The malting and brewing of *Fusarium* infected barley presents a number of processing, product quality and public health concerns. *Fusarium* infected barley also is unsuitable for human consumption and for some livestock. The ultimate solution to *Fusarium*-related problems is the development of FHB resistant barley cultivars. Testing for deoxynivalenol (DON) is an integral part of barley varietal development programs focusing on *Fusarium* resistance. DON testing, however, is a very expensive part of these programs, and thus can limit the number of lines, which may be screened within a given year. The primary objective of this project is to provide barley breeders and pathologists, working on the development of *Fusarium* resistant barley, with affordable, accurate and timely DON analysis.