

## Genome-wide association studies for yield-related traits in soft red winter wheat grown in Virginia

Brian P. Ward, Frederic L. Kolb, David A. Van Sanford, Gina Brown-Guedira, Priyanka Tyagi, Clay H. Sneller, and Carl A. Griffey

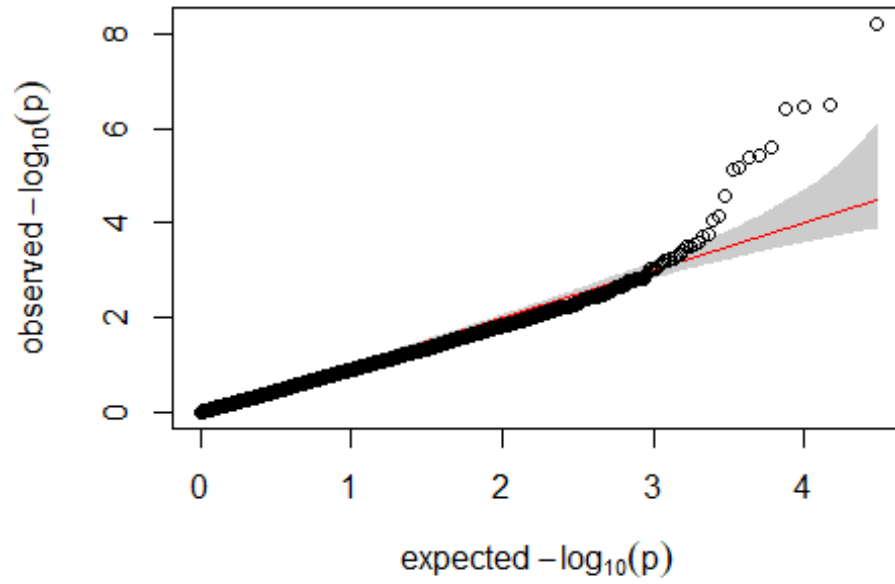
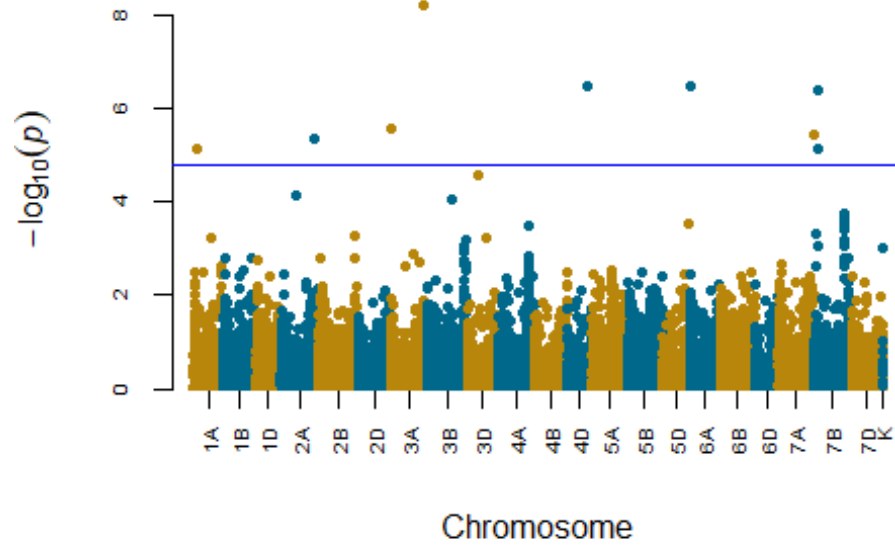
### **S2 File. Manhattan and QQ plots for SNP p-values generated by the FarmCPU algorithm.**

Below are Manhattan and uniform distribution quantile-quantile (QQ) plots produced from the output of a GWAS analysis performed using the FarmCPU algorithm.

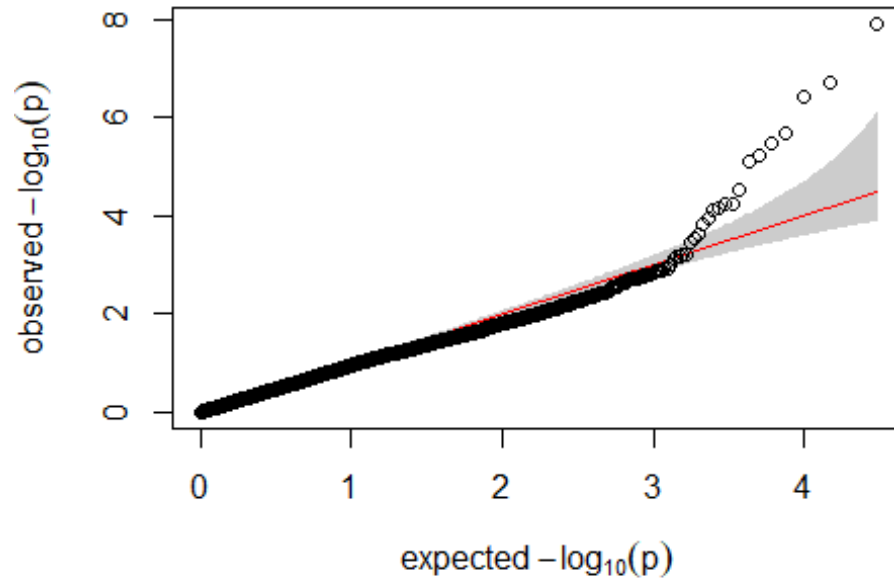
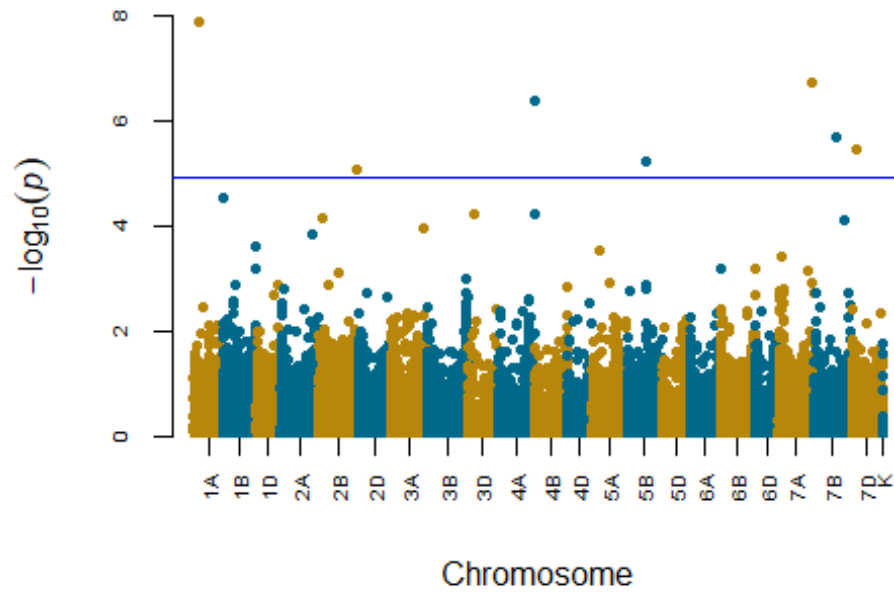
A total of 29,949 genotyping-by-sequencing (GBS) generated markers were included in the analysis.

A false-discovery rate (FDR) threshold was used to determine significance for individual SNP p-values. A horizontal line is placed on the Manhattan plot only if at least one SNP's  $-\log(p)$  value exceeds the FDR threshold.

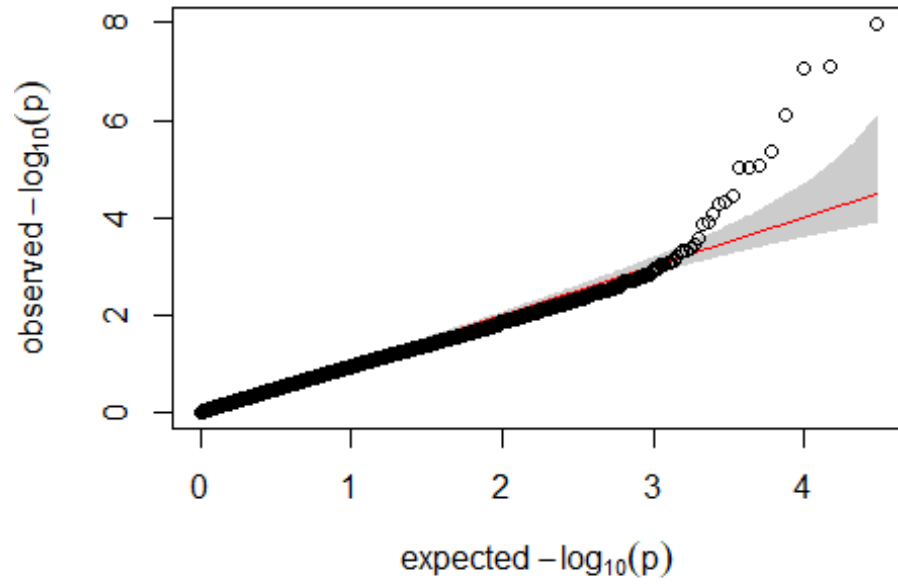
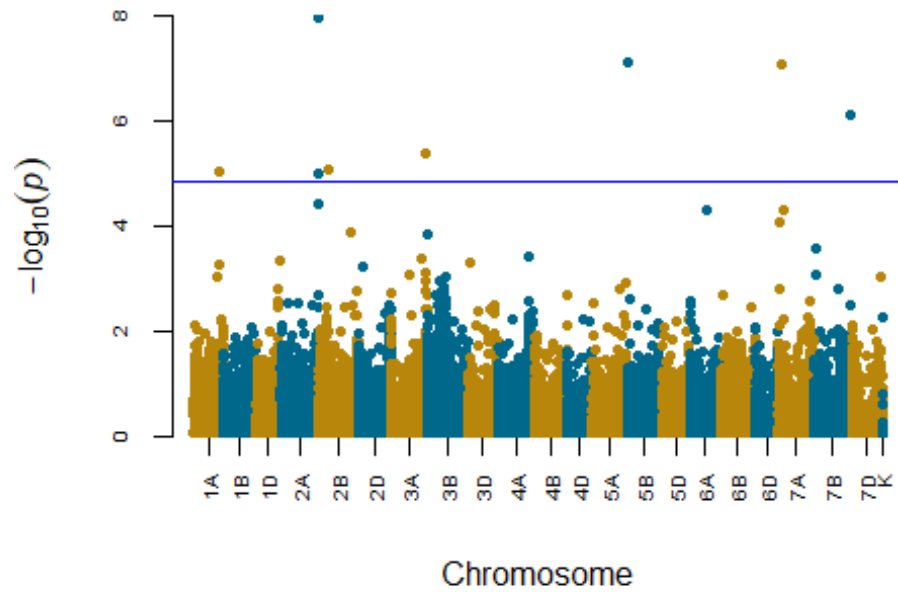
# Manhattan and QQ plots for trait FLSG



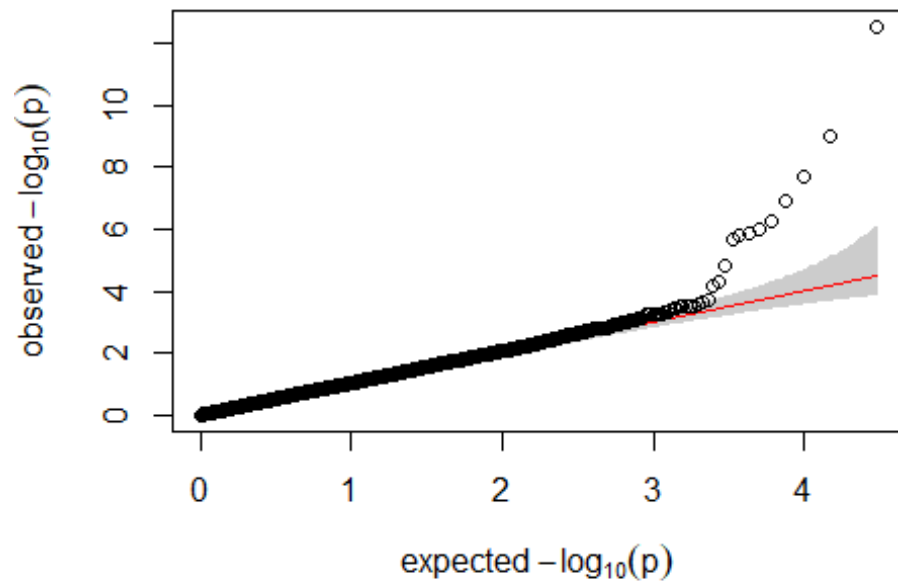
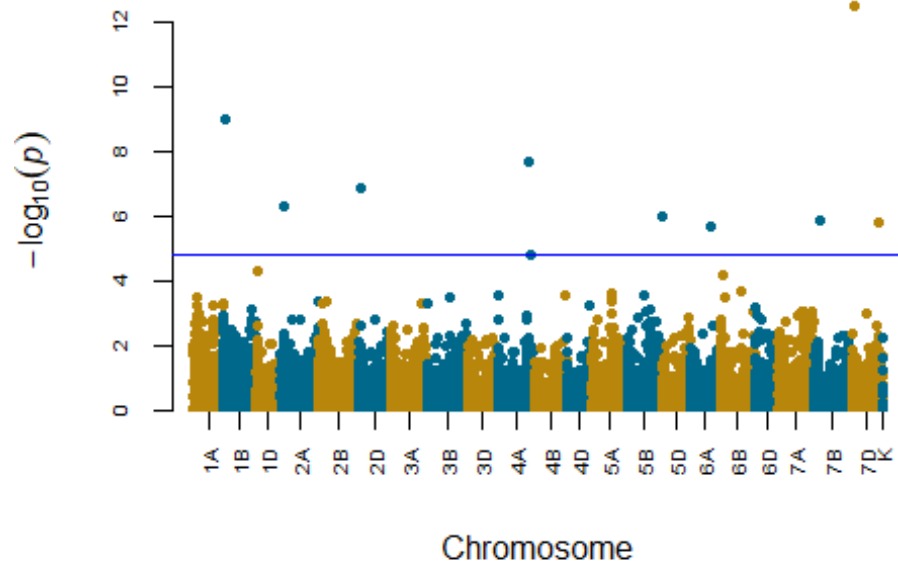
## Manhattan and QQ plots for trait GSQM



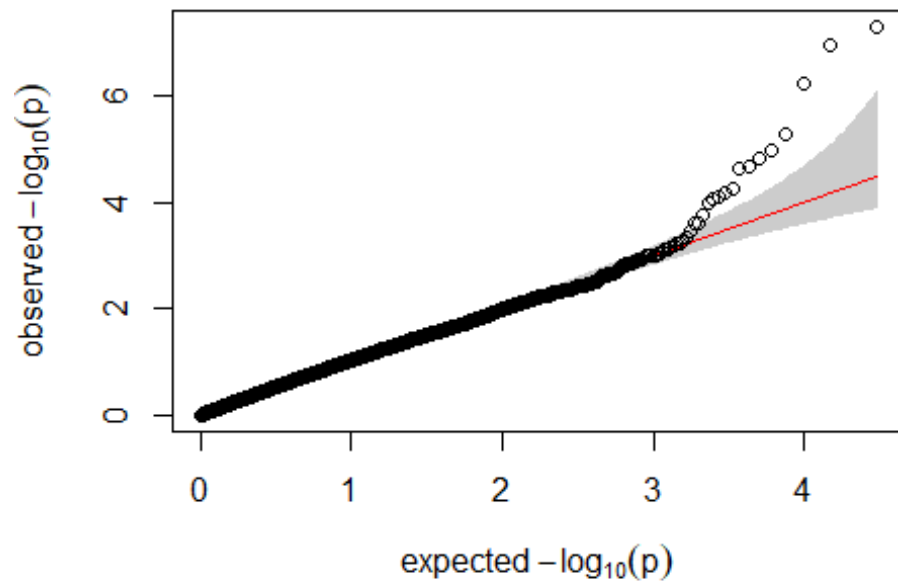
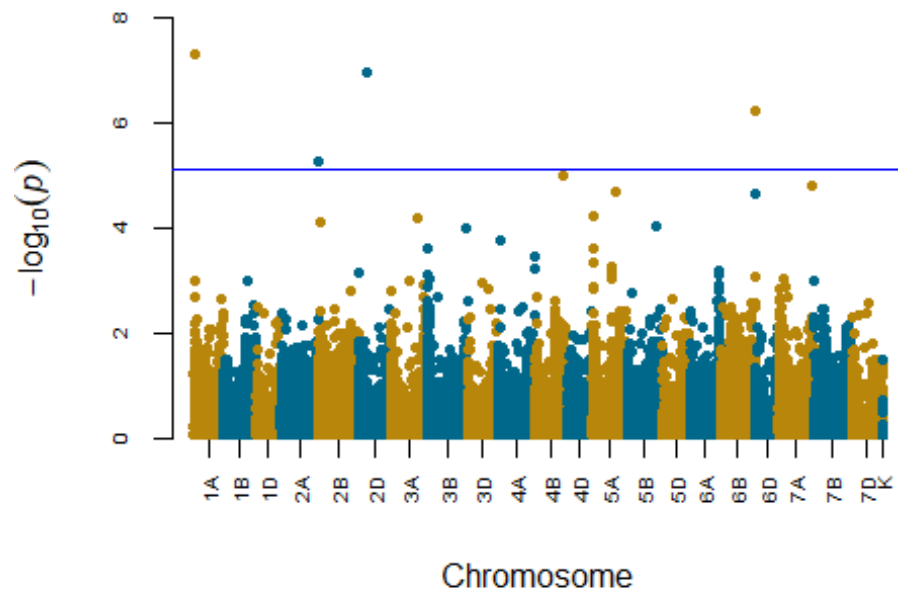
# Manhattan and QQ plots for trait GW



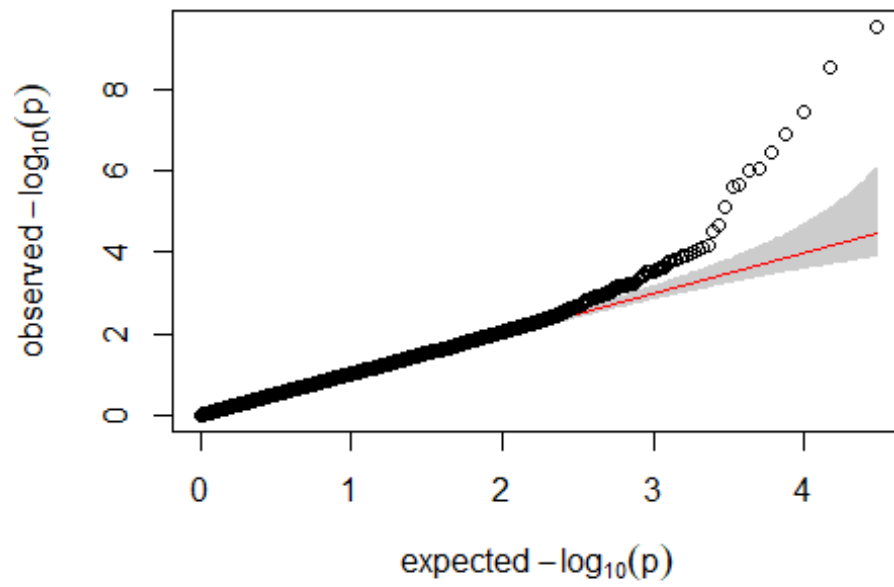
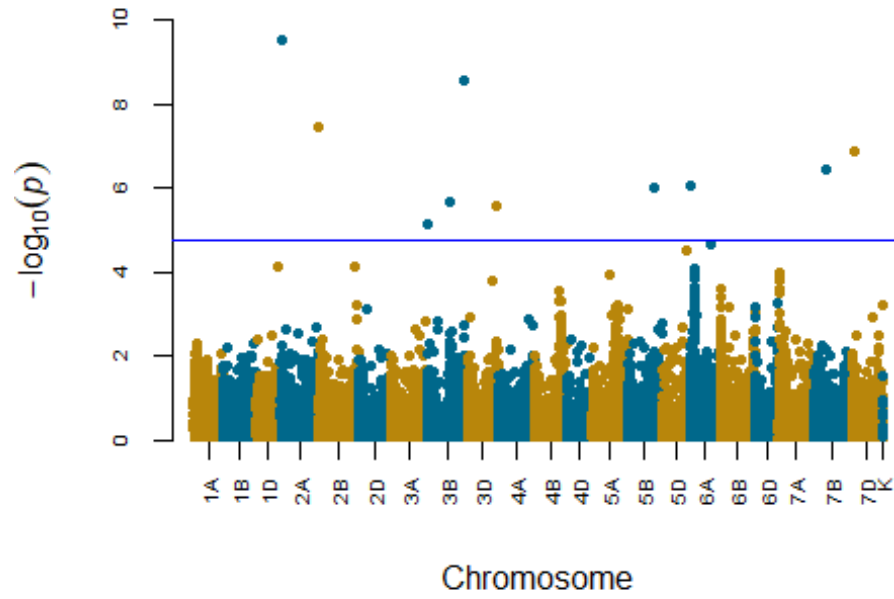
## Manhattan and QQ plots for trait HD



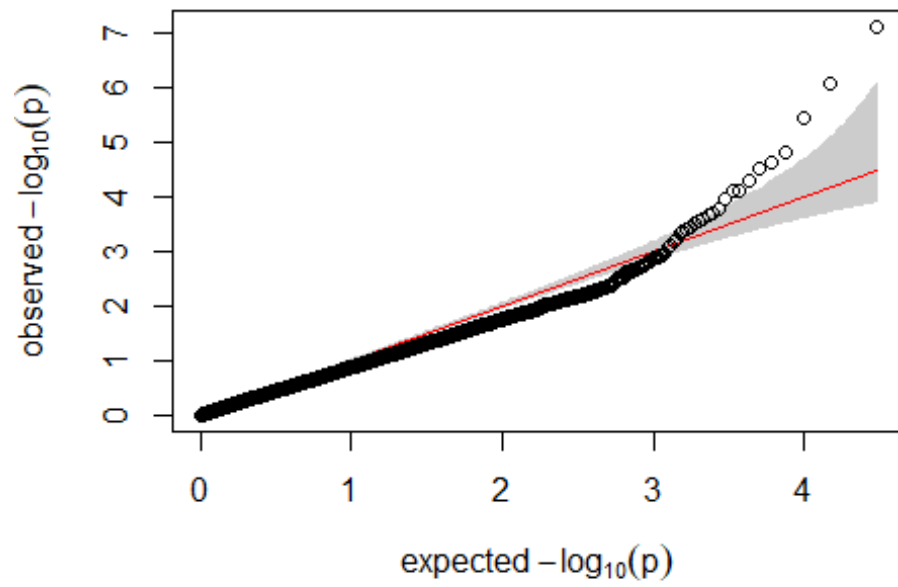
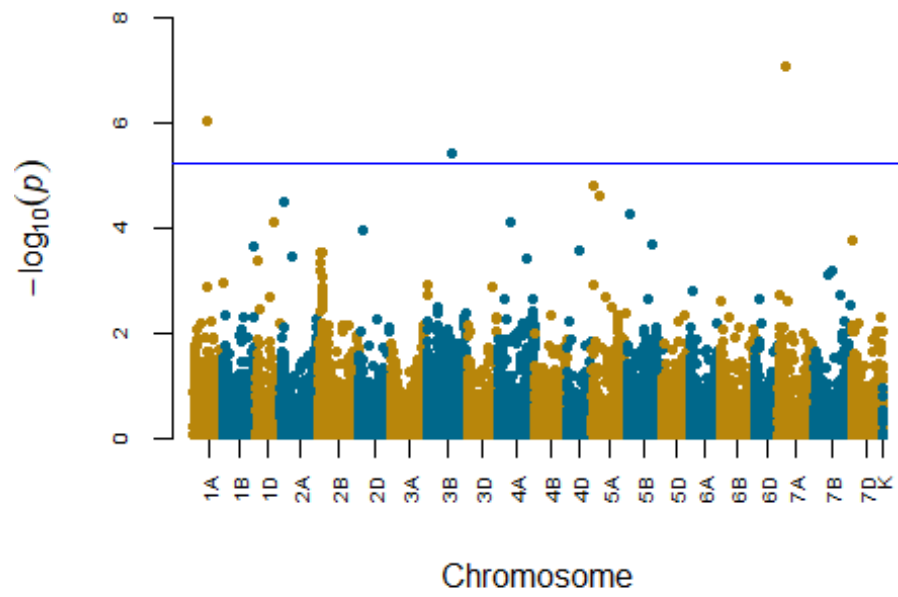
## Manhattan and QQ plots for trait HT



## Manhattan and QQ plots for trait MAT

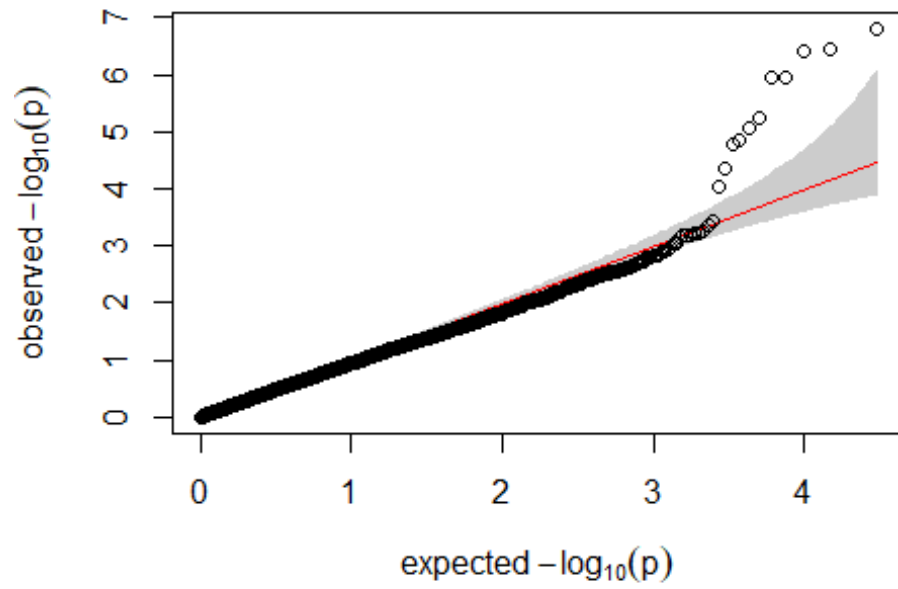
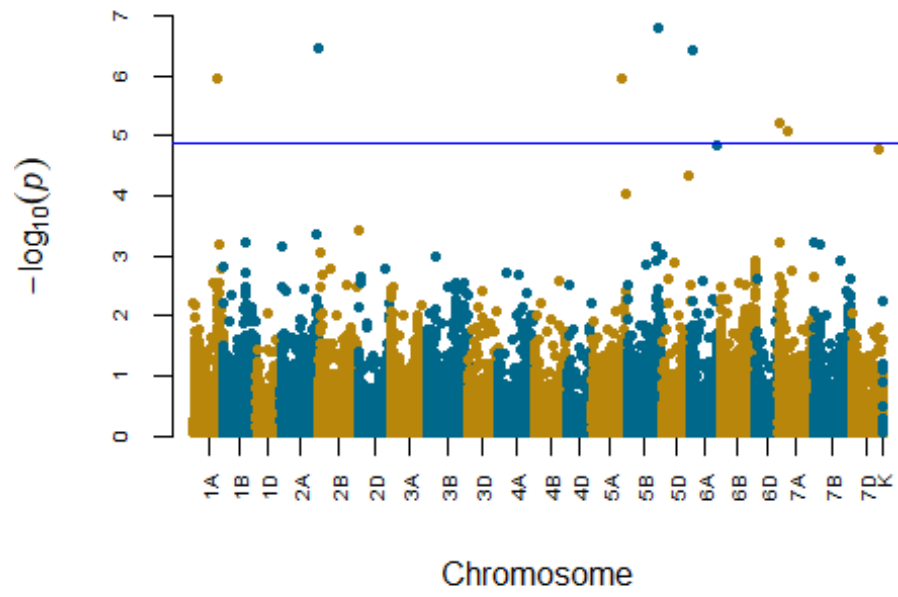


## Manhattan and QQ plots for trait NDVI

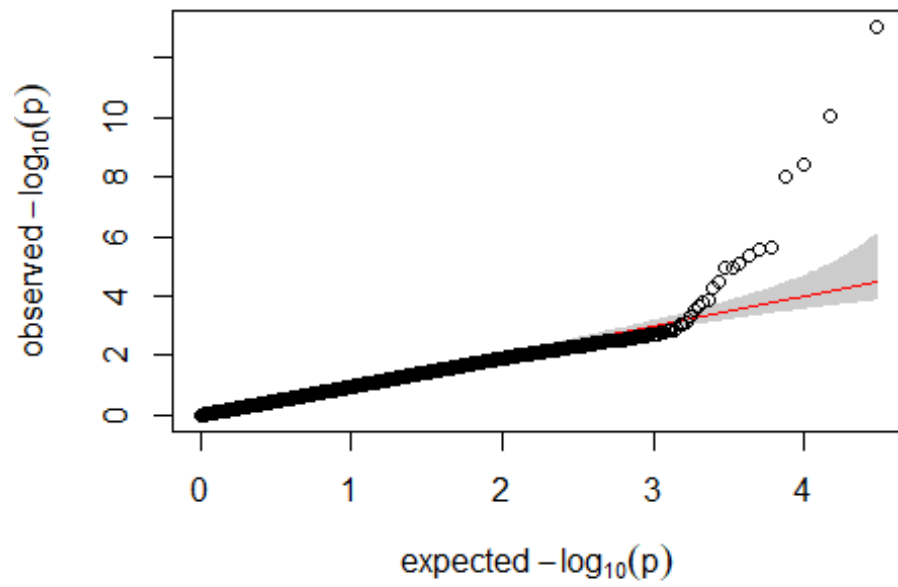
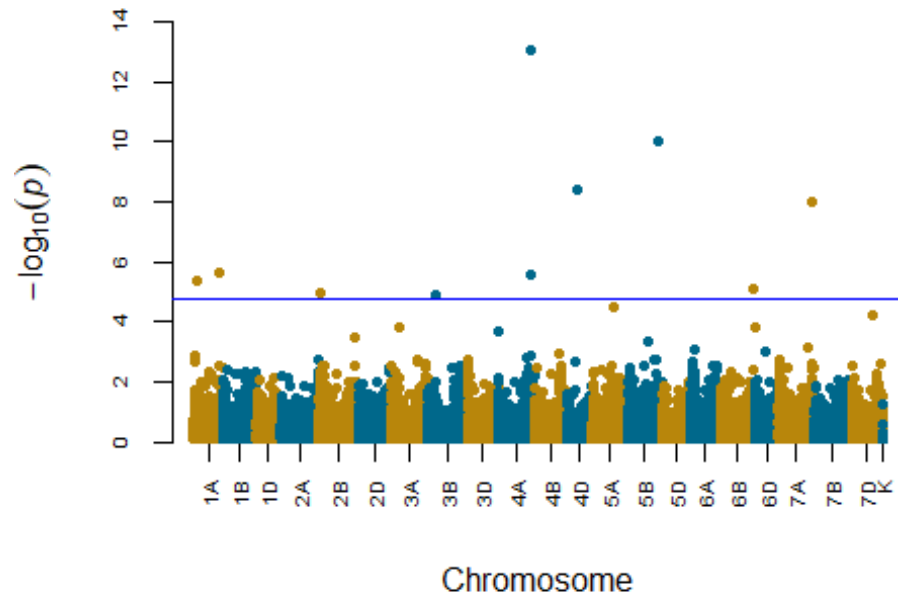




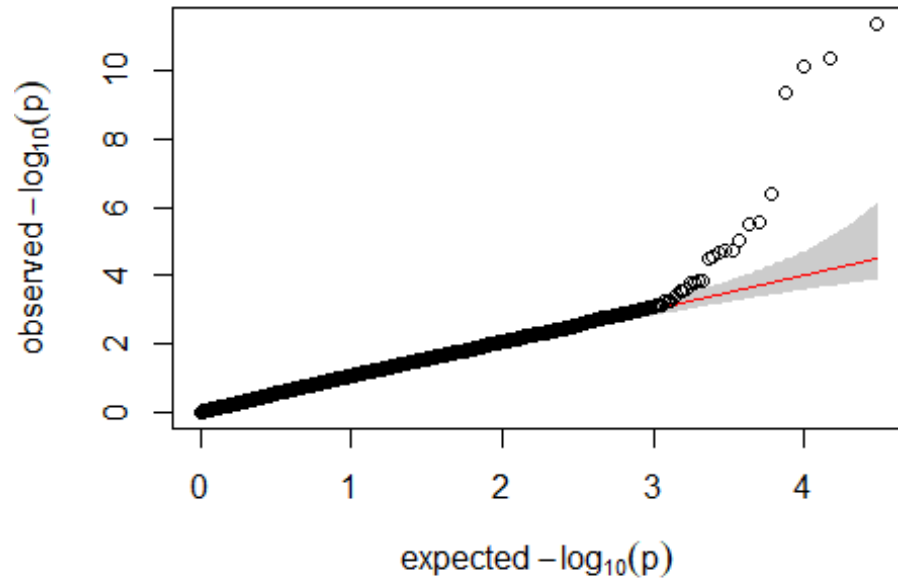
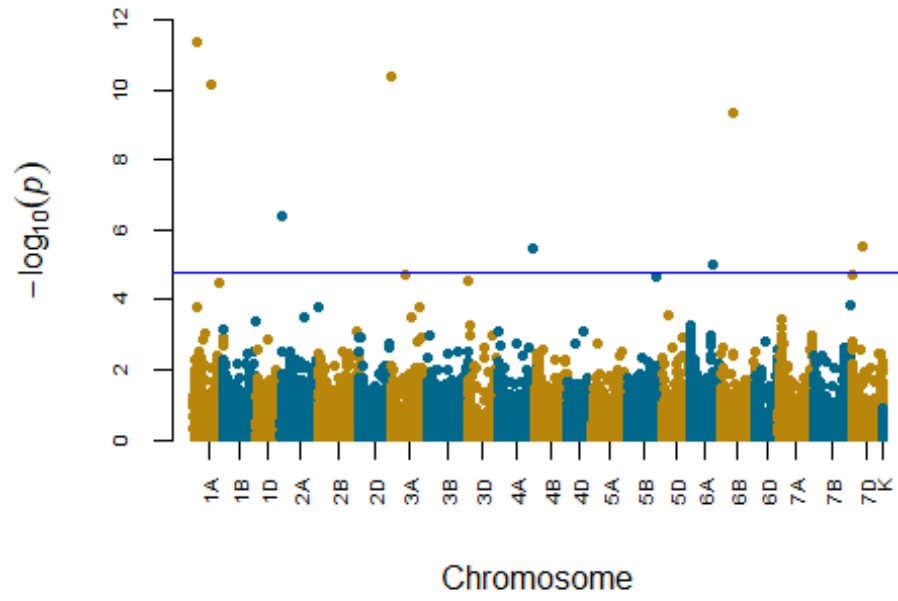
# Manhattan and QQ plots for trait PROT



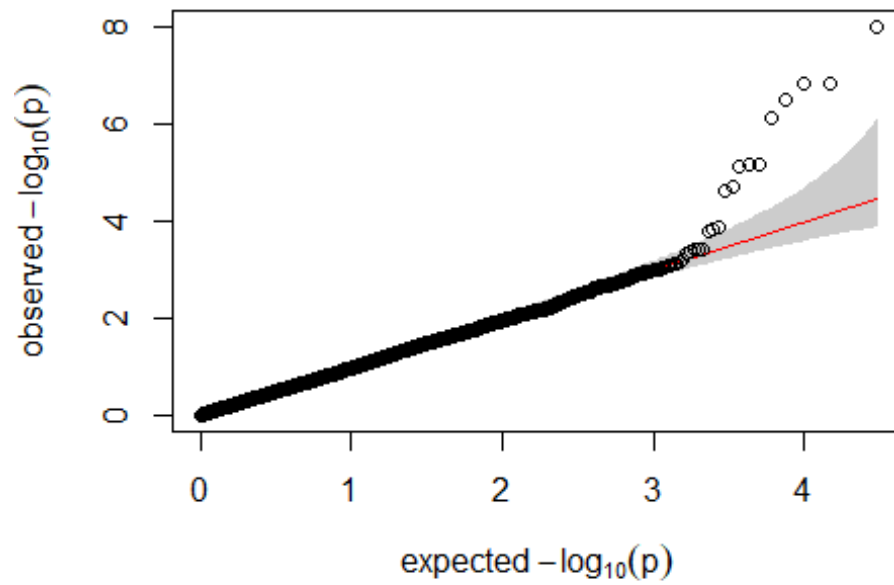
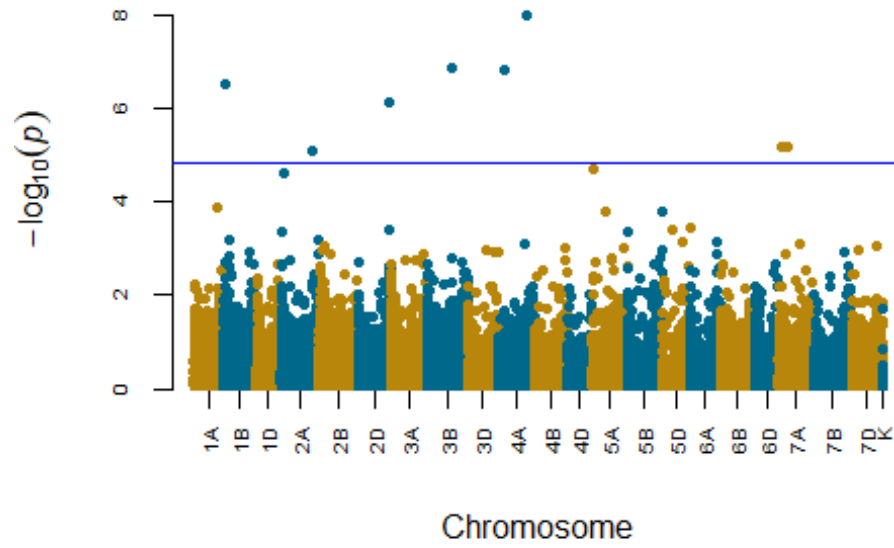
## Manhattan and QQ plots for trait SPH



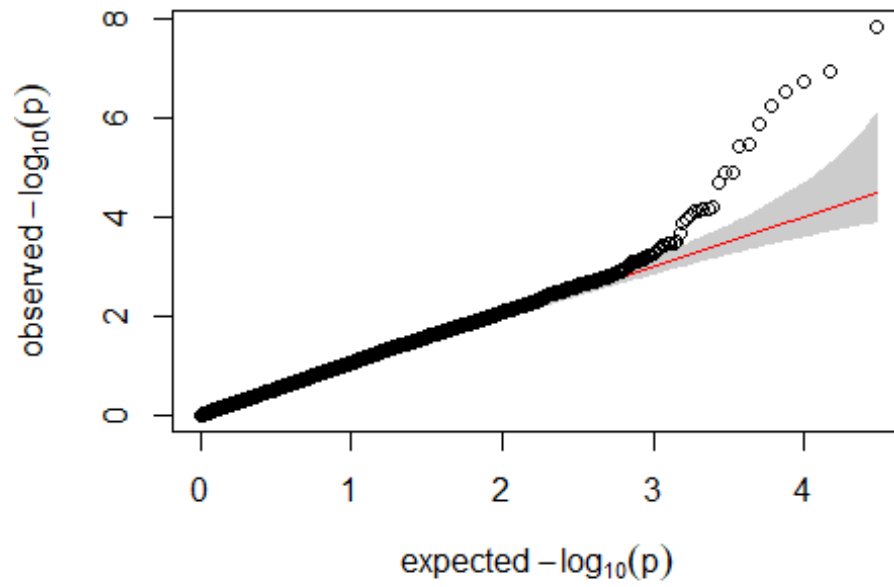
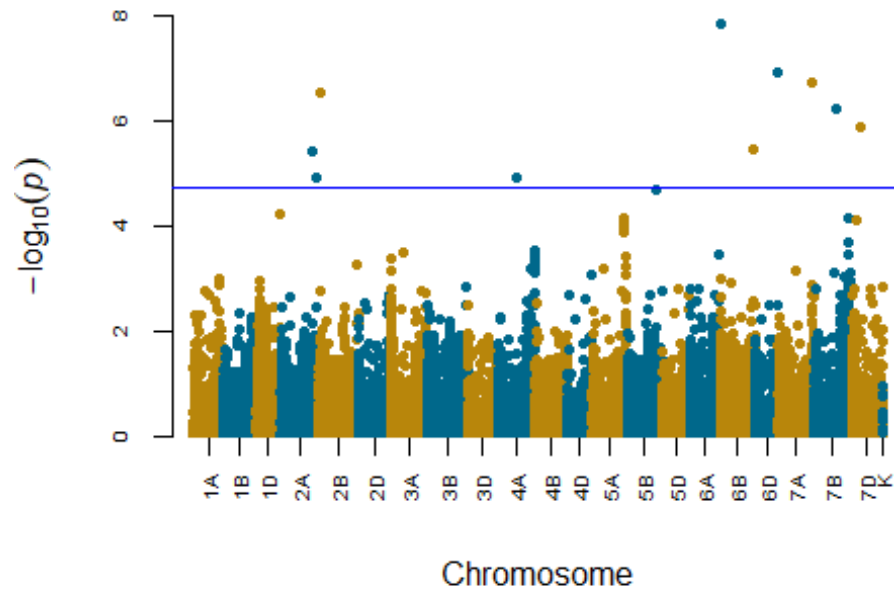
# Manhattan and QQ plots for trait SSQM



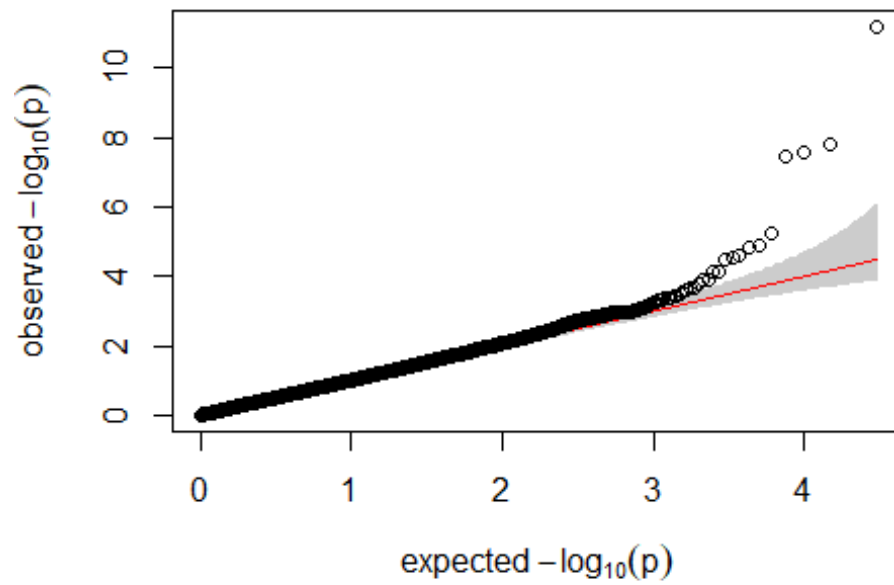
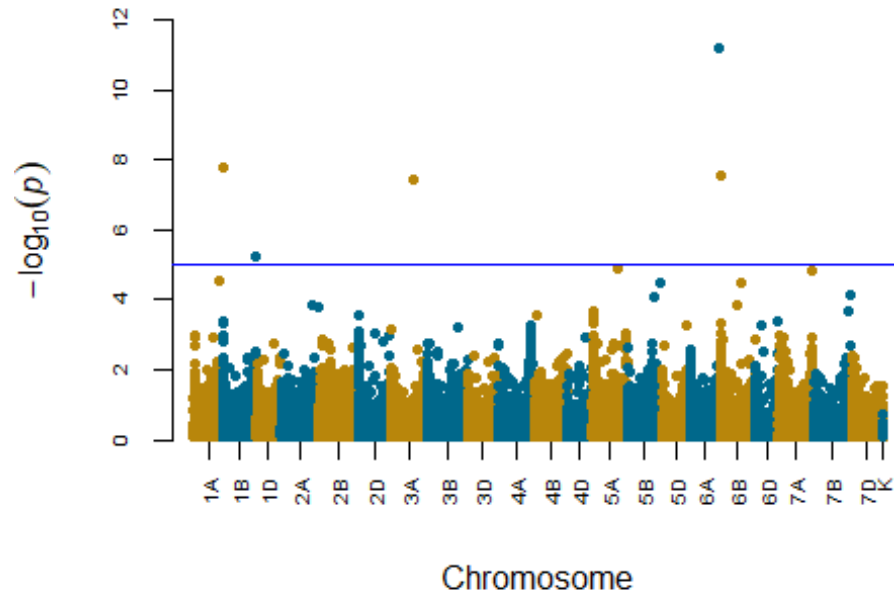
## Manhattan and QQ plots for trait STARCH



## Manhattan and QQ plots for trait TKW



## Manhattan and QQ plots for trait TWT



## Manhattan and QQ plots for trait YLD

