



Supplementary Figure 4. Manhattan plots and QQ plots depicting results of genome-wide association study (GWAS) for grain length trait using five different association models. Chromosomes 1 to 12 represent twelve Nipponbare chromosomes, whereas, chromosomes 13 to 24 represent twelve sub-population groups specific pseudo-chromosomes from 3K pan-genome. The associated loci that harbor previously known grain length genes are marked on the top. The blue horizontal line represents a stringent Benjamini-Hochberg threshold whereas the red horizontal line represents a less stringent suggestive threshold.