**S3 Table. Primer details of *HvCEN* gene for sequencing and genotyping (KASP assay).**

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| --- | --- | --- | --- |
| Primers | Primer sequence | product size (bp) | Aim (polymerase) |
| 2541-F  | TAGAGGGGCGTTGGTGATAC | 731 | Sequencing (Phusion) |
| 2542-R  | CGACATAGGTGGGTTTCAGG |
| 2533-F | TACCTCAGCTGGGGACTTTG | 787 | Sequencing(Platinum) |
| 2534-R | GCTCCCTCAGGTATGGATCA |
| 2535-F | AGTGGTGTCGCTCTTCAGGT | 582 | Sequencing(Platinum) |
| 2536-R | TCTGTTGGAACAGCACGAAG |
| 2537-F | GGCCCCATCCTTAATTTCTC | 849 | Sequencing(Platinum) |
| 2538-R | GGAGGGAGGGAGAACATAGC |
| 2564-F | TGCAACCTACATCTGCCACT | 544 | Sequencing(Platinum) |
| 2565-R | CTTAGCCATGGAAAGGGATG |
| 2566 | GAAGGTGACCAAGTTCATGCTTGCTTTAGCTTTTGCTGATTGGC |  | KASP assay (HvCEN-1780) |
| 2567 | GAAGGTCGGAGTCAACGGATTACTTGCTTTAGCTTTTGCTGATTGGT |  |  |
| 2568 | CTGCATGCATTCATGTGTTTATTCAGAGAA |  |  |