

Alternate soil fumigation



The sorghum approach



Fumigation what is it?

The methods

Soil fumigation is designed to reduce the incidence of weeds or other harmful organisms such as nematodes and damaging fungi in your soil. There are various approaches; chemical, cultural and biological. Chemical control with Methan and Tlone and cultural methods such as solarization and steaming are effective, but much more severe on the beneficial organisms that live in your soil. Fumigation of soil is best used in a combination approach, targeting different methods mentioned above, each season to get the optimal kill of harmful organism.

Bio-fumigants

Fumigator Sorghum

Crop rotation in intensive horticultural production is not always possible. There is a short window from finishing the crop to re-planting leaving fumigation as the single practical option. The problem is many of the chemical methods can be expensive and leave the soil completely bare of natural organisms. Bio-fumigants are becoming popular as an alternative fumigation method. Bio-fumigants, such as fumigator, are being specifically bred for higher levels of active fumigation compounds, and greater biomass production for fumigation.



Photo: B Robertson, HortEx

How does Sorghum work?



Sorghum produces cyanogenic glucoside compound.

The other name for this compound is called Dhurrin.

It breaks down to release toxic cyanide when plant tissue is damaged.

This must be chopped up efficiently to work properly.

It is not safe for livestock and is a poison.

Sorghum fed on by insects releases the compound Dhurrin which can be a natural repellent for insects

Sorghum

Nematode and soil

Trials conducted by HortEx and other groups have shown that fumigator is effective for nematodes control. The use of sorghum by incorporating the aboveground biomass helps to increase the free-living nematodes and improve the soil structure and quality. Free-living nematodes can be an indicator of soil health, with more of these nematodes meaning healthier soils. They are important in nutrient cycling within the soil as they feed on microbes releasing nitrogenous compounds, which are then available to plants. Sorghum can help increase the organic matter in your crop; however, sorghum is a big user of calcium and phosphorus, and soil amendments will be needed while the sorghum is planted. Sorghum does help to increase nitrogen, carbon and other nutrients available to your next crop. It can also increase water-holding capacity of your soil.

Some Key Point



Do not let the Sorghum go to flower the chemical will decline and the fumigation effect decline.

Chop the material as fine as possible and incorporate it quickly. This will reduce loss of the compound to the air. **DO NOT LEAVE FOR HOURS.**

Sealing with water or plastic will improve the performance of the fumigant.

How do I incorporate my fumigator Sorghum



Plant your seed and let it germinate



Let it grow to \approx 1m



Slash it



Hoe it in to release the fumigant



Let it re-grow \approx 100 mm then re-slash

Photos: B Robertson, HortEx