



MEKY – CULTIVATOR

12, 18 OR 24 ROWS

CULTIVATION AND FERTILISATION DURING THE VEGETATION OF SUGAR BEET, MAIZE, VEGETABLES OR RAPE



HIGHER YIELD, MINIMISATION OF SOIL EROSION, REDUCED CONSUMPTION OF MINERAL FERTILIZERS, THOSE ARE THE BENEFITS OF BETWEEN-ROW HOEING OF SUGAR BEET.

Sugar beet growth on slightly sloping fields may be damaged by water and wind erosion, especially in the early stages of development, i.e. in the germination period. Soil is endangered until full engagement of the sugar beet growth (in about mid June). As for the climate, that period is often affected by heavy rains which may greatly damage the land and growth by water erosion.

Between-row cultivation of sugar beet in the vegetation period with the MeKy machine greatly improves the progress of vegetation and, above all, the yield. Sugar beet reacts very positively to hoeing and soil aeration. The MeKy machine may also be used for mineral fertilizer application. Another major benefit of between-row cultivation is the elimination of weeds via this agro-technical intervention.

CULTIVATION AND FERTILISATION OF SUGAR BEET DURING VEGETATION



Increased yield, elimination of soil crust.

Between-row hoeing increases root yield in comparison to non-hoed beet growth. Deep hoeing in the middle of the between-row area immediately before growth engagement shows a very positive effect. Trials have proved that in humid years when soil crust develops hoed growth root yield is much higher.



Easy transport of the machine to the field.

The transport position of the machine does not incur any traffic restrictions when the machine is transported on by roads. The operator's broad field of vision ensures safe machine transport to the field. The main benefit of the front-mounted cultivator is that the working machine is within the operator's field of vision.



Adjustment for maize and other crops.

The MeKy between-row cultivator can be easily adapted to maize growth hoeing. In this case, the tool engagement is not changed, just the number of work units. Maize is hoed in an 8, 12 and 16-row system, depending on the machine type. Generally, the machine can be adjusted to non-typical row spacing, such as for the hoeing of vegetables and some technical crops.



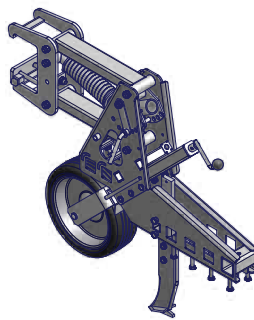
Camera guidance option.

The MeKy machine can be optionally equipped with a camera system for row guidance. The question is whether this is necessary at all. If the machine is front-mounted then the easy operation and optimum sensitivity to fine direction changes are so obvious that investment in a guidance system is redundant. Work speed and accuracy do not improve with the guide. They may even bring trouble in the case of uneven growth or missing plants in rows, or due to the presence of weeds.



Easy change from front to rear variant.

The front-mounted MeKy machine frame is designed to be rebuilt easily by the farm staff themselves to the rear-suspended variant, if required by the technology, or the tractor's readiness, or by the agronomist's decision.

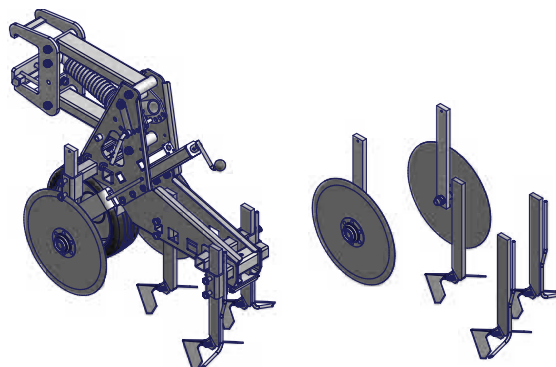


Deep-hoeing cutter with bilateral wings.

MeKy machine work units are equipped with cutters to deepen and improve soil structure. Hoeing depth may be 12–15 cm. This operation creates a coarse soil texture on the hoed soil surface. This condition eliminates water erosion.

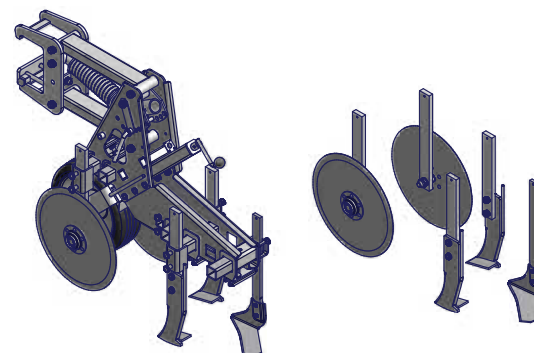


The between-row cultivator is equipped with proprietary work units and tools, some of them also proprietary. This is its main innovative benefit and the result of long-term testing and cooperation with the research team.



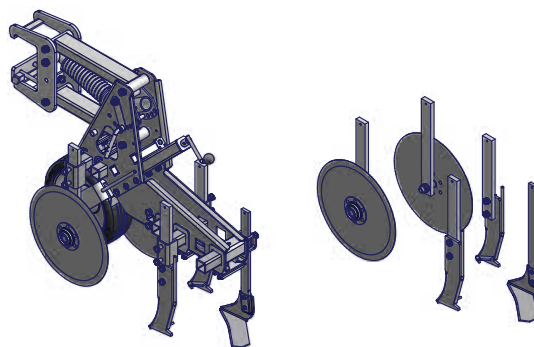
Set of three arrow ploughshares on fixed tine and cutting disc.

This is the classical concept used when the bottom of the processed soil strip is flat and shallow. These tools usually leave the soil crumbly and thus the set is recommended for classical hoeing of medium-heavy to heavy soil where water erosion is not an issue. The penetration of the applied fertilizer is shallow and slow, depending on the soil's moisture content.



The variant for processed soil bottom shaping – flat chisels with a fertilizer feed and a flat ploughshare.

This work tool set is proprietary. Its novelty and originality is in that the chisels make a deeper furrow at the edges of the processed soil strip. The central coulter is working shallowly. This makes a DAM-shaped bottom. In the case of heavy rain, the grooves on the edges show considerable retention quality for water erosion reduction. On the other hand, in the case of insufficient rain, the bottom shape directs water to the sides, i.e. to the plant roots and where the fertilizer is placed. The surface texture of the soil is much coarser than in the case of the classical arrow ploughshare. That also limits erosion. In this case, the fertilizer penetrates the soil more quickly in the shape of an ellipse towards the plant roots.



Groove-making chisel for liquid fertilizer application with hoeing pin and flat ploughshare.

This tool set achieves even deeper engagement and creates an even wider retention area for heavier rains. Setting different depths of engagement of the shaping cutters and the central coulter produces a DAM-shaped bottom. In the case of heavy rain, the grooves on the edges show considerable retention quality for water erosion reduction. On the other hand, in the case of insufficient rain, the bottom shape directs water to the sides, i.e. to the plant roots and where the fertilizer is placed. The coarse soil texture after hoeing eliminates water erosion. Fertilizer penetration is deep and directed towards the plant roots.

CULTIVATION AND FERTILISATION OF SUGAR BEET DURING VEGETATION



Fertilizer tank

New concept of the MeKy machine. That means the tool frame on the front hydraulic suspension of the tractor and the fertilizer tank on the rear three-point hinge of the tractor. The result is a very favourable machine weight distribution of 50 / 50, according to the tank volume and the current fertilizer quantity.

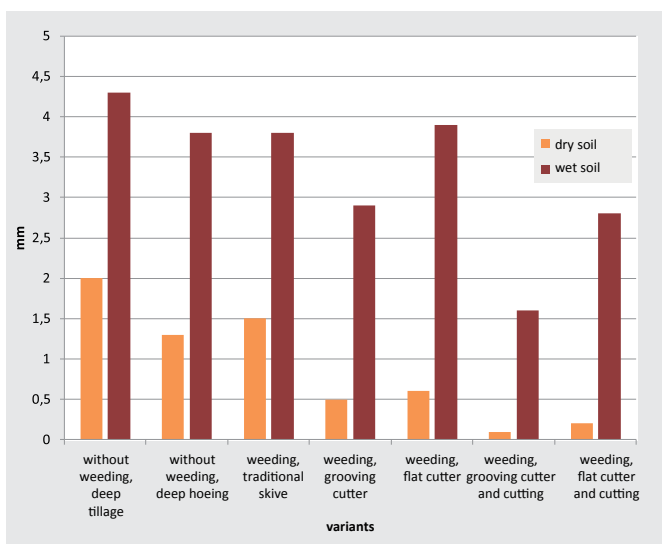
The size of fertilizer tank capacity, depending on the width of machine, may be 1000 l, 1600 l or 1800 l.

The machine includes a clean water container for operator hand washing, filter cleaning and flushing of complete machine system.

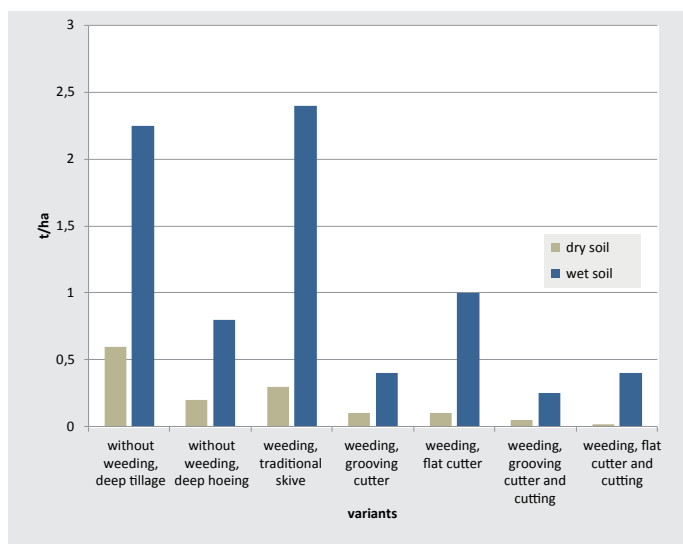
The effect of between-row hoeing on water erosion reduction

For several years we and the design team have performed water corrosion resistance tests on individual technological procedures on slightly sloping sugar beet fields. The staff of the Zbraslav Research Institute repeatedly applied rain from the rain simulator on the test fields. The results are shown in the flow chart below. It is clear that the new proprietary work tools show much better results than other technologies. These tools modulate the bottom

of the processed soil strip, creating a DAM-shape for strong reduction of water erosion. In the case of heavy rain, the grooves on the edges show considerable retention quality for water erosion reduction. On the other hand, in the case of insufficient rain, the bottom shape directs water to the sides, i.e. to the plant roots and where the fertilizer is placed.



Surface run-off during the course of testing the anti-erosion effect of soil hoeing between sugar beet rows. (Source: VÚMOP Prague)



Soil loss during the course of testing the anti-erosion effect of soil hoeing between sugar beet rows. (Source: VÚMOP Prague)

TECHNICAL DATA	MODEL		
	MEKY-12/8	MEKY-18/12	MEKY-24/16
Length	2250 mm	2270 mm	2270 mm
Number of sugar beet/maize rows	12/8	18/12	24/16
Transport width	2980 mm	2980 mm	2980 mm
Transport height	980–1350 mm	980–1350 mm	980–1350 mm
Height	3750 mm	3965 mm	3965 mm
Operating weight	930–1540 kg	1515–2167 kg	1515–2656 kg
Maximum permitted weight	1540 kg	2167 kg	2656 kg
Fertilizer tank volume	1000 l / 1600 l / 1800 l	1000 l / 1600 l / 1800 l	1000 l / 1600 l / 1800 l
Working speed	8–12 km/h ⁻¹	8–12 km/h ⁻¹	8–12 km/h ⁻¹
Required aggregation	100–140 Hp	140 Hp	160 Hp
Hydraulic circuit	min 1	min 1	min 1