

ViTASSO brown mustard

The biofumigant for soil-borne pest control, GAEC and Potato rotations

A New Concept In Integrated Crop Management

ViTASSO brown mustard is a green manure crop with biofumigation properties. Use as part of your Cross Compliance requirements for *Good Agricultural and Environmental Condition* (GAEC) Policy.

- Easy to establish and cost effective
- Improves soil health
- Increases organic matter
- Suppresses volunteers
- Erosion control
- 'N' Catcher
- Versatile sowing period and winter hardy
- Specific benefits for Potato Rotation



Biofumigation:

The process of using plant derived volatile chemicals to suppress soil-borne pathogens, nematodes, insects and weeds. A pest suppressive action of suitable decomposing *Brassica species* tissue, such as ViTASSO.

The natural way to suppress soil-borne pests and disease.

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A New Concept in Integrated Crop Management:

ViTASSO brown mustard can be used as a green manure catch crop and utilised as a biofumigant. Use ViTASSO in your standard farm practice to meet Cross Compliance requirements for *Good Agricultural and Environmental Condition (GAEC)*.

- Improve soil health
- Control 'run-off'
- 'N' Catcher
- Increase organic content
- Suppress volunteers



Shows absence of pests and disease in over-wintered crop of ViTASSO

ViTASSO brown mustard has advantages over other green manure options:-

- 50 to 70 day crop
- Sow April to September
- Winter hardy
- Biofumigation

ViTASSO brown mustard has general and specific uses:-

- Establish over-wintering green cover after Maize, Potatoes and Sugar Beet

- Potato, Soft Fruit, and Salad rotations etc. benefit from biofumigant effect
- In organic situations ViTASSO can suppress weed growth and be used as part of an integrated disease control programme.

ViTASSO brown mustard is supported by scientific evidence and grower experience. In USA, 20,000 hectares of Potato production use biofumigation as part of their agronomy package. A relatively new concept to the UK, uptake from growers is expected to increase dramatically as pesticide choice reduces and consumers demand more natural production methods.

Can suppress wireworm and PCN populations and their effect on potatoes.

Suppress *Silver Scurf*, *Verticillium wilt* and *Sclerotinia* in potato production.

Defra and HDC research in progress, on Strawberry, Potato and Salad Crops.

Published research from Michigan University, Agroscope Switzerland and SAC. These details are available on request.

A well-grown crop of ViTASSO brown mustard can significantly improve the profitability of potato and salad crops through increased yield, improved quality and reduced use of pesticides.

November left and February right, shows over-winter growth smoothers volunteer wheat.



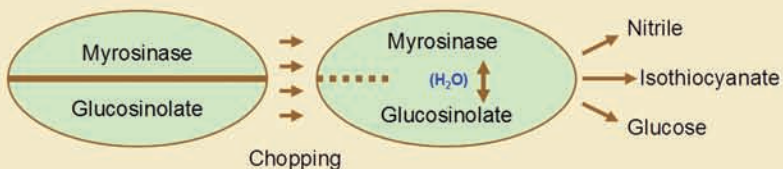
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How does it work?

Unbroken Cell

Broken Cell



When **ViTASSO brown mustard** is chopped and incorporated into moist soil, chemical reactions produce Isothiocyanate (ICT), a natural biofumigant with similar insecticidal effects to Methyl bromide or Metham sodium.

ViTASSO brown mustard (*Brassica juncea*) contains very high levels of glucosinolate in the cell vacuoles. When the crop is finely chopped the vacuoles burst allowing the enzyme Myrosinase, that is also present, to react with the Glucosinolate. The result is the production of the bio-fumigant Isothiocyanate (ICT).

ViTASSO brown mustard is environmentally friendly:

- Reducing soil erosion and fertilizer leaching
- Reducing herbicide use by smothering weeds and volunteers.
- Increasing the water holding capacity of soils thus reducing surface run off.
- Improving soil structure by incorporating organic matter.



ViTASSO brown mustard is a profitable alternative to other soil fumigation methods:

- Increasing tuber yield through improved soils.
- Increasing tuber quality through suppression of nematodes and wireworm.
- Decreasing tuber skin disease and associated quality reduction, such as *Silver Scurf*.



ViTASSO reduces soil-borne potato skin diseases.

How do I get the most of ViTASSO brown mustard?

Successful biofumigation depends on:-

- Establishing and growing a high yielding crop of ViTASSO brown mustard.
- Finely chopping the crop at flowering to maximize the Glucosinolate content and creating rapid fumigation.
- Thorough incorporation of the chopped ViTASSO brown mustard into moist soil conditions. Water is essential for the chemical reaction to take place.

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Crop Husbandry:

Natural biofumigation requires attention to detail, and its success not only depends on good crop husbandry but also on seasonal weather conditions. ViTASSO is a brassica species and this should be considered against other crops in the same rotation.

Establishment:

ViTASSO brown mustard can be sown as a crop instead of leaving a fallow preceding potatoes or as a 'catch crop' before potatoes.

The establishment principles are the same for both:-

- Consider a stable seedbed
- Fine, firm, and moist soil conditions for rapid germination and growth.

Seed Rates:

ViTASSO brown mustard is small seeded with a thousand seed weight of approximately 1.5 grammes. A sowing rate of 5 Kg per hectare should result in an ideal crop stand by establishing up to 300 plants per m².



Sowing Date:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| J | F | M | A | M | J | J | A | S | O | N | D |
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Replacing fallow



Catch crop

Harvest Time:

The Glucosinolate content of ViTASSO brown mustard is at its highest during flowering some 50 to 75 days after sowing. Plants should be terminated at early flower to prevent seeding.



Chopping & Incorporation:

A rapid and massive production of Isothiocyanate is required for successful biofumigation. This in turn is dependant on:-

- Finely chopped biomass, rupturing as many plant cells as possible.
- Moist soil conditions to maximize chemical reactions.
- Thorough plant incorporation releasing the ICT's throughout the soil.
- Biofumigation is most active 7 to 10 days after incorporation after which there is a rapid diminuation.

ViTASSO brown mustard is available in 2 hectare packs (2 x 5 Kg). Call your local seed merchant or Boston Seeds (0800 883 0169), email info@bostonseeds.co.uk or visit www.bostonseeds.co.uk