

Description of Methods and Environmental Conditions for Screening of Cold Tolerant Mapping Population

For the cold tolerant population RTx430/PI610727(Gaigaoliang), both cold optimal germinability were assessed under laboratory conditions. Briefly, 25 seeds were sown in polystyrene Petri dishes lined with filter paper moistened with sterile distilled water. Seeds were allowed to incubate/germinate at a constant 12°C (cold germination) or at 30°C (optimal germination) for 8h in the light, in separate controlled temperature chambers and then both treatments were exposed to 20°C for 16h in the dark. Germination under laboratory conditions was determined visually based on protrusion of radicle to approximately 1mm length. Final germination was counted at 4 or 7 days after sowing for optimal and cold temperature test. To determine variation in field emergence, the RILs and parents were sown in 5 x 1 m plots at the USDA-ARS farm in Lubbock, TX (101° 90' west longitude; 33° 59' north latitude) and at Texas Agrilife farm at New Deal, TX (101° 82' west longitude; 33° 69' north latitude). A total of 50 manually selected high quality seeds were sown on top of well prepared beds on April 1, 2009 for both locations. Plots were uniformly irrigated using a drip system after sowing. Seed emergence was measured based on number of seedlings per plot at 14, 21 and 30 days after sowing. The mean field soil and air temperature during the experimental period was 14.9 °C and 16.6 °C, respectively.