

INDUSTRY PERSPECTIVE ON FUMIGANT AND NONFUMIGANT SOILBORNE PEST MANAGEMENT

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There is a multitude of different strategies, tools and tactics available to growers for combating soilborne crop pests. Some have proven effective through decades of commercial use; while others are new, exploratory, and promising.

Fumigants: taken as a whole, soil fumigation represents an effective, time-responsive and cost-efficient means of managing soilborne pests. Some fumigants have been around for a long time, such as methyl bromide, chloropicrin, 1,3-dichloropropene, and the MITC generators. Many potential fumigant candidates have come and gone, but very few – namely dimethyl disulfide (DMDS) and the “biofumigant” allyl isothiocyanate (AITC) - have actually made it through the labyrinthine gauntlet of consistent and favorable efficacy trials, expensive and often daunting regulatory processes for registration, and, finally, pricing structures that growers can actually afford. All currently registered, and likely all future, soil fumigants share a common challenge: regulatory constraints that limit the use of these products, in one way or another and to varying degrees.

Non-fumigant controls: this diverse category includes everything from centuries-old practices like crop rotation, disease resistance breeding, and plant grafting; to newer concepts that approach pest control through the induction of temporary physicochemical changes in the soil via tactics like anaerobic soil disinfestation, steam and solarization; to the attempted manipulation of the soil biota via the introduction of microbial products; and so on. Some of these non-fumigant concepts, alone or in combination, are touted as a means to replace fumigant use.

Some questions to be addressed are:

- Do soil fumigants even need to be replaced?
- Who will benefit most from the use of fumigant alternatives?
- What are the implementation hurdles that must be overcome to maintain agricultural profitability and market competitiveness?
- Where do these alternatives look most promising?
- When can these alternatives be considered commercially viable?
- How do the alternatives compare to fumigants on cost, energy and equipment needs, ease of adoption, and pest control spectrum?