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Genger, R. K.; Brown, A. H. D.; Knogge, W.; Nesbitt, K.; Burdon, J. J.; Development of SCAR markers linked to a scald resistance gene derived from wild barley *Euphytica* **134**, 149-159, (2003) DOI: [10.1023/B:EUPH.0000003833.63547.78](https://doi.org/10.1023/B:EUPH.0000003833.63547.78)

Abstract

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The F2 progeny of a third backcross(BC3) line, BC line 240, derived from a Turkish accession of wild barley (*Hordeum vulgare* ssp. *spontaneum*), segregated for resistance to scald (*Rhynchosporium secalis*) in a manner indicating the presence of a single dominant resistance gene. Two SCAR marker slinked to this resistance were developed from AFLP markers. Screens of disomic and ditelosomic wheat-barley addition lines with the SCAR markers demonstrated that the scald resistance gene is located in the centromeric region of barley chromosome 3H, a region previously reported to contain a major scald resistance locus, *Rrs1*. Markers that flank the *Rrs1* locus were used to screen the wild barley-derived BC3F2 population. These markers also flank the wild barley-derived scald resistance, indicating that it maps to the same locus as *Rrs1*; it may be allelic, or a separate gene within a complex locus. However, BC line 240 does not respond to treatment with the *Rhynchosporium secalis* avirulence factor NIP1 in the same way as the *Rrs1*-carrying

cultivar Atlas46. This suggests that the scald resistance gene derived from wild barley confers a different specificity of response to the Rrs1 allele in Atlas46. In order to increase the durability of scald resistance in the field, we suggest that at least two scald resistances should be combined into barley cultivars before release. The scald resistance gene described here will be of value in the Australian environment, and the several markers linked to it will facilitate pyramiding.