Figure S1. Characterization of mutation in OsNTL3. Protein sequences of OsNTL3 in WT (NTL3) and mutants (*ntl3-1* and *ntl3-2*) derived from the CRISPR-CAS9 technology. The NAC DNA-binding domain is shown in red. The amino acids for a new C-terminus of NTL3 in *ntl3-2* mutant is boxed.

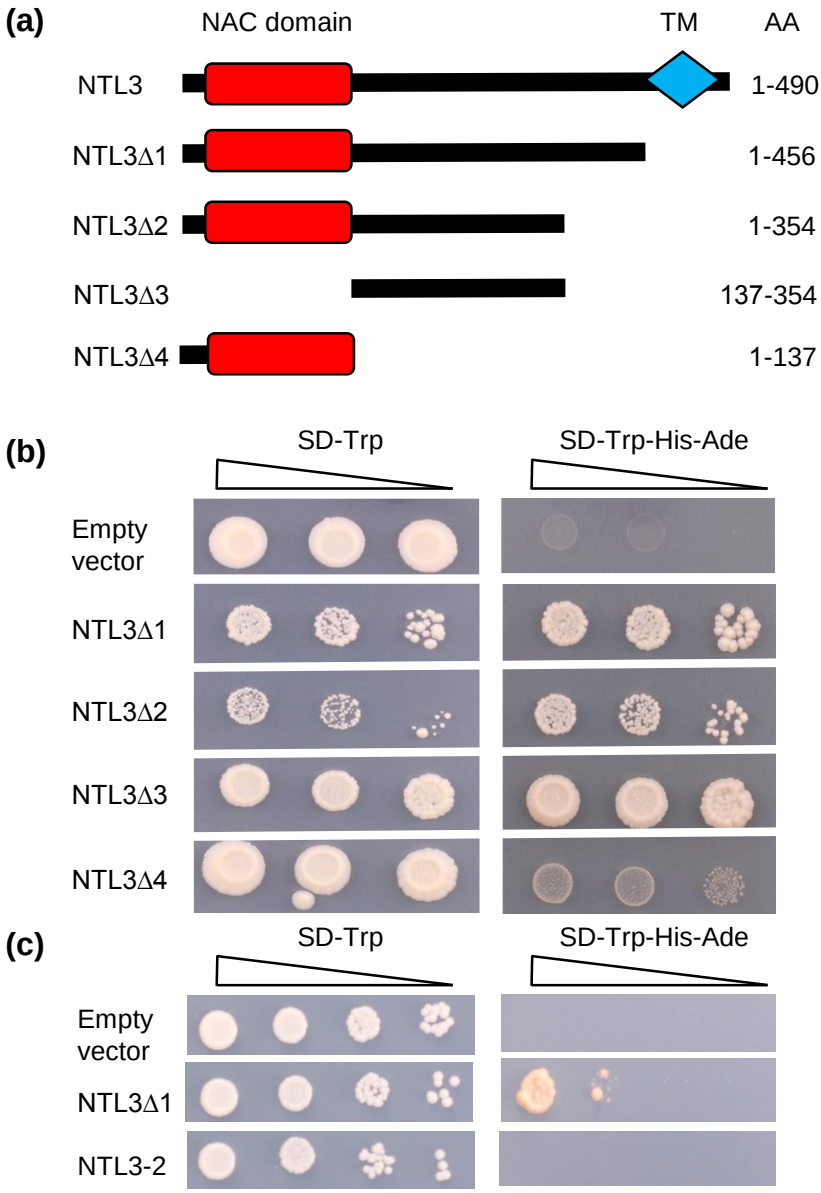

Figure S2. OsNTL3 has transcriptional activation activity. (a) Diagram showing various segments of OsNTL3 that were fused to the yeast GAL4 DNA-binding domain. The NAC domain and transmembrane domain (TM) were shown in rectangle and diamond, respectively. Amino acid (AA) positions were indicated for each segment. (b-c) Activation of the *His* and *Ade* reporter genes in yeast cells. Three different dilutions of yeast cells were spotted on nutritional selection medium. The mutated form of OsNTL3 (NTL3-2) was obtained from the *ntl3-2* rice mutant plants and used for comparison (c).

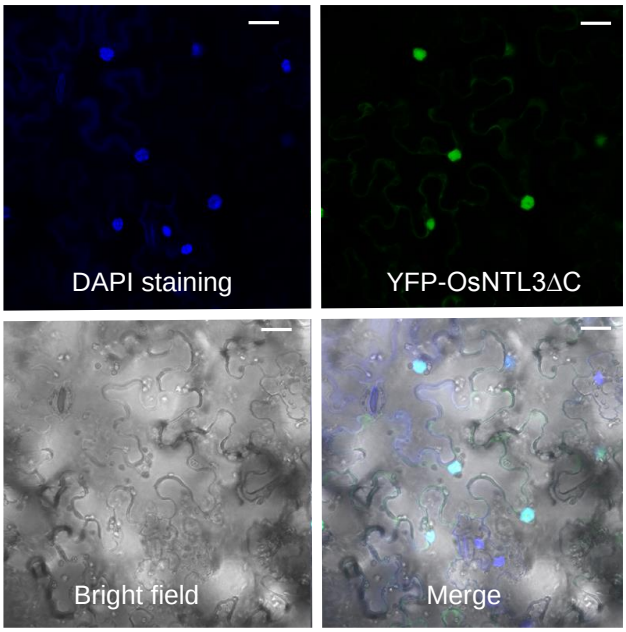

Figure S3. Subcellular localizations of YFP-OsNTL3ΔC. The YFP-tagged truncated OsNTL3 devoid of the transmembrane domain were transiently expressed in tobacco leaves. DAPI staining was used to visualize the nuclei. Bar = 50 μm.

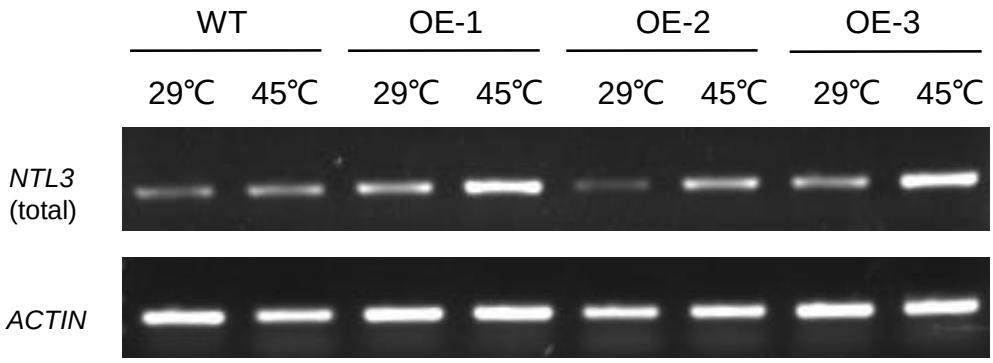

Figure S4. Validation of transgenic expression. Total RNA were extracted from the wild-type (WT) control plants and NTL3ΔC overexpression (OE1-3) plants and the expression of total Os*NTL3* was detected by RT-PCR. *ACTIN* was used as an internal control.

```
LOC_Os07g44950.1(bZIP16)   MAEPDLLAPFADLPFPPGDDFPDFPTLGDDAFALEDFDLDDLDFDFDVDLFPPDAPPPVT
LOC_Os07g44950.1(bzip16)   MAEPDLLAPFADLPFPPGDDFPDFPTGMTPSRWRISISTIWTSTSMWISSRRMRRRR---
                           **************************
LOC_Os07g44950.1(bZIP16)   TSSSSSAAGSPEAGTSSAGDGGSKNEESADSSSPSRSGSDGGGGKDGKDDEAKRRARLVR
LOC_Os07g44950.1(bzip16)   ------------------------------------------------------------

LOC_Os07g44950.1(bZIP16)   NRESAHQSRQRKKQYVEELEGKVKVMQATIADLTARISCVTAENAALKQQLGGAAGAGAA
LOC_Os07g44950.1(bzip16)   ------------------------------------------------------------

LOC_Os07g44950.1(bZIP16)   APPPPMPMYPAVYPLPMPWIHPAYAMRGSQVPLVPIPRLKTQQPASTPEPPAKKARKTKK
LOC_Os07g44950.1(bzip16)   ------------------------------------------------------------

LOC_Os07g44950.1(bZIP16)   VAGVSLLGLLFLMMVCGCLVPAVNRMYGAAYTGEGAAIVPSHHGRILAVEGPQNSVSNGV
LOC_Os07g44950.1(bzip16)   ------------------------------------------------------------

LOC_Os07g44950.1(bZIP16)   DPKVPQNGSETLPALLYLPRNGKHVKINGNLVIKSIVASEKASSRLSNYGEKGSGNQGKE
LOC_Os07g44950.1(bzip16)   ------------------------------------------------------------

LOC_Os07g44950.1(bZIP16)   ETSLAIPGYVAPLEAGEVMDSAKGMNELMALAPGDGSIYREDDGMLPQWFSEAMSGPMLN
LOC_Os07g44950.1(bzip16)   ------------------------------------------------------------

LOC_Os07g44950.1(bZIP16)   SGMCTEVFQFDLSPTTADANGIVPVYSGSVTNTSQNYTENLPSGPVQKVKNRRISYSEAI
LOC_Os07g44950.1(bzip16)   ------------------------------------------------------------

LOC_Os07g44950.1(bZIP16)   PLRGSTSNDTDHFKAPPKNHSQSHAGRKPVSSVVVSVLADPREASDRDGEGRISSNSLSR
LOC_Os07g44950.1(bzip16)   ------------------------------------------------------------

LOC_Os07g44950.1(bZIP16)   IFVVVLIDSVKYVTYSCVLPFKSHSPHL
LOC_Os07g44950.1(bzip16)   ----------------------------
```

Figure S5. Characterization of mutation in Os*bZIP16*. Protein sequences of OsbZIP16 in WT (bZIP16) and mutant (*bzip16*) derived from the CRISPR-CAS9 technology are aligned. The bZIP DNA-binding domain is shown in red.

```
LOC_Os05g34050.1(bZIP17)  MAEPALLDPTAAFDLRLYPAHLFDHELPLAGGGGGDDDDDLPLDGLEFDLPGDFSVEDFL
LOC_Os05g34050.1(bzip17)  MAEPALLDPTAAFDLRLYPAHLFDHELPLAGGGGGDDDDDLPLTGSSSTCPAISPWRTSS
                          ****************************************** *      *
LOC_Os05g34050.1(bZIP17)  LRSPERDDSGEGSAAGSGPTASPSSSPTTSASNSAVANGSGGEVKHEESDEGRSGGGDPK
LOC_Os05g34050.1(bzip17)  SGLRSGTTPARALLPDPGPPPPRRRPRPPRRPTPPSPTAAAARSSTRSRMRGGAVGVTPS
                                     **                                  *   *  *
LOC_Os05g34050.1(bZIP17)  WSLKRKQASPGPSSDAAKCRRSGDGDVSPSASASRTAVDSDEGGTVCEEEEDERRAARLM
LOC_Os05g34050.1(bzip17)  GA-------------------------------------------------------
                          -
LOC_Os05g34050.1(bZIP17)  RNRESAQLSRQRKKRYVEELEEKVKSMHSVINDLNSRISFVVAENATLRQQLSGGSVNCP
LOC_Os05g34050.1(bzip17)  -------------------------------------------------------

LOC_Os05g34050.1(bZIP17)  PPGVYPPAPIPGMHFPWMPGYAMRPPGSHVPLVPIPRLKPQQPVPSSKVVKKPESKKTVE
LOC_Os05g34050.1(bzip17)  -------------------------------------------------------

LOC_Os05g34050.1(bZIP17)  NKSKSKTKTKKVASVSLLGLLLIMLVFGAFIPGFNHNFGMCGQSDNAMFRNFGQSHARVL
LOC_Os05g34050.1(bzip17)  -------------------------------------------------------

LOC_Os05g34050.1(bZIP17)  SVSSQDKSSLNNSDMIGVDVGKMTGNTDGPGKKHQPAHNSSEILPALLYVPRNGKHVKIN
LOC_Os05g34050.1(bzip17)  -------------------------------------------------------

LOC_Os05g34050.1(bZIP17)  GNLIIHSVLASEKAVAHKASKDDSDQSARDHKETSVAIARYLSLPGKDVNRQETSSADGP
LOC_Os05g34050.1(bzip17)  -------------------------------------------------------

LOC_Os05g34050.1(bZIP17)  LPQWFREGMEGPILNSGMCSEVFQFDISTASSNPGGIIPASPVVNSSSVNATEKIPAHSA
LOC_Os05g34050.1(bzip17)  -------------------------------------------------------

LOC_Os05g34050.1(bZIP17)  AYHGKLKNRRVMYNEAIPLTGKTANNTEPFNRTSESSSKLPDSKPASSVVVSVLADPREA
LOC_Os05g34050.1(bzip17)  -------------------------------------------------------

LOC_Os05g34050.1(bZIP17)  GNGDGDPRVSPKPLSKIFVVVLVDGVRYVTYSCTLPFKSSSPHLVN
LOC_Os05g34050.1(bzip17)  ---------------------------------------------
```

Figure S6. Characterization of mutation in *bZIP17*. Protein sequences of bZIP17 in WT (bZIP17) and mutant (*bzip17*) derived from the CRISPR-CAS9 technology are aligned. The bZIP DNA-binding domain is shown in red.

```
LOC_Os06g41770.1(bZIP74)    MDVEFFADLDLDALLASFSSSAAAAGSGVSGLFAPSPPHDAEAGSPESVSSRRPSPSREA
LOC_Os06g41770.1(bzip74-1)  MDVEFFADLDLDALLASFSSSAAAAGSGVSGLFAPSPPHDAEAGSPESVSSRRPSPSREA
LOC_Os06g41770.1(bzip74-2)  MDVEFFADLDLDALLASFSSSAAAAGSGVSGLFAPSPPHDAEAGSPESVSSRRPSPSREA
                            ************************************************************
LOC_Os06g41770.1(bZIP74)    ALSEIERFLMEEGPAAEEGVGAEDFFDALLVDGGEEEEEEEGKGSEAGGSTDGDSGKEN
LOC_Os06g41770.1(bzip74-1)  ALSEIERFLIGGPRGGGGGRRGGFLRRAARRRRGGGGGRRGEGE---------------
LOC_Os06g41770.1(bzip74-2)  ALSEIERAPRRRRGSARRISSTRCSSTAGRRRRKKRGRGVRRGEARMGIPGRRMRWLPR
                            *******                     *
LOC_Os06g41770.1(bZIP74)    EVATPDAEKEDVEAEVDGDDPMSKKKRRQMRNRDSAMKSRERKKMYVKDLETKSKYLEAE
LOC_Os06g41770.1(bzip74-1)  ------------------------------------------------------------
LOC_Os06g41770.1(bzip74-2)  TRRRRMWRRRWMAMIP----------------------------------------------

LOC_Os06g41770.1(bZIP74)    CRRLSYALQCCAAENMALRQSLLKDRPVGAATAMQESAVLTETLPLVSLLWLVSIVCLLP
LOC_Os06g41770.1(bzip74-1)  ------------------------------------------------------------
LOC_Os06g41770.1(bzip74-2)  ------------------------------------------------------------

LOC_Os06g41770.1(bZIP74)    VPGLPNRNPVARSSAGRDLATVTGKKTSSEQQLEETLLLHGRRCKGSRARIKLDTGPFRL
LOC_Os06g41770.1(bzip74-1)  ------------------------------------------------------------
LOC_Os06g41770.1(bzip74-2)  ------------------------------------------------------------

LOC_Os06g41770.1(bZIP74)    AAAAC
LOC_Os06g41770.1(bzip74-1)  -----
LOC_Os06g41770.1(bzip74-2)  -----
```

Figure S7. Characterization of mutation in Os*bZIP74*. Protein sequences of OsbZIP74 in WT (bZIP74) and mutants (*bzip74-1* and *bzip74-2*) derived from the CRISPR-CAS9 technology are aligned. The bZIP DNA-binding domain is shown in red.

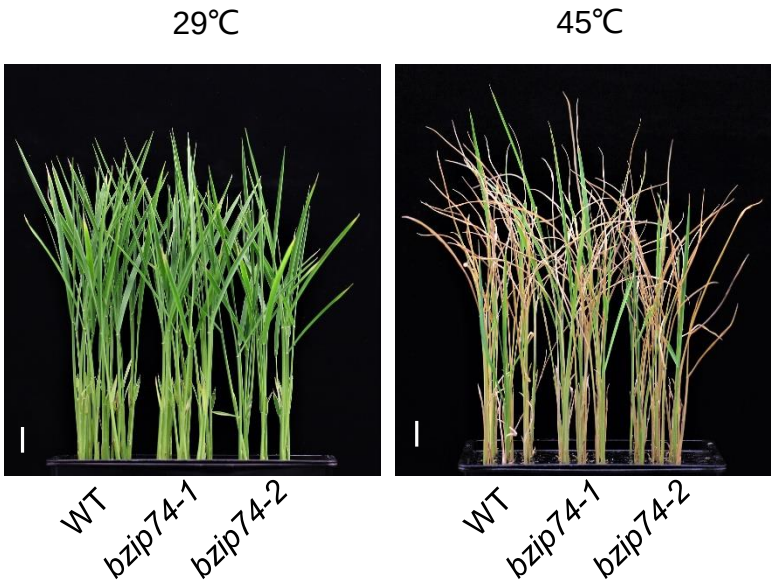

Figure S8. Loss-of-function of Os*bZIP74* does not affect heat stress sensitivity in rice. Eight-day old wild-type (WT) seedlings and two lines of targeted-gene-edited Os*bZIP74* (*bzip74-1* and *bzip74-2*) mutant seedlings grown at 29ºC were transferred to 45ºC for 4-5 days and then photographed after recovering at 29ºC for 7 days. Bar = 1 cm.