

**Title** Characterization of phenotypic determinants of friction discolouration in pears

**Author** Munazza Saeed, Tony McGhie, Lester Brewer, Sue Gardiner, David Chagné, Julian Heyes

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### **Abstract**

Friction discolouration (FD) of pears is an important postharvest disorder responsible for significant consumer discontent in markets because of the unattractive appearance of the fruit surface. Control of this problem is essential to increase profitability of the pear industry. There is no single factor known to act as a limiting factor in incidence of FD; however, certain biochemical constituents (polyphenol oxidase, phenolic compounds and ascorbic acid) and skin anatomy have been reported to play important roles in this mechanism. Identification of phenotypic determinants likely to play a role in the incidence of FD is a prerequisite for finding molecular markers that can be used in pear breeding programmes to control FD. For this purpose, 250 seedlings from two segregating populations for FD derived from interspecific crosses between Asian and European pears were selected. Out of 19 studied variables, a few consistent predictors were observed in relation to FD index of seedlings. All these predictors were phenolic compounds. The study showed that the concentrations of procyanidin dimer B2 and isorhamnetin 3-galactoside/glucoside were negatively correlated, while quercetin -3-*O*-glucoside, epicatechin, cyanidin-3-arabinose/cyanidin-3-xylose and 5-*O*-caffeoylquinic acid were positively correlated, to susceptibility to FD. In addition, there was clear evidence of the influence of environmental factors (fruit size, harvest date, time in storage) on FD. These data will be used to accelerate the search for molecular markers that can be used to reduce FD-susceptibility in the pear breeding programme.