

Ferticast - Solid Fertiliser Applicator

Whilst liquid fertiliser is available in bulk or in IBC's to suit farms who do not regularly use liquid it may be more practical on some farms to use solid fertiliser. The OPICO Ferticast offers the same level of precision as the Nitro-Jet but is suited to prilled or granular fertilisers. The Ferticast utilises proven seeder technology from our range of specialist small seed metering units, the only difference is that the Ferticast has a stainless steel base so that the parts in aggressive contact with the fertiliser do not corrode. All Ferticast units come with electronic rate control giving accurate calibration, speed related metering and on the move variable rate control. The controls also incorporate an airflow monitoring system, metering mechanism fault sensor, and low level hopper sensor as well as providing feedback of application details for the current job.



Nitro-Jet Technical Data

| Product code | Model | Tank Capacity | Machine Weight | Machine Weight when full (water) | Machine Weight when full (Fert 1.3sp) | Pump Capacity | Max Pressure | Max Hydraulic Flow |
|--------------|--------------------|---------------|----------------|----------------------------------|---------------------------------------|---------------|--------------|--------------------|
| 30SK1000 | Skid Unit | 1000litres | 340kg | 1340kg | 1640kg | 400l/min | 7.6bar | 49.2l/min |
| 3064600R | Integrated Rigid | 600litres | 250kg | 850kg | 1030kg | 400l/min | 7.6bar | 49.2l/min |
| 3064600H | Integrated Folding | 600litres | 250kg | 850kg | 1030kg | 400l/min | 7.6bar | 49.2l/min |
| 30FT1000 | Front Tank | 1000litres | 380kg | 1380kg | 1680kg | 400l/min | 7.6bar | 49.2l/min |

Alternative tank sizes are available subject to design limitations, please contact OPICO for more information. Units come as standard with an RDS Variable Rate Control and will require a hydraulic free flow return for the pump.

Once you have chosen the Nitro-Jet for you, the correct manifold kit for the cultivator needs to be specified - Standard builds of 5, 6, 7, 8, 9, and 10 outlet manifold kits are off the shelf but other sizes can be provided on request.

Manifold Kit contents -

- Main manifold c/w 2 mounting clamps
- Nozzle body assemblies, brackets and mounting blocks for the nozzles
- 2 sets of stainless steel narrow band nozzles (sizes to be specified by customer)
- A quantity of 6mm hose

Nitro-Jet Accessories include -

Additional hydraulic hose, a radar, a radar mounting bracket, a SAT speed GPS signal converter and an outlet isolating valve

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OPICO'S NITRO-JET LIQUID FERTILISER APPLICATOR



Give your OSR a boost!

TILL-FEEDING



Profit from our knowledge

Ensure the best possible start for your OSR with a Nitro-Jet

A wet harvest means a late harvest and therefore late drilling, giving the Oil-Seed Rape a shorter period of time for the plant to achieve enough strength and size to get through the winter months, and furthermore a cold, wet autumn means even fewer growing days before winter.

One answer to help these problems is to apply fertiliser at seeding to give the plant a quicker start and allow it to grow more vigorously in a shorter time span. But to do this as a separate operation after drilling takes more time and money. Till-Feeding with OPICO's new Nitro-Jet gives you all this and more.

Till-Feeding for better establishment

TILL-FEEDING



15kg/ha N = 45kg/ha N Applied to band

Many farms are already Till-Seeding their Oil-Seed Rape in rows using a subsoiler or cultivator. As well as reducing costs and allowing a faster turnaround, Till-Seeding also conserves moisture in the soil and reduces traffic on the land; improving soil structure; allowing better plant growth and resulting in stronger plants and better yields.

However, broadcasting the fertiliser across the full width on band sown Oil-Seed Rape is very wasteful especially in the autumn when the rape plants are small and cannot scavenge very far for nutrients. The fertiliser needs to be applied in bands or rows where the plants are, decreasing usage and leaching but increasing effectiveness by applying the fertiliser where the plant can use it before the winter. This may mean that the overall rate applied can be reduced or if NVZ regulations have been the limiting factor the rate can be maintained but as the fertiliser is being applied in a



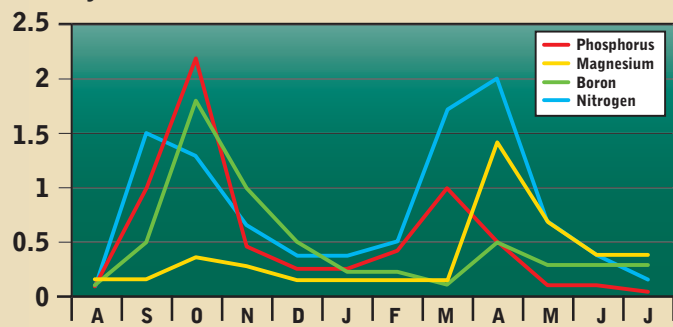
The Narrow band nozzle in operation behind a subsoiler leg.

concentrated band it is the equivalent to three times the application rate across the full width.

As the "Monthly nutrient content of winter Oil-Seed Rape" graph below shows there is a significant requirement for not only Nitrogen but also Phosphate and Boron in the autumn. There are environmental factors such as wet, drought and cold which cannot be controlled but if we can ensure that nutrients that we are in control of are supplied in the right place at the right time then the crop has the best start possible.

The Nitro-Jet range of fertiliser applicators has been designed to operate in tandem with low cost rape establishment on subsoilers and other cultivators giving the crops a timely nutritional boost for the critical pre-winter growing period.

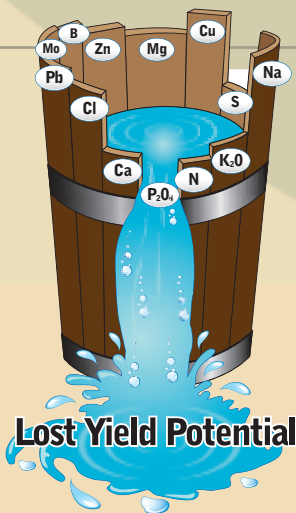
Monthly nutrient content of Winter OSR



P.Marr, Masstock Smart Farming

“The level of crop production can be no greater than that allowed by the most limiting of the essential growth factors”

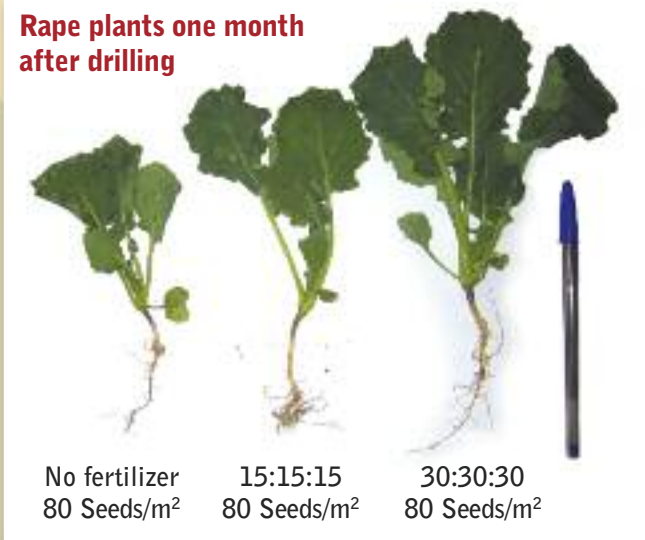
Justus von Liebig 1803 - 1873



Lost Yield Potential

OPICO OSR Fertiliser Trials

Rape plants one month after drilling



No fertilizer 80 Seeds/m² 15:15:15 80 Seeds/m² 30:30:30 80 Seeds/m²

After initial trials which showed a significant benefit to the crop, OPICO began a trials programme all over the UK in conjunction with Masstock and other agronomy companies. These looked at the autumn response to different levels of targeted fertiliser and ultimately yield benefits that can be achieved as a result. Whilst it is early days to scientifically say that there is a specific yield benefit the early results and common sense dictates that stronger well established crops are more likely to survive the winter and produce a higher yield. The fact that many late drilled crops throughout the country failed in the cold, wet autumns of 2007 and 2008 shows the importance of giving the crop the boost it needs at drilling as an insurance policy if nothing else.



No Nitrogen



45kgs down the row 15kgs overall

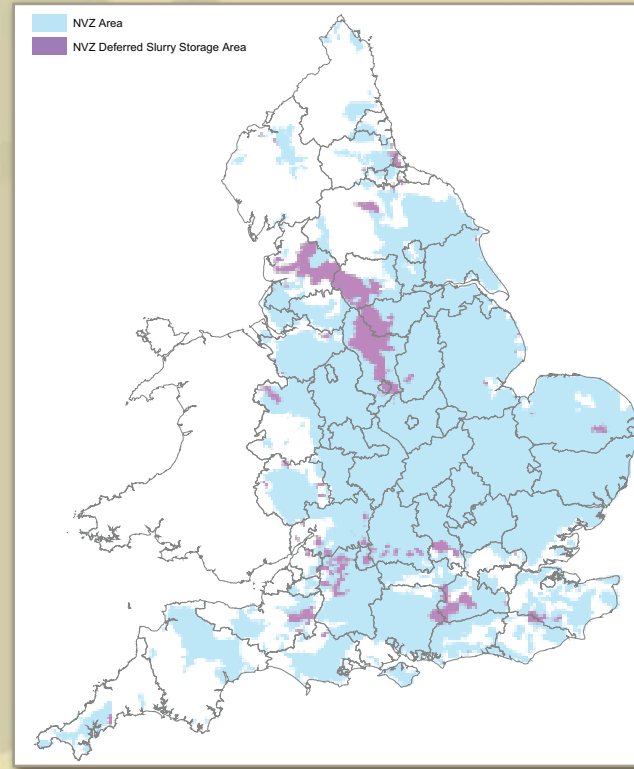
Nitrate Vulnerable Zone (NVZ)

NVZ's as a concept were introduced following the ratification of the EC Nitrate Directive 1991, the initial 2002 NVZ's covered about 55% of the land in England but as from the 1st January 2009 the area was increased to cover approximately 70% of England or to put it another way 90% of arable land.

Whilst NVZ's were designed to protect from diffuse water pollution through leaching of Nitrates into the groundwater and ultimately into extracted drinking water they have focused many farmers minds on accurate and efficient spreading of fertilisers by default.

With a typical crop of Winter OSR the NVZ regulations state that a maximum of 30Kg/ha of Nitrogen can be applied in the autumn and that it must be applied before 30th October. Aside from the fact that applying fertiliser as a separate operation costs money and takes time at a busy time of year the low limit means that it is important to ensure that the Nitrogen gets to exactly where it is needed.

Due to yield benefits wide rows have become part and parcel of Oil-Seed Rape establishment over recent years but in doing so have created the need for more accurate fertiliser application to ensure the plant is able to take up the nutrients. This is even more important when you consider that the fertiliser that falls on 2/3 of the ground between the rows will not be able to be reached by the establishing crop roots and will be wasted and potentially leached down through the soil profile.



Nitrate Vulnerable Zones

Till-Seeding and Till-Feeding

Till-Feeding offers an ideal opportunity to both save money on autumn fertilisers and get an improved response from what's applied. As well as eliminating any application costs, the Nitro-Jet system offers tremendous flexibility.



Andy Eccles - OMEX

In many situations with early-drilled crops, seeded in conditions where some moisture is available, all that is required is an application of Nitrogen. The Nitro-Jet places the nitrogen in the ideal position for uptake by the crop and allows rates to be tailored according to season and variety. Extra nitrogen can be applied for varieties that lack vigour, without any NVZ restrictions and rates can be reduced if autumn conditions are optimal for establishment.

Phosphate should be included where soil P-indices are 2 or less or for later seeded crops, where the cold wet soils of late autumn can lead to slow growth rates. Phosphate is important for rooting and it is therefore required in any situation where rooting could be limited.

The phosphate fertiliser in liquid fertiliser can include Omex TPA, an additive that keeps phosphate soluble and available to the establishing crop for longer. It also stimulates the development of prolific root hairs, which in turn aid further nutrient uptake. Liquid phosphates are based on ammonium phosphate and there is evidence that the combination of ammonium phosphate aids the uptake of phosphate as the plant roots seek out the nitrogen. A range of N and P solutions are available from Omex, depending on field requirements.

For situations where complete nutrition is required for the seedling, it is simple to apply an NPK solution based on 9-9-9, which contains around 11kg of N, P and K per 100 l/ha applied in the band (approx 30 l/ha of field).

Application with liquid fertilisers offers a number of advantages over solids. The fertiliser is applied precisely in the treatment band, and rates can be accurately controlled. Comparisons of crops receiving a banded liquid fertiliser application with no treatment show better establishment, bigger plants and better survival which is especially important in a harsh winter.

According to Andy Eccles, "if you're Till-Seeding you should be Till-Feeding".



Potential benefits of band applying liquid nitrogen at OSR drilling

Reliable rapid establishment of winter Oil-Seed Rape is essential to set the crop up to achieve a high yield, across the whole planted acreage. OSR typically has a thousand seed weight of 5g which is one tenth of a cereal seed and one hundredth of a bean seed. This only provides it with enough nutrients and energy to grow a small root and cotyledon, after that it is reliant on accessing nutrients from the soil. However with only a small root, nutrient access is limited so supplying the required nutrients where they are needed close to the roots using OPICO's Nitro-Jet has not surprisingly proved beneficial.

Many OSR crops have Nitrogen applied to the seedbed to aid establishment but research with Masstock has shown that OPICO's Nitro-Jet system provides a much more targeted and beneficial approach.

- Only applies nutrients where the seed is placed.
- Concentration of nutrients approximately 3 times compared to broadcast application so typically only 15 to 20 kg/ha N need be applied.
- Does not stimulate weed growth between crop rows as no nitrogen applied to uncropped area.
- Opportunity to target phosphate and boron applications as well as nitrogen, both essential for effective root growth.
- Nutrients applied in same operation as planting saving time and application cost.
- Helps ensure good rapid establishment and growth through the autumn and a bigger green area index going into the spring therefore reducing spring N requirements.
- Lower risk of nitrogen leaching as only applied where the crop is going to take it up.

Trials carried out at Masstock's Lincoln SMART Farm last season showed that band applying fertiliser produced yields 4.1% higher than where the fertiliser had been broadcast equating to 0.2 t/ha so with rape at £250/t this is equivalent to £50/ha. With these levels of extra yield, the additional cost of the equipment will be rapidly paid back over a modest acreage. More importantly though, it will help ensure reliable establishment of the OSR crop and protect the other investments into the crop.



David Langton - Masstock

The Nitro-Jet - liquid fertiliser applicator

Whilst there are four different types of Nitro-Jet to suit different farm requirements all have the same basic features:

Impact Resistant Tank



All models of Nitro-Jet come complete with impact resistant tanks between 600L and 1000L in capacity and a tank level gauge to allow the operator to see the level of fertiliser when filling and in work.

Liquid Transfer



This feature allows the operator to use the pump to empty the Nitro-Jet tank back to the storage unit used.

Outlet Manifold



The metered output is divided at the manifold and distributed via 6mm flexible pipe to the outlets.

Hydraulic Drive Pump



The same 400L/min high pressure pump is used on all models allowing high speed self filling and providing pressure required for the application operation.

Nozzle and Protected Shroud



The 6mm flexible pipe is routed around the cultivator or Subsoiler frame to supply the shroud protected nozzle bodies, each nozzle body is fitted with an anti drip and a specially manufactured stainless steel narrow band nozzle. These whole units should be mounted on the cultivator in line with the row of seed so that the fertiliser is readily available to the young seedlings, each shroud unit is manufactured to be easily mounted and adjustable so that the outlet can be easily moved if required.



RDS Variable Rate Controller



The RDS control unit allows simple calibration and set up and in work provides speed related metering and variable rate control within the limits of the nozzle flow range. Furthermore the volume applied and area covered are recorded for farm records.

Flow Meter and pressure gauge



In order to control the speed related application of the liquid fertiliser a flow meter and pressure gauge are used with any excess liquid being pumped back to tank to agitate the contents.

RDS Cut Out Switch



This finger switch comes as standard on all Nitro-Jets so that no matter whether the forward speed signal comes from GPS, radar or landwheel it is cut out when the machine is lifted on the headland. On three point linkage machines it is best positioned on the headstock of the machine.

A Nitro-Jet designed to suit your farm



Rigid Subsoiler Integrated Nitro-Jet



Integrated Nitro-Jet mounted on a 3m 5 Leg HE-VA Subsoiler with Variocast 8 Electronic Seeder

This unit is specifically designed to fit on rigid HE-VA Subsoilers, importantly the framework ensures that the weight of the Nitro-Jet is carried as far forward as possible to minimise the required lift capacity and make the whole unit easier to handle. The 600L rectangular shaped tank is supported above the headstock allowing the Subsoiler to function normally and the outlet manifold is mounted at the rear of the Nitro-Jet chassis so that the pipe work can be tidily routed within the frame down to the outlets. When an OPICO seeder is fitted the signal for the forward speed is taken from the landwheel or radar controlling the seeder, alternatively it may be taken from the tractor's radar or a separately mounted radar unit.



Front Tank Nitro-Jet

The 1000L Front Tank Nitro-Jet is designed to be mounted to any tractor with a Front Linkage and used in conjunction with a mounted or trailed implement. The Front Tank has a category II three point hitch, front bull bar and lights to replace those obscured on the tractor. As it is front mounted this unit includes a transfer pipe (length to be specified by the customer) to transfer the liquid fertiliser to the machine at the rear of the tractor where the manifold is mounted. The customer needs to mount this transfer pipe on the tractor and the manifold on the machine. The standard nozzle brackets are readily adaptable but will require bracketry to mount them where required on the cultivator. When an OPICO seeder is fitted the signal for the forward speed is taken from the landwheel or radar controlling the seeder, alternatively it may be taken from the tractor's radar or a separately mounted radar unit.



Front 3 point linkage Mounted Nitro-Jet



Hydraulic Folding Subsoiler Integrated Nitro-Jet



Integrated Nitro-Jet mounted on a 4m 7 Leg HE-VA Subsoiler with Variocast 8 Electronic Seeder

The design of the HE-VA folding Subsoiler limits the space to mount a tank and so this integrated unit uses a Tubular 600L tank to allow normal folding and operation of the Subsoiler whilst keeping the weight as far forward as possible to make the whole unit easier to handle. The chassis is supported on the whole width of the headstock of the subsoiler to improve stability, once again the outlet manifold is mounted at the rear of the Nitro-Jet chassis so that the pipe work can be tidily routed within the frame down to the outlets. When an OPICO seeder is fitted the signal for the forward speed is taken from the landwheel or radar controlling the seeder, alternatively it may be taken from the tractor's radar or a separately mounted radar unit.



Skid Unit Nitro-Jet

The 1000L Skid Unit Nitro-Jet is the most adaptable unit being suited to be mounted on a three point linkage or onto the framework of a cultivator with some fabrication work. It has a category II three point hitch and multi-fit base plate to allow the customer to mount it wherever it required. The customer also needs to mount the manifold and the nozzle outlets on the machine. The standard nozzle brackets are readily adaptable but will require bracketry to mount them where required on the cultivator. When an OPICO seeder is fitted the signal for the forward speed is taken from the landwheel or radar controlling the seeder, alternatively it may be taken from the tractor's radar or a separately mounted radar unit.



Cultivator Mounted Skid Unit Nitro-Jet