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Case study: Using plant-based solutions to manage an *Armillaria* spp. infested landscape in the Royal Botanic Gardens Cranbourne (Victoria, Australia)

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Armillaria root rot is recognised globally as a significant threat to industries with highly modified soils, including agriculture, forestry and botanic gardens. *Armillaria* spp. are parasitic fungi that break down the vascular system of their host plant, causing dieback and mortality of woody species. In addition, *Armillaria* spp. can persist as saprophytes (on stumps and dead roots) making control difficult as healthy roots that contact infected material may become inoculated.

Following significant plant losses across the Australian Garden (AG), three *Armillaria* species (*A. luteobubalina, A. fumosa* and *A. pallidula*) were identified across 30 different sites. In response, an Armillaria Response Plan that outlines future management strategies was developed to mitigate the risk to the living collections. At present, infected sites are managed using a range of different techniques, including soil amelioration works (i.e., air spading, excavation and soil removal, addition of organic matter, increasing soil pH, removal of old stumps and root material, installation of sub-surface irrigation, application of phosphonic acid, implementation of a plant nutrition program and improved hygiene measures.

The Dry River Bed (DRB) is a 3300m^2 precinct within the AG which comprised predominately of densely planted hedgerows of medium to large shrubs. *Armillaria* spp. rapidly colonised the DRB and caused widespread mortality and dieback across the landscape. The failure of the precinct significantly impacted the overall presentation of the AG, which necessitated a full landscape precinct review. Existing management techniques (as outlined above) were deemed impractical due to the scale and complexity of a full landscape redevelopment. Therefore, a change in the original planting intent was required with herbaceous perennials, grasses and flowering monocots replacing the woody shrub plantings. This plant-based solution has led to the successful establishment of a diverse herbaceous border – improving the resilience of the living collections and beautifying the AG for the enjoyment of all.