MULCHTEC
NATURE EMPOWERED

The MulchTec Planter

Boost the fertility of your soil with permanent root penetration and coverage

Fertile soil with high yield security, environmental resilience, evaporation and erosion protection, and a significant increase in soil life is a strong argument for rethinking our approach to vegetable cropping.

SAFEGUARD LONG-TERM SOIL FERTILITY

Direct mulch planting

Getting started with the system – primary tillage

Warm, dry soil is loosened in autumn to break up any potential compaction. The seedbed is then prepared in line with the requirements of the planned vegetable crop the following year. Special attention is paid to carefully following routes and forming an even soil surface. Root-propagated weeds must be kept to a minimum for successful direct planting.

Sowing a cover crop

Sowing takes place as early as possible in the autumn, directly following tillage. Cover crops are composed of cereals and legumes (e.g. vetch grown with rye), with no perennial plants or grasses. To prevent seeds from maturing, the flowering times of the individual components should be coordinated. When choosing varieties, pay attention to high biomass yields – 10-12 t DM/ha are possible in this case at flowering. In principle, the same amount of attention should be paid to a cover crop as to a main crop.

Establishing a mulch layer

Right before planting the main crop, the cover crop is flailed down to the ground. Additional mulch material will need to be spread if the crop was not fully flowering, not enough biomass is present or there are weeds in the crop. On the whole, an even depth of around 8 cm should be targeted, depending on the structure of the material, in order to thoroughly blacken out the soil and prevent weed regrowth. This equates to around 15 t DM/ha. The chosen cutting length and structure of the material should ensure that air can travel between the mulch and the soil (approx. 5-10 cm).

Planting and fertilisation

The MulchTec-Planter enables planting directly into uncultivated, root-penetrated, mulched soil. During the same pass, it makes sense to fertilise the plants in the root zone to tide them over with a starter dose of fertiliser while the nutrients from the mulch gradually mineralise, thus accelerating the early development of the crop. N release from the mulch material within a period of 12 weeks: at C/N ratio 12:1 around 50%, from C/N ratio 30:1 around 0%. It is advisable to wait until the last frost has passed before planting tender crops into mulch. After spreading silage mulch, around 10 days should elapse before planting to avoid outgassing damage.


GF 456 GX

The all-rounder for mulch planting

The MulchTec-Planter is an essential tool for implementing direct mulch planting cost-effectively in professional vegetable cropping. Its powerful cutting equipment produces impressive results in all plant-based mulches. Its Revolver planting equipment, which has been custom designed for mulch planting, is accurate under challenging conditions yet flexible when it comes to the types of young plant it can handle.

CUTTING AND PLANTING EQUIPMENT

Precision in detail

HOW IT WORKS IN A NUTSHELL

The mulch layer is sliced open by a cutterbar. The cutterbar consists of a knife wheel that runs through a deflector share to prevent the knives from coming contact with the ground. The deflector share travels through the soil up to half way, lifts up the mulch a little and feeds it onto the knife wheel. The planting share follows behind in the cut that has been created, determines the planting depth and positions the young plants. Then come the pressure rollers that press the soil back down and close up the mulch layer.

Frame and drive

The sturdy frame is available between 2 m and 3 m wide. Up to four cutterbars can be mounted, which can be infinitely adjusted to make all row spacings and track widths possible.

The cutterbars are driven by electric motors powered by a PTO-driven generator.

Powerful cutterbars

The MulchTec-Planter is equipped with high-performance cutterbars that actively slice open organic mulch layers of all types. The knife wheel runs through a deflector share that prevents the knives from coming in contact with the ground, guaranteeing a clean cut of the mulch layer. The rotational speed is continuously variable, enabling it to be adapted to different mulch densities and materials as well as speeds of travel. The working height is guided by a parallelogram with a slotted hole, enabling blockage-free planting, even on uneven ground.

Akkord planting equipment

The tried-and-tested Akkord planting equipment is used when flexibility and simplicity are the order of the day. It allows for row spacings of 55 cm and above, and plants all pot shapes up to 6 cm in width.

Revolver planting equipment

The Revolver planting equipment, which has been specially developed for mulch systems, comes into its own when precision and speed take priority. The spacings within the row can be freely selected via an electronic control unit. The plants can be planted in parallel or offset. It can be used with tray plants, peat blocks, bare-root leeks and coarse-grained seeds with a few simple adjustments. A slat chain holds the leaves upright until the plant has been pressed down. Depending on the soil characteristics, the pressure rollers can be pneumatically pressurised or depressurised for optimum soil contact.

Linear root zone fertilisation

The fertilisation equipment on the MulchTec-Planters has been designed to deposit commercial fertilisers underneath the mulch layer into the planting slot beneath each young plant. This minimises losses and gives plants rapid access to nutrients. All spreadable commercial fertilisers can be metered precisely.

Crate stocking

To avoid running out of fresh supplies too soon, generous storage space is provided on both sides for full or empty crates of young plants. When travelling by road, the sturdy, lightweight corrugated aluminium floor can be folded up by the handle and safely stowed away.

Technical specifications and equipment versions

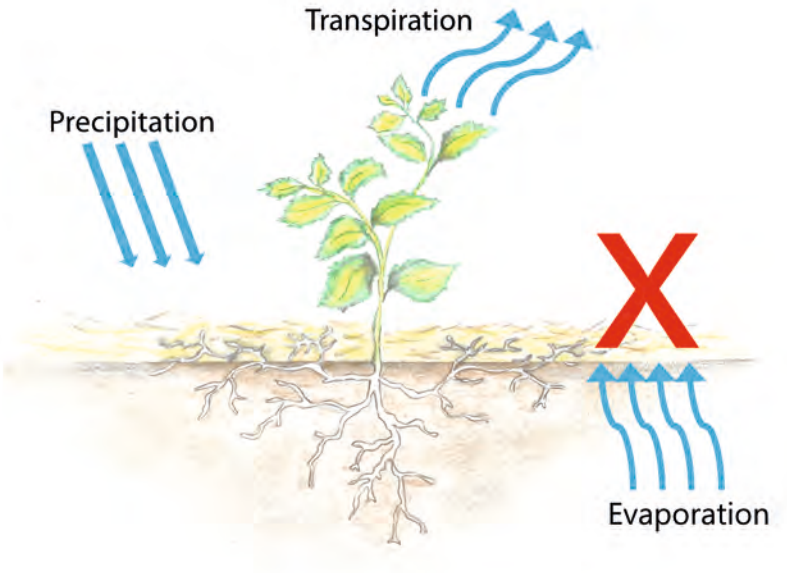
		Revolver MulchTec-Planter	Akkord MulchTec-Planter
Frame	Drive	PTO-driven generator	
	Rpm at PTO	300 rpm	
	Power rating at generator	8 kW	
	Voltage at generator	48 volt	
Cutterbars	Number	1 to 4	
	Cutterbar motor power rating	2.0 – 3.0 kW	
	Ratational speed	Continuously variable between 2000 and 4200 rpm	
Planting equipment	Minimum row spacing, continiously	36 cm	55 cm
	Varible spacing control	Electronic Minimum spacing 10 cm	Manual or via planting disc
	Pot shapes	Peat blocks up to 4x4 cm, tray plants, bare-root leeks, coarse-grained seed	Any, max. 6x6 cm peat blocks
	Planting capacity per row	4000 plants/h	2000 plants/h
	Offset planting	Yes	No
	Max. planting speed	1500 m/h depending on mulch condition	1500 m/h each depending on mulch condition
	Control unit with screen	Yes	No
	Pneumatic preassure control	Yes, 0 kg to + 300 kg	No
Options	RAUCH UKS 150 root zone fertilisation	Yes	
	Crate stocking	Yes	
Tractor requirements	Tractor performance rating	Min. 60 hp	
	Three-point suspension	Category II and III	
	Air pressure system	Yes	No
	Electrical supply	12 volt, 3-pole	
Dimensions	Frame width	200 – 300 cm	
	Track width	150 – 200 cm continuously adjustable	
	Width incl. crate storage	Depending on track width, plus 64 cm in transport position and plus 184 cm in working position	
	Length	280 cm	270 cm
	Height	140 cm, 170 – 200 cm with fertiliser hopper	
Weights	Basic machine two assemblies	880 kg	740 kg
	Each additional assembly	200 kg	155 kg
	Crate stocking	60 kg	
	Root zone fertilisation	260 kg	

NATURE GIVES BACK GENEROUSLY

The effects of soil coverage and root penetration

Evaporation and erosion protection

In recent years, as a result of climate change, there have been more dry years with long periods of drought during summer, punctuated by individual bouts of heavy rain. In the described cultivation system, winter cover crops are able to convert winter rain into biomass. In turn, the biomass is converted into a mulch layer, which conserves the soil moisture and most importantly has the ability, due to its high infiltration capacity, to absorb and store heavy rain without it causing erosion. By covering the soil with organic mulch, unproductive evaporation via the soil is almost completely interrupted. The only evaporation that takes place is via the leaves of the crop. This enables considerable volumes of water to be saved.



MULCH WITHOUT TILLAGE
356 earthworms / m^2
0,44 g / earthworm
= 1566 kg/ha
Equates to the weight of approx. 3 cows/ha

TILLAGE WITHOUT MULCH
122 earthworms / m^2
0,30 g / earthworm
= 366 kg/ha
Equates to the weight of approx. 0.7 cows/ha

"For soil to be described as being of good tilth, the crust must remain crumbly throughout the entire growing season and not collapse as a result of the silting effect of water."

– Margareth Sekera, "Healthy Soils, Sick Soils" (translation from the German)

Soil structure at harvest time
14 months without tillage

Nutrient absorption from the mulch

In a natural environment, nutrients accumulate on the soil surface and are then absorbed by the fine roots of the plant. The organically-bound nitrogen in the mulch material mineralises first of all into ammonium. Even at this stage, the crop's fine roots absorb the nitrogen based on their needs and photosynthetic capacity. It is a healthy form of plant nutrition. As for the soil life, the material and its nutrients are provided in bite-sized form. The organic material is intensively converted into clay-humus complexes, which stabilises the nutrients. The nutrients are then available for longer periods of time based on requirements.

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MulchTec is a brand of live2give.
This non-profit company carries out projects in health promotion, education and research.