

WHEAT MUTANTS WITH REDUCED SCAB SYMPTOMS

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Mutation breeding has been used for more than 50 years to introduce beneficial variants into breeding populations in the hope that plant breeders can develop new, improved varieties. By mutating wheat seeds resistance to diseases such as leaf rust has been discovered and deployed in new varieties. Our project has a strong focus on developing wheat varieties that are resistant to head scab and thus our interest in mutation breeding. Samples of KY93C-1238-17-1, a very high yielding but scab susceptible line, was treated with gamma radiation to induce mutations. Irradiated (M1 generation) seed was increased in plots and M2 seed was harvested in bulk. 240 rows of M2 seed were grown in the irrigated, inoculated scab nursery at Lexington, KY in 2009. These contained an estimated 37000 seeds. Clean, scab free heads were tagged, harvested and used to seed head

rows in the 2010 scab nursery. 29 rows were selected based on overall reduced levels of visual scab symptoms of the heads within the row. Percent scabby seed was compared to the parental line in the scab nursery in 2011 in a two rep randomized complete block experiment. In 2012, 14 of the most resistant lines were re-tested and incidence, severity, index and DON data were additionally collected using a similar experiment.

RESULTS

In Figure 1 the bar in charcoal is the susceptible parent; the white bars represent lines that do not differ significantly from the parent and the light gray bars associated with lines M39,45,47,41,37,42,48 and 49 are significantly lower in percent scabby seed. In 2013 these lines will be tested at two locations under varying scab pressure to see if the resistance holds up. It is very early in the process but the results are encouraging so far.

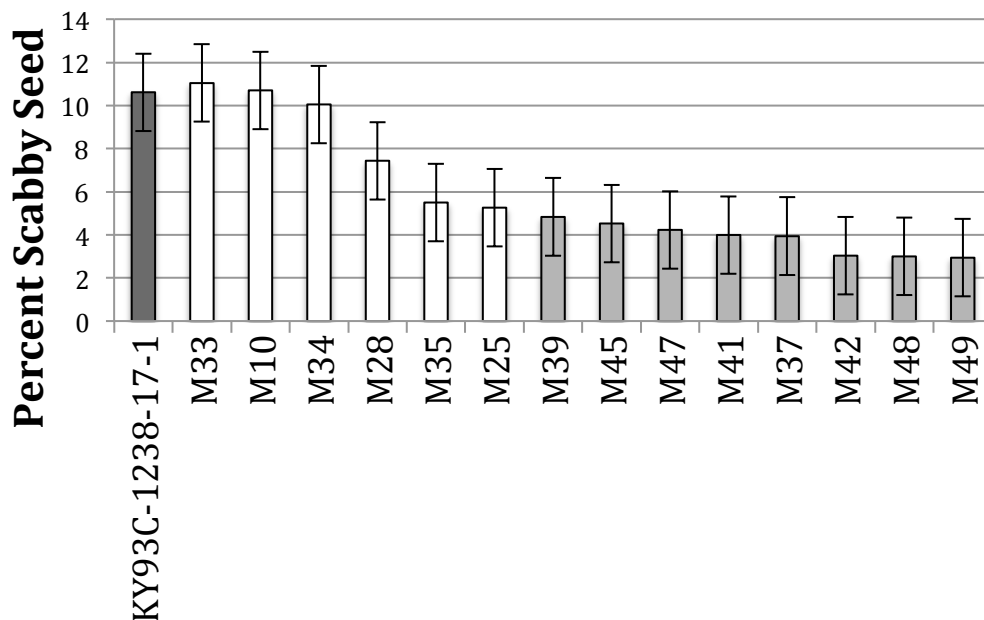


Figure 1. Mutant Wheat Lines Compared with Parental Line for Percent Scabby Seed, Lexington, KY 2012