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Bowman                MSIRSSSGGSGGGQTSQMMAFSEHSLPKPIAGHPQPQPSPPSSPSERPAPRGRRRAQEPG 60
Irregular spike 25    MSIRSSSGGSGGGQTSQMMAFSEHSLPKPIAGHPQPQPSPPSSPSERPAPRGRRRAQEPG 60
Foma                  MSIRSSSGGSGGGQTSQMMAFSEHSLPKPIAGHPQPQPSPPSSPSERPAPRGRRRAQEPG 60
Donaria               MSIRSSSGGSGGGQTSQMMAFSEHSLPKPIAGHPQPQPSPPSSPSERPAPRGRRRAQEPG 60
Morex                 MSIRSSSGGSGGGQTSQMMAFSEHSLPKPIAGHPQPQPSPPSSPSERPAPRGRRRAQEPG 60
Optic                 MSIRSSSGGSGGGQTSQMMAFSEHSLPKPIAGHPQPQPSPPSSPSERPAPRGRRRAQEPG 60
Haruna Nijo           MSIRSSSGGSGGGQTSQMMAFSEHSLPKPIAGHPQPQPSPPSSPSERPAPRGRRRAQEPG 60
brc1.5                MSIRSSSGGSGGGQTSQMMAFSEHSLPKPIAGHPQPQPSPPSSPSERPAPRGRRRAQEPG 60
com2.k                MSIRSSSGGSGGGQTSQMMAFSEHSLPKPIAGHPQPQPSPPSSPSERPAPRGRRRAQEPG 60
Freak                 MSIRSSSGGSGGGQTSQMMAFSEHSLPKPIAGHPQPQPSPPSSPSERPAPRGRRRAQEPG 60
HOR14427              MSIRSSSGGSGGGQTSQMMAFSEHSLPKPIAGHPQPQPSPPSSPSERPAPRGRRRAQEPG 60
BM-NIL (BW192)com2.g  MSIRSSSGGSGGGQTSQMMAFSEHSLPKPIAGHPQPQPSPPSSPSERPAPRGRRRAQEPG 60
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Bowman                RFLGVRRRPWGRYAAEIRDPTTKERHWLGTFDTAQEAALAYDRAALSMKGAQARTNFVYA 120
Irregular spike 25    RFLGVRRRPWGRYAAEIRDPTTKERHWLGTFDTAQEAALAYDRAALSMKGAQARTNFVYA 120
Foma                  RFLGVRRRPWGRYAAEIRDPTTKERHWLGTFDTAQEAALAYDRAALSMKGAQARTNFVYA 120
Donaria               RFLGVRRRPWGRYAAEIRDPTTKERHWLGTFDTAQEAALAYDRAALSMKGAQARTNFVYA 120
Morex                 RFLGVRRRPWGRYAAEIRDPTTKERHWLGTFDTAQEAALAYDRAALSMKGAQARTNFVYA 120
Optic                 RFLGVRRRPWGRYAAEIRDPTTKERHWLGTFDTAQEAALAYDRAALSMKGAQARTNFVYA 120
Haruna Nijo           RFLGVRRRPWGRYAAEIRDPTTKERHWLGTFDTAQEAALAYDRAALSMKGAQARTNFVYA 120
brc1.5                RFLGVRRRPWGRYAAEIRDPTTKERHWLGTFDTAQEAALAYDRAALSMKGAQARTNFVYA 120
com2.k                RFLGVRRRPWGRYAAEIRDPTTKERHWLGTFDTAQEAALAYDRAALSMKGAQARTNFVYA 120
Freak                 RFLGVRRRPWGRYAAEIRDPTTKERHWLGTFDTAQEAALAYDRAALSMKGAQARTNFVYA 120
HOR14427              RFLGVRRRPWGRYAAEIRDPTTKERHWLGTFDTAQEAALAYDRAALSMKGAQARTNFVYA 120
BM-NIL BW192com2.g    RFLGVRRRPWGRYAAEIRDPTTKERHWLGTFDTAQEAALAYDRAALSMKGAQARTNFVYA 120
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Bowman                HAAYNNYPPFLAPFHAQPAYASSTMPYGGQQHAGAAPPHIGSYHSHGGVGYHQQGPGAGA 180
Irregular spike 25    HAAYNNYPPFLAPFHAQPAYASSTMPYGGQQHAGAAPPHIGSYHSHGGVGYHQQGPGAGA 180
Foma                  HAAYNNYPPFLAPFHAQPAYASSTMPYGGQQHAGAAPPHIGSYHSHGGVGYHQQGPGAGA 180
Donaria               HAAYNNYPPFLAPFHAQPAYASSTMPYGGQQHAGAAPPHIGSYHTHGGVGYHQQGPGAGA 180
Morex                 HAAYNNYPPFLAPFHAQPAYASSTMPYGGQQHAGAAPPHIGSYHTHGGVGYHQQGPGAGA 180
Optic                 HAAYNNYPPFLAPFHAQPAYASSTMPYGGQQHAGAAPPHIGSYHTHGGVGYHQQGPGAGA 180
Haruna Nijo           HAAYNNYPPFLAPFHAQPAYASSTMPYGGQQHAGAAPPHIGSYHTHGGVGYHQQGPGAGA 180
brc1.5                HAAYNNYPPFLAPFHAQPAYASSTMPYGGQQHAGAAPPHIGSYHTHGGVGYHQQGPGAGA 180
com2.k                HAAYNNYPPFLAPFHAQPAYASSTMPYGGQQHAGAAPPHIGSYHTHGGVGYHQQGPGAGA 180
Freak                 HAAYNNYPPFLAPFHAQPAYASSTMPYGGQQHAGAAPPHIGSYHTHGGVGYHQQGPGAGA 180
HOR14427              HAAYNNYPPFLAPFHAQPAYASSTMPYGGQQHAGAAPPHIGSYHTHGGVGYHQQGPGAGA 180
BM-NIL BW192com2.g    HAAYNNYPPFLAPFHAQPAYASSTMPYGGQQHAGAAPPHIGSYHTHGGVGYHQQGPGAGA 180
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                                                                  (L228H)

Bowman                GECSMPVPNAADHAASPMDVRSSGHDFLFPSADDNSGYLSSVVPESCLRPRGGDLQDARR 240
Irregular spike 25    GECSMPVPNAADHAASPMDVRSSGHDFLFPSADDNSGYLSSVVPESCHRPRGGDLQDARR 240
Foma                  GECSMPVPNAADHAASPMDVRSSGHDFLFPSADDNSGYLSSVVPESCLRPRGGDLQDARR 240
Donaria               GECSMPVPNAADHAASPMDVRSSGHDFLFPSADDNSGYLSSVVPESCLRPRGGDLQDARR 240
Morex                 GECSMPVPNAADHAASPMDVRSSGHDFLFPSADDNSGYLSSVVPESCLRPRGGDLQDARR 240
Optic                 GECSMPVPNAADHAASPMDVRSSGHDFLFPSADDNSGYLSSVVPESCLRPRGGDLQDARR 240
Haruna Nijo           GECSMPVPNAADHAASPMDVRSSGHDFLFPSADDNSGYLSSVVPESCLRPRGGDLQDARR 240
brc1.5                GECSMPVPNAADHAASPMDVRSSGHDFLFPSADDNSGYLSRVVPESCLRPRGGDLQDARR 240
com2.k                GECSMPVPNAADHAASPMDVRSSGHDFLFPSADDNSGYLSRVVPESCLRPRGGDLQDARR 240
Freak                 GECSMPVPNAADHAASPMDVRSSGHDFLFPSADDNSGYLSRVVPESCLRPRGGDLQDARR 240
HOR14427              GECSMPVPNAADHAASPMDVRSSGHDFLFPSADDNSGYLSRVVPESCLRPRGGDLQDARR 240
BM-NIL BW192 com2.g   GECSMPVPNAADHAASPMDVRSSGHDFLFPSADDNSGYLSRVVPESCLRPRGGDLQDARR 240
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                                                                  (S221R)

Bowman                YSVSDADAYGLGLREDVDDLASMVAGFWGGADAAYGGFAPANGGGHDMVASSQGSDNGYS 300
Irregular spike 25    YSVSDADAYGLGLREDVDDLASMVAGFWGGADAAYGGFAPANGGGHDMVASSQGSDNGYS 300
Foma                  YSVSDADAYGLGLREDVDDLASMVAGFWGGADAAYGGFAPANGGGHDMVASSQGSDNGYS 300
Donaria               YSVSDADAYGLGLREDVDDLASMVAGFWGGADAAYGGFAPANGGGHDMVASSQGSDNGYS 300
Morex                 YSVSDADAYGLGLREDVDDLASMVAGFWGGADAAYGGFAPANGGGHDMVASSQGSDNGYS 300
Optic                 YSVSDADAYGLGLREDVDDLASMVAGFWGGADAAYGGFAPANGGGHDMVASSQGSDNGYS 300
Haruna Nijo           YSVSDADAYGLGLREDVDDLASMVAGFWGGADAAYGGFAPANGGGHDMVASSQGSDNGYS 300
brc1.5                YSVSDADAYGLGLREDVDDLASMVAGFWGGADAAYGGFAPANGGGHXMVASSQGSDNGYS 287
com2.k                YSVSDADAYGLGLREDVDDLASMVAGFWGGADAAYGGFAPANGGGHDMVASSQGSDNGYS 300
Freak                 YSVSDADAYGLGLREDVDDLASMVAGFWGGADAAYGGFAPANGGGHDMVASSQGSDNGYS 300
HOR14427              YSVSDADAYGLGLREDVDDLASMVAGFWGGADAAYGGFAPANGGGHDMVASSQGSDNGYS 300
BM-NIL BW192com2.g    YSVSDADAYGLGLREDVDDLASMVAGFWGGADAAYGGFAPANGGGHDMVASSQGSDNGYS 300
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Bowman                PFSFLSH 307
Irregular spike 25    PFSFLSH 307
Foma                  PFSFLSH 307
Donaria               PFSFLSH 307
Morex                 PFSFLSH 307
Optic                 PFSFLSH 307
Haruna Nijo           PFSFLSH 307
brc1.5                PFSFLSH 307
com2.k                PFSFLSH 307
Freak                 PFSFLSH 307
HOR14427              PFSFLSH 307
BM-NIL BW192com2.g    PFSFLSH 307
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Figure S3 COM2 protein sequence alignment of different mutant alleles: Mutated positions between parents of the population BW-NIL(*com2.g*) and Haruna Nijo as well as other identified mutants that either shared the same mutation observed in the mutant parent of *com2.g* (S221R) (four mutants; *brc1.5*, *com.k*, Freak , HOR14427) or showed a different mutation (L228H) (one mutant; the *irregular spike 25*). The remaining cultivars represent the donor lines; see Table S1.