

## Foliar Fungicides Reduce, But Don't Eliminate, Stubble Borne Inoculum Of *Ascochyta* Blight In Lentils

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*Ascochyta* blight (AB) (causal agent *Ascochyta lentis*) is a major foliar fungal disease of lentil that can be managed with foliar fungicides. To investigate the impact of foliar fungicides on the subsequent stubble borne inoculum load, a spore release experiment was conducted in 2017 and 2018. Lentil stubble infested with AB was sourced from field trials conducted in 2016 and 2017 at Maitland SA, which included two lentil cultivars with different AB resistance ratings, PBA Hurricane XT (formerly moderately resistant) and PBA Flash (moderately susceptible). Field trials were inoculated with AB infested lentil stubble and had two treatments *viz.* fortnightly sprays with foliar fungicide during the growing season or untreated. After harvest in December, stubble from individual plots was placed into nylon mesh bags (140 x 70 cms, 1 kg stubble per bag) and incubated in ambient conditions on the Waite Research Precinct campus to allow maturation of spores of *A. lentis*. Five months later seeds of nine lentil cultivars and elite lines were sown into pots (10 cm diameter) placed around bags of stubble from either treated or untreated PBA Hurricane XT or PBA Flash plots. Each pot contained five uniform plants and each cultivar was sown into five separate pots, totalling 45 pots around each bag of stubble. All bags of stubble with associated pots were separated from one another by at least 50 m to prevent cross-infection. Conidia and ascospores that developed on the infested stubbles were spread by rain and wind to the potted plants. Lesions of AB on the plants were counted and collected each week for 12-15 weeks. Data were square root transformed before analysis to normalise residuals. The Mann-Whitney U test found no significant difference between the data from the two years and split plot analysis was performed, with stubble type as main plots, cultivars as subplots and years as replicates. The interaction between stubble type and cultivar was significant ( $P < 0.001$ ). Highest lesion numbers developed on susceptible and moderately susceptible cultivars next to untreated stubble of PBA Flash. Lesion number was significantly reduced for cultivars next to the treated stubble of PBA Flash and generally similar to those from the untreated stubble of PBA Hurricane XT. Fewest lesions developed on all lines, irrespective of susceptibility, next to stubble of treated PBA Hurricane XT. The number of lesions was low on the moderately resistant cultivars PBA Hurricane XT and PBA Hallmark XT (tested as CIPAL1422). A small number of lesions also developed on the resistant lentil lines, Indianhead and ILL7537. This indicates there are isolates present in the pathogen population capable of overcoming the major sources of resistance in the lentil breeding program, albeit at a low frequency. In the presence of treated stubble, a significant number of lesions developed on a range of lentil hosts indicating that stubble from fungicide treated crops is still a major source of inoculum for future crops. Ongoing monitoring of the *A. lentis* pathogen population remains an important plant health surveillance activity each season.