Development of a diagnostic assay for the rapid detection of different ascochyta blight pathotypes in lentil

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Pulses offer a great opportunity in creating a sustainable global food supply as they are an excellent source of protein, with low carbon footprint and have better environmental impact. Pulses however are not immune to fungal diseases, of which Ascochyta blight (AB) has the worst impact on yield and quality in Australia. Our group has identified and characterised the first effector protein, AlAvr1, for an ascochyta pathogen. This avirulence effector in *Ascochyta lentis,* causing AB in lentil, mediates resistance in certain lentil cultivars. Currently there are two known forms of the effector; AlAvr1‑1 that was described for the PBA Hurricane XT‑avirulent isolates (Pathotype 1) and AlAvr1‑2 characterised in the PBA Hurricane XT-virulent isolates (Pathotype 2). Discovery of this effector gene enabled us to design a PCR-based diagnostic assay to classify isolates into the two pathotypes and predict virulence towards PBA Hurricane XT, PBA Hallmark XT and PBA Bolt. Here, we aim to extend this work by developing a high through-put diagnostic tool for the simultaneous detection and pathotype identification of *A. lentis* isolates using a qPCR-based assay. This method offers fast, sensitive and reliable approach for effective and correct disease diagnosis with the intention of deploying this technology in the field. This tool will help growers with disease management decisions, including cultivar choice and rotation, which in turn reduces the risk of AB infection and its impact on grain quality and yield.