

An annual resown cover crop which comprises a specific cultivar of Brassica napus selected for its glucosinolate profile/concentration and its potential biofumigation benefit. Nemcon targets root knot nematode (*Meloidogyne* spp.) and root lesion nematode. Incorporation of Nemcon into the soil should be done when the crop is approaching flowering. This will ensure maximum yield and negate the potential for volunteer crops.

NEMCON (*Brassica napus*) is a naturally occurring tetraploid cross of two other common brassica species *Brassica oleracea* (Kale/Cabbage species) and *Brassica rapa* (Turnip). As part of their natural make-up, the plant tissue of the Brassica family contain high levels of a chemical called glucosinolates (GL's). This is the chemical which gives mustard its hot tangy taste.

The use of these naturally occurring chemical compounds for the control of soil borne pests and diseases is called biofumigation. Biofumigation is conducted by isothiocyanates (ITC's) , a result of the breakdown of the GL's. The enzyme myrosinase is a key part of this breakdown process.

NEMCON targets root knot nematode (*Meloidogyne* spp.) and root lesion nematode. Both are microscopic, soil dwelling , worm like organisms that feed on roots, causing small lumps or galls (*Meloidogyne* spp) or the rotting of feeder roots (*Pratylenchus* spp). Infected plants gradually decline in vigour, particularly on sandy and sandy loam soils, and are sensitive to stress.

The nematodes may be present in the soil at planting time or may be introduced with soil on implements, in dust, in seepage, or in run-off water from contaminated areas. They can also be present on roots of other introduced plants. Nematodes complete their life cycle (eggs to larvae to adults) in the soil and/or in the roots of plants. They can infect a wide range of fruit trees, vegetables, crops and pasture species. For an effective control of these organisms the key is to maximise GL production then create an environment for an efficient conversion to ITC's.

Sowing of NEMCON is critical given the small seed size (295,000/Kg). If sown below 1cm, germination will be compromised. This product should be sown into a well prepared seedbed. Sowing rates for broad acre applications should be 20Kgs/Ha. If the product is used for inter-rows the sowing rate can be reduced to 10kgs/Ha. It is important to keep sowing rates at these levels to ensure, effective competition against weeds, maximum biomass production and finally to ensure each individual plant produces thin stems to aid incorporation.

NEMCON is very responsive to Nitrogen and Sulphur. These two elements along with Carbon and Hydrogen are essential in the formation of both GL's and ITC's. As in all situations a soil test should be conducted to ensure adequate soil nutrient levels. A standard recommendation of fertiliser can include up to 100kgs/ha of Nitrogen split over several applications. A standard recommendation would include approximately 60Kgs/ha of DAP and 60Kgs/Ha of SOA broad cast and incorporated within 1 week prior to sowing. NEMCON will be responsive to extra applications of fertiliser particularly at the bolting stage, post emergence.

The final stage of the process is incorporation. This should be done when the crop is approaching flowering. This will ensure maximum yield but negate the potential of volunteer plants in following crops. As mentioned earlier myrosinase is the enzyme that aids the breakdown of GL's to ITC's. Myrosinase activity is greatly enhanced by mechanical damage to cells. Thus when incorporating NEMCON into the soil, rotary hoeing should be used in preference to cultivation. After incorporation immediate irrigation is required. Isothiocyanates are inherently a very volatile compound. The volatility is reduced by the irrigation and the moisture also aids in the speed of the breakdown process.