

Supplementary Table S1. Wheat leaf rust infection types used in disease assessment for seedling stage according to Johnston and Browder [20].

Host response (class)	Infection type	Disease symptoms
Immune	0	No uredia or other macroscopic sign of infection.
Nearly immune	0;	No uredia but hypersensitive necrotic or chlorotic flecks present.
Very resistant	1	Small uredia surrounded by necrosis.
Moderately resistant	2	Small to medium uredia surrounded by chlorosis or necrosis.
Moderately susceptible	3	Medium-sized uredia that may be associated with chlorosis.
Very susceptible	4	Large uredia without chlorosis or necrosis or rarely necrosis.
Heterogeneous	X	Random distribution of different variable sized uredia on single leaf.