P17 *5th ISFHB: Session 1 - Germplasm Development and Breeding for Scab Resistance*

USE OF DOUBLED HAPLOID LINES VIA ISOLATED MICROSPORE CULTURE FOR THE INTROGRESSION OF RESISTANCE TO FUSARIUM HEAD BLIGHT INTO WHEAT ELITE CULTIVARS

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Fusarium Head Bligh (FHB) is a devastating disease of wheat and other cereals mainly caused by different species of the fungus *Fusarium*, reducing grain yield and severe affecting quality, mostly due to mycotoxins contamination. The great majority of commercially wheat varieties are highly susceptible to the disease and searching for resistance has been a major focus of many breeding programs. Incorporating resistance genes into improved germplasm is a very attractive and clean approach to control the disease; however, it is a very tedious and long process, due to the innumerous cycles of selfing and lack of homozygosis. Using Doubled Haploid technology is possible to shorten the process of introgression of resistant genes into wheat elite genotypes, enhancing selection efficiency and the development of new varieties. However, many wheat genotypes behave as recalcitrant to haploidization procedures, mostly related to androgenesis. To this end, the first objective of this research was to evaluate the response of a group of wheat genotypes to androgenesis, via isolated microspore culture. Out of a few resistant known genotypes, four were tested to know their ability to respond to microspore culture: a) Frontana; b) Sumai-3; c) BRS 179; and d) BRS Guamirim. Two other genotypes were also tested and used as controls (Fielder and Embrapa 27), showing high and low response to androgenesis respectively. Preliminary analysis of our data revealed that most genotypes responded to microspore culture, producing both embryos and green plants. Of all tested genotypes, Frontana showed the highest response, even higher than the responsive control, producing a massive amount of embryos and plants, followed by Sumai-3 and Fielder. BRS 179 showed moderate response and BRS Guamirim behaved as recalcitrant as Embrapa 27 (few embryos and no green plants were produced). Based on these results, it will be possible to combine different sources and types of resistance and incorporate them into elite wheat genotypes through the aid of microspore culture, since three resistant genotypes were highly responsive to the method. Our findings will be valuable to support wheat breeders on the designing of crosses to develop improved FHB resistant varieties. Further studies are under development, including the formation of a multi-parent mapping population (eight-way cross) aiming for genetic analysis, combining different types and sources of resistance to FHB and the ability to respond to microspore culture.

Keywords: microspore culture; doubled haploids; wheat