

Supplementary Table 1 Primers used for synthesizing gRNA spacers and genotyping of CRISPR-edited mutants

Name	sequence 5'→3'	Purpose
gRNAs1- <i>Pita-Fuhui2663</i>	GTGTGGGATATTGTTAGCCG	CRISPR/CAS9
<i>Pita-R-F</i>	TGGCCAACAACCTCCACTGAA	Screening of lines
<i>Pita-R-Fuhui2663</i>	TCAGCATGCTATCCCACGTA	Screening of lines
<i>Pita-Fuhui2663-dCAPS-F</i>	ATCACGGGTATGGATTTTCA	Restriction enzyme
<i>Pita-Fuhui2663-dCAPS-R</i>	GTGCATCTTCAACCTGACTTGATGATTGTTGA	Restriction enzyme

Supplementary Table 2. Indel and SSR molecular marker used for fine mapping the *Pita-R* gene

Marker	Sequence of forward primer	Sequence of reverse primer	Physical distance (kb)
Indel-12-4	ATCATTTTCAGCCTGTGCC	AGCTTAATAGGGGGGACG	4203
RM27728	CCTCCATACTCACAAAGGAAGTCG	TCCCTCCGTACTTATAAAGGAAGTCG	5590
RM27766	ATGGTGCCCGAGTACAATGG	TGAGGTGCATGTGAACCTTGG	6438
RM27830	CTGTCCTGTGCCTCCTGTGC	GGTACGTCATCCGTGTATGAGTCG	7886
RM27860	AACCTTGGAGCAATATCACC	TGAATCACTAGCCGATAACC	8654
Indel-1	AGCATCCTAAGCACTTTAGC	TTGAGCATGTTGATCCTGT	9143
Indel-6	AACCAACTAGTCGCATATTA	TTCTTCCTTAACTCGTCGAA	9765
Indel-11	ACAACCAAGTTTGATCACTG	ATGCTACACACACGACTACG	10368
Indel-22	TGGGCAACTGAATCTAACCA	GGAGATGATGATGCGGTGAT	10474
Indel-26	CCCAAAGTCAGCTGAGAGTA	AGCCATACGACTGTAGGAAA	10572
Indel-30	TAGGAGGGGTATAATCGTCA	TTAGGGTAACATTGGCATT	10622
Indel-33	TAACCTTCAGGCGTACTTTC	TTTTGCAAATTTTGATGTTG	10652
Indel-12	ATCCATTCCATTTGTACGAG	ATAGTTTTCACTACTTCCCA	10721
Indel-16	AAGCATGGATACAAACCATT	GCAAAAACAACCGTAAGAAG	11328
RM27960	CGGCCCGAACCTGTATAACC	AGGAGTATCCTTTCTCGCAATCG	11935
RM27983	GCAAGCGTGGGATTCTCTCC	CTATGCCAGATGGTGCTTACTCG	12685
Indel-12-7	CAACTAAAACCAACACAAAATCCA	TGTCTAGTTGCATGTCTGAGTGTC	13198

Supplementary Table 3. Mutation sites of two target mutant lines

Line	Target type	Mutation site
<i>Pita-Fuhui2663-KO-1</i>	gRNAs 1	TATGGGCTTCATCAATGCTGGGATATTGTTAGCCGTGGTTTGCC (1 bp insertion)
<i>Pita-Fuhui2663-KO-2</i>	gRNAs 1	TATGGGCTTCATCAATG - GGGATATTGTTAGCCGTGGTTTGCC (1 bp deletion)

Supplementary Table 4. Haplotype analysis of *Pita-Fuhui2663*

Haplotype	SNP	Sample list	Group	Plant Height (2799)
Hap1	TCCACTGCCCCA	680	Aus: 2; Bas: 12; GJ: 13; XI: 645; admix: 8	(617 of 680) mean: 96.408
Hap2	TACTACTGCGCCC	651	Aus: 82; Bas: 15; GJ: 37; XI: 504; admix: 13	(584 of 651) mean: 96.731
Hap3	CACTCTGCGTCC	359	Aus: 5; GJ: 203; XI: 137; admix: 13; na: 1	(333 of 359) mean: 99.700
Hap4	TACTACTGCGCCA	349	Aus: 106; Bas: 29; GJ: 5; XI: 195; admix: 14	(338 of 349) mean: 90.322
Hap5	TACACACGGCCC	299	Bas: 6; GJ: 282; XI: 3; admix: 8	(279 of 299) mean: 99.315
Hap6	TATACACGGCCC	254	GJ: 239; XI: 8; admix: 7	(246 of 254) mean: 85.077
Hap7	TACAATGCGCCC	158	Bas: 6; XI: 147; admix: 5	(149 of 158) mean: 92.970
Hap8	TACACACGGCAC	31	GJ: 20; XI: 11	(31 of 31) mean: 100.935
Hap9	TMCACTGCSCCM	23	XI: 19; admix: 4	(20 of 23) mean: 94.950
Hap10	YMCWCTGCSYCM	8	XI: 7; admix: 1	(8 of 8) mean: 97.938
Hap11	TAYACACGGCCC	7	GJ: 7	(6 of 7) mean: 87.000
Hap12	TMCACTGCCCCA	7	XI: 7	(6 of 7) mean: 87.333
Hap13	TACACWSSGCCC	6	XI: 3; admix: 3	(4 of 6) mean: 98.500
Hap14	TACAMTGCGCCC	6	XI: 6	(6 of 6) mean: 99.000
Hap15	TACTACTGCGCCM	6	Aus: 1; Bas: 1; XI: 3; admix: 1	(4 of 6) mean: 89.250
Hap16	TAYACWSSGCCC	5	GJ: 1; XI: 2; admix: 2	(5 of 5) mean: 95.200
Hap17	TMCAMTGCSCCM	4	XI: 4	(4 of 4) mean: 110.750
Hap18	TMCACTGCSCCA	4	XI: 4	(4 of 4) mean: 89.250
Hap19	YACWCTGCGYCM	4	admix: 4	(4 of 4) mean: 95.500
Hap20	YACWCWSSGYCC	4	GJ: 4	(4 of 4) mean: 110.625
Hap21	TMCACWSSSCCM	3	GJ: 1; XI: 1; admix: 1	(2 of 3) mean: 102.500
Hap22	TACACASSGCCC	3	Bas: 1; GJ: 1; admix: 1	(3 of 3) mean: 105.667
Hap23	TACACWSSGCCM	3	XI: 1; admix: 2	(3 of 3) mean: 90.667
Hap24	YACWMTGCGYCC	3	XI: 1; admix: 2	(2 of 3) mean: 86.000
Hap25	TMCACTGCGCCM	3	XI: 2; admix: 1	(3 of 3) mean: 97.167

Note: XI means Xian/indica subpopulation; GJ means Geng/japonica types; Aus means *centrum*-Aus population; Bas means *centrum*-Basmati population; admix means admixed between any two or more of the XI, GJ, Aus, Bas populations.

Supplementary Figure 1. Fuhui2663 is resistant to KJ201 and LTH is susceptible to KJ201 under laboratory conditions.



Supplementary Figure 2. *Ptr* was located about 210 kb upstream of *Pita-Fuhui2663* and *Pita*



Supplementary Figure 3. Amino acid sequence comparison among Pita-Fuhui2663-KO-1, Pita-Fuhui2663-KO-1, Pita-Fuhui2663 and Pita-S

Pita-Fuhui2663	MAPAVIASQGVIMRSLTSKLSGLLQPPPEPPFAQPSLSLRKGERKRWILLKGLDHLHLLDYLLVPEPSTAPFPSTAAKWEVRELSYVDDFLDELITQLLHRRGGGSGSTAGAN	120
Pita-S	MAPAVIASQGVIMRSLTSKLSGLLQPPPEPPFAQPSLSLRKGERKRWILLKGLDHLHLLDYLLVPEPSTAPFPSTAAKWEVRELSYVDDFLDELITQLLHRRGGGSGSTAGAN	120
Pita-Fuhui2663-KO-1	MAPAVIASQGVIMRSLTSKLSGLLQPPPEPPFAQPSLSLRKGERKRWILLKGLDHLHLLDYLLVPEPSTAPFPSTAAKWEVRELSYVDDFLDELITQLLHRRGGGSGSTAGAN	120
Pita-Fuhui2663-KO-2	MAPAVIASQGVIMRSLTSKLSGLLQPPPEPPFAQPSLSLRKGERKRWILLKGLDHLHLLDYLLVPEPSTAPFPSTAAKWEVRELSYVDDFLDELITQLLHRRGGGSGSTAGAN	120
Consensus	MAPAVIASQGVIMRSLTSKLSGLLQPPPEPPFAQPSLSLRKGERKRWILLKGLDHLHLLDYLLVPEPSTAPFPSTAAKWEVRELSYVDDFLDELITQLLHRRGGGSGSTAGAN	
Pita-Fuhui2663	KNISSMIARLGLNRRRWIADEVTLFRARVKEAIRRHESYHLGRNTSSSRPREEDDDDDREDSAGNERRRFLSLTFGMDDAAVHGQLVGRDISMOKLVWMLADGEPKLVASIVGSGGV	240
Pita-S	KNISSMIARLGLNRRRWIADEVTLFRARVKEAIRRHESYHLGRNTSSSRPREEDDDDDREDSAGNERRRFLSLTFGMDDAAVHGQLVGRDISMOKLVWMLADGEPKLVASIVGSGGV	240
Pita-Fuhui2663-KO-1	KNISSMIARLGLNRRRWIADEVTLFRARVKEAIRRHESYHLGRNTSSSRPREEDDDDDREDSAGNERRRFLSLTFGMDDAAVHGQLVGRDISMOKLVWMLADGEPKLVASIVGSGGV	240
Pita-Fuhui2663-KO-2	KNISSMIARLGLNRRRWIADEVTLFRARVKEAIRRHESYHLGRNTSSSRPREEDDDDDREDSAGNERRRFLSLTFGMDDAAVHGQLVGRDISMOKLVWMLADGEPKLVASIVGSGGV	240
Consensus	KNISSMIARLGLNRRRWIADEVTLFRARVKEAIRRHESYHLGRNTSSSRPREEDDDDDREDSAGNERRRFLSLTFGMDDAAVHGQLVGRDISMOKLVWMLADGEPKLVASIVGSGGV	
Pita-Fuhui2663	GKTTLATEFYRLGSRDLDAFFDCRAFVTRPKRPMETKILITDMLSQLRPFCHQSGSDVWEVDRLLTIRTHLQDERYFIILEDWASSNWDIVSRGLPDNNCSRILITTEIEFPVALACCG	360
Pita-S	GKTTLATEFYRLGSRDLDAFFDCRAFVTRPKRPMETKILITDMLSQLRPFCHQSGSDVWEVDRLLTIRTHLQDERYFIILEDWASSNWDIVSRGLPDNNCSRILITTEIEFPVALACCG	360
Pita-Fuhui2663-KO-1	GKTTLATEFYRLGSRDLDAFFDCRAFVTRPKRPMETKILITDMLSQLRPFCHQSGSDVWEVDRLLTIRTHLQDERYFIILEDWASSNWDIVSRGLPDNNCSRILITTEIEFPVALACCG	360
Pita-Fuhui2663-KO-2	GKTTLATEFYRLGSRDLDAFFDCRAFVTRPKRPMETKILITDMLSQLRPFCHQSGSDVWEVDRLLTIRTHLQDERYFIILEDWASSNWDIVSRGLPDNNCSRILITTEIEFPVALACCG	360
Consensus	GKTTLATEFYRLGSRDLDAFFDCRAFVTRPKRPMETKILITDMLSQLRPFCHQSGSDVWEVDRLLTIRTHLQDERYFIILEDWASSNWDIVSRGLPDNNCSRILITTEIEFPVALACCG	
Pita-Fuhui2663	YNSEHIKIDFLGDDVSSQLFFSGVVGQGNFEPGHLTEVSHDMIRKCGGLPLAITITARHFRSQQLLDGMQCNHQRSLTISNLKRNFTLQGMROVLNIYNNPHCLKACILYLSIYKE	480
Pita-S	YNSEHIKIDFLGDDVSSQLFFSGVVGQGNFEPGHLTEVSHDMIRKCGGLPLAITITARHFRSQQLLDGMQCNHQRSLTISNLKRNFTLQGMROVLNIYNNPHCLKACILYLSIYKE	480
Pita-Fuhui2663-KO-1	STGCLKSIVFQWCSWFRKISWISFSHDKMMWLLASNNYNSQTFKFAVRWNAAMESHTKIIDYFQFEKSYFAGDEASQFYLGSSSFESMSIIPHLGRGHNEGGLGEAMDGRFHQ	480
Pita-Fuhui2663-KO-2	STLLRLHWVMSQVNCFSVELLAKEMNFLDILLRFLMTRNVVACHQLQPDILASCHESNGITYNMHLLFIRKILLCRGGYSTLPIIFLIVRHCVTILASIRKTLTGSPITGNWGL	480
Consensus	YNSEHIKIDFLGDDVSSQLFFSGVVGQGNFEPGHLTEVSHDMIRKCGGLPLAITITARHFRSQQLLDGMQCNHQRSLTISNLKRNFTLQGMROVLNIYNNPHCLKACILYLSIYKE	
Pita-Fuhui2663	DYIIRKANLVQWMAEGFINSIENKVMEEVAGNYFDELVGRGLQFVDVNCNEVLSCVHHMVLNFIKCKSIEENFSITLDISQITVRHAKVRRLSHFSNAHDTTFLAGLRISQVRS	600
Pita-S	DYIIRKANLVQWMAEGFINSIENKVMEEVAGNYFDELVGRGLQFVDVNCNEVLSCVHHMVLNFIKCKSIEENFSITLDISQITVRHAKVRRLSHFSNAHDTTFLAGLRISQVRS	600
Pita-Fuhui2663-KO-1	FHRKSHGRSCELFTCWGFGFTSRCLQGIWCSAPHGIRFQVNRGEFQHYIGSFSDSKTCQGSFTLASLQOCTYNTSRFEITSSIGFITSQVYAFHCLASSSSSEIFLGRS	600
Pita-Fuhui2663-KO-2	KVSSIFPKISWKRLQGITLMLNLVGAWSNQLTAKMRYCHVCTTWISSSGVQRRIALHWIILRRQMLTRFADSRFTSAMHICHHQVLSHKEDRWHSFKSSVCLFQIIGFEEFFSR	600
Consensus	DYIIRKANLVQWMAEGFINSIENKVMEEVAGNYFDELVGRGLQFVDVNCNEVLSCVHHMVLNFIKCKSIEENFSITLDISQITVRHAKVRRLSHFSNAHDTTFLAGLRISQVRS	
Pita-Fuhui2663	MAFFGQVCMFSIADYRLLVLLCFWADQERTSVLTISIFELLQRLYRKITGNITVKLPEKIQGLQHCTEADARATAVLLDIVHTQCLLHLRLVLLDLFPHCHRYIFTSIPKWTGKL	720
Pita-S	MAFFGQVCMFSIADYRLLVLLCFWADQERTSVLTISIFELLQRLYRKITGNITVKLPEKIQGLQHCTEADARATAVLLDIVHTQCLLHLRLVLLDLFPHCHRYIFTSIPKWTGKL	720
Pita-Fuhui2663-KO-1	ENKLPHEHTVTITLSEDMYHSTSRDEPTLLATGCRCEMNCPIGYCSVTVPFSSCTTISAPSSQVHLRQBPQCMHWAQCSFHFHCSHANFPGHSGPTGISHCFAACSNBA	720
Pita-Fuhui2663-KO-2	VEGLIKRQAMTSQALNCYNDGCVISQLNFGQRSKRYNTRCHWKCQQLLSWILFIHSVQCTFVYVYICSLTVGTSSPASPNGLSESTISATLQSCKEFLNTLTKSLDLS	720
Consensus	MAFFGQVCMFSIADYRLLVLLCFWADQERTSVLTISIFELLQRLYRKITGNITVKLPEKIQGLQHCTEADARATAVLLDIVHTQCLLHLRLVLLDLFPHCHRYIFTSIPKWTGKL	
Pita-Fuhui2663	NNLRILNIAVMOISQDDDLTLKGLSITALLIVRTAPACRIVAAEFGFGLSKRYEMFVCTAPCMTEVEGAMFVQRLNLRFNANEFQYDSKETLEHLVALAEISARIGTDDDEENKT	840
Pita-S	NNLRILNIAVMOISQDDDLTLKGLSITALLIVRTAPACRIVAAEFGFGLSKRYEMFVCTAPCMTEVEGAMFVQRLNLRFNANEFQYDSKETLEHLVALAEISARIGTDDDEENKT	840
Pita-Fuhui2663-KO-1	CARNRRCESRVSCVHLVCLYSTMHDFCGRNAEACARVSKVQCCRVQVGLGRFCRDLCKNMGHIRQNSGVLEDCQSCASDAESYTYTMGGDLWCREDLRFGTTRFW	840
Pita-Fuhui2663-KO-2	LFRCLFEQLRKESLSLRMGSGLSSTSCLSVCHALLWKEQCRVCKGIGSMPTSSSSMTLRQGWNTWSFLQRSLLQELGALMMNQTCLKWSLFCFASIRRRALLNIYNGWIGLVL	840
Consensus	NNLRILNIAVMOISQDDDLTLKGLSITALLIVRTAPACRIVAAEFGFGLSKRYEMFVCTAPCMTEVEGAMFVQRLNLRFNANEFQYDSKETLEHLVALAEISARIGTDDDEENKT	
Pita-Fuhui2663	EVEASLTAIRKHFESTIMVDIQRWDWIFCAGRNLLDELAQQDDHRYGFFILFPGYNLQGLLSFFLSLFWLLSLFENHLQPDIMI	927
Pita-S	EVEASLTAIRKHFESTIMVDIQRWDWIFCAGRNLLDELAQQDDHRYGFFILFPGYNLQGLLSFFLSLFWLLSLFENHLQPDIMI	927
Pita-Fuhui2663-KO-1	IFHIFHLEQLTRITELLSESAVASIETCYASSTLLDCL.....	927
Pita-Fuhui2663-KO-2	KGTWNRKINHNKQIMDFSYSGVITYYKDYGFLLCRGFYLYLLCIENLTLF.....	927
Consensus	EVEASLTAIRKHFESTIMVDIQRWDWIFCAGRNLLDELAQQDDHRYGFFILFPGYNLQGLLSFFLSLFWLLSLFENHLQPDIMI	

Supplementary Figure 4. Detection and analysis of *Pita-Fuhui2663-dCAPS* molecular marker. M represents DNA size markers; Lane 1 shows the amplified target fragment of 123 bp from *Pita-Fuhui2663*; Lane 2 shows the amplified target fragment of 98 bp from *Pita-S*.

