Microsatellite Markers Linked To Wheat Leaf Rust Resistant Gene Lr17 On Chromosome 2AS

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Leaf rust, caused by Puccinia recondita, is a widespread disease of wheat (Triticum aestivum L.) worldwide. Genetic resistance is an economical approach to control the disease. Although no longer widely effective, the seedling leaf rust resistant gene Lr17 is present in a number of CIMMYT, Australian, and US wheat cultivars. This gene is located on chromosome 2AS, but has not been mapped with DNA markers. Our objective was to map Lr17 with linked microsatellite markers. Recombinant F₂:₃ inbred lines (RIL) (124 total) of a cross of Jupateco 73 (with Lr17) and Wee bill 1 (without Lr17) were used in this study. The primary leaves of seedling plants, were inoculated with a race avirulent to Jupateco 73S and virulent to Wee bill 1. Infection type of each line was recorded as low, high, or segregating. The segregation ratio of infection types of the RILs fit a one-gene model. Six microsatellite markers on chromosome 2AS were polymorphic between the two parents and were screened on the RILs. Microsatellite markers Xgwm636 and Xbaro124 were both linked distal to Lr17. Xgwm636 is the closest marker to Lr17 (4.0 cM). Xbaro124 is a dominant marker in this population and is 4.8 cM distal to Xgwm636.