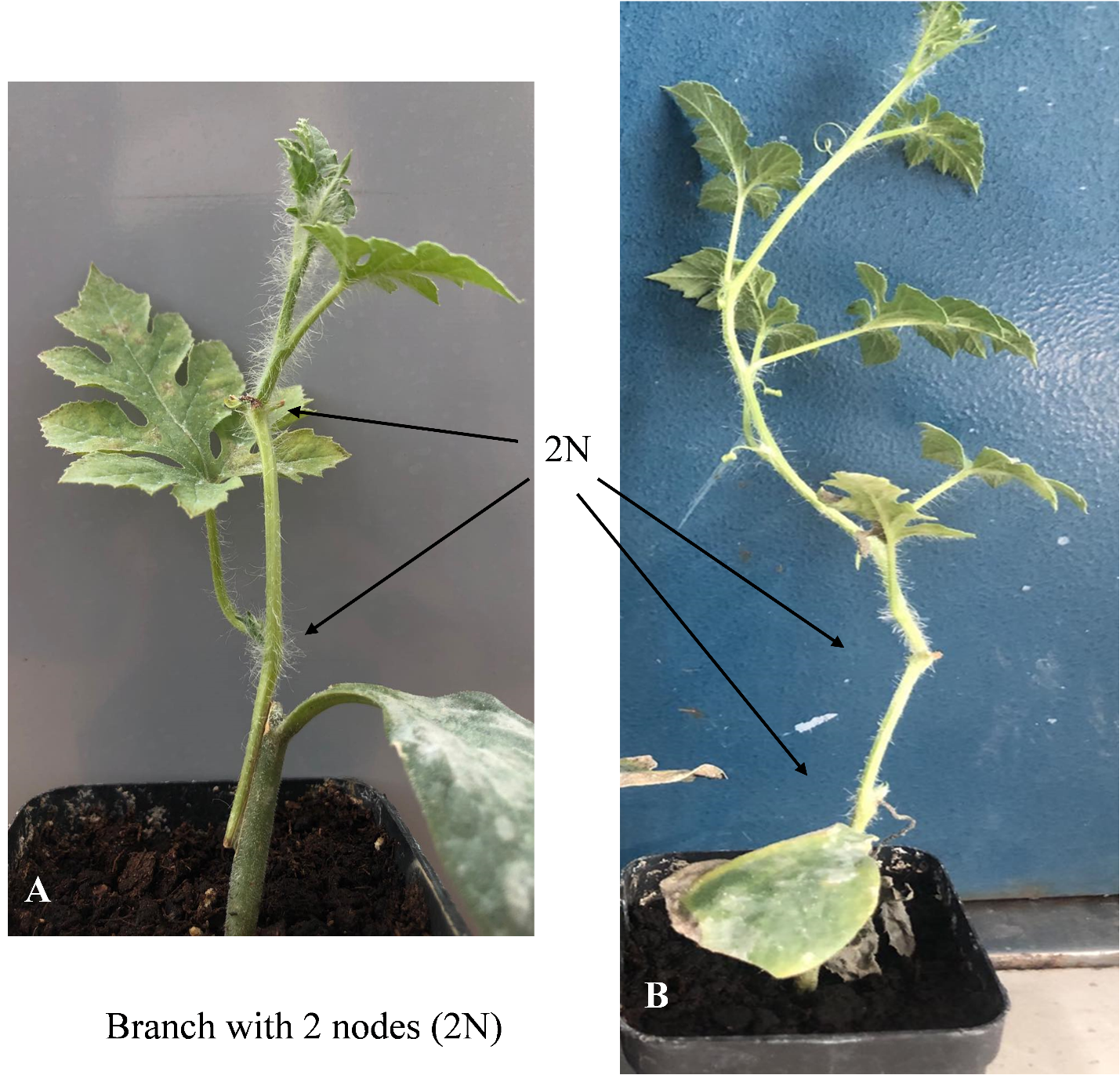
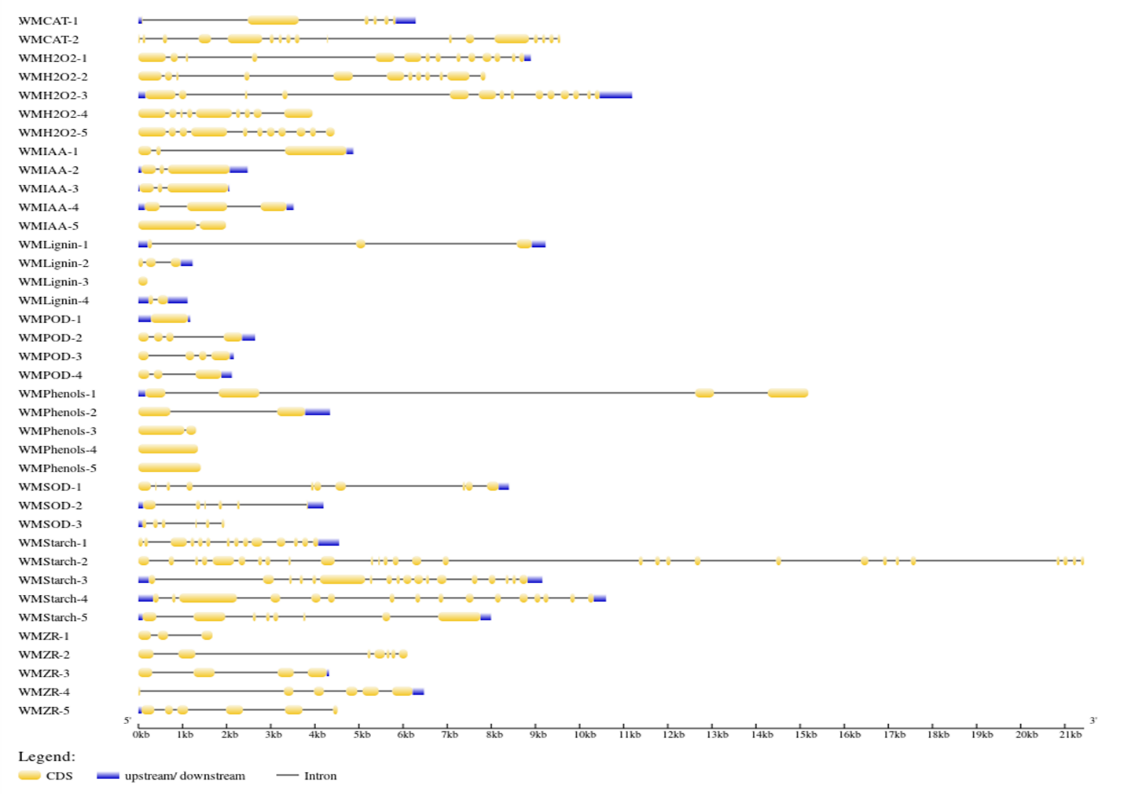
**Supplementary Data**

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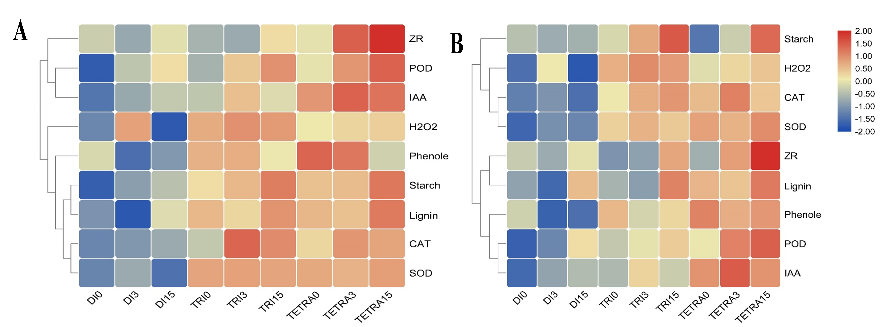
**(Figure S1)***. Effect of Scion/rootstocks combinations on the survival of polyploid watermelon grafting using (AM) as scion.* ***(A)****: at 0 DAG,* ***(B)*** *15 DAG, and* ***(C)****: 30 DAG,* ***DAG****: Days after Grafting.*

****

**(Figure S2)** *Effect of Scion/rootstocks combinations on the survival of polyploid watermelon grafting using (2N) as scion.* ***(A)****: at 15 DAG, and* ***(B)*** *30 DAG.*



**(Figure S3)** *Structure of genes involved in graft compatibility during watermelon grafting process. Yellow boxes and black lines indicating exons and introns respectively, while blue boxes at the both end of each gene indicates untranslated regions (UTRs).*

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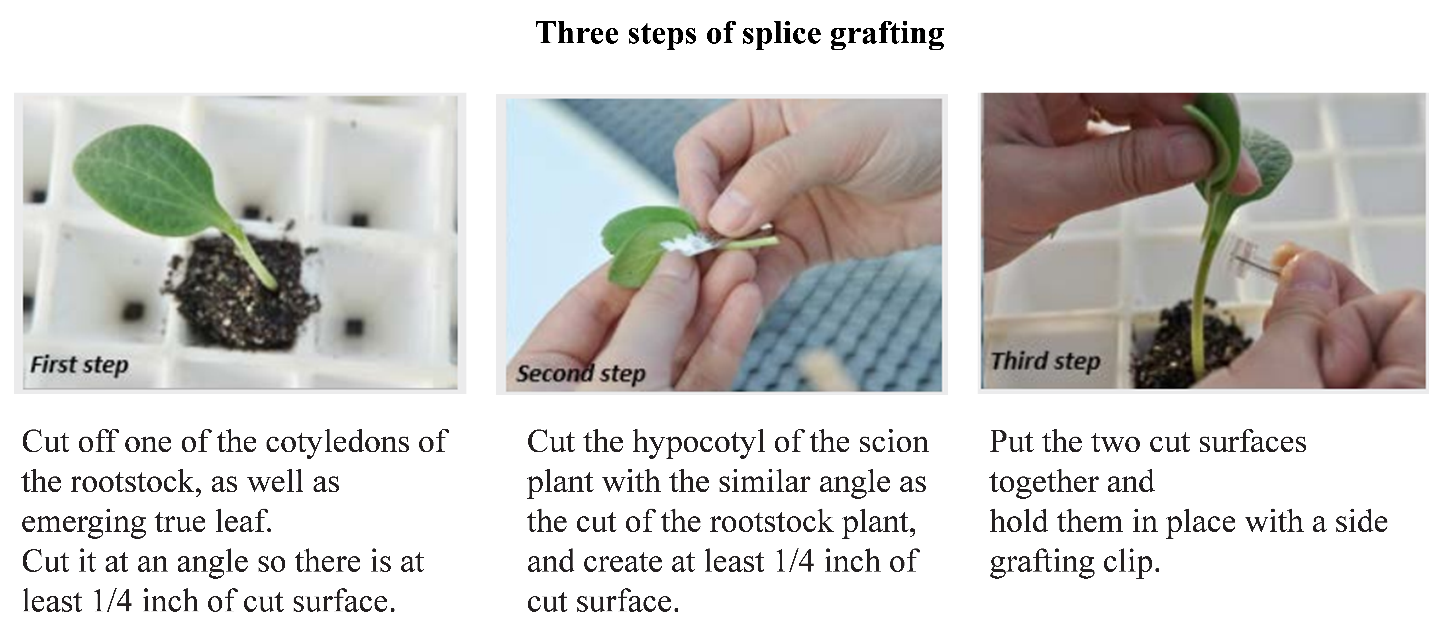
*Figure S4. Heat map representing the contents of hormones, starch, antioxidants and biochemicals in the grafting union at 0, 3 and 15 days after grafting.*] ***Di****: Diploid,* ***Tri****: triploid,* ***Tetra****: Tetraploid.*

**Table S1:** Genes linked to graft compatibility having high homology with other genes selected from different plant species.

|  |  |  |
| --- | --- | --- |
|  |  | **High homology** |
| WMCAT | WMCAT-1 | CMCAT\_*Cucurbita moschata*  CMCAT\_*Cucurbita\_maxima* |
| WMCAT-2 | CPCAT\_*Cucurbita pepo*. |
| WMPOD | WMPOD-1 | CSPOD\_*Cucumis sativus3*  CMPOD\_*Cucumis melo3*. |
| WMPOD-2 | CMPOD\_*Cucumis melo*2  CSPOD\_*Cucumis sativus*2 |
| WMPOD-3 | CMPOD\_*Cucumis melo*  CSPOD\_*Cucumis sativus* |
| WMPOD-4 | CMPOD\_*Cucumis melo*4 and CSPOD\_*Cucumis sativus*4 |
| WMIAA | WMIAA-1 | CSIAA\_*Cucumis sativus3* andCMIAA\_*Cucumis melo3* |
| WMIAA-2 | CSIAA\_*Cucumis sativus*2 and CMIAA\_*Cucumis melo*2 |
| WMIAA-3 | CSIAA\_*Cucumis sativus* and CMIAA\_*Cucumis melo* |
| WMIAA-4 | CMIAA\_*Cucumis melo*4 and CSIAA\_*Cucumis sativus*4 |
| WMIAA-5 | CMIAA\_*Cucumis melo*5 and CSIAA\_*Cucumis sativus*5 |
| WMZR | WMZR-1 | CSZR\_*Cucumis sativus2*, CSZR\_*Cucumis sativus*3 CMZR\_*Cucumis melo*2,and CMZR\_*Cucumis melo*3 |
| WMZR-2 | - |
| WMZR-3 | CSZR\_*Cucumis sativus*5 and CMZR\_*Cucumis melo*5 |
| WMZR-4 | CMZR\_*Cucumis melo*4 and CSZR\_*Cucumis sativus*4 |
| WMZR-5 | CMZR\_*Cucumis melo* and CSZR\_*Cucumis sativus* |
| WMPhenols | WMPhenols-1 | CSPhenols\_*Cucumis sativus5* and CMPhenols\_*Cucumis melo5* |
| WMPhenols-2 | CSPhenols\_*Cucumis sativus*3 and CMPhenols\_*Cucumis melo*3 |
| WMPhenols-3 | CMPhenols\_*Cucumis melo,* and CSPhenols\_*Cucumis sativus*. |
| WMPhenols-4 | - |
| WMPhenols-5 | CMPhenols\_*Cucumis melo*2, CMPhenols\_*Cucumis melo*4  CSPhenols\_*Cucumis sativus*2, CSPhenols\_*Cucumis sativus*4. |
| WMLignin | WMLignin-1 | CSLignin\_*Cucumis sativus* and CMLignin\_*Cucumis melo* |
| WMLignin-2 | CMLignin\_*Cucumis melo*4, CSLignin\_*Cucumis sativus*4, and CSLignin\_*Cucumis sativus*5. |
| WMLignin-3 | - |
| WMLignin-4 | CMLignin\_*Cucumis melo*1, CMLignin\_*Cucumis melo*3, CSLignin\_*Cucumis sativus*1, and CSLignin\_*Cucumis sativus3*. |
| WMStarch | WMStarch-1 | CSStarch\_*Cucumis sativus4*. |
| WMStarch-2 | CMStarch\_*Cucumis melo*2 |
| WMStarch-3 | CMStarch\_*Cucumis melo4*, and CSStarch\_*Cucumis sativus3*. |
| WMStarch-4 | CMStarch\_*Cucumis melo3*, and CSStarch\_*Cucumis sativus2*. |
| WMStarch-5 | CMStarch\_*Cucumis melo5*, and CSStarch\_*Cucumis sativus5* |
| WMH2O2 | WMH2O2-1 | CSH2O2\_*Cucumis sativus5* and CMH2O2\_*Cucumis melo*4 |
| WMH2O2-2 | CSH2O2\_*Cucumis sativus2*. |
| WMH2O2-3 | CSH2O2\_*Cucumis sativus5* and CMH2O2\_*Cucumis melo*4 |
| WMH2O2-4 | CCH2O2\_*Citrullus colocynthis*. |
| WMH2O2-5 | CSH2O2\_*Cucumis sativus6*, and CSH2O2\_*Cucumis sativus7*. |
| WMSOD | WMSOD-1, | CSSOD\_*Cucumis sativus2,* CMSOD\_*Cucumis melo*, and CMSOD\_*Cucumis melo*2. |
| WMSOD-2 | CSSOD\_*Cucumis sativus3*. |
| WMSOD-3 | CSSOD\_*Cucumis sativus* |

**Table *S2*:** *Primers used for qRT-PCR in this study.*

|  |  |
| --- | --- |
| ID | primer |
| Actin-F | GTACGACAACGGGCCTTAAA |
| Actin-R | ATGGGCTTGACAGGTTGTTC |
|  |  |
| WMCAT-1-F | CTAATGTGTTGAGCGGCAAA |
| WMCAT-1-R | GTCTTACGAACCGCTCTTGC |
| WMCAT-2-F | CGGCATTACTAAAGCGGAAG |
| WMCAT-2-R | TAGTCCAGAAGGGGGTGTTG |
|  |  |
| WMPOD-1-F | TTGGATGCCTACACGATCAA |
| WMPOD-1-R | GTATTGGCCAGCTTCACCAT |
| WMPOD-2-F | CATTGGGAAGGAAGGACTCA |
| WMPOD-2-R | CAATGTCAAGCCCTTGGTTT |
| WMPOD-3-F | GCTCTTTCAGGAAGCCACAC |
| WMPOD-3-R | GGTAGGGCTCACAAAGTCCA |
| WMPOD-4-F | TGGCTGTGATGCTTCTATGC |
| WMPOD-4-R | CTGCACAAGAGACGATTCCA |
|  |  |
| WMSOD-1-F | TTTCTAAGGTCCACCGCAAC |
| WMSOD-1-R | GGGAATTGGGTTTGAAGGAT |
| WMSOD-2-F | CAAGAAGACGATGGAGCACA |
| WMSOD-2-R | TCCATCAGCATTGGCAATTA |
| WMSOD-3-F | CCATCCAGTTCGTCCAAGAT |
| WMSOD-3-R | CCTCCATGGTCCTTCTTCAA |
|  |  |
| WMH2O2-1-F | GGGTTACTTCGGACCAGACA |
| WMH2O2-1-R | GAAACCCGTCAGCCTATCAA |
| WMH2O2-2-F | ATGACCAAAAACGTCGGAAG |
| WMH2O2-2-R | ACTCGCTCGACTCGTTCATT |
| WMH2O2-3-F | AACTTCTGCTTCGACCTCCA |
| WMH2O2-3-R | AACTCGTGCGAGAAATGCTT |
| WMH2O2-4-F | AGCCAACAAACGAAACCAAC |
| WMH2O2-4-R | TCTGTGGCGATATTGGATGA |
| WMH2O2-5-F | CAGTCCAGGTTCCATTCGTT |
| WMH2O2-5-R | TTCTCAACGCGAACTCCTTT |
|  |  |
| WMIAA-1-F | AATGTCGAGTGGCCGATAAC |
| WMIAA-1-R | GCACCGTGGTGCCTTATACT |
| WMIAA-2-F | TTCCCACGCTGGAATTTTAC |
| WMIAA-2-R | GGGAGGAATTCGAAGTAGCC |
| WMIAA-3-F | ACCTCTATGTGCCTGGGTTG |
| WMIAA-3-R | GGCAAAGAATGGCCTCATTA |
| WMIAA-4-F | GGTGAATTTGAAGCCGATGT |
| WMIAA-4-R | CAAGCTCCTTTTGCAACTCC |
| WMIAA-5-F | AACAATTCCAGGCCACTACG |
| WMIAA-5-R | CCCTGTCGGTATACGCTGTT |
|  |  |
| WMZR-1-F | GACCGCCTATTGCCTCATTA |
| WMZR-1-R | TTCCCACACACATTGCTGTT |
| WMZR-2-F | CGCATTATCCCAGCTCTCAT |
| WMZR-2-R | TAGCGAGACTGAGCGAGACA |
| WMZR-3-F | GTTAGCGAGGGGAGCTTTCT |
| WMZR-3-R | AGCACTCTTTTTGGCGTTGT |
| WMZR-4-F | GTGTCGTGGACATGTTGGAG |
| WMZR-4-R | GCTAGAGCCAAATGCTGTCC |
| WMZR-5-F | GTTACGCGGGGTATATGGTG |
| WMZR-5-R | GCTGCTTTCAAACTCGGTTC |
|  |  |
| WMLignin-1-F | CCTTTATGGGGGAATCCTGT |
| WMLignin-1-R | GTGAACAAAAACGGGTTGCT |
| WMLignin-2-F | ACTCGTTGCCTTTGTCTCGT |
| WMLignin-2-R | GAAACTGCAACTCGTGCAAA |
| WMLignin-3-F | TATGGAAAAGGATGGGTGGA |
| WMLignin-3-R | CTTTAACGTGGCTCGTCCTC |
| WMLignin-4-F | GAGTCGGAGGTTTGGTGTGT |
| WMLignin-4-R | CCGACCAAGAGATGAGAAGG |
|  |  |
| WMPhenols-1-F | GGCTCATAAATCCCCCATTT |
| WMPhenols-1-R | TGCAGGTTGTTGTCCAGTGT |
| WMPhenols-2-F | CTCACTATGTCGCCGGATTT |
| WMPhenols-2-R | ACCGTGAAGGTGGAGAGATG |
| WMPhenols-3-F | AAGGTGCCTGCTTCACCTAA |
| WMPhenols-3-R | TATTTCCCCAACCAAACCAA |
| WMPhenols-4-F | CGATTGAGCAACAAAAAGCA |
| WMPhenols-4-R | CTGTAGGAGGGCTCACGAAC |
| WMPhenols-5-F | CCCGATACTCATCGTTCGTT |
| WMPhenols-5-R | GGCGTAGAAACCCAGGTACA |
|  |  |
| WMStarch-1-F | TGATTGGCACACAGCTCTTC |
| WMStarch-1-R | AATTGATCGGGCAGATTCAG |
| WMStarch-2-F | GCAAAATTTTCCCGAGATGA |
| WMStarch-2-R | TTTTATTCTCGCACGCCTCT |
| WMStarch-3-F | GCTCTGGCTTTGGTTCTTTG |
| WMStarch-3-R | GTCGCATTTTACACGAAGCA |
| WMStarch-4-F | TTTGATCATGGGAGCATTCA |
| WMStarch-4-R | GCCTCTTTGGGAACATGAAA |
| WMStarch-5-F | AAAGGACGGACAACCAAGTG |
| WMStarch-5-R | GCCAGCTACGTCTCCAAGTC |



**(Figure S5) Splice grafting method steps in polyploid watermelon plants**