

**DEMYSTIFYING BIOFUMIGATION WITH BRASSICA COVER CROPS:
What we know about best management and potential benefits**

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Specific brassica cover crops are becoming increasingly popular for their potential use as biofumigants that can be used to reduce soil-borne diseases. Brassica cover crops can additionally benefit soil health, nutrient use efficiency, and weed management. The ability of brassicas to produce compounds that control pathogens has been well documented. Nonetheless, the biofumigation has inherent variability; namely that: 1) the compounds produced by different brassicas and their relative effectiveness on different pathogens is variable; and 2) the ability to bring that potential into the field has also been variable to date. Successful biofumigation hence requires some advanced understanding of the growing of brassica cover crops for biofumigation, and the biofumigation practices.

Researchers have been working to measure the effectiveness of biofumigation in the field, and also the management practices that maximize the potential for brassica cover crops to biofumigate, in order to make this an effective IPM tool. Current recommendations for growers highlight that brassica cover crops need to be treated like cash crops to have biofumigation potential. Cover crops need ample fertility and weed control to produce a critical mass of the compounds needed for biofumigation. Growers are also encouraged to terminate brassica cover crops with practices that maximize contact between the biofumigation compounds and soil-borne pathogens.

On-farm research has found that there are a number of factors that are affecting biofumigation potential in the field, including seasonal weather conditions and farmer misunderstanding of the practices needed to maximize biofumigation potential. Researchers are continuing to work to: 1) clarify the principal factors that most significantly affect biofumigation potential in the field and on-farm; 2) refine the management practices that most efficiently reap the potential of biofumigation; and 3) estimate the additional benefits of brassica cover crops on soil health and resource conservation.