Genetics of Powdery Mildew Resistance in Several Wheat Germplasm Lines. (C01-srnic170241-Poster)

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Abstract:

Knowledge of the genetics and the identification of molecular markers for resistance to wheat powdery mildew (Blumeria graminis f. sp. tritici) are helpful for employment of new genes, especially for pyramidal complexes. The objectives of this research were to 1) study the inheritance and efficiency of resistance to naturally occurring powdery mildew in the five wheat germplasm lines NC96BGTD1, NC96BGTA4, NC96BGTA5, NC98BGTAB10, and NC99BGTAG11; 2) to identify AFLP markers linked to the resistance alleles. Each germplasm was crossed to the susceptible parent 'Saluda' which was utilized as the recurrent parent in the development of germplasm. Germplasm X germplasm populations were developed and their F2:3 progenies were tested in field (three populations), and greenhouse (five populations). Between 119 and 217 F2:3 progeny for field and greenhouse evaluations were developed in each of the populations. Results confirmed that the resistance factors in all five germplasms segregated in monogenic fashion. All five germplasm X germplsm populations segregated in digenic fashion, indicating independent segregation at their resistance loci. NC99BGTAG11 was immune while NC96BGTD1, and NC96BGTA4 were highly resistant NC98BGTAB10 was partially resistant and NC96BGTA5 was not tested under field conditions. Between 18 and 54 AFLP polymorphisms have been detected between the four resistant germplasms and the susceptible parent, in primer screening. Bulk segregate analysis based on pooled DNA of homozygous resistant and susceptible F2 plants is in progress and so far indicates a presence of at least one marker in NC96BGTD1, and NC99BGTAG11, and potential markers in all other germplasms.

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