

Supplementary Data

Supplementary Table 1: Top 20 Strawberry Producers

Area	Item	Year	Value	Unit
China, mainland	Strawberries	2019	3212814	tonnes
United States of America	Strawberries	2019	1021490	tonnes
Mexico	Strawberries	2019	861337	tonnes
Turkey	Strawberries	2019	486705	tonnes
Egypt	Strawberries	2019	460245	tonnes
Spain	Strawberries	2019	351960	tonnes
Russian Federation	Strawberries	2019	208800	tonnes
Republic of Korea	Strawberries	2019	192971	tonnes
Poland	Strawberries	2019	185400	tonnes
Morocco	Strawberries	2019	167827	tonnes
Brazil	Strawberries	2019	165440	tonnes
Japan	Strawberries	2019	158443	tonnes
Germany	Strawberries	2019	143980	tonnes
United Kingdom of Great Britain and Northern Ireland	Strawberries	2019	141594	tonnes
Italy	Strawberries	2019	125130	tonnes
Belarus	Strawberries	2019	81887	tonnes
Netherlands	Strawberries	2019	75590	tonnes
Greece	Strawberries	2019	74430	tonnes
Australia	Strawberries	2019	68534	tonnes
Ukraine	Strawberries	2019	62620	tonnes

Supplementary Table 2: Top 20 strawberry Importers

Area	Item	Year	Value	Unit
United States of America	Strawberries	2019	186499	tonnes
Germany	Strawberries	2019	128105	tonnes
Canada	Strawberries	2019	96912	tonnes
France	Strawberries	2019	64357	tonnes
United Kingdom of Great Britain and Northern Ireland	Strawberries	2019	57379	tonnes
Russian Federation	Strawberries	2019	43885	tonnes
Italy	Strawberries	2019	42314	tonnes
Belgium	Strawberries	2019	33325	tonnes
Netherlands	Strawberries	2019	30113	tonnes
Portugal	Strawberries	2019	20315	tonnes
Austria	Strawberries	2019	20138	tonnes
Spain	Strawberries	2019	18519	tonnes
Poland	Strawberries	2019	17698	tonnes
Saudi Arabia	Strawberries	2019	17115	tonnes
Mexico	Strawberries	2019	16960	tonnes
Czechia	Strawberries	2019	16368	tonnes
Switzerland	Strawberries	2019	14088	tonnes
United Arab Emirates	Strawberries	2019	10388	tonnes
Belarus	Strawberries	2019	10023	tonnes
Romania	Strawberries	2019	9124	tonnes

Supplementary Table 3: Top 20 Strawberry Exporters

Area	Item	Year	Value	Unit
Spain	Strawberries	2019	300036	tonnes
Mexico	Strawberries	2019	137393	tonnes
United States of America	Strawberries	2019	130784	tonnes
Netherlands	Strawberries	2019	57071	tonnes
Greece	Strawberries	2019	45175	tonnes
Belgium	Strawberries	2019	45069	tonnes
Egypt	Strawberries	2019	38543	tonnes
Turkey	Strawberries	2019	25352	tonnes
Morocco	Strawberries	2019	21439	tonnes
Yemen	Strawberries	2019	18800	tonnes
Italy	Strawberries	2019	12990	tonnes
Germany	Strawberries	2019	12229	tonnes
Serbia	Strawberries	2019	8896	tonnes
France	Strawberries	2019	8732	tonnes
Lithuania	Strawberries	2019	7448	tonnes
Portugal	Strawberries	2019	6468	tonnes
Poland	Strawberries	2019	6411	tonnes
Guatemala	Strawberries	2019	6383	tonnes
Belarus	Strawberries	2019	5849	tonnes
Republic of Korea	Strawberries	2019	5259	tonnes

Supplementary Figure 1: Amino acid sequence alignment of Primer 1 for *P. cactorum* Resistant (R) and Sensitive (S) Isolates with previously identified SNPs in *P. infestans*

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Phytophtho PPLEVQSQLQLMWQNE DGLMEMLYGDRNIASGRVSGRKP-----DGW-----RKFFL
R1_Primer1 -----YGDRNIASGRVSGRKP-----DGW-----RKFFL
R2_Primer1 -----GLLYGDRNIASGRVSGRKP-----DGW-----RKFFL
S4_Primer1 -----GLLYGDRNIASGRVSGRKP-----DGW-----RKFFL
R4_Primer1 -----GLLYGDRNIASGRVSGRKP-----DGW-----RKFFL
S3_Primer1 -----NGDRNIASGRVSGRKP-----DGW-----RKFFL
R3_Primer1 -----NGDRNIASGRVSGRKP-----DGW-----RKFFL
S2_Primer1 -----NGDRNIASGRVSGRKP-----DGW-----RKFFL
S1_Primer1 -----RRPQHCLAAVSSWPARRLAQVLSL
                                     **          ..*          : : *

Phytophtho NVIPVAPSRFRPPVFMGDKQFEHAQNSHLSKIMTYSEIVQSDYYKQAATTSDEDDAEK
R1_Primer1 NVIPVAPSRFRPPVFMGDKQFEHAQNSHLSKIMTLSEIVQGDYYKQAATTSDEDDAEK
R2_Primer1 NVIPVAPSRFRPPVFMGDKQFEHAQNSHLSKIMTLSEIVQGDYYKQAATTSDEDDAEK
S4_Primer1 NVIPVAPSRFRPPVFMGDKQFEHAQNSHLSKIMTLSEIVQGDYYKQAATTSDEDDAEK
R4_Primer1 NVIPVAPSRFRPPVFMGDKQFEHAQNSHLSKIMTLSEIVQGDYYKQAATTSDEDDAEK
S3_Primer1 NVIPVAPSRFRPPVFMGDKQFEHAQNSHLSKIMTLSEIVQGDYYKQAATTSDEDDAEK
R3_Primer1 NVIPVAPSRFRPPVFMGDKQFEHAQNSHLSKIMTLSEIVQGDYYKQAATTSDEDDAEK
S2_Primer1 NVIPVAPSRFRPPVFMGDKQFEHAQNSHLSKIMTLSEIVQGDYYKQAATTSDEDDAEK
S1_Primer1 NVIPVCAFTF-PPAFSGDKQFEHAQNSHLSKIMTLSEIVQGDYYKQAATTSDEDDAEK
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Phytophtho EEQVNLSRKLALWTELQNAV NLLVDSSKAKPGTDVAQGIKQVIEKKEGLFRKHMMGKRVN
R1_Primer1 EEQVNLSRKLALWTELQNAV NLLVDSSKAKPGTDVAQGIKQVIEKKEGLFRKH-----
R2_Primer1 EEQVNLSRKLALWTELQNAV NLLVDSSKAKPGTDVAQGIKQVIEKKEGLFRKHMMGK---
S4_Primer1 EEQVNLSRKLALWTELQNAV NLLVDSSKAKPGTDVAQGIKQVIEKKEGLFRKHMMGK---
R4_Primer1 EEQVNLSRKLALWTELQNAV NLLVDSSKAKPGTDVAQGIKQVIEKKEGLFRKH-----
S3_Primer1 EEQVNLSRKLALWTELQNAV NLLVDSSKAKPGTDVAQGIKQVIEKKEGLFRKHIG-----
R3_Primer1 EEQVNLSRKLALWTELQNAV NLLVDSSKAKPGTDVAQGIKQVIEKKEGLFRKHMEWVK--
S2_Primer1 EEQVNLSRKLALWTELQNAV NLLVDSSKAKPGTDVAQGIKQVIEKKEGLFRKHWIG----
S1_Primer1 EEQVNLSRKLALWTELQNAV NLLVDSSKAKPGTDVAQGIKQVIEKKEGLFRKHW-----
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Supplementary Figure 2: Amino acid sequence alignment of Primer 2 for *P. cactorum* Resistant (R) and Sensitive (S) Isolates with previously identified SNPs in *P. infestans*

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Phytophtho NAKALDAHMMGCVHGSNSDI IKTCLPSGQSKAFFPKNNFSLMVLTGAKGSMVNHSQISCGL
R3_Primer2 ---XXXXMMGCVHGSNSDI IKTCLPSGQSKAFFPKNNFSLMVLTGAKGSMVNHSQISCGL
R4_Primer2 -----MMGCVHGSNSDI IKTCLPSGQSKAFFPKNNFSLMVLTGAKGSMVNHSQISCGL
S4_Primer2 -----PMMGCVHGSNSDI IKTCLPSGQSKAFFPKNNFSLMVLTGAKGSMVNHSQISCGL
S3_Primer2 ---XXXXMMGCVHGSNSDI IKTCLPSGQSKAFFPKNNFSLMVLTGAKGSMVNHSQISCGL
S1_Primer2 -----PMGCVHGSNSDI IKTCLPSGQSKAFFPKNNFSLMVLTGAKGSMVNHSQISCGL
R1_Primer2 -----AMMGCVPGSNSDI IKTCLPSGQSKAFFPKNNFSLMVLTGAKGSMVNHSQISCGL
S2_Primer2 ---XXXXHDGLRAGSNSDI IKTCLPSGQSKAFFPKNNFSLMVLTGAKGSMVNHSQISCGL
R2_Primer2 -----XXXXXFLKTCCLPSGQSKAFFPKNNFSLMVLTGAKGSMVNHSQISCGL
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Phytophtho GQQALEGRRVPILCSGRSLPSFEFFDPAPRAGGYVTD RFLTGLRPQEYYHHC MAGREGLV
R3_Primer2 GQQALEGRRVPILCSGRSLPSFEFFDPAPRAGGYVTD RFLTGLRPQEYYHHC MAGREGLV
R4_Primer2 GQQALEGRRVPILCSGRSLPSFEFFDPAPRAGGYVTD RFLTGLRPQEYYHHC MAGREGLV
S4_Primer2 GQQALEGRRVPILCSGRSLPSFEFFDPAPRAGGYVTD RFLTGLRPQEYYHHC MAGREGLV
S3_Primer2 GQQALEGRRVPILCSGRSLPSFEFFDPAPRAGGYVTD RFLTGLRPQEYYHHC MAGREGLV
S1_Primer2 GQQALEGRRVPILCSGRSLPSFEFFDPAPRAGGYVTD RFLTGLRPQEYYHHC MAGREGLV
R1_Primer2 GQQALEGRRVPILCSGRSLPSFEFFDPAPRAGGYVTD RFLTGLRPQEYYHHC MAGREGLV
S2_Primer2 GQQALEGRRVPILCSGRSLPSFEFFDPAPRAGGYVTD RFLTGLRPQEYYHHC MAGREGLV
R2_Primer2 GQQALEGRRVPILCSGRSLPSFEFFDPAPRAGGYVTD RFLTGLRPQEYYHHC MAGREGLV
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Phytophtho DTAVKTSRSGYLQRCLIKHLEDLNVGYDHTVRNSDGGVIQFLYGEDGIDPVQSAMLSGKD
R3_Primer2 DTAVKTSRSGYLQRCLIKH-----
R4_Primer2 DTAVKTSRSGYLQRCLI-----
S4_Primer2 DTAVKTSRSGYLQRCLIKHK-----
S3_Primer2 DTAVKTSRSGYLQRCLIKQ-----
S1_Primer2 DTAVKTSRSGYLQRCLNQAQQ-----
R1_Primer2 DTAVKTSRSGYLQRCLNQAQ-----
S2_Primer2 DTAVKTSRSGYLQRCLIQAQK-----
R2_Primer2 DTAVKTSRSGYLQRCLNXXXXXI-----
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Supplementary Figure 3: Amino acid sequence alignment of Primer 3 for *P. cactorum* Resistant (R) and Sensitive (S) Isolates with previously identified SNPs in *P. infestans*

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Phytophtho DVESSRAQEVEQRLNQVALSELINNTNGVRVKDQFHSSENGILWVRDYQIRLSFFKLKEI
S1_Primer3 -----KKEI
R1_Primer3 -----TIRLTFFKLKEI
R3_Primer3 -----XXXXXITIRLTFFKLKEI
S3_Primer3 -----GDTIRLTFFKLKEI
S2_Primer3 -----XXXXXDQIRLTFFKLKEI
S4_Primer3 -----GDQIRLTFFKLKEI
R2_Primer3 -----XXXXXIRIRLTFFKLKEI
R4_Primer3 -----FHSSENGILWVRDYQIRLTFFKLKEI
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Phytophtho KRVFGLSADQVFNSFGRGFVVGKLLTLISREMKKSGVTVSAAA EKNNFKAPSGADKKKNDD
S1_Primer3 KRVFGLSADQVFNSFGRGFVVGKLLTLISREMKKSGVTVSAAA EKNNFKAPSGADRKKT--
R1_Primer3 KRVFGLSADQVFNSFGRGFVVGKLLTLISREMKKSGVTVSAAA EKNNFKAPSGADRKKTND
R3_Primer3 KRVFGLSADQVFNSFGRGFVVGKLLTLISREMKKSGVTVSAAA EKNNFKAPSGADRKKTND
S3_Primer3 KRVFGLSADQVFNSFGRGFVVGKLLTLISREMKKSGVTVSAAA EKNNFKAPSGADRKKTND
S2_Primer3 KRVFGLSADQVFNSFGRGFVVGKLLTLISREMKKSGVTVSAAA EKNNFKAPSGADRKKTND
S4_Primer3 KRVFGLSADQVFNSFGRGFVVGKLLTLISREMKKSGVTVSAAA EKNNFKAPSGADRKKTND
R2_Primer3 KRVFGLSADQVFNSFGRGFVVGKLLTLISREMKKSGVTVSAAA EKNNFKAPSGADRKKTND
R4_Primer3 KRVFGLSADQVFNSFGRGFVVGKLLTLISREMKKSGVTVSAAA EKNNFKAPSGADRKKTND
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Phytophtho DEDDDDEQGTLRFGSRGEVQGYGEMDEEDEKIRKAQMADSDIDSYDETSGNQKNGADT
S1_Primer3 -----
R1_Primer3 D-DDDDEQGTLRFGSRGEVQGYGEMDEEDEKIRKAQMADSDIDSDETSGNKKKQR---
R3_Primer3 D-DDDDEQGTLRFGSRGEVQGYGEMDEEDEKIRKAQMADSDIDSDETSGNKKKQRR--
S3_Primer3 D-DDDDEQGTLRFGSRGEVQGYGEMDEEDEKIRKAQMADSDIDSDETSGNKKSNE---
S2_Primer3 D-DDDDEQGTLRFGSRGEVQGYGEMDEEDEKIRKAQMADSDIDSDETSGNKKSNE---
S4_Primer3 D-DDDDEQGTLRFGSRGEVQGYGEMDEEDEKIRKAQMADSDIDSDETSGNKKSNE---
R2_Primer3 D-DDDDEQGTLRFGSRGEVQGYGEMDEEDEKIRKAQMADSDIDSDETSGNKKSNE---
R4_Primer3 D-DDDDEQGTLRFGSRGEVQGYGEMDEEDEKIRKAQMADSDIRS-----

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