ViTTASSO 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 ViTTASSO.

The natural way to suppress soil-borne pests and disease.
**ViTTASSO brown mustard**

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

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**A New Concept in Integrated Crop Management:**

**ViTTASSO brown mustard** can be used as a green manure catch crop and utilised as a biofumigant. Use ViTTASSO 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

**ViTTASSO 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 **ViTTASSO brown mustard** can significantly improve the profitability of potato and salad crops through increased yield, improved quality and reduced use of pesticides.

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**ViTTASSO brown mustard** has general and specific uses:-

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

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*November left and February right, shows over-winter growth smoothers volunteer wheat.*
ViTTASSO brown mustard

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

How does it work?

Unbroken Cell

Myrosinase

Glucosinolate

Broken Cell

Myrosinase

Glucosinolate

\[(\text{H}_2\text{O})\]

Nitrile

Isothiocyanate

Glucose

Chopping

When ViTTASSO 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.

ViTTASSO 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).

ViTTASSO 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.

ViTTASSO 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.

ViTTASSO reduces soil-borne potato skin diseases.

How do I get the most of ViTTASSO brown mustard?

Successful biofumigation depends on:-

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

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

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

Establishment:
ViTTASSO 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:
ViTTASSO 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:

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Replacing fallow

Catch crop

Harvest Time:
The Glucosinolate content of ViTTASSO 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.

ViTTASSO 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