

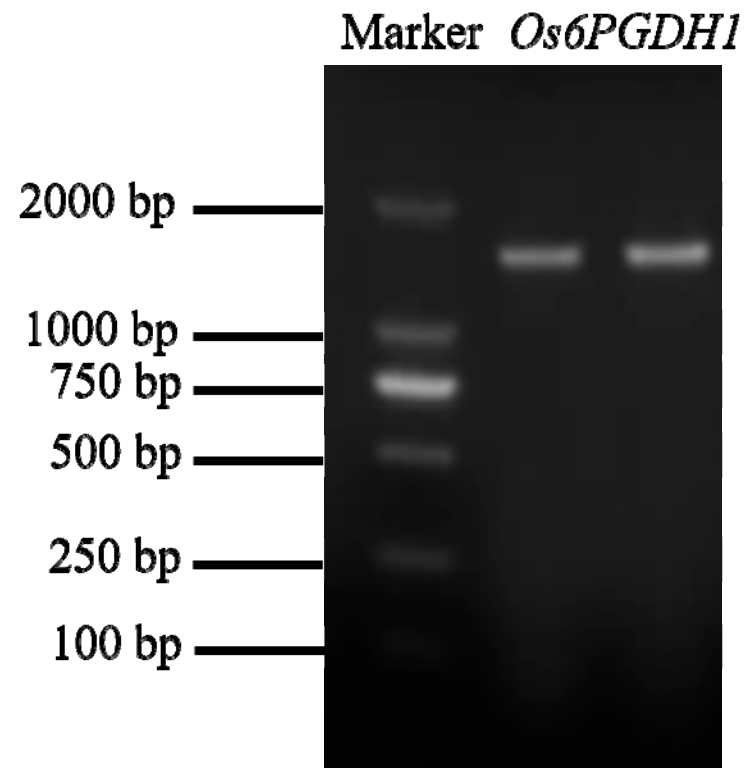
Supplementary Materials:

## **Overexpression of a Cytosolic 6-Phosphogluconate Dehydrogenase Gene Enhances the Resistance of Rice to *Nilaparvata lugens***

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**Figure S1.** Gel electrophoresis of PCR amplified full-length segments of *Os6PGDH1* from cDNA library of Xiushui 110. The PCR product is about 1500 bp.

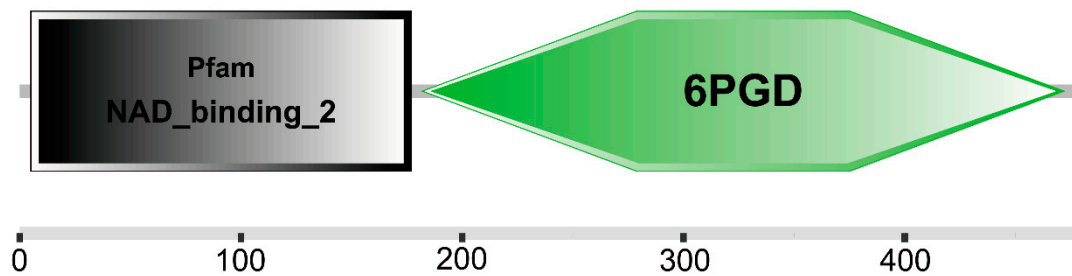


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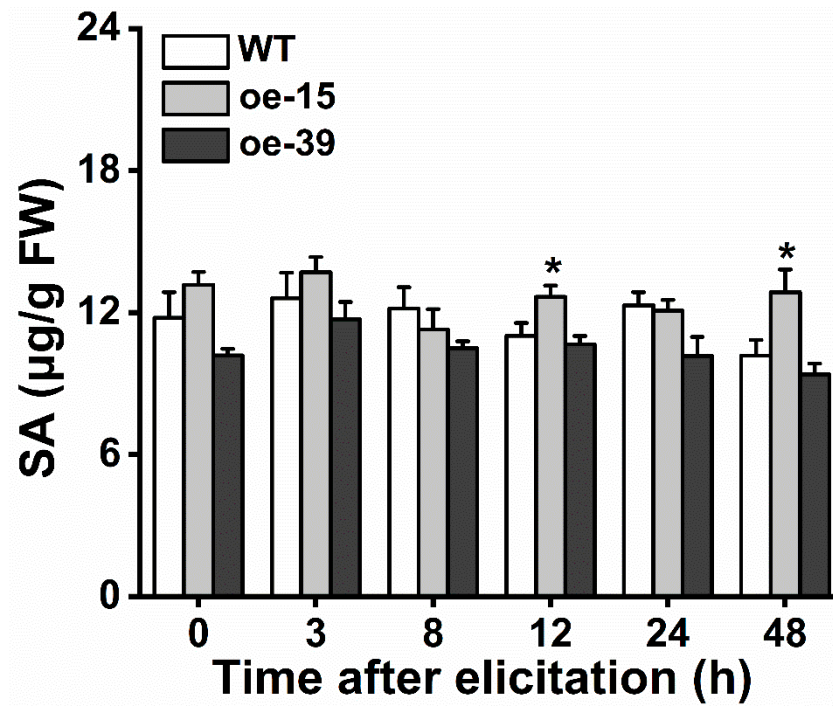
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1      M A V T R I G L A G L A V M G Q N L A L N I A E K
26     GGGTTCCCTATCTCTGTCTACAACAGGACGACTTCTAAGGTTGATGAGACCGTTTCAGCGCCCAAGGTAGAAGGA
26     G F P I S V Y N R T T S K V D E T V Q R A K V E G
151    AACCTTCCTGTGTACGGGTTCCATGACCCTGCATCCTTTGTGAACTCCATTGAGAAGCCACGTGTGTCATCATG
151    N L P V Y G F H D P A S F V N S I Q K P R V V I M
226    CTTGTCAAGGCTGGTGCACCAGTGGACCAGACCATTGCAACTCTTGCAGCACACTTGGAGCAGGGTGACTGTATT
226    L V K A G A P V D Q T I A T L A A H L E Q G D C I
301    ATTGATGGAGGAAATGAGTGGTACGAGAACACTGAGAGGAGGGAGAAGGCAATGGAGGAGCGTGGCCTCCTCTAT
301    I D G G N E W Y E N T E R R E K A M E E R G L L Y
101    CTTGGGATGGGTGTTCCGGAGGAGAGGGGTGCCCGCAATGGCCCGTCTTGATGCCTGGTGGCTCATTGCGAG
101    L G M G V S G G E E G A R N G P S L M P G G S F E
376    GCGTACAAGTACATTGAAGATATTCTTCTCAAGGTGGCTGCCAGGTTCTGATAGTGGCCCGTGGCTCACATAC
126    A Y K Y I E D I L L K V A A Q V P D S G P C V T Y
451    ATTGGCAAAGGTGGATCTGGAACCTTTGTCAAGATGGTTCACAACGGAATTGAGTATGGTGACATGCAACTGATT
151    I G K G G S G N F V K M V H N G I E Y G D M Q L I
526    TCTGAGGCATATGATGTTCTCAAGTCAGTTGGTAAGCTCACAAACAGTGAGCTGCAGCAGGTGTTTCTGAGTGG
176    S E A Y D V L K S V G K L T N S E L Q Q V F S E W
601    AACAAAGGTGAGCTCCTCAGTTTCTGATTGAGATCACAGCCGACATATTTAGCATCAAGGATGACCAGGGTTCA
201    N K G E L L S F L I E I T A D I F S I K D D Q G S
676    GGCCACCTGGTCGACAAGGTCCCTGGACAAGACTGGGATGAAGGAACTGGGAAGTGACTGTGCAGCAGGCCGCA
226    G H L V D K V L D K T G M K G T G K W T V Q Q A A
751    GAGCTTTCTGTGGCTGCTCTACAATTGAGGCATCCTTGGATTCCAGGTTCTCAGTGGGTTGAAGGATGAGCGT
251    E L S V A A P T I E A S L D S R F L S G L K D E R
826    GTTGAGGCTGCCAAGGTCTTCCAAGTGACTTCTCCAGCAACTGCCAGTGGACAAGGCACAGCTGATTGAAGAC
276    V E A A K V F Q G D F S S N L P V D K A Q L I E D
901    GTGAGGCAGGCTCTTTACGCCTCGAAGATCTGCAGTACGCTCAGGGCATGAACATCATCAAGGCCAAGAGCATG
301    V R Q A L Y A S K I C S Y A Q G M N I I K A K S M
976    GAGAAAGGTGGAGCCTCAACCTCGGTGAGCTACGGAGGATCTGGAAGGGAGGGTGATCATCCGTGCCATCTTC
326    E K G W S L N L G E L A R I W K G G C I I R A I F
1051   CTGGACCGCATCAAGAAGGCCTACGACAGGAACTCCGACCTCGCCAACCTGCTCGTGGACCCTGAGTTCGCTCAG
351    L D R I K K A Y D R N S D L A N L L V D P E F A Q
1126   GAGATCATGGACAGGCAAGCGGCATGGCGCAGGGTGGTCTGCCTTGCCATCAACAATGGCGTCAGCACCCAGGC
376    E I M D R Q A A W R R V V C L A I N N G V S T P G
1201   ATGTCGGCGAGTCTCGCGTACTTCGACTCCTACCGAGGGACAGGCTGCCTGCCAACCTGGTGCAGGCACAGAGG
401    M S A S L A Y F D S Y R R D R L P A N L V Q A Q R
1276   GACTATTTCCGGGCTCACACCTACGAGAGGGTCGACATGCCCGGCTCCTTCCACACCGAGTGGTTCAAGATCGCG
426    D Y F G A H T Y E R V D M P G S F H T E W F K I A
1351   CGTGCTGCTAAGATGTGA
451    R A A K M *
1426   R A A K M *
476

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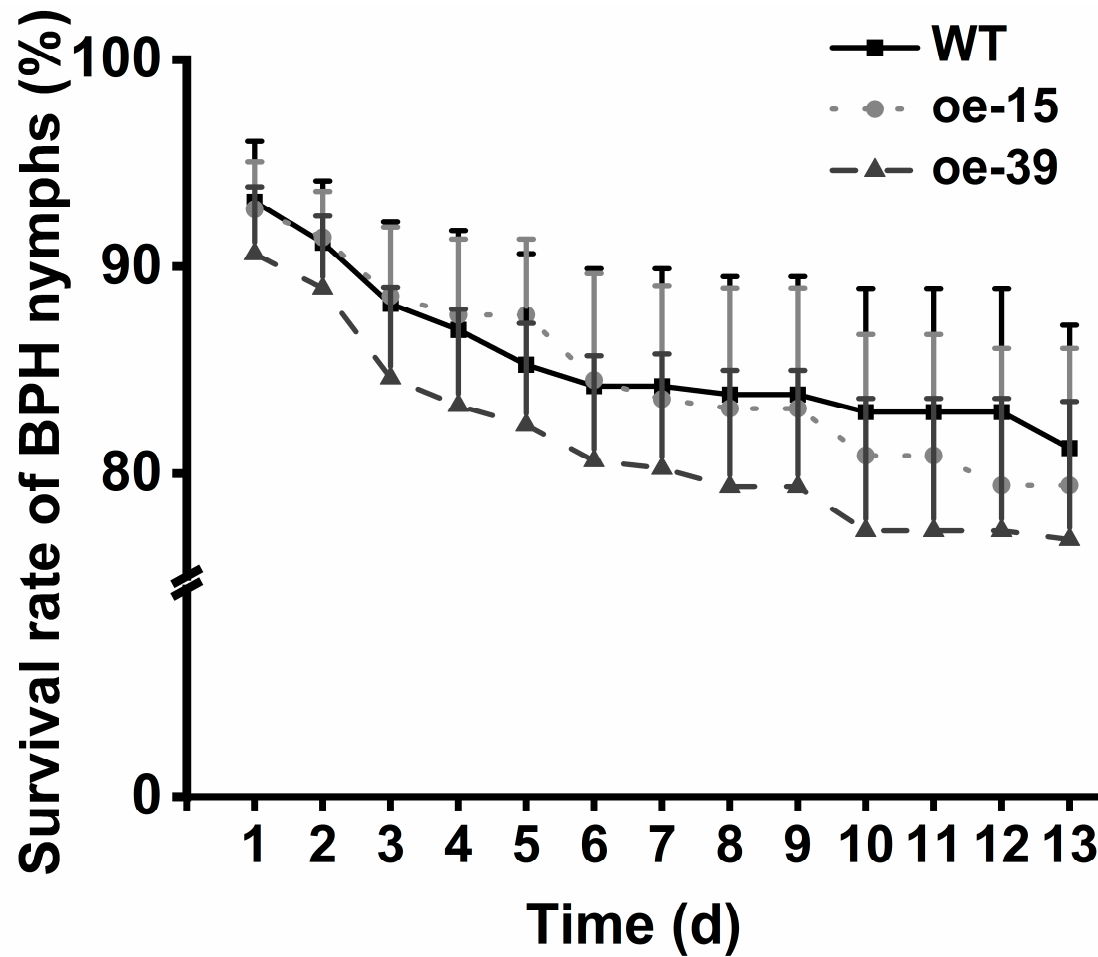
**Figure S2.** The nucleotide and deduced amino acid sequence of Os6PGDH1. The stop codon is marked by an asterisk.



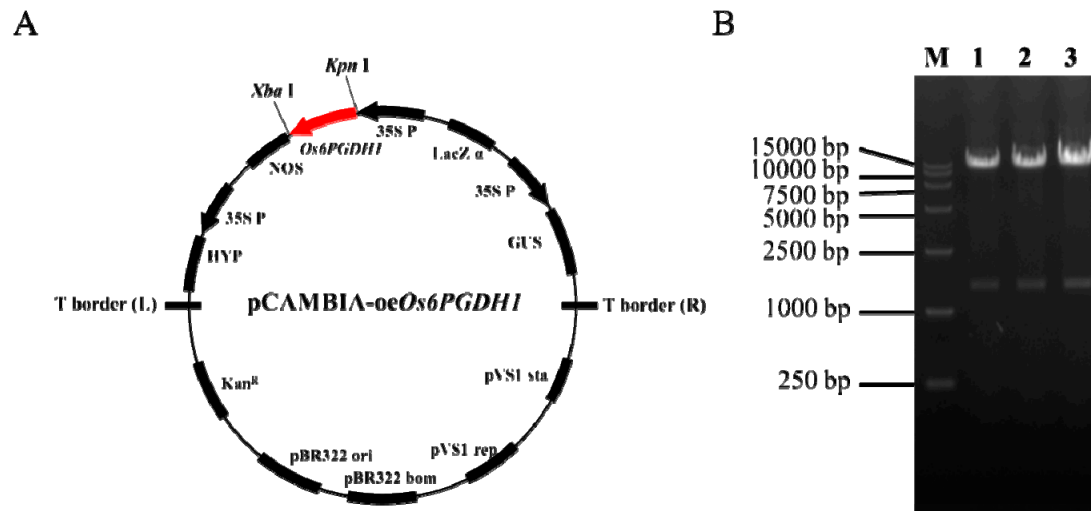
**Figure S3.** Prediction of the conserved domains of Os6PGDH1. The nicotinamide adenine dinucleotide phosphate (NADP)-binding site (NAD\_binding\_2) and 6-phosphogluconate (6PD) binding site (6PGD) are indicated by black and green, respectively.



**Figure S4.** Levels of SA in oe6PGDH lines and WT plants at indicated time points after they were individually infested by 15 gravid BPH females. Values are means + SE, n = 6. Asterisks indicate significant differences in oe6PGDH lines compared with WT plants (one-way ANOVA followed by Duncan's multiple range test,  $P < 0.05$ ).



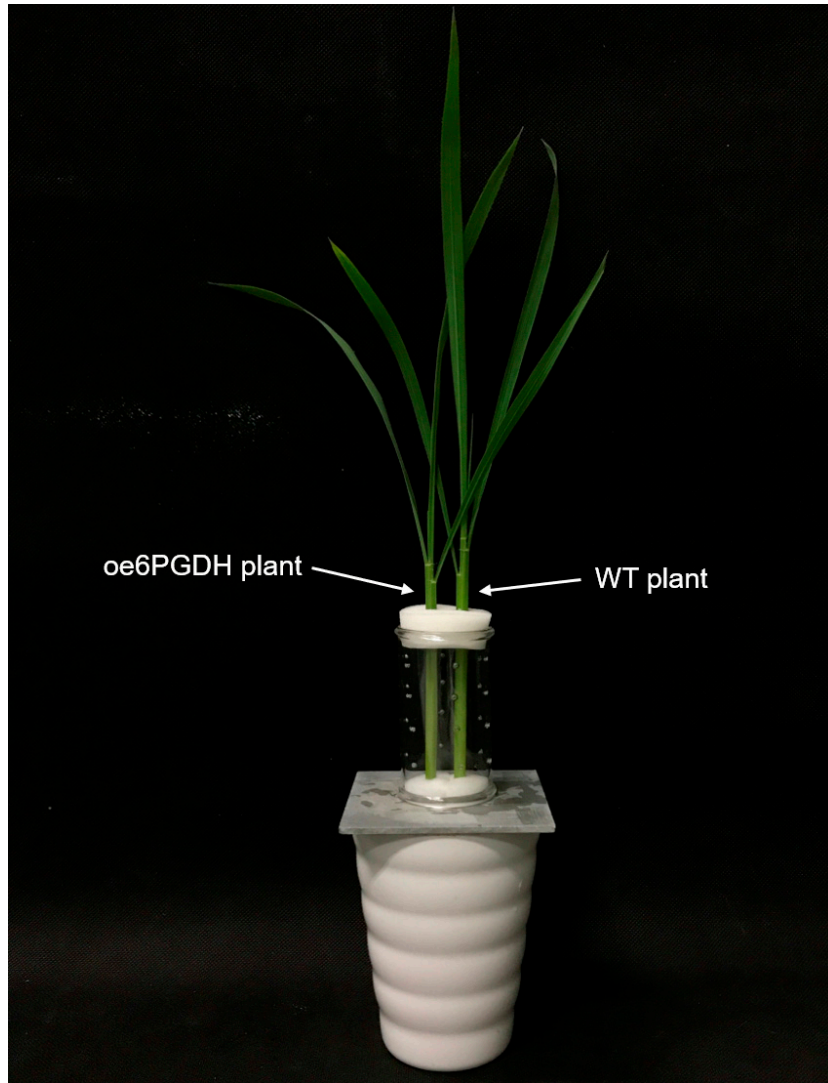
**Figure S5.** The survival rate of 15 newly hatched BPH nymphs that fed on oe6PGDH or WT plants. Values are means + SE, n = 13. Asterisks indicate significant differences in oe6PGDH lines compared with WT plants (one-way ANOVA followed by Duncan's multiple range test,  $P < 0.05$ ).



**Figure S6.** Construction of *Os6PGDH1*-overexpression vector used for rice transformation. A, Vector construction of pCAMBIA-*oeOs6PGDH1*; B, restriction digestion of pCAMBIA-*oeOs6PGDH1* with *Kpn* I and *Xba* I.







**Figure S7.** The experimental setup of BPH bioassay for feeding and oviposition preference.



**Table S1.** Primers and probes used for qRT-PCR of target genes

<b>Gene name</b>	<b>TIGR ID</b>	<b>Forward primer (5'-...-3')</b>	<b>Reverse primer (5'-...-3')</b>	<b>Probe (5'-...-3')</b>
<i>OsACTIN</i>	Os03g50885	TGGACAGGTTATCACCATTGGT	CCGCAGCTTCCATTCCTATG	HEX-CGTTTCCGCTGCCCTGAGGTCC-BHQ1
<i>Os6PGDH1</i>	Os06g02144	GGAAGTGGGAAGTGGACTGT	TTGCTGGAGAAGTCACCTTG	FAM-TGGCAGCCTCAACACGCTCA-BHQ1