

Magnesium and sulphur demand of selected crops

Ideally application rates should be adjusted according to the requirements of the crops, the magnesium and sulphur availability determined by soil or leaf analyses and the anticipated losses due to leaching. Contributions from manure or slurry should also be taken into account together with likely availability of the nutrients supplied.

In the absence of soil data and leaf analyses, the typical magnesium and sulphur uptake of crops, shown in the following table, gives an indication on which application rates may be based.

Crops	Nutrient removal kg/ton*	
	MgO	SO ₃
Asparagus	2.4	12.5
Barley	4	8
Beans (phaseolous)	1.2	-
Brussels sprouts	1.1	4
Calabrese	3.3	8.25
Carrots	0.5	1.25
Cauliflower	0.9	4.75
Leeks	0.5	3.5
Maize	3.5**	5**
Onion	0.7	2
Peas	1.3	-
Potatoes	1.5	2
Oats	4.3	9.5
Oilseed rape	10.6	31.0
Sugar beet	1.5	1.75
Wheat	4.2	7.5

*All removal figures are based on the whole crop including non-harvested parts. If crop residues are returned to the soil, a proportion of the nutrients will also be returned.

** Maize figures are as % of dry matter.

General recommendations

- When the soil magnesium status is satisfactory, a maintenance application of 100–150 kg/ha **ESTA® Kieserit** is appropriate for most crops under most growing conditions. Alternatively a suitable maintenance level of magnesium can be obtained from using Korn-Kali as a potash source which contains a maintenance level of magnesium (6% MgO).
- For correction of acute Mg and S deficiency, an application of 200–300 kg/ha **ESTA® Kieserit** as top dressing is a well accepted rate in a wide range of crops.
- For amelioration of soils with poor magnesium status, an application of 300 - 500 kg/ha **ESTA® Kieserit** is recommended after harvest or prior to sowing.
- For annual crops, **ESTA® Kieserit** is usually applied as a basal dressing in autumn or late winter. On sandy soils and under high rainfall conditions application in early spring as basal or top dressing is recommended. For maize, placement of **ESTA® Kieserit** together with N and P fertiliser has proved to be worthwhile.
- ESTA® Kieserit** can be surface applied and does not always require incorporation. The optimum application timing for perennial crops is before the onset of the main growth phase.

For information on how you can benefit from using **ESTA® Kieserit** in your fertiliser program, call the Technical Helpline on **FREEPHONE 0800 0322480**.

ESTA® Kieserit gran.

ESTA® Kieserit

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ESTA® Kieserit gran.
25% MgO · 50% SO₃



ESTA® Kieserit gran.

ESTA® Kieserit for all soil conditions...

...and for all crops

EC FERTILISER

Kieserite 25+50

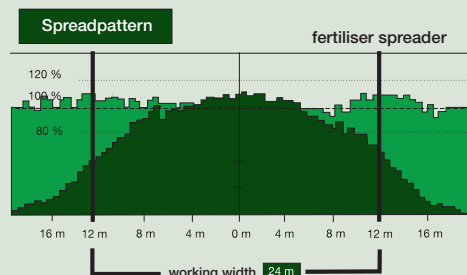
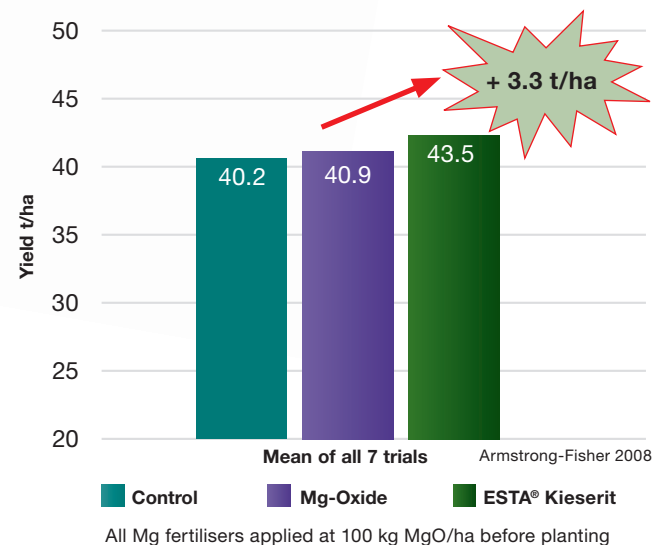
25% MgO water-soluble magnesium oxide
50% SO₃ water-soluble sulphur trioxide (= 20% S)

- Sulphate based magnesium fertiliser derived from natural mineral deposits.
- Contains the nutrients magnesium and sulphur in an immediately plant available (water-soluble) form making **ESTA® Kieserit** suitable for all soil types regardless of pH.
- The mineral Kieserite is purified from salt deposits using the patented electrostatic separation process (**ESTA®**) which results in a high purity product formed in an environmentally sound way.
- Excellent spreading characteristics (tested to spread to 36m) due to superb granule strength and size distribution.
- Granular product highly suitable for bulk blending and also available as **ESTA® Kieserit fine** suitable for complex fertiliser manufacture.
- Due to its natural origin, **ESTA® Kieserit** has been classified as being suitable for use in organic farming systems according to EU Directives EC No. 834/2007 and 889/2008.
- Spreading trials have confirmed the superior spreading uniformity of **ESTA® Kieserit gran.**

- Because of the immediate delivery of available magnesium and sulphur to plants, **ESTA® Kieserit** is used for many different applications including agriculture, horticulture, specialised crops and forestry.
- Continuous cropping at high yield levels has depleted natural magnesium reserves of soils in many areas of the UK where supplementation with magnesium fertiliser is easily justified.
- Sulphur deposition levels also continue to decline with more crop types in more areas requiring routine applications of sulphur to achieve potential.
- **ESTA® Kieserit** guarantees a magnesium supply on calcareous (chalk) soils where calcium can interfere with magnesium availability.
- Nutrients of surface-applied **ESTA® Kieserit** are immediately plant available. In contrast, magnesium compounds such as Mg carbonate (MgCO₃) or Mg-oxide (MgO) release their magnesium at very low rates and generally need to be incorporated and applied on acid soils to be effective.

- Root crops, oilseed crops, and cereals have high magnesium requirements and should regularly receive magnesium dressings to guarantee optimum supply.
- The specific sulphur requirements of oilseed crops and various vegetable crops are adequately met by **ESTA® Kieserit**, improving quality characteristics such as oil and vitamin content.
- The improved sulphur supply enhances the efficiency of applied nitrogen fertiliser and hence improves the productivity and quality of the crops.
- Fast growing crops producing large amounts of biomass within a short period of time are particularly sensitive to inadequate Mg and S supply. Owing to its nutrient release capacity **ESTA® Kieserit** ideally meets the requirements of plants throughout the cropping season.

Independent magnesium trials in potatoes, 2005-2008



Magnesium deficiency in potatoes



Sulphur deficiency in oilseed rape