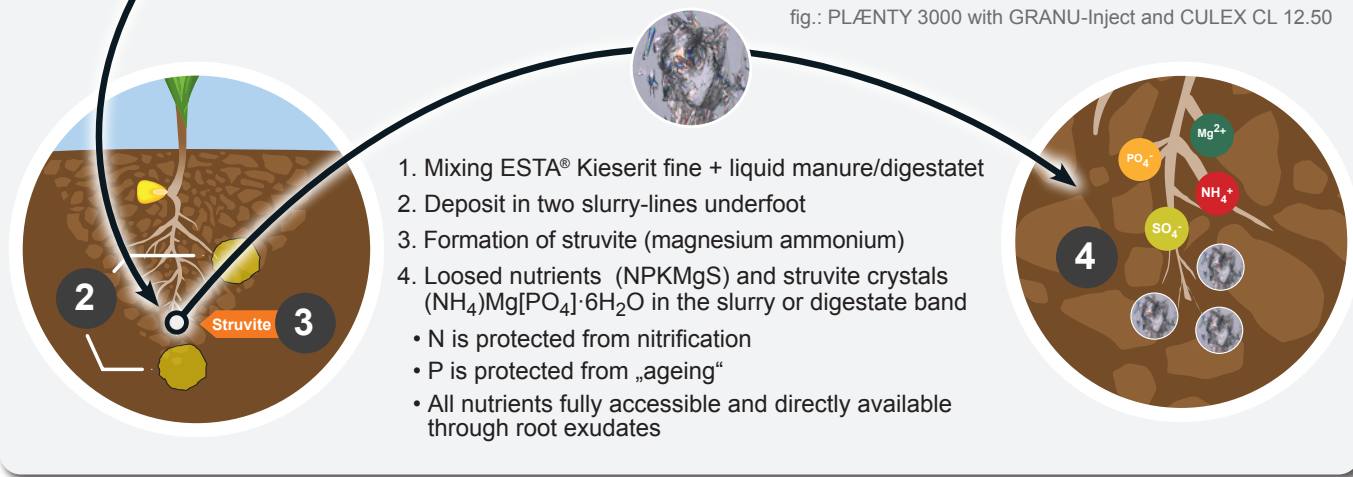




fig.: PLÄNTY 3000 with GRANU-Inject and CULEX CL 12.50



1. Mixing ESTA® Kieserit fine + liquid manure/digestate
2. Deposit in two slurry-lines underfoot
3. Formation of struvite (magnesium ammonium)
4. Loosed nutrients (NPKMgS) and struvite crystals (NH<sub>4</sub>)Mg[PO<sub>4</sub>]·6H<sub>2</sub>O in the slurry or digestate band
  - N is protected from nitrification
  - P is protected from „ageing“
  - All nutrients fully accessible and directly available through root exudates

### MAP-PRECIPIATION

The aim here is to use the magnesium from kieserite and the ammonium and phosphorus from the slurry to grow struvite crystals in the slurry lines.

Struvite has a sand-like structure with a typical nutrient composition of 5%N, 23%P O<sub>22</sub> and 12%MgO. Struvite is a magnesium ammonium phosphate (MAP), which has the efficiency-improving advantage that part of the nitrogen from the liquid manure is bound as ammonium in struvite and is protected from nitrification and washout losses. Furthermore, the phosphate from the liquid manure in the new Struvite compound has very good citric

acid solubility and thus plant availability via root exudates, equal with triple superphosphate. The phosphate is thus protected against ageing and remains readily available to plants. Due to its relatively high weight (bulk density 1,380 kg/m<sup>3</sup>), Kieserit fine is difficult to mix homogeneously into a 20 m<sup>3</sup> slurry tanker, for example. The „just-in-time“ introduction of Kieserit fine into the distribution head has the advantage that an exact mixture can be produced and that crystallization only begins in the soil and no sand-like deposits can occur in the spreading vehicle. The media can no longer unmix until they enter the soil.

### CONCLUSIONS:

- Close nutrient gaps in organic farm manure for Mg and S
- Improvement of N and P efficiency through the struvite effect
- More root growth, more vital plants and better grain filling



Fertilizer/Seed Wagon  
**PLÄNTY 3000**



Fertilizer Injection  
**GRANU-Inject**



Fertilizer Injection  
**GRANU-Inject Mini 600**



Controller  
**autoFLOAT ISOBUS**



Distribution Head  
**DOMAX**



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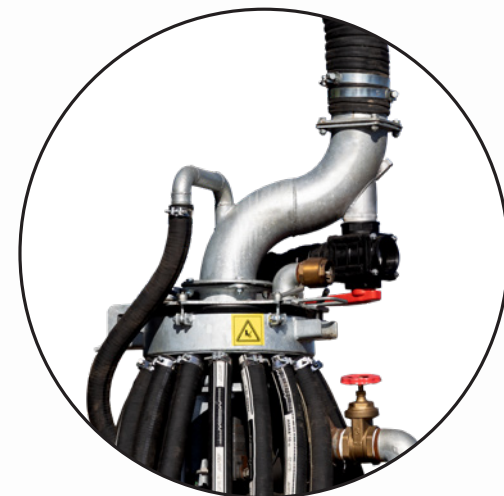
# Fertilizer Injection **GRANU-Inject Mini 600**



# GRANU-Inject

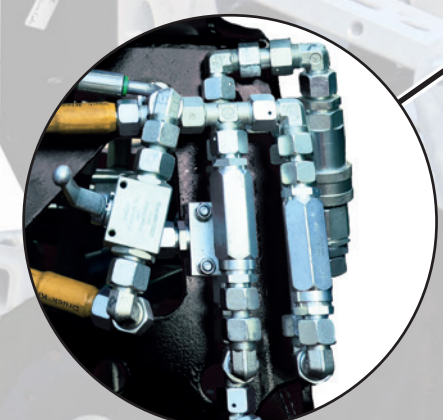
# Fertilizer Injection GRANU-Inject Mini 600

The GRANU-Inject fertilizer injector was designed for use with the Strip-Till CULEX ST and CULEX ML 8.75. The concept enables the simple addition of fine and granulated fertilizers „just in time“ into the slurry flow and thus directly into the fertilizer depot of the maize or potato plants.



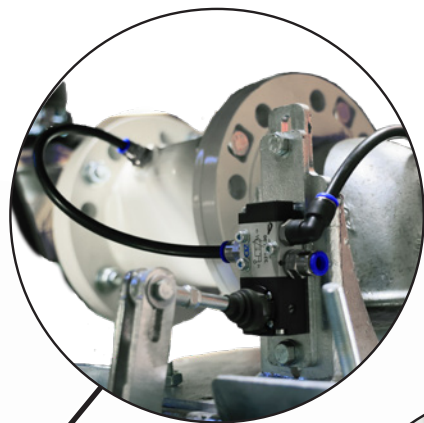
## 7. Distribution Head

- The slurry is divided into main and side streams.
- The inoculated slurry is fed back into the main flow under pressure via the center of the distribution head.
- The rotor in the distribution head reliably mixes the slurry from the main and side streams.



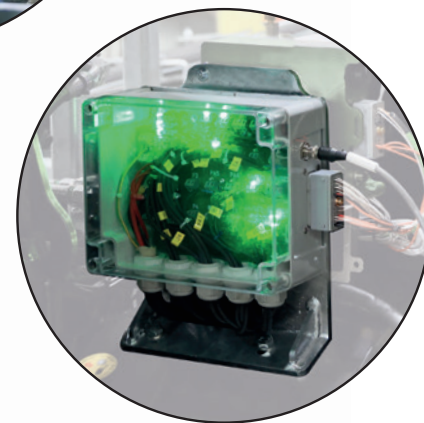
## 6. Oil Supply

- The rotary piston pump is supplied with oil in series with the slurry distributor. A simple valve ensures that the pump always rotates in the same direction.



## 1. Valve

- A float-controlled pinch valve ensures a continuous flow of slurry to flush away the granulate.



## 2. Control System

- The GRANU-Inject Mini 600 is supplied with an ISOBUS control system as standard.
- The target-admixture quantity can be regulated via application cards if necessary.
- The ingredient measurement of the slurry or fermentation substrate is not affected, as the fertilizer is added downstream of the NIR sensor.



## 3. Dosing Unit

- The metering drive is ISOBUS-controlled, which means that the target-admixture quantity can also be controlled via application cards.
- Media from 0 - 600 kg per hectare can be applied.



fig.: GRANU-Inject Mini 600 folded on Strip-Till CULEX ML 8.75

## 4. Data

	Unit of measurement	GRANU-Inject MINI 600
Container volume	litre	600
Empty weight	kg	740
Spacing wheel blow-out device		Series
Automatic transport position		Series

Weights and dimensions are approximate and non-binding. Subject to change without notice.



## 5. Rotary Piston Pump

- Hydraulically driven rotary piston pump Blue Line Nova from BÖRGER.

fig.: GRANU-Inject Mini 600 on Strip-Till CULEX ML 8.75

By injecting additional fine and granulated fertilizers, nutrient gaps in organic farm manure can be closed!



- e.g.:
- Addition of ESTA® Kieserit fine (magnesium + sulphur)
  - Addition of nitrogen fertilizers such as urea
  - Addition of potassium fertilizers
  - Addition of fertilizers with micronutrients
  - Addition of phosphorus fertilizers

Most positive effects are achieved when correctly placed fertilizer depots are created in root crops.

*The container can be lowered to the floor for easy filling. The Container filling quantity corresponds to a Kieserit BigPack with the Standard weight of 600 kg.*

## How GRANU-Inject Mini 600 works

