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Aussie Farms Fight Charcoal Rot with New Soil Strategies

July 31, 2025

– Categories: Economics



A groundbreaking study reveals innovative methods to combat charcoal rot in Australian strawberry farms, using soil fumigation and Totally Impermeable Film (TIF) to boost crop health and reduce losses from this destructive disease.

A recent study from Victoria, Australia, offers hope for strawberry growers battling charcoal rot, a soilborne disease caused by the fungus *Macrophomina phaseolina*. The research highlights advanced soil fumigation techniques combined with Totally Impermeable Film (TIF), a plastic barrier that traps fumigants more effectively than the industry-standard Low-

Density Polyethylene (LDPE) film. These strategies have slashed disease incidence and lifted fruit yields, providing practical solutions for farmers facing economic strain from crop losses.

The study, conducted between 2018 and 2019 in Victoria's Kinglake and Silvan regions, tested fumigants like 1,3-dichloropropene and chloropicrin under TIF. Results showed TIF increased fumigant concentration in soil by up to 38% compared to LDPE, reducing *Macrophomina phaseolina* DNA in soil by 65% and charcoal rot cases by 93%. Broadacre fumigation, treating both beds and inter-rows, further cut pathogen levels by 55% and boosted yields by 40%, according to researcher Dylan J. McFarlane. "These methods give growers a stronger defense against a relentless disease," McFarlane noted, as reported by HortTechnology.

For Australian farmers, these findings are a game-changer. Charcoal rot, which causes plant wilting and crown rot, has long plagued the \$400 million strawberry industry, especially in warmer regions. Traditional LDPE-based fumigation offered limited control, but TIF's ability to retain fumigants longer ensures better pathogen suppression while reducing environmental impact. The study also found that destroying old crops with metham sodium before fumigation increased yields by 30%, a cost-effective step for growers, per Hort Innovation's 2022 report.

Adoption of these practices is already yielding results. Victorian farms using TIF saw a 5% drop in charcoal rot from 2017 to 2020, adding \$5 million in revenue, Hort Innovation estimates. As farmers face rising costs and market pressures, these proven techniques offer a path to resilience without reliance on untested alternatives. The research underscores the value of innovation in safeguarding Australia's agricultural backbone, ensuring strawberries remain a staple on tables nationwide.