



Suspension Fertilisers



AGRICULTURE

Product Guide



Established in the UK in 1976, OMEX has developed into a dynamic group of companies operating throughout the world, manufacturing suspension and liquid fertilisers along with foliar health promoters for the agricultural, horticultural and amenity sectors.

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OMEX Agriculture Ltd is the UK's largest liquid fertiliser manufacturer, offering the farmer total crop nutrition through a range of quality suspension fertilisers, solution fertilisers and foliar health promoters for all crops.

Suspension and solution fertilisers provide a high accuracy, high quality, crop nutrition delivery system, OMEX is the UK's leading expert in the production, application and support of liquid fertilisers.

A complete range of foliar nutrients is supplied in a wide range of pack sizes, all backed up by the unique SAP® testing service.

OMEX has also developed a range of micronutrients for anaerobic digesters and neutralisers for waste water treatment as well as liquid deicing agents that have applications in ensuring the safe and

effective winter operation of farm yards, sprayers and produce distribution centres.

OMEX works with over 25 international universities, research institutes, trials organisations and commercial partners every year to constantly improve formulations and develop a product range that maximises yield to give growers the best possible returns.

All OMEX products are available from the team of OMEX District Sales Managers and via the UK's leading agricultural distributors.

Sales Manager Scotland
Mhairi Robertson
M 07850 475012
E mhairir@omex.com

Commercial Director
Rob Burton
M 07970 577903
E robertb@omex.com

District Sales Manager
Ed Cooper
M 07880 497882
E edcooper@omex.com

District Sales Manager
Steve Ebbage
M 07850 475014
E stevee@omex.com

District Sales Manager
Chris Pacey
M 07702 640830
E chrisp@omex.com

District Sales Manager
Mark Southwell
M 07826 915270
E marks@omex.com

District Sales Manager
Ben Blom
M 07850 475035
E benb@omex.com

Commercial Director
Andrew Butler
M 07970 621396
E andrewb@omex.com

Business Development Manager
Edward Dickinson
M 07814 891160
E edwardd@omex.com

Sales Manager South
Mark Riches
M 07557 765576
E markr@omex.com

District Sales Manager
Scott Baker
M 07850 475018
E scottb@omex.com

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Suspension fertilisers explained

OMEX suspension fertilisers are high quality thixotropic liquids, which means they remain gelled when static and are fully flowable when pumped.

Nutrients are mixed and suspended with a complex suspending agent, ensuring complete homogeneity throughout delivery and application. Because suspensions are true quality compound fertilisers, each droplet contains the full analysis of the product, including trace amounts of micronutrients.

Suspensions are usually contract applied with state-of-the-art sprayers which spread an even coating of nutrients right up to the field margin. Suspensions do not separate or segregate and offer a more accurate tailored fertiliser system than solid blends.

Almost any mix of nutrients can be made to order at no extra cost to precisely tailor the right level of each nutrient for maximum yield potential and efficiency.



The Manufacturing Process

The manufacture of suspension fertilisers is a sophisticated process. OMEX has unrivalled expertise in this specialist area, with over 40 years' experience of the development and distribution of suspensions.

Raw materials are carefully selected to match crop requirement and to ensure maximum response.

The production process is fully traceable and audited, with full analysis of raw materials and all production batches carried out.



Application

Due to the consistency and density of the product, OMEX suspensions are applied by a dedicated team of contractors with certificated specialist spraying machinery, able to treat up to 350 hectares per day, with 36m booms plus GPS guidance and steering.

Special headland nozzles ensure that the quality fertiliser is sprayed right up to field boundaries and no further.

OMEX deliver straight from the factory to the field via a fleet of over 250 road tankers. The contractor

rapidly loads the sprayer directly from the delivery tanker, for immediate application.

The application rate is controlled by conventional spray controllers relative to ground speed, ensuring the correct fertiliser rate is applied throughout the field.

Once a farmer places an order with OMEX, all the logistics of the delivery and application are taken care of, ensuring that the application is timely, accurate and simple to organise for the farm business.



Soil and SAP® Analysis

OMEX suspensions are an ideal part of a precise farming system which includes both soil and SAP® testing to ensure that the most effective and efficient blend of nutrients are applied to each field and crop.

Soil testing is free of charge to customers, and forms the basis of a tailor made fertiliser recommendation by FACTS qualified advisors.

SAP® testing and analysis is an ideal tool for accurately determining the nutritional status of crops during the growing season and allows the nutrition to be fine-tuned, based on the real-time needs of the plant.



Why use Suspensions

OMEX suspension fertilisers offer a number of benefits over conventional solid fertilisers:

Financial

Improved crop response from accuracy and nutrient availability.

By entrusting the fertiliser application to OMEX, farmers can reduce the costs associated with receiving, handling, storing and applying fertiliser, allowing farm labour to be used more efficiently. Numerous trials, comparing suspension with solid fertiliser, have consistently demonstrated yield and quality benefits due to quality and accuracy of suspensions on a wide range of crops. By using suspensions, farmers can maximise the response to fertiliser applications providing major potential financial benefits.

Agronomic

Tailor made nutrition with uniform application over the whole field.

Accuracy

A sprayer offers much greater accuracy of application than a spreader and suspensions are applied with high-accuracy floodjets, providing a fully overlapped consistent and even application across the full boom width.

One of the main problems with using blended solid fertilisers is that even after careful blending and calibration, segregation occurs during handling, transport and in the spreader's hopper, which means the product is no longer uniform before it is spread and during the spreading, different particle sizes spread different distances.

As suspension fertilisers are true quality compounds, the complete analysis (including low rates of micronutrients if required) is applied with



a level of accuracy that cannot be achieved with solid fertilisers.

OMEX's professional contractors use specialist machinery which accurately apply the fertiliser right up to, but not beyond, the field margins. Application is less sensitive to wind and rain, so can be made on days when trying to apply a blend would be impractical.

Efficiency

OMEX suspensions are tailor made to individual field and crop requirements with high quality raw materials and therefore avoid under or over application of nutrients. Additives are available to improve nutrient use efficiency, effectively making the nutrients in suspensions work harder and providing a better return from the fertiliser applied. Also, by being immediately available, growth of the newly planted crop is optimised.



Environmental

Accurate and efficient with less risk of leaching and pollution.

Farm audits, quality assurance protocol and many aspects of industry codes and government guidance refer to the importance of accurate fertiliser application for good reasons; it minimises the environmental impact of fertiliser use. Suspensions provide the most accurate fertiliser application method available and application includes features such as headland nozzle arrangements that ensure that all the fertiliser remains in the field. Additives are available to dramatically reduce the environmental impact of fertiliser application, potentially reducing the carbon footprint of the nitrogen applied by up to 70%.

Convenience

No bag disposal or storage, contract application and no farm labour or planning.

The logistics involved in using solid fertiliser can require significant management time, from arranging delivery, offloading and safe storage to safe delivery to the field and loading into the spreader. The requirements can be more onerous for products containing ammonium nitrate, where strict codes must be followed and restrictions on storage and field handling potentially complicate the fertiliser management process further.

With OMEX suspensions, all of the logistics and administration are covered and the farmer simply needs to provide OMEX the field maps and concentrate on other important aspects of running the business.

Fertiliser delivery, application, return of un-used product, records of the application, analysis and retention of a sample of the applied fertiliser is all taken care of.

Traceability

From soil sample to application.

The OMEX high quality suspension system provides total traceability, from the initial soil sample to the application of tailored nutrient to the field.

Traceability records, listing the fertiliser analysis used, field name, application date and fertiliser rate used (net of any returned unused fertiliser) refer to an application record, listing weather and field conditions and any operator comments. A non-nutrient report is also available, often required by farm auditors, listing the heavy metal content of the specific fertiliser applied to the field and detailing the actual level of heavy metals applied.

Pre-issue conformity checks are carried out at the production factory and the fertiliser is also fully analysed and a sample retained until after any food produced has left the food chain. The fertiliser tanker is issued and returned over certified weighbridges and the accompanying delivery note lists the field details for application, the application rate required, haulier details and a sample reference number. A reference number to trace the source of the fertiliser recommendation is also provided.

In addition to the industry codes of practice, delivery drivers follow an OMEX Code of Practice and the application operators also follow a specific code ensuring a minimum standard of operating.

Support

Growing with OMEX

Choosing to Grow With OMEX provides professional support in caring for the crop from planting to harvest. If required, a local District Sales Manager will work with you toward achieving the best possible yield, with support services including crop monitoring, SAP analysis and ongoing advice on crop nutrition.



Potatoes

The potato crop is probably the most expensive crop to grow. High inputs are required to provide maximum returns. In order to achieve maximum yields of quality potatoes it is important to ensure that fertiliser inputs fully perform. The quality of the raw materials used to make quality suspensions plus the accuracy of application ensure maximum crop response to the nutrients applied. In replicated plot trials at Harper Adams University College, OMEX suspensions demonstrated significant yield increases over a UK branded solid fertiliser.

Nitrogen flexibility

OMEX suspensions for potatoes contain three different sources of nitrogen, from ammonium phosphate, ammonium nitrate and urea. These different sources are carefully balanced to optimise the nutrition of the crop, providing a more even delivery of nitrogen and improved crop response. They are also available with the nitrogen stabiliser Didin, allowing all the nitrogen to be applied safely in the seedbed and leading to a yield increase of over 4 t/ha in trials at ADAS Gleadthorpe. Didin can also significantly reduce the carbon footprint of nitrogen applied for potatoes, especially useful when auditing crops grown for crisps and processing.



The ideal phosphate source

OMEX potato suspensions use 100% water soluble phosphate sources, compared to some solid fertiliser that only contain 60% water soluble phosphates. The potato crop is unique in requiring fully soluble phosphates and OMEX suspensions are also available with Polymex, an additive that prevents the water soluble phosphate locking up in the soil, keeping the soluble phosphate available to the crop for longer, increasing yields and adding to the benefit of OMEX suspensions.

Potash choice

Potash has become a more expensive nutrient in recent years and is required in large amounts by the potato crop. It is therefore important to apply it as accurately and evenly as possible. OMEX quality suspensions help achieve this, with tailored analyses and highly accurate application. The flexibility of suspensions also offers a choice of potash source, which can be especially useful in processing crops. By using sulphate of

potash, instead of the usual muriate of potash, it is normal to see higher dry matter levels in potatoes, improving the quality of the crisping varieties of the crop.

Responsive Magnesium

Magnesium is available in all OMEX suspensions, providing the only true quality compound range of magnesium fertilisers available in the UK. The magnesium is fully crop available, allowing application in the seedbed to provide full crop requirements, without the need for a separate pass.

Sulphur soil conditioner

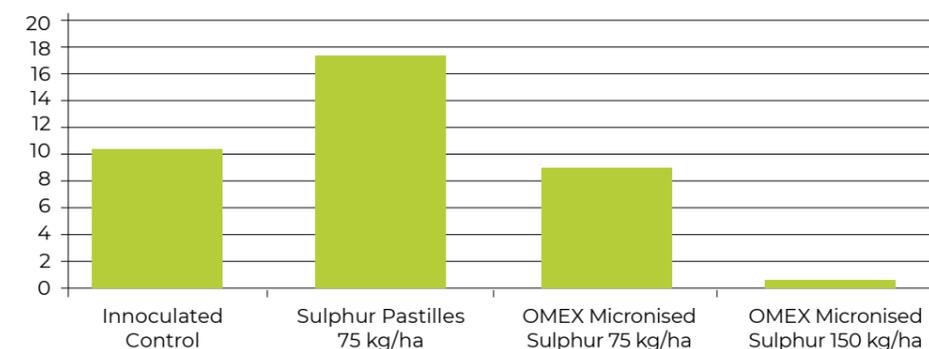
Potatoes, particularly those grown on high pH soils, are susceptible to common scab. Extensive trial work has shown that including micronised sulphur in suspensions for potatoes can reduce soil pH and reduce the incidence of common scab on the harvested potatoes. Full details are available in a separate technical bulletin from OMEX.



No sulphur Micronised sulphur

Soil pH	Suggested Rates of Micronised Sulphur		
	Low Scab Risk	Medium Scab Risk	High Scab Risk
8.5	70 kg/ha	150 kg/ha	200 kg/ha
8.3	70 kg/ha	125 kg/ha	175 kg/ha
8.1	50 kg/ha	100 kg/ha	150 kg/ha
7.9	50 kg/ha	75 kg/ha	100 kg/ha
7.7	40 kg/ha	75 kg/ha	90 kg/ha
7.5	40 kg/ha	50 kg/ha	80 kg/ha
7.3	40 kg/ha	50 kg/ha	75 kg/ha
7.1	40 kg/ha	50 kg/ha	75 kg/ha
6.9	30 kg/ha	40 kg/ha	50 kg/ha
6.7	30 kg/ha	40 kg/ha	50 kg/ha
6.5	30 kg/ha	40 kg/ha	50 kg/ha
6.3	30 kg/ha	40 kg/ha	50 kg/ha
6.1	30 kg/ha	40 kg/ha	50 kg/ha

Mean number of scab lesions per tuber



Source: Stockbridge Technology Centre

Sugar Beet

Quality products for high yielding quality crops

OMEX suspensions are tailor-made for the beet crop, containing the required ratio of nitrogen, phosphate, potash, magnesium, sulphur, sodium, boron and manganese for individual situations. Trials have demonstrated significant increases in the sugar content of suspension-treated crops. The increased sugar content has a marked effect on the adjusted yield of the crop, compared to blended fertiliser

Suspensions offer an economical fertiliser application of quality fertiliser with accuracy advantages and environmental benefits plus the convenience of a contract service. Based on the results of soil analysis, a complete suspension analysis can be supplied, avoiding the need to make a number of passes, often necessary with straight fertilisers.

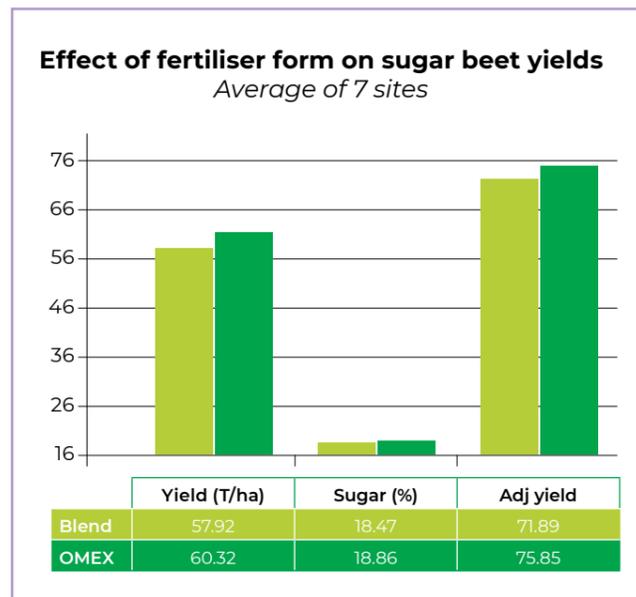
Accuracy and flexibility

The key to achieving top gross margins and sugar yields is to tailor crop nutrition to meet specific crop needs, avoiding wasteful application of unnecessary nutrient and to apply the required nutrient accurately. Accurate application is rarely achieved with bulk blends due to segregation of the different fertiliser particles in the blend and the different spreading characteristics of the constituent particles.

OMEX suspensions are true compounds and each droplet contains the complete analysis. So, wherever the fertiliser is applied the soil and the crop receives the correct amount of nitrogen, phosphate, potash, magnesium, sodium, sulphur, boron and micronutrients.



Field trial above shows the same crop, fertilised with OMEX suspension (left) vs a granular blend (right)



The best approach to optimising the nutrition of the sugar beet crop is start with a soil sample. Soil sampling and analysis is a free service for OMEX customers and if suspension fertilisers are not used, a small charge is made; there is no obligation to buy suspensions following testing.

Suspensions for sugar beet can be formulated for all situations, from simple P-K-Mg-Na mixes applied pre-ploughing to full analysis suspensions, containing all the nutrients required for the crop, including nitrogen, phosphate, potash, magnesium, sodium, sulphur, boron, manganese, plus additives such as Didin and Polymex. Suspensions have been shown to consistently increase the sugar content of crops and this has a marked effect on the adjusted yields, compared to blended and straight fertilisers.

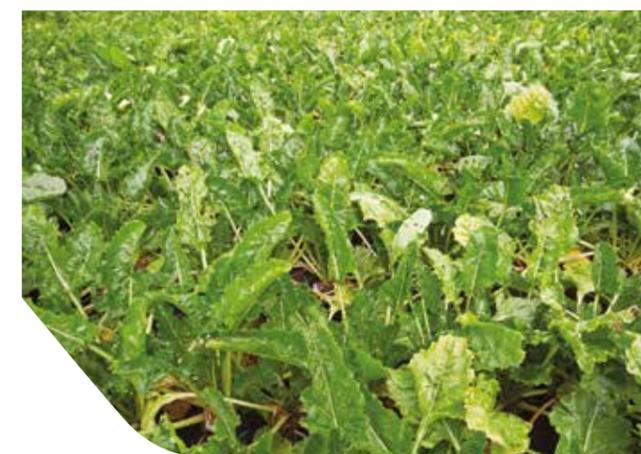
In responsive situations, sodium is an excellent nutrient for beet, providing a low cost replacement of some of the functions of potash in the crop. This can save cost and provides excellent results and suspension fertilisers are the ideal carrier to apply the sodium evenly across the field

Magnesium for results

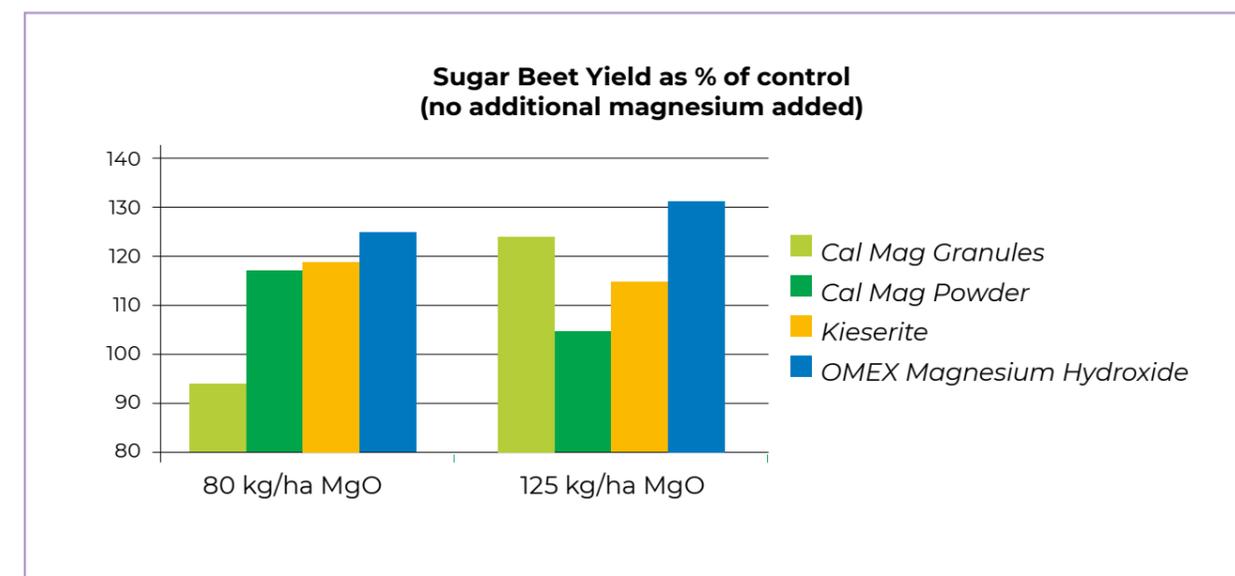
Suspensions include magnesium in the form of colloidal magnesium hydroxide, a highly available source of magnesium with maximum availability to plants.



Healthy crop



Magnesium deficient crop



Cereals and Oilseed Rape

Controlling costs and maximising returns on inputs are key to successfully growing oilseed rape and cereals. The OMEX suspension fertiliser system addresses these requirements by applying quality tailored fertiliser products with a high level of accuracy and precision, reducing farm costs and improving crop response.

Variable rate application is available from most OMEX contractors, working with application maps from most providers, farm labour is freed up to improve the timeliness of autumn operations and herbicides can be tank-mixed with the fertiliser to create further cost and time savings.

Maintain soils to maintain yield potential

A series of national surveys, comparing rates of removal of P and K with rates of replacement, have shown that UK soils have been in deficit for 15 years; more nutrients are being removed than are being replaced. This is not sustainable and as soil levels drop to index 1 and below, crop yield potential is significantly compromised.

In order to maintain crop yields and soil fertility, fields should be tested every 3-4 years and annual applications of P and K should be made as required to maintain indices at index 2. OMEX offer free soil sampling to customers and all OMEX suspensions can be tailor made to individual requirements.

Specific crop needs can be met rather than relying on standard fertiliser analyses, which is often the case if solid fertiliser is used. In addition, micronutrients and biostimulants can be added to maximise crop response, particularly early establishment.

Using suspension fertilisers for cereals and oilseed rape is also an ideal way to apply magnesium and micronutrients with the P and K mix, all in a single, accurate pass.

Timeliness

For optimum yields, crops need to be established at the right time and the most effective weed control is achieved by optimal timing. Farm labour is generally committed during oilseed rape establishment time; harvesting cereals and preparing seedbeds for the following crops. OMEX suspensions offer an accurate and cost effective application of fertiliser on time, every time. A widely used approach is to include Avadex Excel in suspensions, providing the most accurate method of applying Avadex at 36m. When growing cereals, a common approach for blackgrass control is Avadex. Avadex can be mixed into the suspension fertiliser mix, saving a pass.

Autumn sulphur application

Planning and applying sulphur to combinable crops can be logistically challenging, ensuring the correct nitrogen plus sulphur product is in stock and requiring higher rates of application. An alternative is to have elemental sulphur applied in an OMEX suspension in the autumn, which supplies plant-available sulphur in the spring, simplifying spring nitrogen top-dressing.

Precision fertiliser

Suspension fertilisers are ideal for variable rate application and further information is available in the OMEX Precision Farming leaflet.



Maize

Maize is no longer simply a forage crop grown to feed livestock, it is being used widely to produce feedstock for the large number of AD plants in the UK.



A useful break crop

Maize can offer advantages in arable rotations and can be useful as part of an effective black grass control strategy and valuable in the management of other persistent weeds, pests and diseases which can build up in a cereal and oilseed rotation. Maize grown for AD processing also supplements the waste from vegetable trimmings and it is therefore also becoming a feature on or around most vegetable production units.

Simplifying nitrogen application

It is common practice to split the nitrogen application for maize, between the seedbed and a top-dressing application. Top-dressing maize can pose a problem in some situations, due to the architecture of the crop and rapid stem extension once it becomes established. The leaf morphology of a young maize plant is often funnel-like, with the cotyledon and first few leaves potentially catching top-dressed nitrogen and retaining it at the growing point. This can lead to scorch from the top-dressing, potentially delaying establishment.

To address both of these potential nitrogen management issues, an increasing number of maize growers are using Didin to control the conversion of ammonium nitrogen to nitrate nitrogen in the soil, spreading the release of nitrate over 6 to 12 weeks. As a result, all the nitrogen can be applied in the seedbed along with the rest of the nutrient requirements in a complete tailor-made quality suspension.

Boosting fertiliser response

The efficiency of the suspension can be enhanced further by the inclusion of the phosphate protecting polymer Polymex, which delays the immobilisation of the phosphate by cations in the soil, primarily calcium and magnesium.

One-pass crop nutrition

Getting the nutrition right for the maize crop can mean that a number of applications are required, with each pass increasing the risk of compaction. Compaction is one of the main obstacles to the effective establishment of the crop; maize ideally requires a spade-depth of loose soil to get established without restriction.

Suspensions offer a one-pass tailored nutrition approach as they can include the specific NPK requirements of the field, along with any sulphur, magnesium and micronutrient requirement plus Didin to allow all the nitrogen to be included in the seedbed.



Vegetables

Vegetable growers need to demonstrate that their production process can be fully traced and that all inputs are fully justified. OMEX recognise the need for tailor-made precision from fertiliser application and have unique traceability systems in operation, helping provide the confidence in the produce that supermarket buyers need.

Quality raw materials

The precise suspension formulations for vegetables are made from high quality raw materials, to ensure maximum yield and crop quality and the accuracy of application ensures these benefits follow through to quality produce.

Accurate and flexible

All OMEX application contractors follow a strict Code of Practice to ensure consistent and reliable nutrient delivery to the soil. In-field product checks are carried out and on-board computers continuously monitor the application rate to confirm that the correct rate of fertiliser is applied over the whole field. Machinery is checked and calibrated regularly, in addition to the industry standard NSTS certification that is accredited to all OMEX sprayers and operators are NRoSO registered,

OMEX suspension recommendations for vegetables are based on thorough soil analysis, having recognised that high fertiliser rates and residues from double-cropping can result in significant reserves of soil nutrients. Following soil analysis, specific high quality suspension formulations are made and accurately applied to growers requirements.

Suspensions for vegetables can also contain micronised sulphur, providing a crop-available

source of sulphur in the seedbed or prior to planting out for increased convenience and optimal crop response and flavour. The flexibility of suspensions means that sodium can also be included for vegetable crops. Trials have shown significant yield increases following the use of sodium on cabbage and kale, and molybdenum can also be included to reduce the risk of whiptail on responsive soils.

Potassium for quality

Potassium is available from sulphate of potash, as well as the standard form of muriate of potash, both formulated from fine powdered sources for enhanced availability and even application. Sulphate of potash has been shown to improve storage characteristics of white cabbage.

Just in time

Growing vegetables often involves last minute decisions on which fields to plant, based on market, soil, logistics and weather factors. The OMEX suspension service provides the flexibility needed to cope with these requirements. The fertiliser is often made on the day of application so there is no need to stock a range of fertiliser analyses on farm to cover all the field and cropping requirements on the farm, a simple telephone call to the OMEX contractor the day before the application is needed is all that is required.

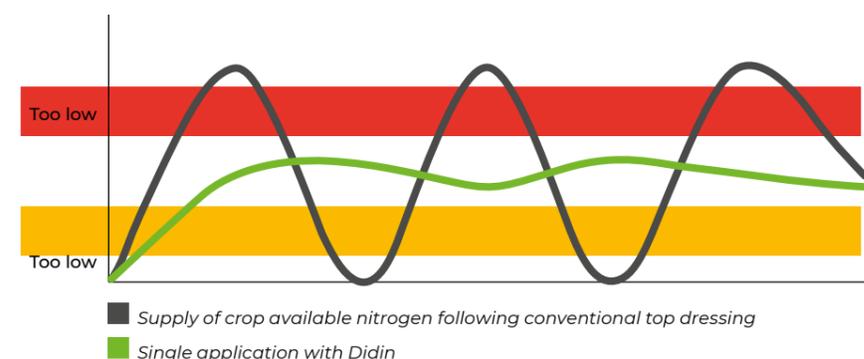


Additives

A range of additives is available for inclusion in all OMEX suspensions. They include products for soil amendment, nutrient efficiency enhancement plus micronutrients and biostimulants, allowing a single application of the total crop nutrition to provide the complete crop requirements.

Didin

Didin was the first widely available nitrification inhibitor to be used in the UK and continues to lead the market. It can be added to any suspension fertiliser and prolongs the release of nitrate from the fertiliser for a period of up to 3 months following application, reducing the need to top-dress and increasing crop yields and quality.



Polymex

When water soluble phosphate is applied to soils it is rapidly converted to insoluble forms of phosphate, often before the crop has a chance to use it. OMEX Polymex delays this immobilisation, prolonging the benefit of the full water solubility of the phosphate and enhancing the crop response to the phosphate applied.

Micronutrients

Various micronutrient additives are available in all OMEX suspensions. For example, GeoMan is an inverse emulsion containing soluble manganese. It is added to suspensions during production and following application and incorporation into the soil, gradually releases plant available manganese for crop uptake. Other micronutrients available for accurate application in OMEX suspensions include boron, copper, molybdenum, selenium and zinc.

Biostimulants

To help boost establishment rates and speed rooting, Rootboost can be included in any

suspension fertiliser, either at the point of manufacture or by tank-mix in the field. Other biostimulants available for inclusion in OMEX suspensions include Biomex Starter, a soil applied bacillus that helps improve nutrient availability and stimulates plant rooting. Biomex Starter grows in the soil and produces substances that stimulate plant growth and also helps exclude pathogens in the soil, by enriching the soil with beneficial bacteria.

Micronised sulphur

Available as a secondary nutrient and as a soil conditioner, micronised sulphur converts rapidly in the soil into plant-available sulphate sulphur. Relatively high rates of micronised sulphur are used to reduce soil pH, making the soil environment more suitable for potatoes on high pH soils and reducing the risk of common scab.



OMEX Agriculture
Bardney Airfield
Tupholme
Lincoln
LN3 5TP

Tel 01526 396000
Fax 01526 396001

Email agriculture@omex.com
Web www.omex.co.uk