

Tenet[®]

Bio-fungicide granule

Registration for onion white rot and Fusarium basal rot

Tenet is registered for control of onion white rot and Fusarium basal rot. Tenet bio-fungicide is formulated as a granule that is applied during field planting of onions and garlic. Field trials over a number of seasons have proven that Tenet helps protect against onion white rot disease and also reduces Fusarium basal rot. It is important to note that Tenet is best used as part of an integrated approach to white rot disease management dependent upon the likely infection levels.

The key benefits from the use of Tenet are:

- Tenet provides growers with an additional tool for onion white rot management
- Tenet should be integrated into a standard chemical programme in soils with medium to high levels of white rot infection.
- Tenet reduces Fusarium basal rot at harvest.
- Tenet improves seedling emergence and crop yield by up to 10%.
- Tenet aids sustainable production and reduces development of fungicide resistance.

Tenet for improved emergence and yield

Tenet trials have repeatedly demonstrated improved seedling emergence. Optimum early plant growth affords the opportunity for increased yields of up to 10% with Tenet use.



View across a trial conducted at Pukekawa in 2003 showing better growth (left) with onions planted with Tenet* compared to the untreated control plants (right).

Long term development and testing

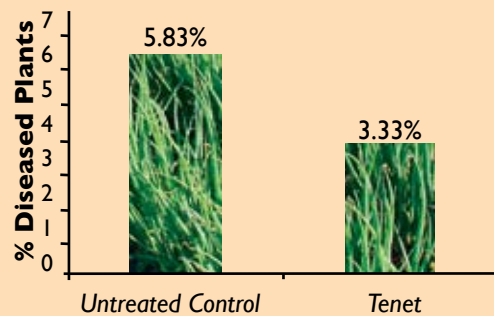
Tenet's active ingredient can be traced to the onion fields of Pukekohe, where a naturally occurring bio-control fungus was isolated by Professor Alison Stewart from the Bio-Protection Centre at Lincoln University. This fungus characterized as *Trichoderma atroviride* strain LC52 has very strong activity against *Sclerotium cepivorum*, which causes white rot. In the mid 1990's a collaborative scientific and testing programme between Lincoln University and Agrimm Technologies began in earnest to seek an effective means of delivery of these protective properties to the growing onion root. A granular formulation containing spores proved the most effective and extensive testing over a decade involving more than 20 separate trials in New Zealand and Australia has demonstrated reproducible field efficacy. This testing has supported Tenet*, the first registration of a bio-fungicide for onion white rot control in New Zealand.

Mode of Action

Tenet contains a natural bio-control fungus *Trichoderma atroviride* LC52 as active ingredient, which is licensed from Lincoln University. This aggressively colonises and occupies the root zone niche protecting the plant roots from fungal pathogens including *Sclerotium cepivorum* and *Fusarium oxysporum*, the causal agents of onion white rot disease and Fusarium Basal Rot. Colonization of the space around the emerging seedling also significantly improves plant emergence and establishment.

Fusarium basal rot reduction

Trials conducted by the late Richard Wood in Pukekohe showed a significant reduction in Fusarium basal rot incidence.



* Tenet active ingredient evaluated in field trials as Trichopel Ali52 or Onionmate granules.

DISTRIBUTED BY:

KI KEY INDUSTRIES LTD

3/44 L Constellation Drive, Mairangi Bay,
P O Box 65 070, Auckland, 1311.
Tel: 09 917 1791 Fax: 09 917 1793

Registered pursuant to the ACVM Act 1997 No. P7644

TRICHO PROTECTION[™]
healthy plants

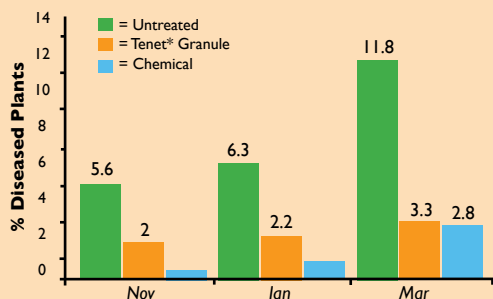
Agrimm
TECHNOLOGIES LIMITED

Manufactured and Registered by:
Agrimm Technologies Ltd,
487 Tancred's Road, Lincoln, New Zealand
Tel: 03 325 3311 Fax 03 325 6117

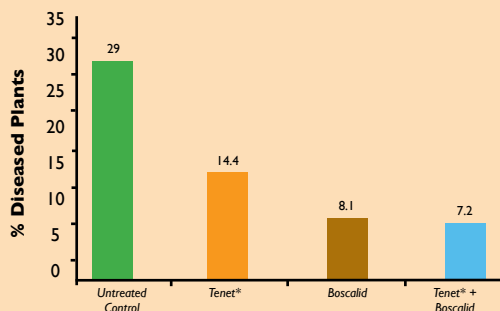
Onion White Rot Control– selected trial results

Field trials conducted under low disease pressure conditions in Canterbury during 1998 / 99 showed Tenet* granule gave similar protection to chemical treatments. Field trials conducted by Dr Oscar Villalta, Department of Primary Industries in Victoria, Australia on spring onions 2003 –2005 showed that Tenet* granule used at planting reduced onion white rot disease by 50% compared to an untreated control and Tenet* plus one fungicide application reduced disease by 75% compared to the untreated control.

Onion white rot development over time with different treatments. Canterbury 1998/99



Onion white rot development in spring onions with different treatments. Heatherston Victoria 2005



It is important to note that Tenet is best used as part of an integrated approach to white rot disease management dependent upon the likely infection levels.

- Tenet provides growers with an additional tool for onion white rot management
- Tenet should be integrated into a standard chemical programme in soils with medium to high levels of white rot infection.
- Tenet reduces Fusarium basal rot at harvest.
- Tenet improves seedling emergence and crop yield by up to 10%.
- Tenet aids sustainable production and reduces development of fungicide resistance.

Application: Tenet granules should be applied as a preventative treatment at sowing into the planting furrow using a Gandy box or similar system attached to the seed drill. Ensure the granules are delivered at the same depth as the seed and well covered by soil to avoid bird strike. Drills should be calibrated before use. Apply at the rate of 25 – 50 kg per ha depending on the infection levels in the area to be planted. Apply at the higher rates to soils with low organic material content. Trials in Australia have shown that increasing the organic content of the soil at planting increased the levels of Tenet bio-activity in the onion root zone with positive benefits. Application of humic acid with Tenet is also recommended when planting into low organic content soils.

Crop	Rate	Application
Bulb Onions	25 - 50 kg per ha	Under conditions of moderate to high disease pressure a standard chemical onion white rot fungicide programme should be maintained
Spring Onions	25 kg per ha	If planting in poor quality soil first amend with organic material to assist the biological activity
Garlic	25 - 35 kg per ha	Apply into the furrow at planting during placement of the cloves

Safety: Non toxic to humans, animals, wildlife and the environment.

Compatibility: Tenet is compatible with most chemical fungicides used on onions. For more information please call 0800 424 746

Packaging: Tenet is available in 25kg bags.

Contact Details: Call 0800 424 746

*Tenet active ingredient evaluated in field trials as Trichopel Ali52 or Onionmate granules.

©Tenet is a registered trade mark of Agrimm Technologies Ltd Christchurch New Zealand

DISTRIBUTED BY:

KI KEY INDUSTRIES LTD

3/44 L Constellation Drive, Mairangi Bay,
P O Box 65 070, Auckland, 1311,
Tel: 09 917 1791 Fax: 09 917 1793

TRICHO PROTECTION™
healthy plants

Agrimm
TECHNOLOGIES LIMITED

Manufactured and Registered by:
Agrimm Technologies Ltd,
487 Tancred's Road, Lincoln, New Zealand
Tel: 03 325 3311 Fax 03 325 6117