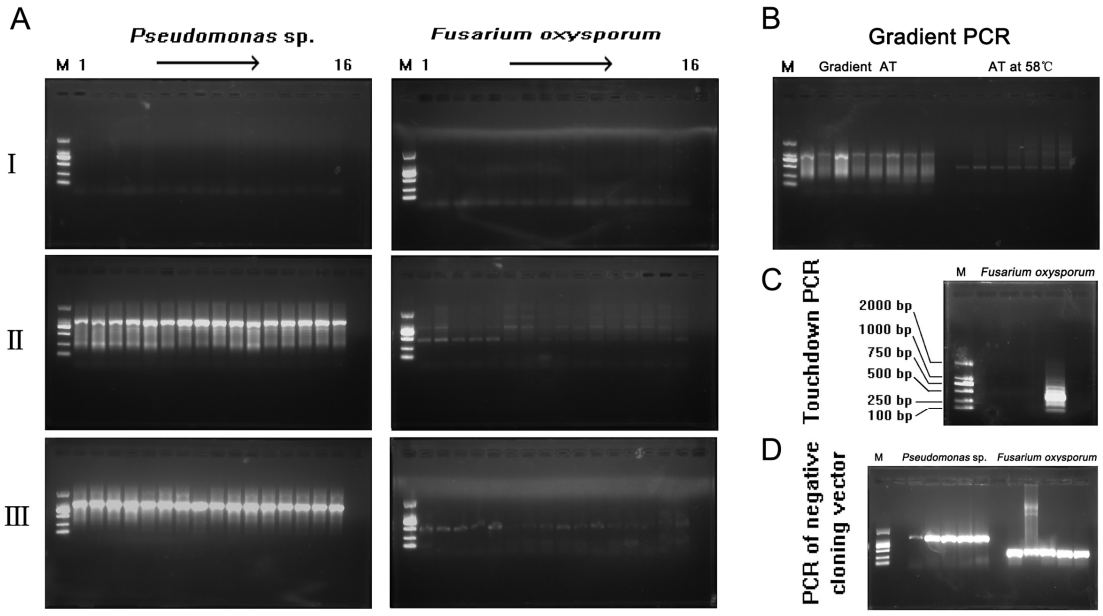


**Figure S1.** Electrophoretic strips of three DNA extraction methods for *Pseudomonas* spp. and *Fusarium oxysporum*, and optimizing annealing temperature using different PCR. A. The effect of three DNA extraction methods for *Pseudomonas* spp. and *Fusarium oxysporum*, the same row of which represents the same extraction method, and the same column represents the same microorganism. Method I referenced to Zhou et al. (1996). Methods II and III optimized humus removal. Annealing temperature was at 58 °C. B. Two PCR effects of 8 random soil DNA samples extracted by method Ⅲ (Left: gradient PCR with annealing temperature from 50 °C to 60 °C, eight gradients; Right: conventional PCR, 58 °C for annealing). C. Touchdown PCR effects of 1 random soil DNA samples extracted by method Ⅲ for FO. D. The electrophoretic strips of negative cloning vector PCR. Conventional PCR by ThermoFisher Scientific A24812, USA, gradient PCR by BIO-RAD T100TM, USA and touchdown PCR by BIO-RAD T100TM, USA. *AT* annealing temperature. *M* DL2000 Plus DNA Marker.

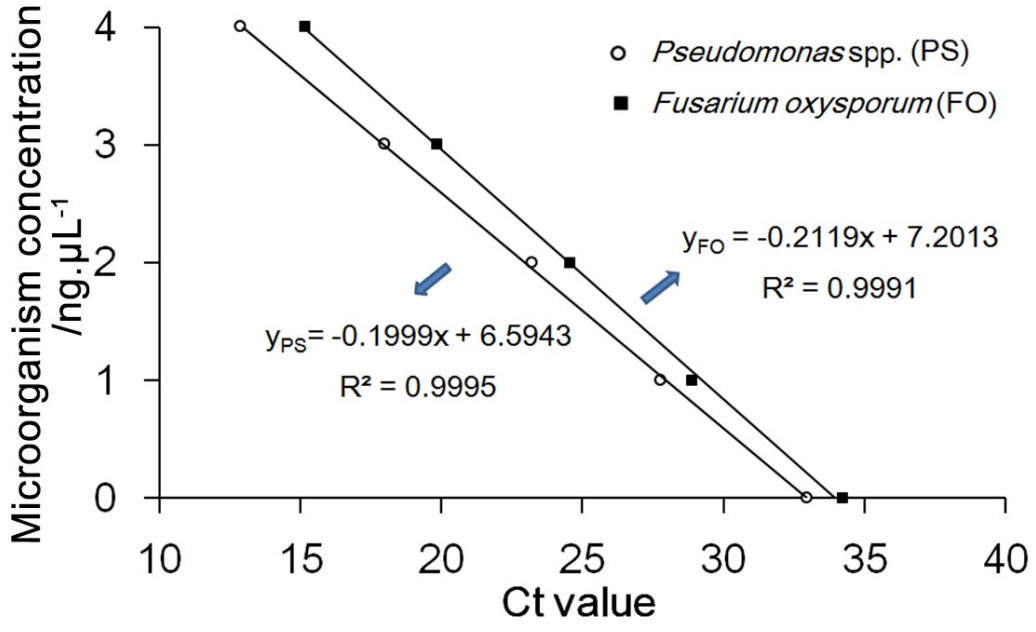


**Figure S2.** Standard curve of concentration and Ct value for *Pseudomonas* spp. and *Fusarium oxysporum*.

**Table S1.** Sequence of DNA fragments inserted into pMD19-T vector.

| microorganism name | Size of DNA fragments | Sequence (5′- 3′) |
|---|---|---|
| *Pseudomonas spp.* | 987 bp | gtctgagaggatgatcagtcacactggaactgagacacggtccagactctacgggaggcagcagtgg gga atattggacaatgggggcaaccctgatccagccatgccgcgtgtgtgaagaaggccttcgggttgtaa ag cactttaagttgggaggaaggctttaaggttaatatccttgaagattgacgttaccaacagaataagcac cggctaactccgtgccagcagccgcggtaatacggagggtgcaagcgttaatcggaattactgggcgt aa agcgcgcgtaggcggccatttaagctagatgtgaaagcccagggcttaaccttggaactgcatttagaa c tggatggctagagtatggaagaggagtgtggaatttcaggtgtagcggtgaaatgcgtagagatctg aag gaacatcagtggcgaaggcgacactctggtccaatactgacgctgaggtgcgaaagcgtggggatca aac aggattagataccctggtagtccacgccgtaaacgatgtcgactagccgttggcctccttgaggggtta g tggcgcagctaacgcgataagtcgaccgcctggggagtacggccgcaaggttaaaactcaaatgaatt ga cgggggcccgcacaagcggtggagcatgtggtttaattcgacgcaacgcgaagaaccttacctactctt g acatccagataaccctgcagagatgtgggggtgccttcgggaaatctgagacaggtgctgcatggctg tc gtcagctcgtgtcgtgagatgttgggttaagtcccgtaacgagcgcaacccttgtccttagttgccagca cgtaatggtgggaactctaaggagactgccggtgacaaaccggaggaaggtggggacgacgtcaag tcat catggcccttacgagtagggctacacacgtgctacaatggggagtacagagggaagcgaagccgcg agtg cagctaa gcagctggcacgacaggtttcccgactggaaagcgggcagtgagcgcaacgcaattaatgtgagtta gct cactcattaggcaccccaggctttacactttatgcttccggctcgtatgttgtgtggaattgtgagcgga taacaatttcacacaggaaacagctatgaccatgattacgccaagcttgcatgcctgcaggtcgacgatt cttggtcatttagaggaagtaaaagtcgtaacaaggtctccgttggtgaaccagcggagggatcattac c gagtttacaactcccaaaccccctgtgaacatacctatacgttgcctcggcggatcagcccgcgccctgta aaaagggacggcccgcccgaggaccctaaactctgtttttagtggaacttctgagtaaaacaaacaaat a aatcaaaactttc |
| *Fusarium oxysporum* f.sp. *R. glutinosa* | 433 bp | |

**Table S2.** Specific primer sequences of 35 *NB-LRRs* for qRT-PCR.

| Gene name | Primer | Sequence (5′- 3′) |
|---|---|---|
| *RgNB1* | *RgNB1*-for | GAATCCTTCGGCTCAGAAACT |
| | *RgNB1*-rev | GCTTGGTGTGCTCATCTTC |
| *RgNB2* | *RgNB2*-for | AGGCACACCACCACACTTCTTC |
| | *RgNB2*-rev | CGTGCGTTTGGACAGGAGGAAA |
| *RgNB3* | *RgNB3*-for | TGATTGACCTTGGACAGAACTC |
| | *RgNB3*-rev | TGCCCTCGTGAACTGGAG |
| *RgNB4* | *RgNB4*-for | GCTACATCTCCTTCGACATACTCC |
| | *RgNB4*-rev | GCCCTTGCCGTGATTGGT |
| *RgNB5* | *RgNB5*-for | CTGAACTTCCGTCTTCGTTACTG |
| | *RgNB5*-rev | TCCAGATTGCTCCAACTCTCA |
| *RgNB6* | *RgNB6*-for | TTGCGTGAGATGCCTATT |
| | *RgNB6*-rev | TTCCCTGCCATAAACAAGA |
| *RgNB7* | *RgNB7*-for | GGTTGGATAAGTCGCTGTGTT |
| | *RgNB7*-rev | CAATGCTAGGTCTTGCCATAGG |
| *RgNB8* | *RgNB8*-for | TTCGCCGTCTTGAAGTGTT |
| | *RgNB8*-rev | CCGTCTAAGTCTAGGAAAGTGATG |
| *RgNB9* | *RgNB9*-for | ACCGTCGCCTTAGCATTCATT |
| | *RgNB9*-rev | TTCGGCAGAGAAGCACAAGA |
| *RgNB10* | *RgNB10*-for | TCGTTCCACCATTGCTCAA |
| | *RgNB10*-rev | ATCCTGCTGCTTCCTTCAC |
| *RgNB11* | *RgNB11*-for | GGCAGATGGTACATGAGAACA |
| | *RgNB11*-rev | GTCGTGGTAACTGAAGGCTAA |
| *RgNB12* | *RgNB12*-for | AATATGGATCTGGTGTCGTT |
| | *RgNB12*-rev | GCAATACCTCGGCATCTC |
| *RgNB13* | *RgNB13*-for | ATTCAACAACAGGTATCTCATT |
| | *RgNB13*-rev | CCAACTCTCATCTTCATTCAA |
| *RgNB14* | *RgNB14*-for | GCTCTGTGGAGAGTCATCTG |
| | *RgNB14*-rev | ATCATAAGCATACCTGGCAAGA |
| *RgNB15* | *RgNB15*-for | GATTTGCTTCGCCACGCTACG |
| | *RgNB15*-rev | GCAGAAGAGGAACACCATCACCAA |
| *RgNB16* | *RgNB16*-for | GATTATGCCTCGTCTCAG |
| | *RgNB16*-rev | TCCAATCCTCTCCATTCT |
| *RgNB17* | *RgNB17*-for | GGATCTTGCTGTTCTTGACCTCTC |
| | *RgNB17*-rev | CCTCCGTGAATATCCCACCATCT |
| *RgNB18* | *RgNB18*-for | GCATTCCAGTCCTCCACAC |
| | *RgNB18*-rev | ACGACTTAGCCGAGATGGT |
| *RgNB19* | *RgNB19*-for | AAGGCGTCAAGAATTGGACTGAT |
| | *RgNB19*-rev | GCGAAGGGCAAACGACTCA |
| *RgNB20* | *RgNB20*-for | CGAATGTAAGAAGAAGCAACC |
| | *RgNB20*-rev | TCAGCCAGAAGCAAACTT |
| *RgNB21* | *RgNB21*-for | CGTGAATTGGAAGGAGTTGGAAT |
| | *RgNB21*-rev | CGTTCGACTTTGGCTAGGATTC |
| *RgNB22* | *RgNB22*-for | AGTAATCATCCGCAACATCTTCCA |
| | *RgNB22*-rev | CGAGGCTGATATGGCTGTGG |
| *RgNB23* | *RgNB23*-for | CACTTGACACTATCGGATGG |
| | *RgNB23*-rev | TTGAGACGGATGGAGATTG |
| *RgNB24* | *RgNB24*-for | GCCAACGCCTACTATCACTT |
| | *RgNB24*-rev | TCATGCTGCCAACATAGAACTG |
| *RgNB25* | *RgNB25*-for | CTTCGCCTCCTCACTCAG |
| | *RgNB25*-rev | GCAAGCCAGATAGGGTCAG |
| *RgNB26* | *RgNB26*-for | TGCGGATTTGAGGGTCAGATTTCT |
| | *RgNB26*-rev | CGGACAACTCCCACCTTCCATATC |
| *RgNB27* | *RgNB27*-for | TCCTGCTCGTGTTAGATGACTACT |
| | *RgNB27*-rev | GCTTCCTCTTGACCCGACTTT |
| *RgNB28* | *RgNB28*-for | GCACTCACCACAGACGAATC |
| | *RgNB28*-rev | TGTAGCGAGAGTAGTCTTACCAAT |

| | | |
|---|---|---|
| *RgNB29* | *RgNB29*-for | TCTCTTCCATACACATCAGACC |
| | *RgNB29*-rev | GACTCAACTTGCCGTTATCAG |
| *RgNB30* | *RgNB30*-for | CGGCGAATAAGTCTGTTACC |
| | *RgNB30*-rev | GTACCTTGGTGGATTAGTAAGC |
| *RgNB31* | *RgNB31*-for | GCTCAGCATCAAAGTAAGGAACA |
| | *RgNB31*-rev | CGTAAGTGTACTCAAGAGGAATGG |
| *RgNB32* | *RgNB32*-for | AGGCTGGTGAAGAGGTACTGTCA |
| | *RgNB32*-rev | TTGTGATGAGTGCCAGAGGTAGAC |
| *RgNB33* | *RgNB33*-for | TTGTTGAGTTGGTAGAGGTC |
| | *RgNB33*-rev | GTGGAGTTCTTGCTGGAG |
| *RgNB34* | *RgNB34*-for | GTGACTTACCATCTCCTTGT |
| | *RgNB34*-rev | AGCCCTTTAAGAACACCTTC |
| *RgNB35* | *RgNB35*-for | GTCCTTCTGCTACGGCTTCA |
| | *RgNB35*-rev | GGACATTGCCAGTGCCATCT |
| *18S RNA* | *18S RNA*-for | GAGCTAATACGTGCAACAAACC |
| | *18S RNA*-rev | CGAAAGTTGATAGGGCAGAAAT |