



CROP NUTRITION

SOMETHING NEW FOR ALL CROPS FROM LAW's



IMPROVING OILSEED RAPE ESTABLISHMENT



Oilseed rape is an important crop for the future in maintaining effective cereal rotations, especially on heavy land and in correcting a global shortage of oilseed. The challenge to establish a crop has never been more difficult with weather fluctuations, soil and airborne pest attacks and timeliness demands.

Law Fertilisers has the answer with a tailored seedbed fertiliser, supplied and applied close to drilling, incorporating a range of natural biocides which combine safe, low cost inputs with unique modes of action.

Cost per acre

| | |
|--|-------|
| ⊕ 30kgs/ha of quick acting, granular nitrogen for fast leaf growth | 7.0 |
| ⊕ 40-80kgs/ha P tailored to soil fertility for quick root development, from | 10.50 |
| ⊕ 40kgs/ha K for improved winter hardiness and seed yield on light land | 6.0 |
| ⊕ 20kgs/ha Mg of slow release magnesium for greener overwintered leaves | 3.0 |
| ⊕ 30kgs/ha S of slow release sulphur to improve disease resistance | 5.0 |
| ⊕ 2kgs/ha B for all year round nutrition for improved fertility | 2.0 |
| ⊕ 7kgs/ha Law's Ferric Phosphate to improve the ability to withstand attack from slugs | 1.4 |
| ⊕ 25kgs/ha Law's Repellent to improve the ability of the plant to withstand soil and pest attack | 3.5 |
| ⊕ TIMELY BULK FERTILISER SPREADING | 3.0 |

FOLIAR FEEDS FOR IMPROVED CROP QUALITY

Tailored foliar feeds manufactured in flexible quantities with full technical support to improve farm returns and meet specific crop needs.



MALT PLUS: IMPROVES MALT CONTENT OF BARLEY: Mg, Mn, K, Cu, Mo, S + H2

A formulation of key minerals that increases starch deposition and quality in contrast to protein development.

APPLY DURING EAR EMERGENCE AT 5-10 litres/ha

PROTEIN PLUS: INCREASES PROTEIN CONTENT IN WHEAT:

18%N + Mg, Mn, Zn, Fe, S + H3

A range of minerals to boost late nitrogen assimilation, delay senescence and manipulate protein development.

APPLY EAR EMERGENCE TO FLOWERING AT 20-50 litres/ha

PULSE PLUS: INCREASES SEED QUALITY IN PEAS & BEANS: Zn, K, Mn, Mo, B, Fe, S + H3

Trace elements formulated to increase seed integrity and size

APPLY DURING MID-LATE FLOWERING AT 5 litres/ha

LATE BEET FEED: REDUCES WINTER FROST DAMAGE IN SUGAR BEET

Mn, Cu, Zn, N, K, Fe, S + H1

Key minerals to increase sugar content and late season growth and enhance the ability of beets to withstand low temperatures

APPLY IN LATE JULY/AUGUST AT 5 litres/ha

FOLIAR CALCIUM: IMPROVES POTATO STORABILITY: Ca, Cl, B, S + H3

Soluble calcium minerals with associated micronutrients to boost mobility and deposition of calcium to increase cell wall strength and reduce post harvest disorders.

APPLY MID-LATE FLOWERING AT 10 litres/ha

SEED PLUS: INCREASES POTATO/CEREAL SEED FERTILITY: Mo, Se, Mn, Zn, Cu, P, S + H1

Macro and micronutrients to elevate all the key minerals for germination and early growth in daughter seed that will also reduce seed borne pests and diseases.

APPLY DURING EARLY FLOWERING AT 10 litres/ha

STARTER PLUS: IMPROVES OILSEED RAPE ESTABLISHMENT: N, P, Mn, Zn, Mo, Cu, S

Macro and micro nutrients that increase root and leaf development of seedlings to improve seedling growth, plant establishment and winter hardiness.

APPLY FROM 4 LEAF STAGE AT 5 litres/ha

ENP 1, 2, 3: Enhanced Nutrition Programme

A multi compound mineral fertiliser programme to support tailored base and topdressing strategy to help a plant withstand pathogen attack. The mineral complex boosts the plant's immune system and minimises nutritional or weather related stresses.

3 APPLICATIONS OF 5 litres/ha between early vegetative growth phase to early flowering.

FARMER COMMENTS 2018

R C, 800 acres, Watton. My ENP wheat crop is looking better than my full fungicide crop.

J A, 3,500 acres. Snettisham. After 3 years of ENP cropping I cannot see any negative difference compared with the crop receiving fungicides.



MATCH OFFTAKE WITH INPUT

With demands for straw and crop by-products combined with changing rotations and increasing pressures on farm margins, it is beneficial for medium term farm planning to calculate the mineral off-take on an annual basis to maintain crop indices at satisfactory levels.

Law Fertilisers can prepare a tailored base fertiliser to ensure soil fertility will be maintained and manures or other organic materials can be assessed to take into account their nutrient contribution.

Any applications below offtake levels will lead to a decline in soil fertility.

| Offtake kgs per hectare | PHOSPHATE P205 | POTASH K2O |
|--------------------------------|----------------|------------|
| CEREAL + STRAW 8ts/ha | 72 | 100 |
| SUGAR BEET 90ts/ha | 72 | 150 |
| BEANS 4ts/ha | 44 | 48 |
| OILSEED RAPE 5ts/ha | 70 | 55 |
| GRASS (2 cuts+grazing) 40ts/ha | 65 | 230 |
| POTATOES 50ts/ha | 50 | 300 |

MICRO NUTRIENTS AND SECONDARY NUTRIENTS

| | Function | Soil type where deficiency might occur | Crops most susceptible |
|-----------------|---|--|--|
| Boron (B) | Essential to actively growing tissue in new growth; necessary for pollen viability and good seed set | Occurs in acid-leached soils, coarse textured sandy soils, peat, drought conditions, over-limed soils, alkaline or low organic matter soils | Roots (except potatoes), brassica, Fruit |
| Copper (Cu) | A major part of a necessary photosynthesis enzyme. Very important during the plant's reproductive stage | Occurs in sandy soils, peat, over-limed soils and in high concentrations of iron and manganese | Cereals, vegetables, tree fruits, wheat, carrots and onions |
| Iron (Fe) | Promotes formation of chlorophyll | Occurs in alkaline soils, in calcareous soils when cold and wet, in soils where phosphate has been excessively applied | Cereals, beans, tree fruits, potatoes and other vegetables |
| Manganese (Mn) | A part of important enzymes involved in respiration and protein synthesis | Occurs in sands, peat, alkaline (pH of 6.5 or above) and particularly in calcareous over-limed soils. Also, areas with low organic matter | Cereals, tree fruits, leafy vegetables, beans, sugar beet and potatoes |
| Molybdenum (Mo) | Essential for nitrogen fixation by nodule bacteria in legumes. Essential for nitrogen reductive performance – nitrate to amine form | Occurs in acid soils (low pH) and in highly-weathered acid leached soils and in soils with low phosphate levels | Cauliflower and all legumes |
| Zinc (Zn) | Important as a catalyst for plant growth regulators in plants and the use of other nutrients. Affects plant maturity | Occurs in calcareous soils (pH of 6.0 or above) after leaching and erosion; in acid-leached soils; in coarse sands and in soils where phosphate has been excessively applied. Also in low-organic matter or over-limed soils | Beans, onions, potatoes, tree fruits, flax, sugar beet, wheat, maize |
| Calcium (Ca) | A secondary nutrient found in greatest amount in cells walls. Utilized in cell division and involved in nitrogen metabolism | Occurs in low pH soils. Also in areas of high nitrogen applications and high potassium levels | Vegetable crops, tree fruits, potatoes, tomatoes, sugar beet, celery, beans, most other legumes |
| Magnesium (Mg) | A secondary nutrient and is a part of chlorophyll. Participates in the activity of enzymes. Assists in translocation of phosphorus in the plant | Occurs in low pH soils. Also in soils where excessive potash has been applied, or in areas of high calcium-lime use | Cabbage, carrots, celery, corn, cucumbers, melons, squash, beans, tree fruits, cereals, onions, potatoes, tomatoes, turnips, maize |
| Sulphur | A secondary nutrient necessary for the formation of several amino acids which are used to form protein. Also, influences sugar metabolism | In areas of low soil sulphate levels, and where there is excessively available nitrogen on low organic matter soils. (Target - one kg of sulphur for every ten kgs of available nitrogen) | Cereals, legumes, grass, sugar beet, tomatoes, potatoes and all other vegetables |

NITROGEN FROM LAW'S

The high quality granular fertiliser from Law's is better value than smaller prills and due to our high volumes now used, we can offer stable year long prices for any requirement.

The excellent spreading characteristics also enable a range of top-dressed products to be manufactured for accurate application in the spring to support base fertilisers and to supply soluble sulphur.

- Spreads up to 40 metres
- Can be supplied in accurate mixes with any other granular fertiliser
- Quick acting, slow release nitrates reduce leaching and improves crop growth
- Can be handled in bulk for reduced costs and quicker loading
- Good value: equivalent cost per unit to smaller less stable prilled ammonium nitrate



Bulk granular nitrogen being discharged at King's Lynn

Trace Element Risk Assessment

Factors which affect micronutrient and secondary nutrient availability

Deficiency observed:

Cause of deficiency

(Soil nutrient imbalances)

| S | Ca | Mg | Mn | Fe | B | Cu | Zn | Mo | |
|---|----|----|----|----|---|----|----|----|---|
| • | • | • | • | • | | • | • | | high nitrogen high phosphorus low potassium |
| | • | • | | • | • | | • | | low calcium high calcium high magnesium |
| | | | • | • | | • | | • | high manganese high iron high copper |
| | • | • | • | • | | • | | • | low zinc high zinc low pH |
| | • | • | • | | | • | | • | high pH high sulphur high sodium |
| | | | | • | | | | | high bicarbonates iron, copper and manganese imbalance |
| • | • | • | • | • | • | • | • | | (Other soil conditions) low organic matter high organic matter poor drainage |
| | • | • | • | • | • | | | | drought cold, wet soils poor aerated soils |
| • | • | • | • | • | | | • | | exposed subsoils heavy manuring heavy rainfall |
| • | • | • | • | | • | • | • | | light and sandy soil |
| • | | • | • | | | • | • | | (Crop Sensitivity) Cereals |
| • | | • | • | | • | | • | | Oil Seed Rape |
| • | • | • | • | • | | | • | • | Pulses |
| • | • | • | • | • | | | • | | Potatoes |
| • | | • | • | | • | | • | | Sugar Beet |

GRASSLAND PLUS

20-5-5 + 7Nao, 5So3, 5Mgo + Se, Co, Cu, Mn, Zn, B, I + H1

Grassland Plus gives the opportunity to apply a high nitrogen base fertiliser with all the key minerals that are important for animal health allowing for safe and steady uptake during grazing.

The phosphate and potash component can be tailored to address soil fertility levels and micronutrients can replace feed supplements.

Sodium will reduce the need for potash in both the grass and the ruminant, reducing risks of hypomagnesaemia as well as improving fertility and milk quality. As shown in the table sodium increases palatability of grass and the efficiency of the rumen which will increase food conversion rates and daily live weight gain.

The effect of application of sodium fertiliser to pasture on the grazing behaviour of calves

| | Treatment | |
|-------------------------|-----------|---------|
| | Sodium | Control |
| Grazing (min./day) | 534 | 424 |
| Biting (bites/min.) | 77.20 | 75.70 |
| Walking (m/min.) | 2.20 | 1.98 |
| Searching distance (cm) | 7.38 | 7.06 |
| Rumination (min./day) | 505 | 421 |
| Drinking (min./day) | 1.06 | 0.71 |

Indicators of immediate post-lambing vigour in lambs from clinically and sub-clinically Cobalt-deficient ewes and Cobalt-sufficient counterparts

| Level of Cobalt deficiency | Time from birth to: (average in minutes) | | |
|----------------------------|--|---------------|----------|
| | Standing | Finding udder | Suckling |
| Clinical | 22 | 41 | 76 |
| Sub-clinical | 29 | 44 | 61 |
| None (OK) | 15 | 24 | 31 |

LAW'S 3% FERRIC PHOSPHATE GRANULES

3mm granules of ferric phosphate organic compounds help protect plants from attack by slugs by restricting feeding after ingestion.

Manufactured with rape as a bait makes them attractive and palatable

Safe to the environment and non target organisms

Spreads up to 24 metres and can be blended with fertiliser accurately.

Trace elements and elicitors added for improved plant emergence and enhanced plant defences

Only British manufactured product on the market

SUMMER OFFER: 50p/kg delivered in 600kg bags or mixed with fertiliser : 75p/kg in 25 kg bags

BULK SPREADING: FREE CONTRACT SERVICE

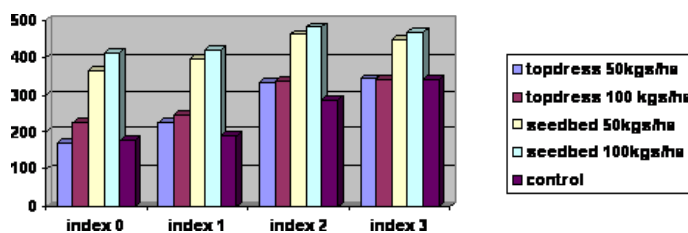
- ⊕ ALLOWS FOR THE INCORPORATION OF PHOSPHATES IN THE TOPSOIL TO INCREASE UPTAKE BY 60% OVER TOP-DRESSING
- ⊕ REDUCES FARM COSTS OF BAG USE AND DISPOSAL
- ⊕ TIMELINESS REDUCES DEMAND FOR FARM LABOUR AND MACHINERY AND IMPROVES PLACEMENT PRECISION
- ⊕ IN-HOUSE SERVICE FOR ONE CALL COMMUNICATION AND DELIVERY
- ⊕ VARIABLE RATE FERTILISER AND LIME APPLICATIONS
- ⊕ TOP-DRESSING OF BULK NITROGEN BLENDS



NEW FOR 2018: tractor and trailed spreader

IMPORTANCE OF APPLYING PHOSPHATE IN THE SEEDBED

Phosphate tissue concentrations in winter wheat at Flag Leaf emergence with different timings of TSP applications. H.Knittel et al



Progressive FERTILISER PLACEMENT OPTIONS only from Law's

Placement fertiliser is based on the fundamental principle of incorporating all the immobile minerals and necessary trace elements at the time of drilling or planting with the initial objective of increasing the rate and evenness of establishment, which is the most vulnerable period in a plant's life. This process also provides the opportunity of adding biocides and trace elements to improve crop health; and minerals to help the crop cope with stress such as from drought and cold.

We can manufacture tailored placement fertiliser using either standard 2-4mm granules for large seeded cereals or potatoes or 1.5-2mm mini granules for low rate applications of 10-15kgs/ha for vegetables or oilseed rape.

Recent Examples:

Standard granule

Potato Placement: N - P+ Mg, S, Zn, Mn, Fe + ferric phosphate granules

Mini-granule

Oilseed rape: N - P + S, B, Mn, Cu, Zn, Fe, Mo

For further details please do not hesitate to call the sales office



March: 01354 740740
Kirkcaldy: 01592 808366
Email: sales@lawfertilisers.co.uk
www.lawfertilisers.co.uk