTL1.18 55 X Col 55			0.3839	NS
CTL1.18 50 X Col 50-CTL1.18 55 X Col 55			0.9618	NS
Col 40 X CTL1.18 40- Col 45 X CTL1.18 45			0.6316	NS
Col 40 X CTL1.18 40- Col 50 X CTL1.18 50			0.8060	NS
Col 40 X CTL1.18 40- Col 55 X CTL1.18 55			0.9982	NS
Col 45 X CTL1.18 45- Col 50 X CTL1.18 50			1.0000	NS
Col 45 X CTL1.18 45- Col 55 X CTL1.18 55			0.9427	NS
Col 50 X CTL1.18 50- Col 55 X CTL1.18 55			0.9883	NS
CTL1.18 40 X Col 40- Col 40 X CTL1.18 40			<0.001	***
CTL1.18 45 X Col 45- Col 45 X CTL1.18 45			<0.001	***
CTL1.18 50 X Col 50- Col 50 X CTL1.18 50			<0.001	***
CTL1.18 55 X Col 55- Col 55 X CTL1.18 55			<0.001	***

**Table S12: Recombination frequencies in the progeny of a cross between parents of CO detector line and wild type Columbia plants of different ages (CTL2.4)**

Cross	Recombination frequencies (R)/Seeds per replicate (S)			Mean CO Rate
	R1/S1	R2/S2	R3/S3	
CTL2.4 40 X Col 40	12.48/858	15.67/351	11.74/281	13.2967
Col 40 X CTL2.4 40	14.69/602	16.43/127	12.99/155	14.7033
CTL2.4 45 X Col 45	10.94/708	13.18/347	10.42/308	11.5133

Col 45 X CTL2.4 45	14.76/851	13.58/595	14.17/345	14.17
CTL2.4 50 X Col 50	15.61/594	20.47/645	23.88/499	19.9867
Col 50 X CTL2.4 50	15.16/555	16.3/205	17.1/421	16.1867
CTL2.4 55 X Col 55	16.04/271	19.51/302	17.78/345	17.7767
Col 55 X CTL2.4 55	16.76/105	17.5/203	18.1/178	17.4533
<b>Comparison between different groups</b>				
Cross			P Value	Significance
CTL2.4 40 X Col 40-CTL2.4 45 X Col 45			0.982	NS
CTL2.4 40 X Col 40-CTL2.4 50 X Col 50			0.934	NS
CTL2.4 40 X Col 40-CTL2.4 55 X Col 55			0.999	NS
CTL2.4 45 X Col 45-CTL2.4 50 X Col 50			0.414	NS
CTL2.4 45 X Col 45-CTL2.4 55 X Col 55			1.000	NS
CTL2.4 50 X Col 50-CTL2.4 55 X Col 55			0.647	NS
Col 40 X CTL2.4 40- Col 45 X CTL2.4 45			0.202	NS
Col 40 X CTL2.4 40- Col 50 X CTL2.4 50			0.822	NS
Col 40 X CTL2.4 40- Col 55 X CTL2.4 55			0.700	NS
Col 45 X CTL2.4 45- Col 50 X CTL2.4 50			0.964	NS
Col 45 X CTL2.4 45- Col 55 X CTL2.4 55			0.990	NS
Col 50 X CTL2.4 50- Col 55 X CTL2.4 55			1.000	NS
CTL2.4 40 X Col 40- Col 40 X CTL2.4 40			<0.01	***
CTL2.4 45 X Col 45- Col 45 X CTL2.4 45			0.975	NS
CTL2.4 50 X Col 50- Col 50 X CTL2.4 50			<0.01	**
CTL2.4 55 X Col 55- Col 55 X CTL2.4 55			0.376	NS

**Table S13: Recombination frequencies in the progeny of a cross between parents of CO detector line and wild type Columbia plants of different ages (CTL4.7)**

Cross	Recombination frequency (R)/Seeds per replicate (S)			Mean CO Rate
	R1/S1	R2/S2	R3/S3	
CTL4.7 40 X Col 40	9.9/777	7.75/619	9.3/570	8.9833
Col 40 X CTL4.7 40	21.24/339	26.59/267	23.91/304	23.9133
CTL4.7 45 X Col 45	7.43/579	8.83/668	9.12/1162	8.46

Col 45 X CTL4.7 45	24.43/700	23.76/884	25.36/698	24.5167
CTL4.7 50 X Col 50	8.53/598	8.16/457	8.34/387	8.3433
Col 50 X CTL4.7 50	23.28/421	22.77/505	22.89/380	22.98
CTL4.7 55 X Col 55	8.47/956	9.34/996	8.9/742	8.9033
Col 55 X CTL4.7 55	20.45/220	21.23/345	22.15/412	21.2767
<b>Comparison between different groups</b>				
Cross	P Value		Significance	
CTL4.7 40 X Col 40-CTL4.7 45 X Col 45	0.999		NS	
CTL4.7 40 X Col 40-CTL4.7 50 X Col 50	0.996		NS	
CTL4.7 40 X Col 40-CTL4.7 55 X Col 55	1.000		NS	
CTL4.7 45 X Col 45-CTL4.7 50 X Col 50	1.000		NS	
CTL4.7 45 X Col 45-CTL4.7 55 X Col 55	0.999		NS	
CTL4.7 50 X Col 50-CTL4.7 55 X Col 55	0.998		NS	
Col 40 X CTL4.7 40- Col 45 X CTL4.7 45	0.997		NS	
Col 40 X CTL4.7 40- Col 50 X CTL4.7 50	0.964		NS	
Col 40 X CTL4.7 40- Col 55 X CTL4.7 55	0.070		NS	
Col 45 X CTL4.7 45- Col 50 X CTL4.7 50	0.664		NS	
Col 45 X CTL4.7 45- Col 55 X CTL4.7 55	0.009		NS	
Col 50 X CTL4.7 50- Col 55 X CTL4.7 55	0.539		NS	
CTL4.7 40 X Col 40- Col 40 X CTL4.7 40	<0.001		***	
CTL4.7 45 X Col 45- Col 45 X CTL4.7 45	<0.001		***	
CTL4.7 50 X Col 50- Col 50 X CTL4.7 50	<0.001		***	
CTL4.7 55 X Col 55- Col 55 X CTL4.7 55	<0.001		***	

**Table S14: Recombination frequencies in the progeny of a cross between parents of CO detector line and wild type Columbia plants of different ages (Col3-4/20)**

Cross	Recombination frequency (R)/Seeds per replicate (S)									Mean CO Rate
	R1/S1	R2/S <sub>2</sub>	R3/S3	R4/S4	R5/S5	R6/S6	R7/S7	R8/S8	R9/S9	
Col3-4/20 40 X Col 40	8.07	8.61	10	7.46	8.95	12				9.18167
	233	511	320	268	268	475				

Col 40 X Col3-4/20 40	23.29	20.72	21.78	27.51	21.9	23.67				23.145
	176	193	303	378	242	511				
Col3-4/20 45 X Col 45	8.82	8.4	8.01	10.26	11.74	9.57	8.36	6.61	8.19	8.97125
	612	702	287	565	681	355	622	590	122	
Col 45 X Col3-4/20 45	23.43	20.45	20.66	25.36	24.14	25	28.01	27.07	27.54	24.265
	431	396	150	138	758	268	257	314	511	
Col3-4/20 50 X Col 50	9.57	7.4	7.27	10.97	9.85	9.64				9.44
	658	378	522	401	406	311				
Col 50 X Col3-4/20 50	26.06	27.19	22.49	20.68	28.44	23.61				24.6988
	211	1140	609	290	334	199				
Col3-4/20 55 X Col 55	9.6	11.48	5.75	6.26	6.8	7.35	8.87	8.04	8.53	8.01875
	500	444	191	527	354	340	248	261	668	
Col 55 X Col3-4/20 55	20.27	30.43	18.91	21.5	24	22.05	23.39	32.03	27.78	24.0725
	148	138	185	413	229	217	218	231	511	

#### Comparison between different groups

Cross	P Value	Significance
Col3-4/20 40 X Col 40-Col3-4/20 45 X Col 45	1.000	Non-Significant (NS)
Col3-4/20 40 X Col 40-Col3-4/20 50 X Col 50	1.000	NS
Col3-4/20 40 X Col 40-Col3-4/20 55 X Col 55	0.996	NS
Col3-4/20 45 X Col 45-Col3-4/20 50 X Col 50	1.000	NS
Col3-4/20 45 X Col 45-Col3-4/20 55 X Col 55	0.999	NS
Col3-4/20 50 X Col 50-Col3-4/20 55 X Col 55	0.970	NS
Col 40 X Col3-4/20 40- Col 45 X Col3-4/20 45	0.976	NS
Col 40 X Col3-4/20 40- Col 50 X Col3-4/20 50	0.981	NS
Col 40 X Col3-4/20 40- Col 55 X Col3-4/20 55	1.000	NS
Col 45 X Col3-4/20 45- Col 50 X Col3-4/20 50	1.000	NS
Col 45 X Col3-4/20 45- Col 55 X Col3-4/20 55	0.712	NS
Col 50 X Col3-4/20 50- Col 55 X Col3-4/20 55	0.735	NS
Col3-4/20 40 X Col 40- Col 40 X Col3-4/20 40	<0.001	***
Col3-4/20 45 X Col 45- Col 45 X Col3-4/20 45	<0.001	***
Col3-4/20 50 X Col 50- Col 50 X Col3-4/20 50	<0.001	***
Col3-4/20 55 X Col 55- Col 55 X Col3-4/20 55	<0.001	***

**Table S15: Recombination frequencies in the progeny of a cross between parents of CO detector line and wild type Columbia plants of different ages (3158)**

Cross	Recombination frequency (R)/Seeds per replicate (S)									Mean CO Rate
	R1/S1	R2/S2	R3/S3	R4/S4	R5/S5	R6/S6	R7/S7	R8/S8	R9/S9	
3158 40 X Col 40	10	9.53	15.41	9.32	11.77	14.47				11.75
	580	619	597	504	781	995				
Col 40 X 3158 40	25.21	26.33	26.33	29.54	26.99	30.16				27.4266
	230	281	346	264	363	885				
3158 45 X Col 45	12	9.94	7.98	9.51	10.99	10.2	12.75	12.58	9.78	10.6366
	500	784	213	389	646	147	1215	858	276	
Col 45 X 3158 45	23.81	24.6	25.62	25.24	26.29	27.89	22.89	24.35	23.62	24.9233
	953	263	111	103	559	294	83	386	452	
3158 50 X Col 50	9.1	10.59	10.57	8.27	12.88	11.23				10.5577
	670	151	709	810	326	463				
Col 50 X 3158 50	25.43	22.92	25.18	25.85	26.13	25.99				25.4966
	287	253	1100	294	528	245				
3158 55 X Col 55	12.83	14.67	9.9	5.98	12.92	10.26	8.69	12.19	7.9	10.5933
	1067	1097	323	167	565	224	276	1009	329	
Col 55 X 3158 55	28.12	28.42	27.82	23.69	23.69	23.69	22.3	25	22.09	24.9633
	129	570	345	595	465	130	712	267	352	
Comparison between different groups										
Cross						P Value		Significance		
3158 40 X Col 40-3158 45 X Col 45						0.932		NS		
3158 40 X Col 40-3158 50 X Col 50						0.932		NS		
3158 40 X Col 40-3158 55 X Col 55						0.941		NS		
3158 45 X Col 45-3158 50 X Col 50						1.000		NS		
3158 45 X Col 45-3158 55 X Col 55						1.000		NS		
3158 50 X Col 50-3158 55 X Col 55						1.000		NS		
Col 40 X 3158 40- Col 45 X 3158 45						0.253		NS		
Col 40 X 3158 40- Col 50 X 3158 50						0.598		NS		
Col 40 X 3158 40- Col 55 X 3158 55						0.236		NS		
Col 45 X 3158 45- Col 50 X 3158 50						0.998		NS		

Col 45 X 3158 45- Col 55 X 3158 55	1.000	NS
Col 50 X 3158 50- Col 55 X 3158 55	0.997	NS
3158 40 X Col 40- Col 40 X 3158 40	<0.01	***
3158 45 X Col 45- Col 45 X 3158 45	<0.01	***
3158 50 X Col 50- Col 50 X 3158 50	<0.01	***
3158 55 X Col 55- Col 55 X 3158 55	<0.01	***

**Table S16: Recombination frequencies in the progeny of a cross between parents of CO detector line and wild type Columbia plants of different ages (3162)**

Cross	Recombination frequency (R)/Seeds per replicate (S)									Mean CO Rate
	R1/S1	R2/S2	R3/S3	R4/S4	R5/S5	R6/S6	R7/S7	R8/S8	R9/S9	
3162 40 X Col 40	14.51	19.72	17.11	17.11	16.96	16.02				16.905
	503	507	495	333	825	699				
Col 40 X 3162 40	14.83	22.38	18.35	23.14	16.41	20				19.185
	236	210	409	363	262	569				
3162 45 X Col 45	16.41	15.09	16.18	14.25	15.57	13.51	13.11	15.45	14.46	14.8922
	798	669	241	505	687	148	900	893	235	
Col 45 X 3162 45	19.64	18.04	19.65	22.18	18.56	20.37	19.2	21.01	20.1	19.8611
	285	388	234	604	528	354	276	295	284	
3162 50 X Col 50	16.3	10.85	14.34	11.33	11.53	13.97				12.7944
	368	258	669	247	390	415				
Col 50 X 3162 50	19.17	20.51	22.87	17.51	20.09	18.8				19.4833
	219	351	529	394	403	439				
3162 55 X Col 55	14.85	17.71	16.28	12.63	13.9	14.04	11.79	14.81	13.3	14.3677
	175	1287	463	182	302	598	602	243	351	
Col 55 X 3162 55	13.71	19.65	21.2	18.98	14.17	15.34	22.06	23	21.12	18.8033
	226	234	580	158	261	352	169	552	232	
Comparison between different groups										
Cross						P Value		Significance		
3162 40 X Col 40-3162 45 X Col 45						0.54900		NS		

3162 40 X Col 40-3162 50 X Col 50	0.00439	**
3162 40 X Col 40-3162 55 X Col 55	0.25239	NS
3162 45 X Col 45-3162 50 X Col 50	0.34817	NS
3162 45 X Col 45-3162 55 X Col 55	0.99924	NS
3162 50 X Col 50-3162 55 X Col 55	0.70599	NS
Col 40 X 3162 40- Col 45 X 3162 45	0.99810	NS
Col 40 X 3162 40- Col 50 X 3162 50	0.99999	NS
Col 40 X 3162 40- Col 55 X 3162 55	0.99996	NS
Col 45 X 3162 45- Col 50 X 3162 50	0.99991	NS
Col 45 X 3162 45- Col 55 X 3162 55	0.94928	NS
Col 50 X 3162 50- Col 55 X 3162 55	0.99602	NS
3162 40 X Col 40- Col 40 X 3162 40	0.50437	NS
3162 45 X Col 45- Col 45 X 3162 45	< 0.001	***
3162 50 X Col 50- Col 50 X 3162 50	< 0.001	***
3162 55 X Col 55- Col 55 X 3162 55	< 0.001	***

**Table S17: Recombination frequencies in the progeny of a cross between parents of CO detector line and wild type Columbia plants of different ages (CTL5.17)**

Cross	Recombination frequency (R)/Seeds per replicate (S)			Mean CO Rate
	R1/S1	R2/S2	R3/S3	
CTL5.17 40 X Col 40	4.42/475	5.39/334	4.9/354	4.9033
Col 40 X CTL5.17 40	6.03/745	5.24/768	4.7/399	5.3233
CTL5.17 45 X Col 45	3.88/1409	6.25/687	5.07/958	5.0667
Col 45 X CTL5.17 45	6.08/704	5.93/661	4.78/364	5.5967
CTL5.17 50 X Col 50	16.51/644	16.67/304	17.79/405	16.99
Col 50 X CTL5.17 50	17.9/517	17.85/392	15.66/421	17.1367
CTL5.17 55 X Col 55	19.54/477	12.05/354	16.02/278	15.87
Col 55 X CTL5.17 55	18.65/252	16.1/354	14.78/421	16.51
<b>Comparison between different groups</b>				
Cross	P Value		Significance	

CTL5.17 40 X Col 40-CTL5.17 45 X Col 45	1.000	NS
CTL5.17 40 X Col 40-CTL5.17 50 X Col 50	1.000	NS
CTL5.17 40 X Col 40-CTL5.17 55 X Col 55	0.999	NS
CTL5.17 45 X Col 45-CTL5.17 50 X Col 50	1.000	NS
CTL5.17 45 X Col 45-CTL5.17 55 X Col 55	1.000	NS
CTL5.17 50 X Col 50-CTL5.17 55 X Col 55	1.000	NS
Col 40 X CTL5.17 40- Col 45 X CTL5.17 45	1.000	NS
Col 40 X CTL5.17 40- Col 50 X CTL5.17 50	0.987	NS
Col 40 X CTL5.17 40- Col 55 X CTL5.17 55	1.000	NS
Col 45 X CTL5.17 45- Col 50 X CTL5.17 50	0.974	NS
Col 45 X CTL5.17 45- Col 55 X CTL5.17 55	1.000	NS
Col 50 X CTL5.17 50- Col 55 X CTL5.17 55	1.000	NS
CTL5.17 40 X Col 40- Col 40 X CTL5.17 40	<.001	***
CTL5.17 45 X Col 45- Col 45 X CTL5.17 45	<.001	***
CTL5.17 50 X Col 50- Col 50 X CTL5.17 50	<.001	***
CTL5.17 55 X Col 55- Col 55 X CTL5.17 55	<.001	***

**Table S18: Line-wise male and female mean ratio comparisons**

CO line	Mean	SEM
CTL1.2	1.1875	0.124466
CTL1.18	2.35	0.409959
CTL2.4	1.3425	0.212348
COL3-4/20	2.6875	0.299819
3158	2.335	0.13404
CTL4.7	2.6775	0.209821
3162	1.2275	0.194829
CTL15.17	3.1925	0.216391
Comparison between different CO lines		
Cross	P Value	Significance
CLT2.4-3158	<0.001	***
CLT2.4-3162	0.9976	Non-Significant (NS)
CLT2.4-CLT4.7	<0.001	***
CLT2.4-CLT5.17	<0.001	***
CLT2.4-Col3-4/20	<0.001	***
CLT2.4-CLT1.18	<0.001	***

CLT2.4- CLT1.2	0.9853	NS
3158-3162	<0.001	***
3158-CLT4.7	0.4759	NS
3158- CLT5.17	<0.001	***
3158-Col3- 4/20	0.4365	NS
3158- CLT1.18	1.0000	NS
3158-CLT1.2	<0.001	***
3162-CLT4.7	<0.001	***
3162- CLT5.17	<0.001	***
3162-Col3- 4/20	<0.001	***
3162- CLT1.18	<0.001	***
3162-CLT1.2	1.0000	NS
CLT4.7- CLT5.17	0.0514	NS
CLT4.7-Col3- 4/20	1.0000	NS
CLT4.7- CLT1.18	0.5366	NS
CLT4.7- CLT1.2	<0.001	***
CLT5.17- COL3-4/20	0.0616	NS
CLT5.17- CLT1.18	<0.001	***
CLT5.17- CLT1.2	<0.001	***
COL3-4/20- CTL1.18	0.4962	NS
COL3-4/20- CTL1.2	<0.001	***
CTL1.18- CTL1.2	<0.001	***

**Table S19: Age-wise male and female mean ratio comparisons**

Age	Mean	SEM
40	2.10125	0.835728
45	2.21	0.856371
50	2.2	0.762234
55	1.98875	0.723196
Comparison between different age groups		
Age groups	P Value	Significance
40-45	0.993	NS
40-50	0.995	NS
40-55	0.992	NS
45-50	1.000	NS
45-55	0.945	NS
50-55	0.952	NS

**Table S20: Structural features of the eight intervals used in this study**

Line Name	Chr. No	Centromere position (Mb)	Percentage of interval that is close to a telomere*	Percentage of interval that is close to a centromere**	Length of interval (distance between markers , Mb)	Interval's length as % of total
CTL1.2 (Centromere is between markers)	1	15.05	0	65	10.50	34%
CTL1.18	1	15.05	100	0	3.81	13%
CTL2.4	2	3.9	0	0	3.3	17%
Col3-4/20	3	13.8	65	0	5.04	21%
3158	3	13.8	65	0	5.54	23%

CTL4.7	4	6	43	0	5.4	28%
3162	5	11.88	0	22	4.8	17%
CTL5.17	5	11.88	72	0	5.1	18%

The table summarises some key features of the intervals bounded by each pair of markers. \*This percentage was calculated by determining how much of the interval's length occurs within the first 15% or last 15% of the chromosome's length. \*\*This percentage was calculated by determining how much of the interval's length occurred in the two regions that are on either side of the centromere (each region being 15% of the chromosome's length). For both cases, the choice of 15% was based on our analysis of the distribution of male and female CO hotspots in each of the five chromosomes, as depicted in Figure 4, Giraut *et al.* (2011).