# Maintaining Biosecurity and Market Access in the Australian Strawberry Industry Following Methyl Bromide Phase-out

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The biosecurity and market access of the Australian strawberry industry is presently under threat from current and possible future withdrawals of soil fumigants. Currently, regulatory authorities in some states only grant certification or accept entry of strawberry transplants if they are produced in soils treated with methyl bromide (MB). A key issue is that thresholds that meet certification for soil-borne diseases in transplants are not clearly defined in Australia or worldwide. Therefore there is no benchmark to compare the health status of transplants produced under alternative systems with those produced in MB-treated soils. Our research has commenced developing and applying molecular and traditional tools to better define soil-borne disease thresholds that meet certification standards. Preliminary data suggests that the incidence of crown rot caused by *Phytophthora cactorum* in transplants grown in MB-treated soil may be in the range of 0.01 - 1.0 %, but the development of molecular-based screening and appropriate sampling strategies is important to better define certification standards for this pathogen.

The strawberry nursery industry in Australia has trialled alternatives to MB since 1995. Generally, alternative fumigants currently registered in Australia (metam sodium; dazomet; chloropicrin and 1,3 dichloropropene) have controlled soil-borne pathogens and weeds to similar levels as MB (e.g. 1,3-D / Pic reduced *Rhizoctonia solani* AG2.1 from 65 pg DNA / g soil to undetectable levels). However, due to their low volatility, the registered alternative fumigants have sometimes caused phytotoxicity in strawberry transplant crops (up to 40 % yield loss). This is exacerbated under the cold conditions (< 5ºC soil temperature) and heavy soils present in the nursery industry. Volatile alternative fumigants, such as methyl iodide and ethanedinitrile, have given more consistent yield responses in trials and are currently undergoing registration in Australia. As long-term solutions, trials are investigating soil-less systems (e.g. hydroponics and soil-less substrates) and non-pesticide methods (e.g. biofumigation and mycofumigation) as alternatives to MB and other soil fumigants for strawberry transplant production.