

### 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 O22 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/m³), ESTA® Kieserit FINE is difficult to mix homogeneously into a 20 m³ slurry tanker, for example. The „just-in-time“ introduction of ESTA® 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
  - Phosphorus content in the soil will be reduced in the medium and long term

TR Series 101 & 1000	TRG Series 101 & 1000	Strip-Till CULEX
Slurry cultivator FZG	Slurry mulch cultivator APER	Subsoiler TL
Telescopic shield VTS	Hose reel VSH	Power-Lift-Axle PLA
PL/ENTY	GRANU-Inject	GRANU-Inject Mini
EcoZIP	DOMAX	T-RUBBER Accessoires

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## Allround Injector for Grassland and Crops EcoZIP



# EcoZIP





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First patented injector for emission-free placement of nutrient-deposits on vegetated areas (grassland, grain, corn etc.).

The VOLMER EcoZIP is a true allround injector, designed for precise and efficient application in a wide range of conditions – from grassland and cereals to maize and more. It's also ideally suited for cultivated and direct-seeded fields. Its mission: to place a nutrient-rich (slurry) depot at depths of up to 10 cm while securely closing the slot – all with minimal disturbance to existing crops and root systems. Soil structure and plant health remain intact. On pre-cultivated land, such as winter ploughing, the EcoZIP's uniquely engineered tools ensure a fine, crumbly soil texture – the perfect foundation for optimal growth.

## 8. Drop Stop / Section Control (optional)

- Reduced operating costs
- Minimized crop damage and lower environmental impact
- No overlaps in the field or on headlands due to automatic section control
- Uniform row spacing and consistent plant growth – even on headlands

## 7. WTC-System

- Our unique **Wheel Tire Closing System** (WTCS) ensures both precise depth control of the injection unit and reliable closing of the injection slit – without displacing slurry from the soil.

## 6. Tools

- 6 mm thick cutting discs cleanly slice through the turf.
- The interchangeable coulters open the soil and determine the fertilizer amount to be applied.
- The slurry tubes place the nutrient depot approximately 8 - 10 cm deep into the soil.

## 5. Ground Contour Following

- All units follow ground contours independently and with ease.
- The individual adjustment of coulter pressure allows adaptation to a wide range of conditions.

## 2. Seeding Equipment (optional)

In the same pass, seeds for grassland or cereals can be injected, for example in combination with our **VOLMER PLÄNTY** or **EXCEEDER**. The EcoZIP enables simultaneous fertilizing and seeding, as well as seeding only.

## 3. Mounting Drawbar (or classic 3-point linkage))

- The innovative mounting system with a rearward-offset pivot point creates a trailing effect for improved maneuverability.
- The robust design is built to withstand high torsional and shear forces.
- Various mounting options available, including standard 3-point linkage.

## 1. Fertilizing Equipment (optional)

The **GRANU-Inject** allows the simultaneous application of kieserite or other mineral fertilizers directly into the slurry stream. The additional injection of fine and granulated fertilizers can close nutrient gaps in organic farm manure!

## 4. Data

	Unit of measurement	EcoZIP 3000	EcoZIP 6000	EcoZIP 9000	EcoZIP 12000
Rows/Distance	cm	18.75	18.75	18.75	18.75
Working depth	cm	8 - 10	8 - 10	8 - 10	8 - 10
Working width	m	3.00	6.00	9.00	12.00
Transport width	m	3.00	3.00	3.00	3.00
Approx. weight	kg	2,750	5,500	8,250	11,000
Outlets	pcs.	16	32	48	64
Hydraulic pressure adjustment		✓	✓	✓	✓
Chassis		✓	✓	✓	✓

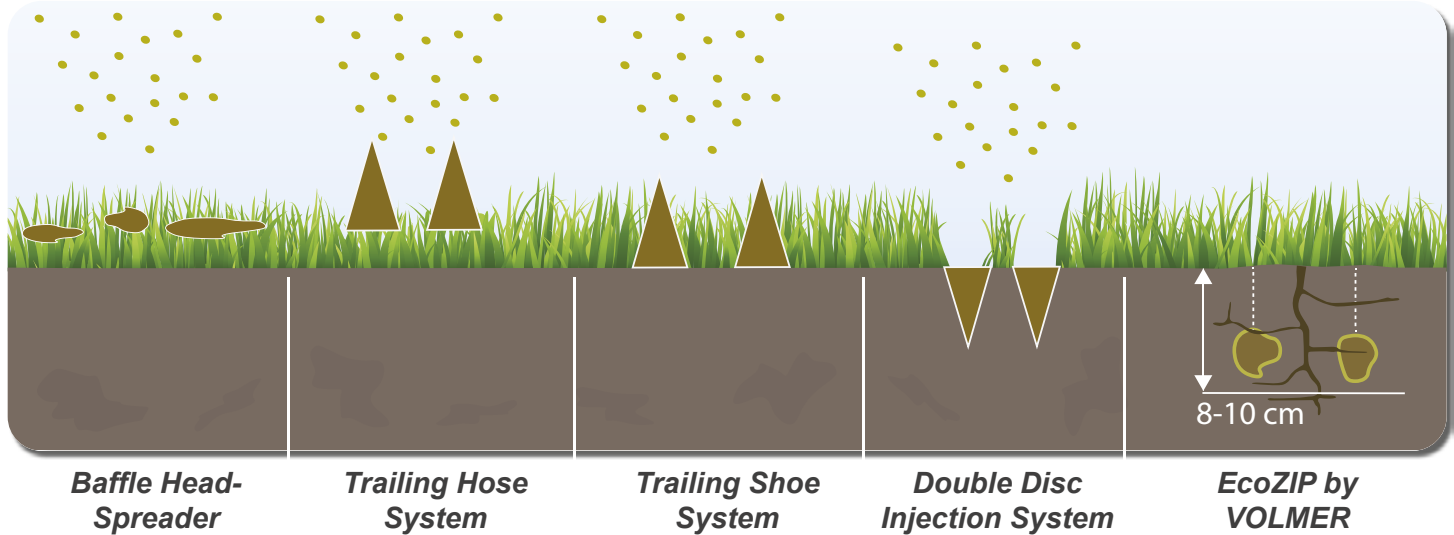
Weights and dimensions are approximate and non-binding. Subject to change without notice.

## EcoZIP - System Advantages:

- ✓ Depot fertilization: Nutrients are precisely placed in the root zone where they are needed, not just near the soil surface.
- ✓ Nitrogen losses are reduced to zero.
- ✓ Improved plant development and higher dry matter yields (up to +30% expected in grassland).
- ✓ Animals can return to treated areas more quickly.
- ✓ Feed, silage, hay & grain remain uncontaminated by slurry, reducing the risk of livestock diseases.
- ✓ No odor or air pollution (no fine dust emissions).
- ✓ Unlike competing systems, the injection slit is completely closed without damaging plants.
- ✓ Reduced fertilization frequency lowers operational and labor costs.
- ✓ Vertical, root-conserving insertion of patented tools makes EcoZIP ideal for established crops.
- ✓ Electronically controlled hydraulic coulter pressure ensures a consistent work pattern, even on sandy or loess soils.
- ✓ Always optimal working depth – even in wheel tracks or compacted zones – thanks to electronic control of each row.
- ✓ No clod formation – EcoZIP promotes a loose, crumbly soil structure.
- ✓ Ideal for No-Till cropping systems, as there is no soil disturbance.
- ✓ Organic matter remains on the surface and is not incorporated (maintaining the C/N ratio).

## System Comparison

The VOLMER EcoZIP is the first machine to place slurry into the turf rather than on it – completely emission-free.



### Application versatility:

Whether organic slurry, liquid fertilizer (ASL), or mineral fertilizer – even in combination – the VOLMER EcoZIP delivers targeted depot fertilization exactly where it's needed. Perfect for seeding, reseeding, and undersowing maize. Apply nutrients during or independently from seeding – flexible to your system.

### Application area:

Grassland, cereals, maize, cover crops, etc. Also ideally suited for cultivated fields or no-till systems, as there is no soil disturbance.

### Advantages:

Nitrogen losses are reduced to zero. Improved plant development and increased dry matter yields (up to +30% expected in grassland). The result: active root growth in the slit area or directly at the nutrient depot.

Injection slit completely closed