

LIMEX70

clubroot

protect your crop
and your profits

LimeX70, produced by
British Sugar, is the ultimate
performer in managing
clubroot in brassicas



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UK's No.1
Liming product
for correction
of soil acidity



Success with LimeX70

Pete Eastwood, Limeco Associate, has four decades of agricultural liming experience around the Spalding area of Lincolnshire.

Having seen the benefits of using LimeX over the last 10 years, Pete has become a firm advocate of the product. He now recommends it to all his customers, to optimise pH and suppress clubroot in field brassicas, particularly where the rotation is dominated by 'greens'.

D E Brand & Sons Ltd of Surfleet is another of Pete's LimeX customers.

They have grown brassicas intensively for over 25 years and used LimeX routinely for almost 10 years. Derek Brand comments that in his experience "*Frequent overall applications of LimeX offer effective suppression in the intensive brassica rotation, and provides good nutrient maintenance as a secondary benefit*". Derek's son Richard adds that "*LimeX has helped to even-up fields, and has effectively eliminated clubroot for the time being*".

Geoff Tunnard, a customer of Pete's for several years, comments "*My experience of LimeX is that it has prevented the spread of clubroot, and the patches of infection have not become worse. I now feel that if I used LimeX more routinely before planting, as opposed to post crop harvest, I could probably improve upon the level suppression already achieved*".



Pete Eastwood discusses LimeX with one of his customers, Geoff Tunnard

Pete says "*The combination of raised pH and highly-available calcium suppresses the clubroot*", however he warns that "*with intensive rotations, farmers must not neglect their lime status in field areas that have not given clubroot problems in the past*".

Pete has also seen success following the recommendation of LimeX to suppress clubroot on Oilseed Rape in areas of more traditional combinable rotation.

Charles Wright & Sons is a major distributor of LimeX products from its operation in Old Leake. Richard Wright has canvassed a number of his customers, and concludes that LimeX is popular because "*It benefits the crop that it is applied to by working straight away*". They also feel that LimeX offers cost-effective insurance against clubroot and that the integral nutrient package is hard to argue against."

From experience Richard concludes that "*Overall applications are necessary to ensure that hot spots are managed and to minimise*



Richard Wright of LimeX distributor Charles Wright & Sons

the impact of clubroot in field areas that have been previously unaffected".

All Brassica crops are at **risk** from **clubroot!**

Clubroot is caused by a minute, well-designed resting spore *Plasmodiophora brassicae* that can lay dormant for at least two decades before striking at a valuable crop. In badly infested land entire crops can be completely wiped out but even with more patchy infection the disease causes uneven maturity, low yields and poor quality - in many cases the affected crop is simply not worth harvesting.



Managing Clubroot requires active husbandry to tackle conditions that favour the pathogen responsible, principally:

- low pH
- calcium deficiency
- poor drainage

LimeX70 is the ideal way to correct acidity. Proven over more than 80 years, it is an easily-spreadable, high quality liming material:

- corrects soil acidity for optimum soil pH
- fast-acting & long-lasting due to its fine particle size
- contains beneficial nutrients assisting the long-term fertility of the soil
- improves soil structure at higher application rates
- can be stored outside for maximum flexibility



%
70
60
50
40
30
20
10
0
Lime

Independently tested and verified

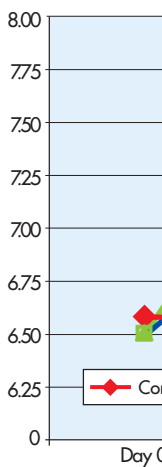
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Following 3 years of Defra-funded research into clubroot control measures, undertaken by ADAS Terrington and SAC Edinburgh, a number of conclusions were drawn from the combination of glasshouse and field experiments that were completed at Kirton, Lincolnshire and Crail, near Fife in 2006.

From the range of treatments investigated for the control or suppression of clubroot, the most effective treatments were those containing calcium.

Under moderate disease levels at the Kirton trial site (55% clubroot in untreated plots), LimeX gave 97% control at 4 tonnes /ha.

pH over time

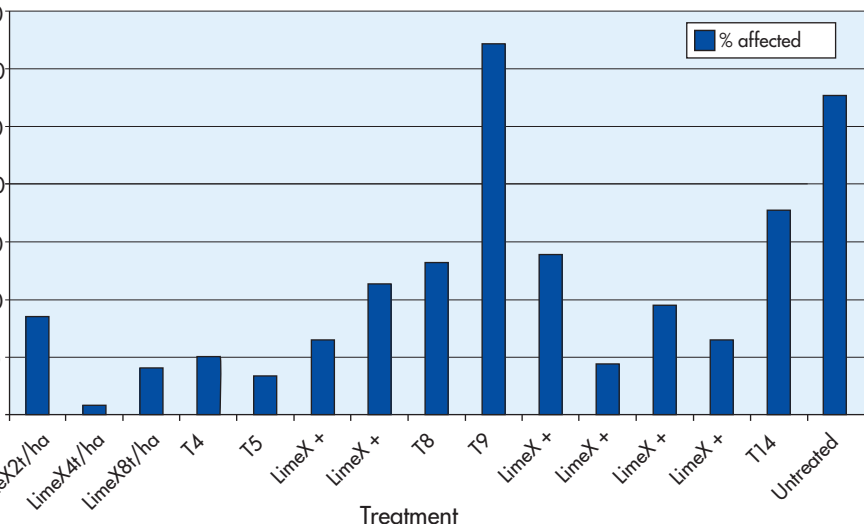


Clubroot Incidence at Kirton, Lincolnshire Trial Site (2006)

The trial demonstrated that fineness of lime is essential to ensure a rapid two-fold effect; firstly to raise the pH to above 7.5 and, simultaneously, make calcium ions readily available.

plants with clubroot

Source: ADAS Boxworth 2006



The extremely fine particle size of LimeX delivers readily available Ca^{2+} ions and raises pH rapidly to inhibit the early stage of root infection.

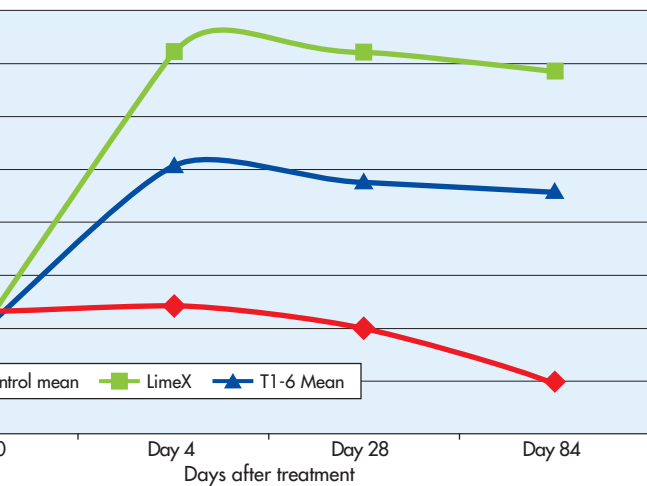
The clubroot incidence graph (left) shows the response from applications of LimeX was significantly better than the majority of other treatments, despite the high natural background pH.



pH Change at Crail, Fife Trial Site (2006)

At the Crail trial site, the field pH was 6.5. As can be seen from the graph (left), the LimeX treatment raised this rapidly to 7.8 three days after application and also raised the available calcium level to 6500mg/l Ca²⁺.

Source: K Stewart SAC 2006



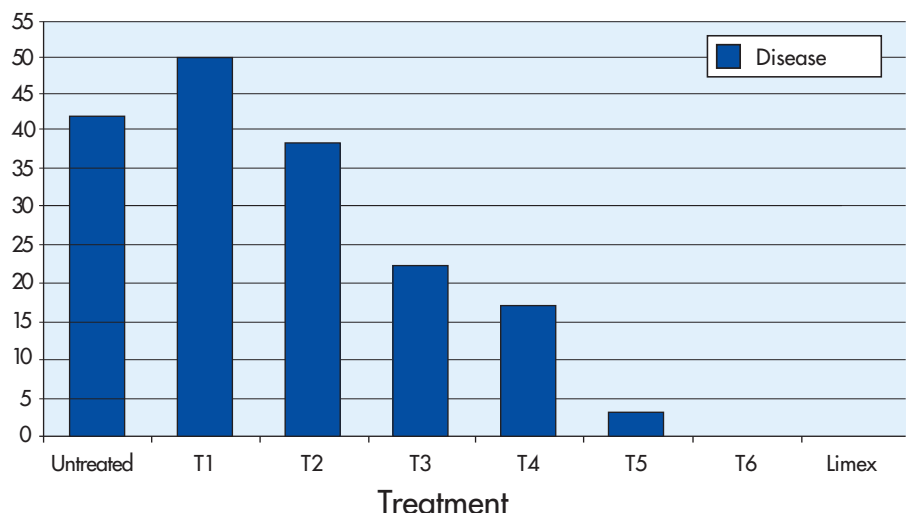
Unlike at Kirton, the treatments were not applied overall, but were banded, prior to transplanting the modules into the treated zones. The disease level was very severe (93% clubroot in untreated plots), and late planting and drought added to crop stress. Despite this, LimeX achieved a significant reduction in disease and the greatest yield response.

Performance of Lime Products in SAC Glasshouse Trial Site (2006)

The SAC glasshouse experiment in 2006 took the most promising of 48 potential control treatments examined in 2004 and 2005 forward for a final replicated experiment. The only treatment combinations which were effective were those containing calcium products. There was no improvement in the control effect achieved in combination as it is not possible to improve upon the (near) 100% control obtained with the calcium products used alone. The performance of LimeX at 4t/ha is demonstrated in the graph (right).

Disease Index

Source: K Stewart SAC 2006



Realising the nutrient value

A unique advantage of LimeX70, and an important one regarding overall farm costs, is the value of the nutrients integral in the product. The information below shows the minimum levels for three important nutrients and their value to your enterprise using the Fertiliser Manual (RB209 8th Edition 2010) as a guide.

Sulphate (SO₃)

- Minimum of 9kg in every tonne of LimeX70
- At a LimeX70 application rate of 10 tonne/hectare (4t/acre) this equates to 90kg/hectare of SO₃ worth £14.50
- This is a valuable contribution and will significantly reduce the risk of SO₃ deficiency.
- Add 50kg/ha of SO₃ where sulphate content of soil is low

Phosphate (P₂O₅)

- Minimum of 10kg in every tonne of LimeX70
- At a LimeX70 application rate of 10 tonne/hectare (4t/acre) this equates to 100kg/hectare of P₂O₅ worth £95.00
- This is sufficient maintenance phosphate for brassicas at P Index 2

Magnesium (MgO)

- Minimum of 7kg in every tonne of LimeX70
- At a LimeX70 application rate of 10 tonne/hectare (4t/acre) this equates to 70kg/hectare of MgO worth £27.00
- Apply 100kg/ha MgO for brassicas at Mg Index 1.

The combined value of these integral nutrients is around

£145.00 per hectare

inclusive of the saving of application.

LIMEX70



MgO
SO₃
P₂O₅

pH-nutrient maintenance

The above values are based on the market-average price of proprietary nutrients and were correct at the time of printing.

The most up-to-date values are available on our website limex.co.uk

To discuss your liming requirement or for technical enquiries, contact our **Helpdesk 0870 240 2314** or visit our website limex.co.uk

Alternatively, e-mail us at limex@britishsugar.com

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