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| **Table S3. Primers used for melanin biosynthesis related genes and cell wall-degrading enzyme genes expression** | | | | |
| **Sequence number** | **Primer name** | **Sequence(5'-3')** | **Annotation** | **Function** |
| VM1G\_05725 | VM05725Q-F | CTCGCCCATGTACTATGTCTTC | Exopolygalacturonase | Pectinase activity |
| VM05725Q-R | GTATCCCAGCCATCCGTATTC |
| VM1G\_03030 | VM03030Q-F | CCCGCACTACTTCTTCTTTGA | Exopolygalacturonase C | Pectinase  activity |
| VM03030Q-R | ACGTCGCTTCCTTGGATTT |
| VM1G\_10448 | VM10448Q-F | ACGATGGCACTACGGTTATTT | Endopolygalacturonase C | Pectinase  activity |
| VM10448Q-R | CCCTTCACGGTGATGTTGT |
| VM1G\_04322 | VM04322Q-F | CGAGAGGACGTGGGTAAATATC | exopolygalacturonase | Pectinase  activity |
| VM04322Q-R | GACCGTGCGTACCATTACA |
| VM1G\_06261 | VM06261Q-F | GTGACCATCTCTAACAGCCATATC | Pectate lyase | Pectinase  activity |
| VM06261Q-R | CTGGTCATCAGATCCCGTAAAG |
| VM1G\_02197 | VM02197Q-F | TCACGATGAGCAGCATGAC | **E**ndopolygalacturonase | Pectinase  activity |
| VM02197Q-R | CACCAGAGGTGCAAGTAACA |
| VM1G\_10963 | VM10963Q-F | CTGGACAACACTGACCTGAT | Pectate lyase | Pectinase  activity |
| VM10963Q-R | GAGATGGTGACACGGTTAGAG |
| VM1G\_07780 | VM07780Q-F | CGGTCTGTCCATTGGCTC | endo-polygalacturonase | Pectinase  activity |
| VM07780Q-R | GAGATGCCAGACAGGGTGAT |
| VM1G\_00119 | VM00119Q-F | TCCATTGGCTCAGTCGGTG | endo-polygalacturonase | Pectinase  activity |
| VM00119Q-R | GCCGCCCTTGTAGTTCTGC |
| VM1G\_07103 | VM07103Q-F | CCTCAATCTCTCAACCCTCTTC | Endo-1,4-beta-xylanase | Hemicellulase activity |
| VM07103Q-R | CCAACACCATCAGTCCAGAA |
| VM1G\_01177 | VM01177Q-F | GAGGTCATGGAGGCACATATC | Putative xylanase III | Hemicellulase activity |
| VM01177Q-R | GTAGAAGATGTTGTCCCGGTAAG |
| VM1G\_08103 | VM08103Q-F | GGAAGAAACTGGGCATGTCTAT | Endo-1,4-beta  -xylanase | Hemicellulase activity |
| VM08103Q-R | CTAAGCCTCAGACACCGTAATG |
| VM1G\_05031 | VM05031Q-F | CCTCCCACGAACAAGGATATT | Xylosidase : arabinofuranosidase | Hemicellulase activity |
| VM05031Q-R | GGGTTTGGGTATCTCCAGTATG |
| VM1G\_10016 | VM10016Q-F | CCTACAAAGAGGCAACAACAAC | Galactan-beta-  galactosidase | Hemicellulase activity |
| VM10016Q-R | TCCGGCGGATAAACAACTATAC |
| VM1G\_10306 | VM10306Q-F | GCTTCGCGGATTTACCAAAC | Beta-glucosidase cel3A | Cellulase activity |
| VM10306Q-R | CTGGTCTTCCACATCCCAATAA |
| VM1G\_07764 | VM07764Q-F | GAGACGATCAAGGGTACACAAG | Beta-glucosidase cel3A | Cellulase activity |
| VM07764Q-R | CGGATTGCGTGTTGTTGTATG |
| VM1G\_00613 | VM100613Q-F | CTCCCGTAGGCATTCGATTT | putative beta-glucosidase A | Cellulase activity |
| VM100613Q-R | CCATTGCTAGACCTCGTTGAT |
| VM1G\_10301 | VM10301Q-F | CAACGAGTGGGACACTTCTATC | Putative 1,4-beta-D-glucan cellobiohydrolase B | Cellulase activity |
| VM10301Q-R | CTGTAGTCACTTCCATCGACAC |
| VM1G\_10790 | VM10790Q-F | CATCCGAACCATCCTCATCATAG | 1,4-beta-D-glucan cellobiohydrolase CEL6A | Cellulase activity |
| VM10790Q-R | GGCATAGTTAACGCCCGTATAG |
| VM1G\_09037 | VM09037Q-F | TGTTCAGCGTCAGTGCATATAG | Endoglucanase cel12C | Cellulase activity |
| VM09037Q-R | TTGGTCGTCGTGGTAGTAGT |