Kverneland

PACKER

SOIL RE-CONSOLIDATION

WHEN FARMING
MEANS BUSINESS

Realising the full potential of farming is about growing and developing your business, not only your crop or livestock, but also your profit. Improve productivity and profitability by focusing on the positives and minimising disadvantageous aspects, through strong, dedicated management.

Success springs from determination and clear targets, from laying down the appropriate strategy and allocating correct investments for the future. Quality results require the right ideas and equipment. When there is work to be done, you need the optimal setup and smart solutions that support you towards an easier, more profitable way of working. You need solutions that make tough and demanding conditions less complicated.

TILLAGE

Preparing and cultivating your soil in order to achieve the highest possible yield is about choosing the correct tillage system

YOUR KVERNELAND
INTELLIGENT FARMING SOLUTIONS

Choose the best farming solution for you and your land. Combine the highest possible yields with sustainability. This will start with the correct tillage. The choices you make depend on various factors and has to match your specific circumstances, like soil structure, crop rotation, residue management, economic and ecological viabilities.

The choice is yours!

You must consider environmental and legal issues. From conventional methods to conservation tillage: the balance of operations at the right time has to be found to achieve high yields with the best soil condition (air, moisture, biological activity, etc.) with a minimum amount of energy, time and investment. For this, Kverneland offers a full range of intelligent farming solutions.

CONVENTIONAL TILLAGE

Conventional Tillage
- **Intensive** method of cultivation
- Complete soil inversion e.g. by a plough
- Less than 15-30% crop residues left on soil surface
- Seedbed preparation done by an active tool or special seedbed harrow
- High phytosanitary effect by reduced pressure of weed and fungi diseases - fewer herbicides and fungicides needed
- Better dry-off and faster increase of soil temperature for better nutrients absorbation

CONSERVATION TILLAGE

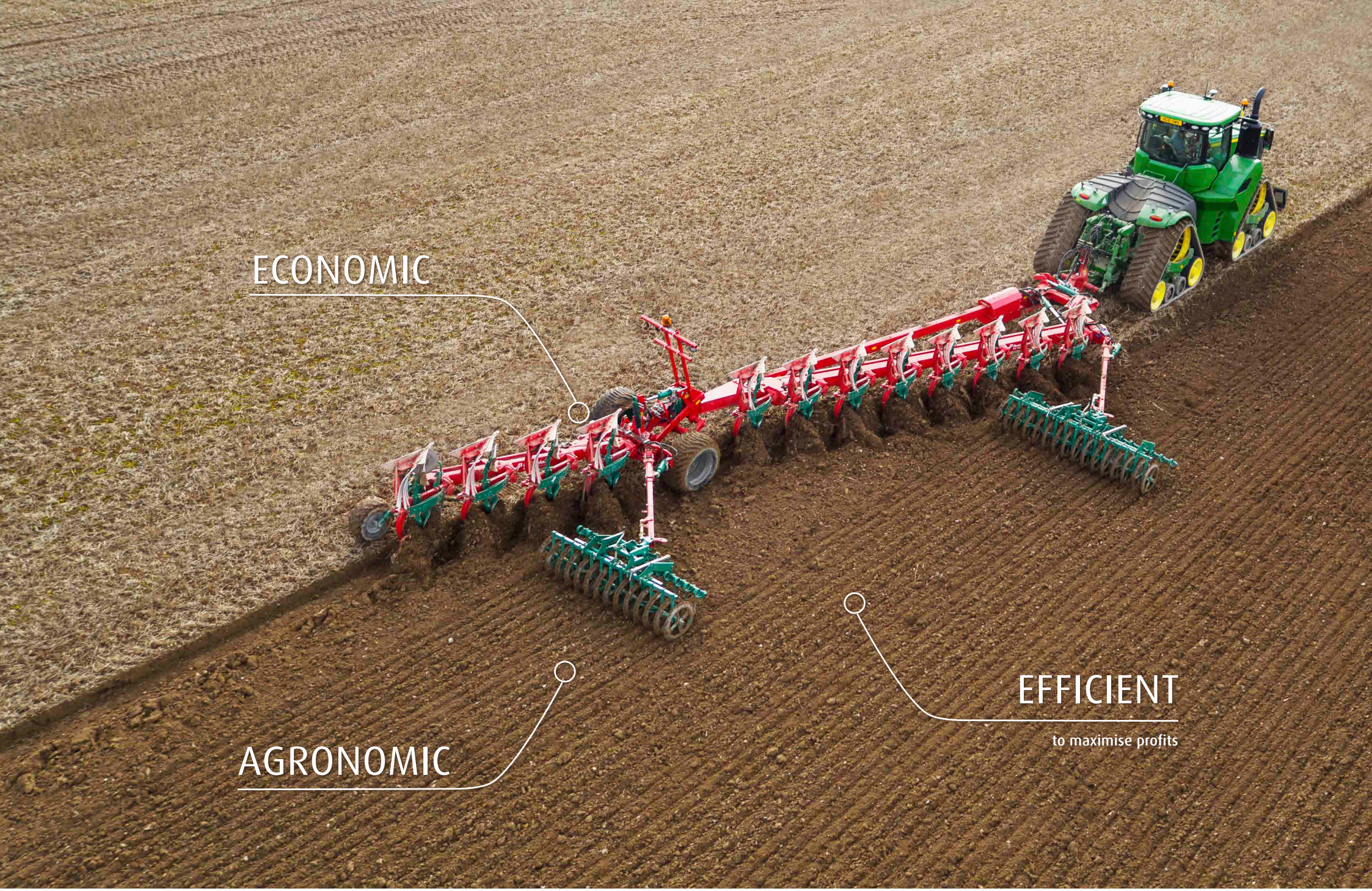
Mulch Tillage
- **Reduced** intensively in terms of depth and frequency
- More than 30% of residues are left on soil surface
- Extended repose period of the soil
- Cultivator and/or discs incorporate the crop residues within the top 10cm of soil for stable bearing soil
- Full-width tillage - seedbed preparation and seeding in one pass
- Protection against soil erosions with reduced lost of soil and water
- Improvement of soil moisture retention

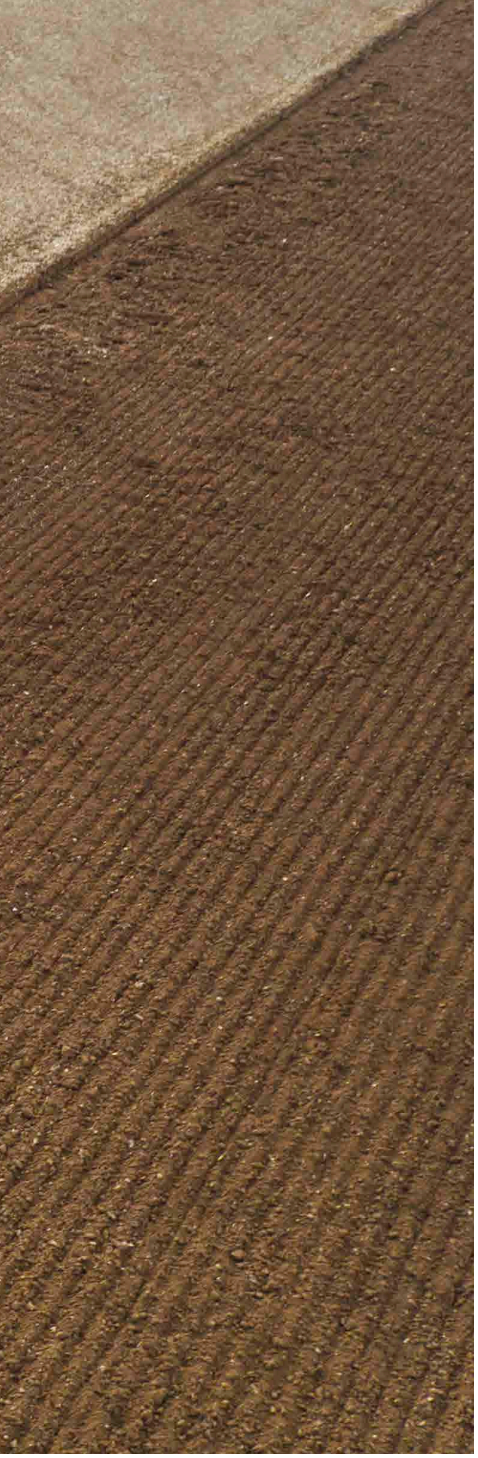
Strip Tillage
- **Strip-wise** loosening before or during seeding of up to 1/3 of the row width (Loibl, 2006). Up to 70% of the soil surface remains untouched
- Strip-till combines the soil drying and warming benefits of conventional tillage with the soil-protecting advantages of no-till by disturbing only the area of the soil where the seeds are placed
- Exact fertilising deposit
- Soil protection against erosion and drought

Vertical Tillage / No-Till
- **Extensive** method
- Working soil vertically avoids additional horizontal layers or density changes
- Increasing water infiltration, root development and nutrient take-up
- Plants' roots dictate the overall health of the plant, as they deliver nutrients and water throughout, contributing to a higher yield
- A strong set of roots make plants more resistant to wind and drought.
- Indirect energy input

CROP ESTABLISHMENT SYSTEMS					KVERNELAND'S INTELLIGENT FARMING SOLUTION					
Method					Deep Tillage (not a must)	Basic Tillage	Seedbed Preparation	Seeding	Spreading	Spraying
CONVENTIONAL	intensive	Soil coverage after Seeding	up to 15%	**Conventional** with soil inversion						
			15 - 30%	**Reduced Till** without soil inversion						
			> 30%	**Mulch Seeding** without soil inversion						
				Strip Tillage stripewise loosening						
	extensive			**VertiCal Tillage** shallow tillage						

CLASSIFICATION OF TILLAGE METHODS KVERNELAND (Source: adpated from KTBL)


ECONOMIC
AGRONOMIC
EFFICIENT
to maximise profits



OPTIMISE PLOUGHING
WITH DIRECT SOIL RE-CONSOLIDATION

Agronomic
Re-consolidate soils right after ploughing or directly before seeding, crushes coarse clods and favorises moisture.

Efficient
A wide range of tools to re-consolidate soils is available from Kverneland. They adapt to any soils conditions and customs.

Economic
Completing 2 operations in 1 only pass saves time. Less fuel gets used too.

OVERVIEW

MAXIMISE SOIL RE-CONSOLIDATION BENEFITS

Ploughing alone benefits most soils. Re-consolidation after ploughing or before seeding increases productivity and favours higher yields.

Agronomic benefits

The combination of ploughing and re-consolidating is both efficient and environmentally friendly. Soils are loosened, organic matters are incorporated to enrich the soils. Weeds are controlled mechanically. The elevation of temperature of the ploughed soil is actually positive. The associated water evaporation is limited by the immediate re-consolidation via packers. Water capilarity is hence re-established for the benefit of the soil life.

Maximise efficiency

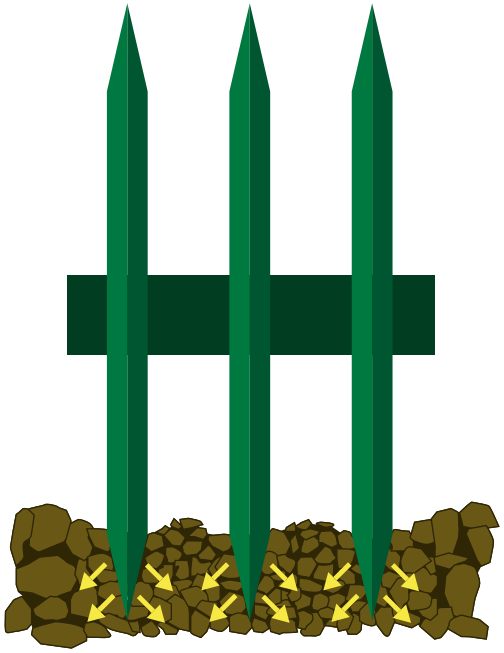
Driven by efficient crop management processes, as a farmer, it is difficult to grant sufficient time for the soil to settle by itself. Furthermore, soil moisture shall be maintained to ensure a good germination after seeding.

Kverneland's re-consolidating tools are therefore recommended in combination with ploughing or directly before seeding. Coarse clods get crushed, soil is re-consolidated with a favourable soil moisture.

Higher profitability

Profitability is generally improved by either cutting down costs or improving yields. By re-consolidating soils either during ploughing or directly before seeding, the profitability improves on both ends. Cost are reduced by completing 2 operations simultaneously. The fuel consumption is optimised too. Yields will improved due to the re-consolidation of the soils.

TOOLS FOR RE-CONSOLIDATION
PACKER PRINCIPLE

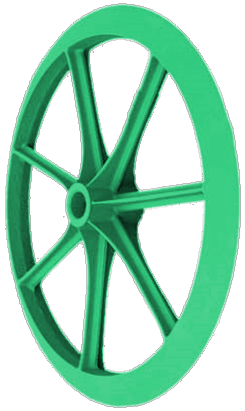


The soil packers are also called furrow presses. Single or double row rollers, they are pulled while ploughing. Positioned beside the plough, they re-consolidate the plough furrow while the soil still contain moisture.

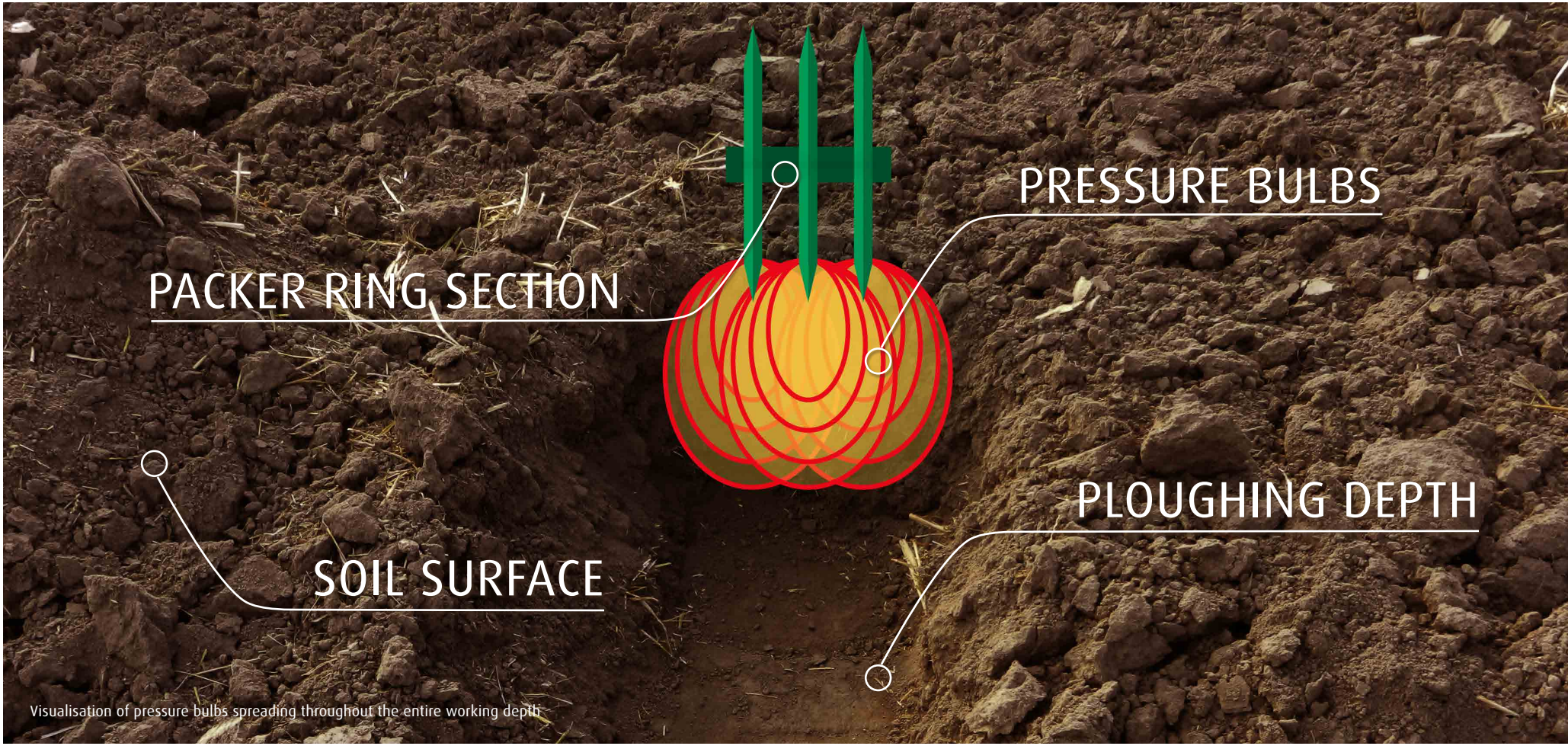
Kverneland soil packers suit different soils conditions and local customs. One can choose among 30° (Packomat) to 50° heavy cast iron rings shape. Their diameter is equally important when it comes to the levelling of the soil surface. 700 and 900 mm rings have proved to be the most popular for the models SP, DP, FP, TP. For the Packomat, 480 and 600 mm rings give the best results.

The ring profile compacts the soil from the top down to the ploughing horizon. A crumbling roller with 550 mm diameter is available to crumble the top layer, hence limiting erosion, and to create a seedbed.

The packer rings consolidate the freshly ploughed land in order to reach a better soil structure. Kverneland's packers enable soil re-consolidation, seedbed preparation, crumbling and levelling of the plough furrows. The soil is hence ready for a fast and good plant growth.

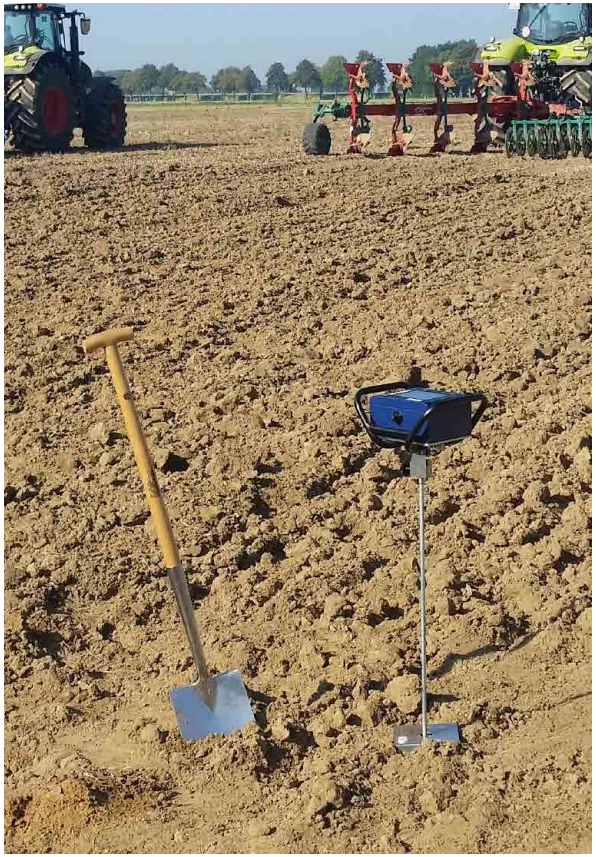


BULB PRESSURE THEORY



Visualisation of pressure bulbs spreading throughout the entire working depth

CHOOSING THE CORRECT TOOL
FOR A SUCCESSFUL SOIL PREPARATION



Three different solutions for re-consolidation during ploughing

The soil re-consolidation is influenced by the choice of packers.
Kverneland made a test in 2016. It compared and measured the re-consolidation results when using 3 different packers:

- Kverneland Packomat
- Kverneland Trailed Packer
- Integrated competitor system

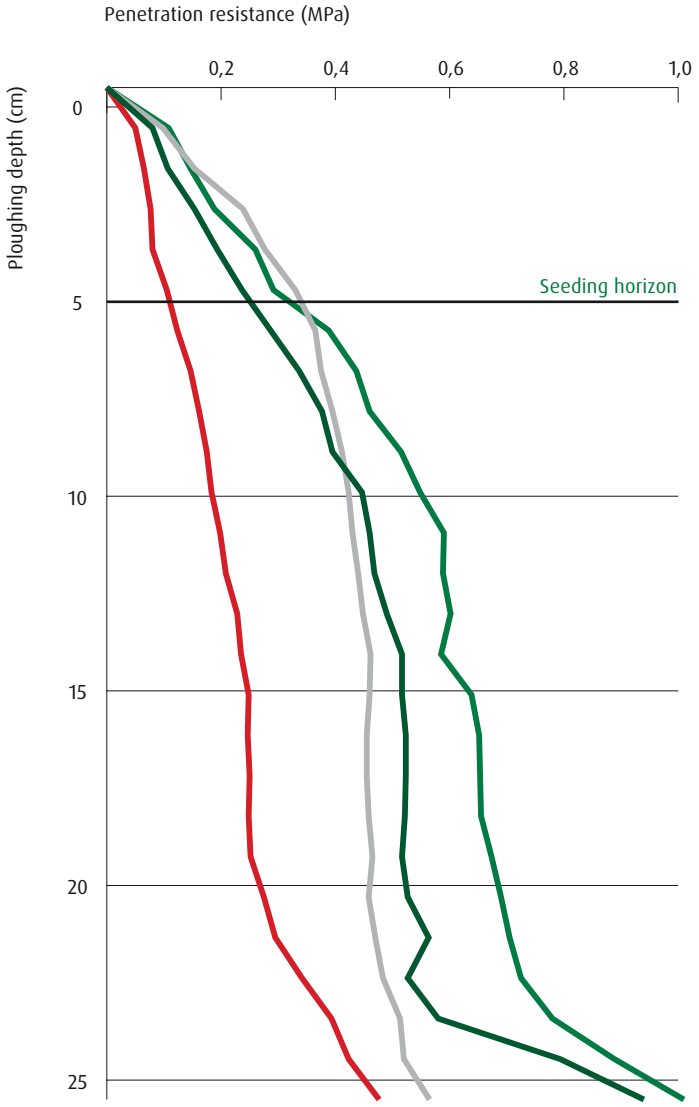
TEST RESULTS

The re-consolidation of the soil after ploughing has been analysed after using three packer systems: Kverneland Packomat, Kverneland packer and a competitor packer.

The graph compares the results from the actual re-consolidation and shows that:

- using a packer has a significant re-consolidation effect compared to ploughing alone.
- from an agronomic point of view, the Packomat and the trailed packer positively impact the entire ploughing depth.
- the competitor system shows a lower degree of re-consolidation directly underneath the seeding horizon (5 cm).

Source: Kverneland Group, Klepp, Haus Düsse, 2016

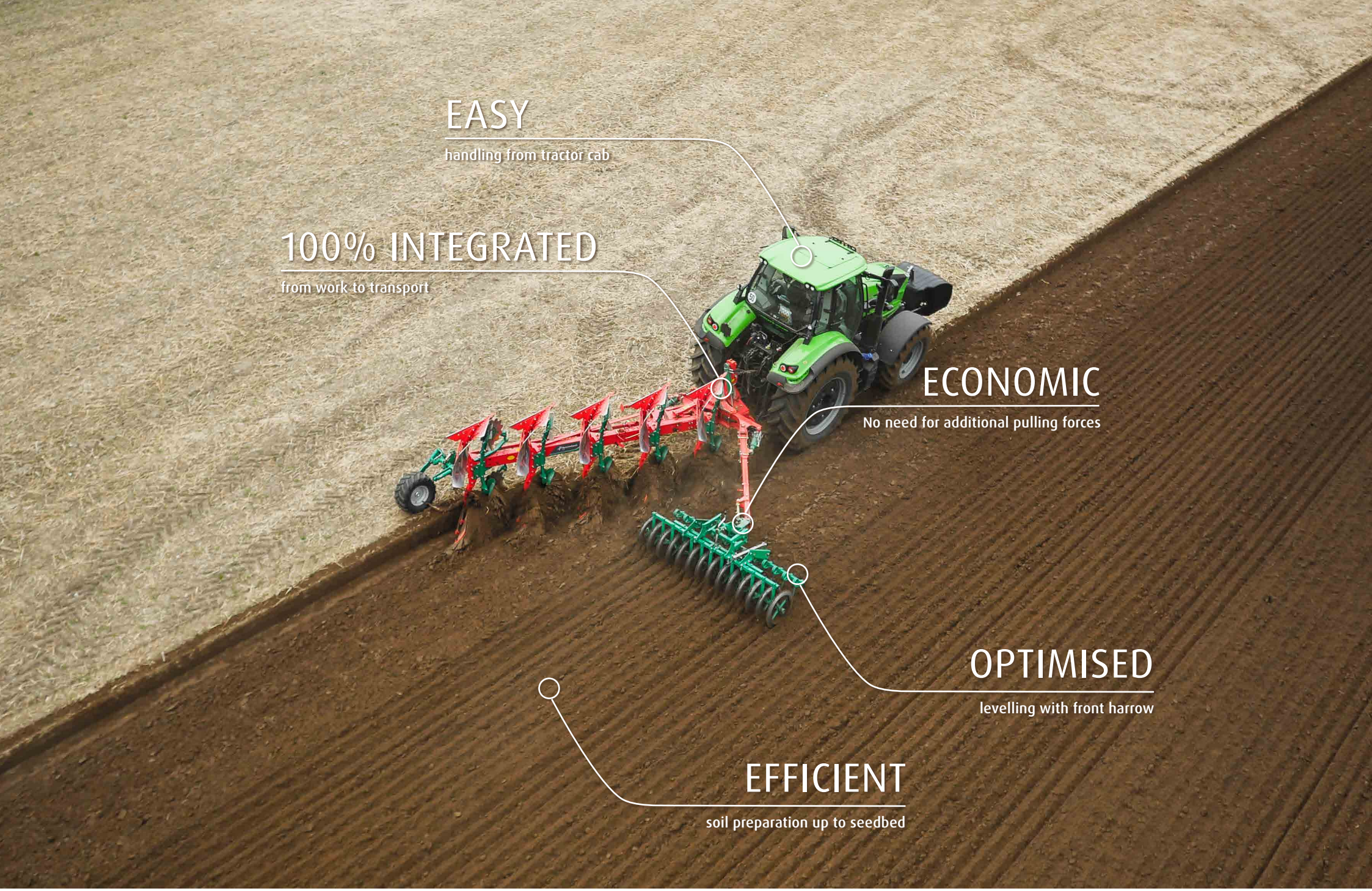


Kverneland Trailed Packer

Kverneland Packomat

Competitor system

Plough without Packer


EASY
handling from tractor cab
100% INTEGRATED
from work to transport
ECONOMIC
No need for additional pulling forces
OPTIMISED
levelling with front harrow
EFFICIENT
soil preparation up to seedbed

KVERNELAND PACKOMAT
EFFICIENT SOIL PREPARATION

100% integrated Packer
Packomat follows the plough from transport to work. Compared to other packers, the Packomat offers high productivity gains.

Easy handling
From the tractor cabin, it is easy to position the Packomat for transport or work. The Packomat can remain lifted on field bonderies.

Optimised levelling
Choice of front harrows to crush clods and ease the ring soil re-consolidation.

Economic
Packomat contributes to the balance of the plough in work. No extra pulling forces are needed. Its design reduces landside pressure and their wear. No need for extra manpower for transport

Efficient
Packomat works in any ploughing conditions. Soil preparation can be extended to seedbed.
Available from 4 to 12 furrow Kverneland ploughs, Packomat is an efficient tool.

Packomat is a Kverneland invention

KVERNELAND PACKOMAT
EFFICIENT SOIL PREPARATION

Packomat works in all ploughing conditions. It levels, re-consolidates, crushes clods, prepares seed beds, from light-dry to heavy-wet soils.

Packomat is rigidly mounted via a packer arm. The latter is made of a specially hardened spring steel. By means of that arm, weight transfer takes place from the plough to the Packomat to ensure that the packer works the soil with the correct "field pressure".

Easy packing pressure adjustments. More than 1250 kg* pressure gets easily regulated by means of a turnbuckle or an optional hydraulic cylinder.

Low pulling forces

The Packomat does not require any extra pulling force than for the plough alone. The support of the depth wheel on one side and the Packomat on the other side, balance even better the Kverneland plough. Less landside pressure actually reduces the draft requirements.

*Based on a 5-furrow plough with 2,80 m Packomat

PACKOMAT FOLLOWS THE PLOUGH
DURING WORK

User friendly

Packomat, being an integrated packer, is easy to use. It follows the plough automatically.

For the first pass next to field edge, lift up the packer arm.

At the headland, the Packomat reverses side with the plough.

Lower then the plough to start ploughing, the Packomat follows the plough and starts re-consolidating the ploughed soil.

At the headland, lift the plough and the Packomat follows the same movement automatically.

PACKOMAT FOLLOWS THE PLOUGH
DURING TRANSPORT

Narrow transport width
Smart: the roller can be mechanically or hydraulically adjusted to get transport width within tractor width.

No additional tractor or manpower required for transport.

20 years of successful experience

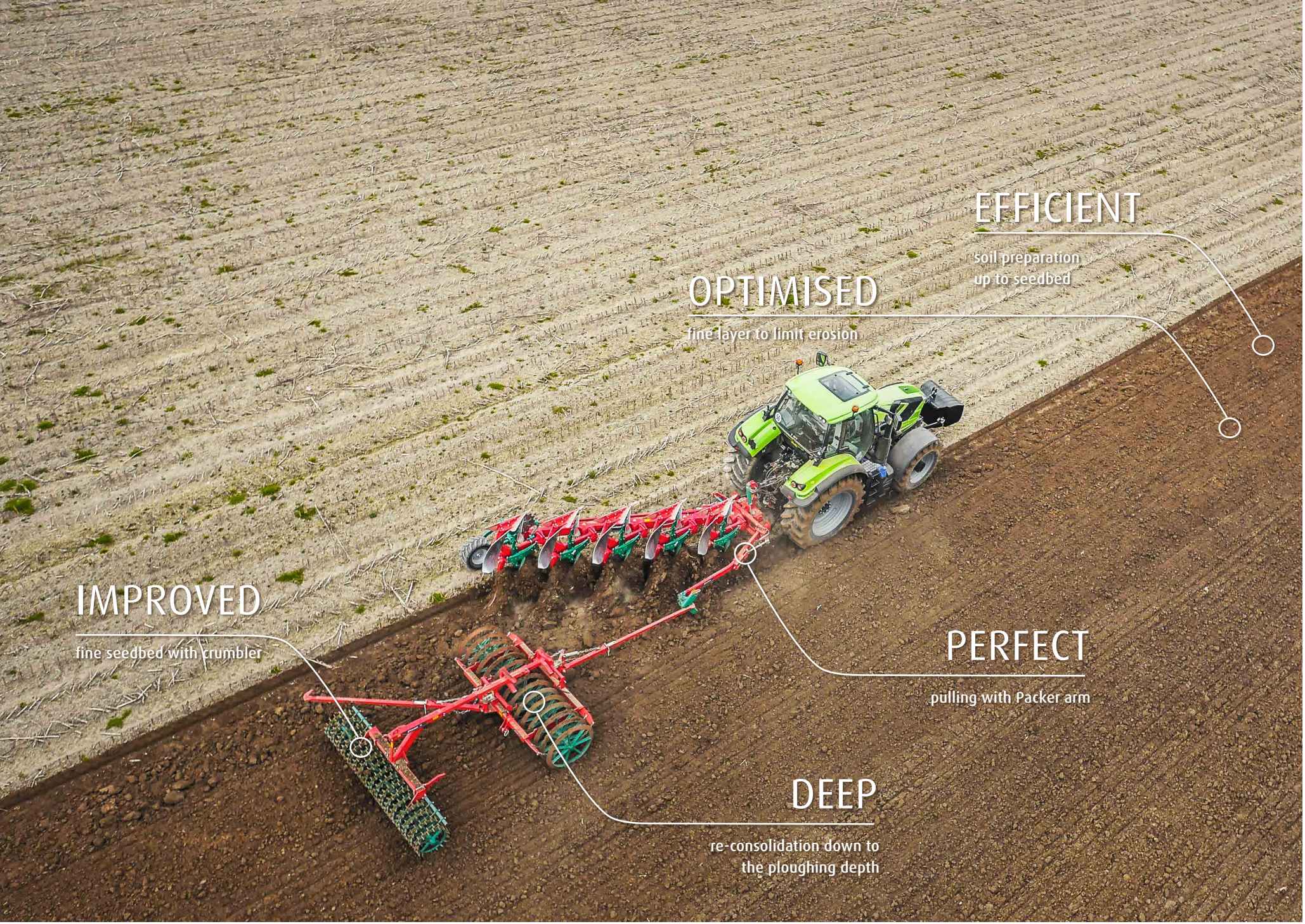
up to 6 furrow Mounted ploughs
up to 12 furrow PW/RW Semi-mounted ploughs by combining 2 rollers

TECHNICAL DATA

20 cm ring distance Ø 60 cm rings
(optional Ø 48 cm)

Single front harrow: 16 mm tines with rev. points or
20 mm tines with blade points

Packomat	Working width m	Ring spacing cm	Ring Ø mm
4 furrow ring sections	2,40	20	480/600
5 furrow ring sections	2,80	20	480/600
6 furrow ring sections	3,20	20	480/600
8 furrow ring sections	4,00	20	480/600


EFFICIENT
soil preparation
up to seedbed
OPTIMISED
fine layer to limit erosion
IMPROVED
fine seedbed with crumbler
PERFECT
pulling with Packer arm
DEEP
re-consolidation down to
the ploughing depth

KVERNELAND TRAILED SOIL PACKER
HEAVY DUTY SOIL PREPARATION

Single Packers (SP) and Single Turn-around Packers (TP)

These packers are ideal for heavy-duty re-consolidation in light to medium soils. The crumbler roller, part of the single turn-around combination, adds a crumbling effect and refines the seedbed preparation.

Re-consolidate the soil structure while ploughing to keep the moisture needed for optimum crop establishment. The Kverneland plough packer arm enables an easy release and hooking of the packer at headlands.

As good and even easier

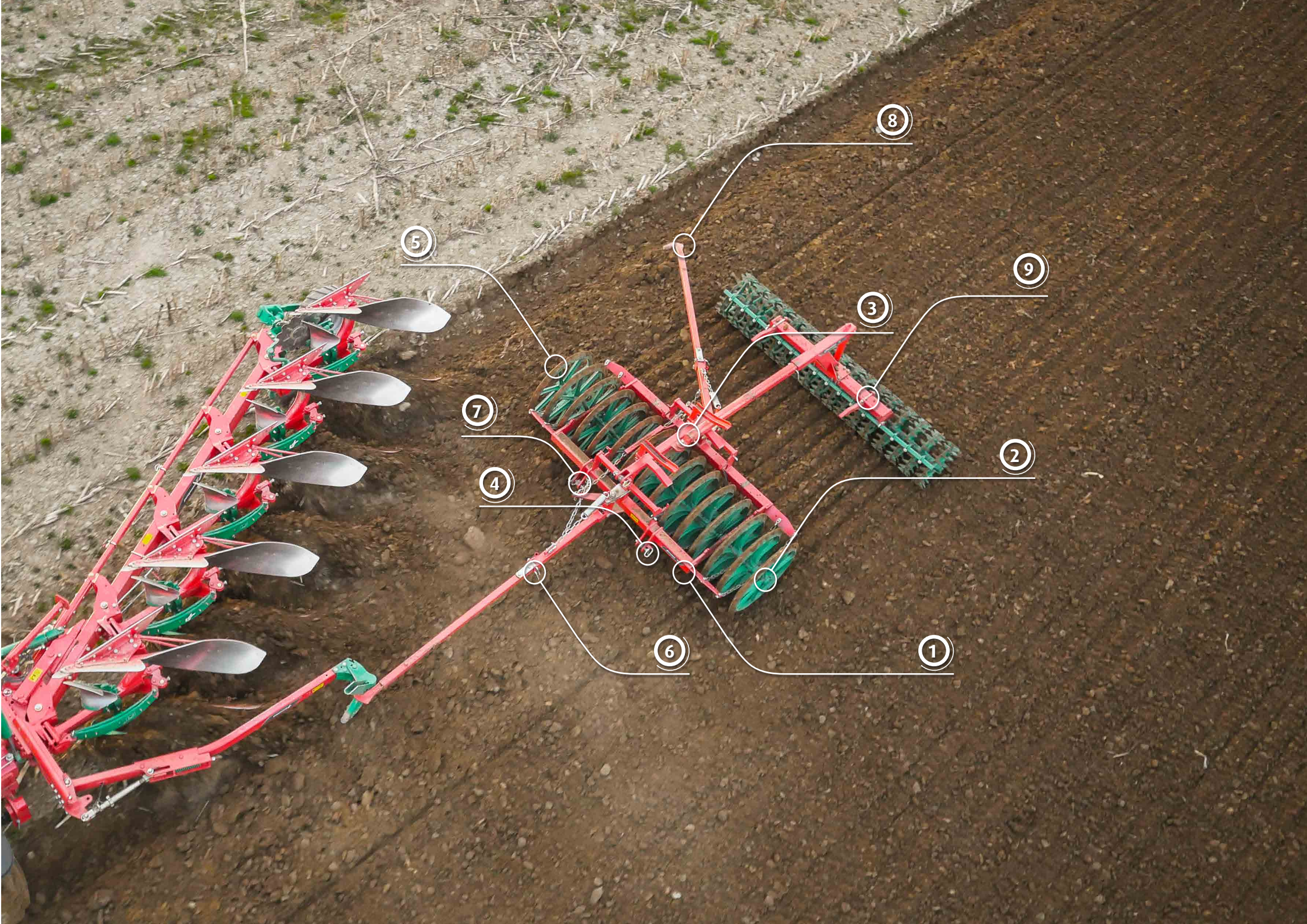
Packer configuration	Ring diameter mm	Ring profile	Soil conditions				
			light	light/ medium	medium	medium/ heavy	heavy
Single Packer (SP)	900	50°					
Single Turn-around Packer (TP)	900	50°					

SINGLE PACKER AND SINGLE TURN AROUND PACKER
KVERNELAND SP/TP

1. Strong extendable frame (axle needs to be changed)
2. High-tensile axle with maintenance-free bearings:
   - 2 bearings up to 2,90 m
   - 4 bearings for bigger sizes
3. Pivot bolt for additional crumble roller
4. Connection to 3-point linkage Cat. II
5. Strong gray cast iron

Options

6. Vertically adjustable pulling arms for reversible ploughs with damper system (from 2,10 m)
7. Jerk chain for conventional plough
8. Special Kverneland hook
9. Lightning kit


8
5
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1

PACKER ARM

with shock absorber

PACKER ARM

STRONG AND RELIABLE

Packer arm connecting to the packer

Spring system

Kverneland packer arm is available for all Kverneland mounted reversible ploughs and for all packers.

Packer arms are connected to the headstock on most of the Kverneland plough models in order to minimize additional side forces during ploughing. The specific design of the 2500 i-Plough allows the packer arm to be connected directly to the main frame.

Quick, easy and smooth operations thanks to the hydraulic release system and to the spring system which absorbs shocks. Simple manual handling for transport position.

TECHNICAL DATA

KVERNELAND SP: SINGLE PACKER 900

Kverneland SP: Single Packer, rings Ø 900 mm 50°	Weight kg	Number of rings	Working width m
SP 901-210	1 072	11	2,10
SP 901-230	1 168	12	2,30
SP 901-270	1 346	14	2,70
SP 901-290	1 428	15	2,90
SP 901-330	1 665	17	3,30
SP 901-350	1 738	18	3,50
SP 901-370	1 834	19	3,70
SP 901-390	1 930	20	3,90
SP 901-410	2 012	21	4,10
SP 901-430	2 094	22	4,30

TECHNICAL DATA

KVERNELAND TP: SINGLE PACKER WITH CRUMBLER

Kverneland TP: Single Turn-around Packer, rings Ø 900 mm 50°, crumbler roller Ø 550 mm	Weight kg	Number of rings	Working width m
SPC 901-210	1 646	11/13	2,10
SPC 901-230	1 777	12/14	2,30
SPC 901-270	2 025	14/16	2,70
SPC 901-290	2 137	15/17	2,90
SPC 901-330	2 524	17/20	3,30
SPC 901-350	2 597	18/20	3,50
SPC 901-370	2 748	19/22	3,70

KVERNELAND TRAILED SOIL PACKER
CRUMBLER

Crumbler, rings Ø 550 mm	Weight kg	Number of rings	Working width m
CR 55-220	475	13	2,20
CR 55-240	510	14	2,40
CR 55-280	580	16	2,80
Cr 55-300	610	17	3,00
CR 55-350	760	20	3,50
CR 55-380	815	22	3,80

- Fine seedbed preparation and levelling thanks to the 550 mm notched crumble rings. The produced fine top layer also limits erosion.
- Additional hooked crumble roller on pivot bolt
- Easy turning process
- Extendable
- Self-cleaning with integrated scrapers
- Strong gray cast iron rollers

Options:

- Standard drawbar with brackets
- Telescopic drawbar with saddle brackets for transport
- Transport wheels with mechanical handling
- Lightning kit


Kverneland TP


PERFECT
pulling with Packer arm
IMPROVED
crumbling effect
DENSE
re-compaction/cm³

KVERNELAND TRAILED SOIL PACKER
FOR EXTREMELY LIGHT TO MEDIUM SOILS

Double Packers and Double Turn-around Packers. The Kverneland DP adapt to soils by choosing a specific ring profile. A fine seedbed is obtained by adding a crumbler roller. The packer is then called Kverneland TP. The Kverneland DP enables a more evenly packed soil than the SP, more rings being used for the same area. A deeper re-compaction can be achieved by a 38 degree ring profile.

Standard

- 900mm rings, profile 38° or 50°
- Strong extendable frame (axle needs to be changed)
- High-tensile axle with maintenance free bearings, 2 bearings up to 2,90m, 4 bearings for bigger sizes per axle
- Pivot bolt for additional crumble roller
- Connection to 3-point linkage Cat. II

Options

- Vertical adjustable Pulling arms for reversible ploughs with damper system (from 2,10 m)
- Jerk chain for conventional plough
- Special Kverneland hook
- Hydraulic length-transport system
- Lightning kit

Ideal for varying soil conditions

Packer configuration	Ring diameter mm	Ring profile	Soil conditions				
			Light	Light/ medium	medium	medium/ heavy	heavy
Double Packer	900	38°					
	900	50°					
Double Turn-around Packer	900	38°					
	900	50°					

KVERNELAND TRAILED SOIL PACKER
TRANSPORT

Kverneland DP

Kverneland TP

- Easy transport in front or rear 3-point linkage
- Manual assembly and disassembly of Pulling arms
- Pulling arms during transport in brackets fixed

TECHNICAL DATA

KVERNELAND DP: DOUBLE PACKER

Double Packer, rings Ø 900 mm 38°	Weight kg	Number of rings	Working width m
DP 901-225	1 414	15	2,25
DP 901-255	1 605	17	2,55
DP 901-285	1 766	19	2,85
DP 902-315	2 076	21	3,15
DP 902-345	2 219	23	3,45
DP 902-375	2 363	25	3,75
DP 902-405	2 554	27	4,05
DP 902-435	2 720	29	4,35
Double Packer, with hydr. Transport system			
DP 902-315 FW	2 434	21	3,15
DP 902-345 FW	2 577	23	3,45
DP 902-375 FW	2 722	25	3,75
DP 902-405 FW	2 913	27	4,05
DP 902-435 FW	3 078	29	4,35

Double Packer, rings Ø 900 mm 50°	Weight kg	Number of rings	Working width m
DP 901-225S	1 484	15	2,25
DP 901-255S	1 687	17	2,55
DP 901-285S	1 858	19	2,85
DP 902-315S	2 173	21	3,15
DP 902-345S	2 321	23	3,45
DP 902-375S	2 476	25	3,75
DP 902-405S	2 679	27	4,05
DP 902-435S	2 855	29	4,35
Double Packer, with hydr. Transport system			
DP 902-315S FW	2 532	21	3,15
DP 902-345S FW	2 680	23	3,45
DP 902-375S FW	2 835	25	3,75
DP 902-405S FW	3 037	27	4,05
DP 902-435S FW	3 215	29	4,35


DEEP
re-consolidation down to the ploughing depth
PERFECT
for combinations
MAXIMISE
levelling
EASY
to manoeuvre

KVERNELAND FRONT PACKER
A CONVENIENT ALTERNATIVE

Easier to handle than a trailed packer at headlands, the FP can be used immediately before seeding. Re-consolidating after ploughing in wet conditions is not recommended. The front packer becomes the solution to re-consolidate once the ploughed soil has dried up. Leveling and crushing of clods is then more efficient.

Maximise efficiency

The Kverneland FP levels soils efficiently. It adapts to soils thanks to the availability of several ring profiles (38°, 45°, 50°). Front tines can be added in difficult soil conditions. The Kverneland FP offers capacity with a 3-6 meters working width and remains easy to manoeuvre via the passive steering with a damping system.

Maximise productivity

Two operations in one pass. Levelling in combination with seedbed preparation or levelling and seeding can be executed in one pass. Kverneland FP in the front of the tractor and a seeder or power harrow in the rear. Use only one tractor with two implements at work and in transport.

Packer configuration	Ring diameter mm	Ring profile	Soil conditions				
			Light	Light/ medium	medium	medium/ heavy	heavy
Front Packer	700	45°					
Front Packer plus tines	700	45°					

Packer configuration	Ring diameter mm	Ring profile	Soil conditions				
			Light	Light/ medium	medium	medium/ heavy	heavy
Front Packer	900	38°					
	900	50°					
Front Packer plus tines	900	38°					
	900	50°					

KVERNELAND FRONT PACKER
PERFECT FOR IMPLEMENT COMBINATIONS

- Strong and robust tower for long reliability.
- Passive steering with damping system.
- High-tensile axle with maintenance free bearings.
- Connection to 3-point linkage Cat. II.
- Rigid (3,00 m) and hydr. foldable (4,00 m +).
- Parking stand (foldable FP are possible to park in transport or working position).
- Manual transport locking for safe and stable transport.


SO
SW 155

Rigid front packer

KVERNELAND FRONT PACKER
SAFE IN TRANSPORT

Foldable front packer

On public roads, the packers' 3- point linkage is locked in order to allow safe transport without swaying. Hydraulically foldable packers are getting locked, automatically, prior to folding whereas all rigid models need to get locked manually.

KVERNELAND FRONT PACKER
USEFUL OPTIONS

- Lightning kit
- 2-row front Harrow, tines 45x12mm, mechanical adjustment
- 2-row front Harrow, Packomat-tines 20mm with knives, mechanical adjustment

45x12mm tines

TECHNICAL DATA

KVERNELAND FP: FRONT PACKER

Front Packer, rings Ø 700 mm 45°	Weight kg	Number of rings	Working width m
FP 70-300, rigid	1 080	20	3,00
FP 70-400, fold	1 665	26	4,00
FP 70-450, fold	1 780	28	4,50
FP 70-600, fold	2 290	38	6,00

Front Packer, rings Ø 900 mm 38°	Weight kg	Number of rings	Working width m
FP 90-300, rigid	1 395	15	3,00
FP 90-400, fold	2 115	20	4,00
FP 90-450, fold	2 270	22	4,50
FP 90-600, fold	3 005	30	6,00
Front Packer, rings Ø 900 mm 50°			
FP 90-300S, rigid	1 465	15	3,00
FP 90-400S, fold	2 165	20	4,00
FP 90-450S, fold	2 370	22	4,50
FP 90-600S, fold	3 150	30	6,00

ORIGINAL PARTS & SERVICE
LET'S FOCUS ON YOUR BUSINESS

MYKVERNELAND
SMARTER FARMING ON THE GO

A personalised online platform tailored to your machine needs

With MYKVERNELAND you will benefit from easy access to Kverneland's online service tools.

First hand access to information on future developments and updates, Operator and Spare Part manuals, FAQs and local VIP offers. All info gathered in one place.

REGISTER YOUR PRODUCT NOW:
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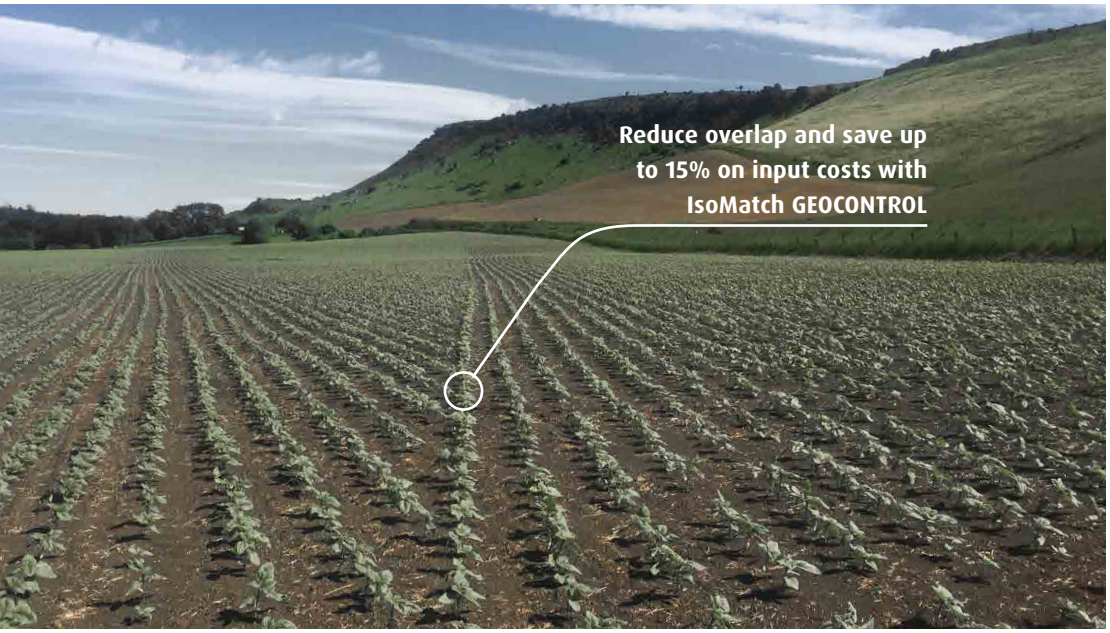
MANAGE YOUR FARM AS A BUSINESS
WITH OUR ISOMATCH PRECISION FARMING OFFERING

Our precision farming offering is essential in managing your farming business with success. Applying electronics, software, satellite-technology, online tools and Big Data enables you to use your farming equipment more effectively and reach higher profitability of your crops.

iM FARMING - smart, efficient, easy farming



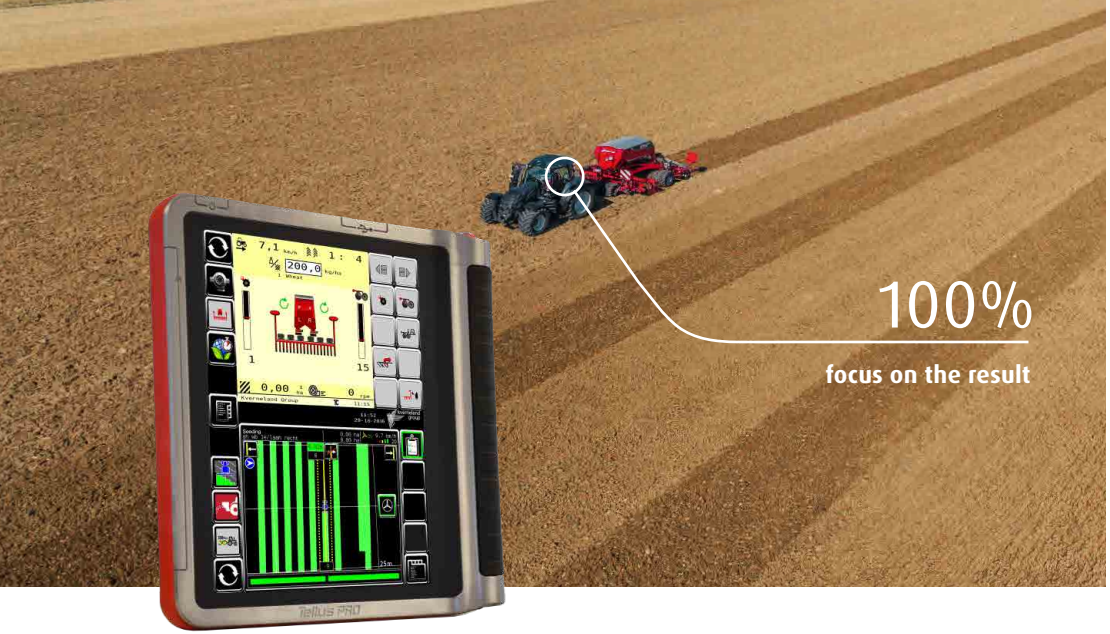
Maximum savings!
*The **IsoMatch GEOCONTROL** precision farming application includes Manual Guidance and Data Management free of charge. It is possible to expand this application with Section Control and/or Variable Rate Control.*

Enhance your success with e-learning

IsoMatch Simulator is a free downloadable virtual training program. It simulates all functions of the IsoMatch Universal Terminals and Kverneland ISOBUS machines. Train yourself and make yourself familiar with your machine to avoid errors and enhance your machine performance.

The best overview in farm management

IsoMatch FarmCentre is the first of a series of telematics solutions. This fleet management solution is applicable for your ISOBUS machines in combination with an IsoMatch Tellus GO/PRO. Whether you wish to control your fleet, manage tasks remotely or analyse machine performance data, IsoMatch FarmCentre provides this in an efficient web application, linking implements, tractors, terminals and the cloud in one continuous flow of data and connectivity.



Improve your performance
Maximum efficiency, minimum waste

Be a PRO in increasing productivity

The **IsoMatch Tellus PRO** 12-inch terminal provides you with the optimal solution for an all-in-one control system inside the tractor cab including automatic steering. It is the centre for connecting all ISOBUS machines, running precision farming applications and Farm Management Systems.
It offers everything you need to get the maximum out of your machines and crop, as well as cost savings in fertiliser, chemicals and seeds by using automatic section control and variable rate control. With the unique dual screen functionality it gives you the opportunity to view and manage two machines and/or processes simultaneously.

Easy control management

The **IsoMatch Tellus GO** is a cost-efficient 7-inch terminal, especially developed for managing the machine in a simple way. Easily set up the machine with the soft keys and simply use the hard keys and rotary switch for optimal control while driving.

IsoMatch Global PRO

GPS antenna system with RTK precision for the highest accuracy (2-3 cm) and best productivity.

IsoMatch Grip

This ISOBUS auxiliary device is made for maximum machine control and efficient farming. Operate up to 44 implement functions from one device.

IsoMatch InLine

Light bar for manual guidance including section status information. Manage the distance from the A-B line and steer for the ideal position.

IsoMatch (Multi)Eye

Connect up to 4 cameras to the IsoMatch Universal Terminals. It gives you full control and overview of the entire machine operation.

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WHEN FARMING MEANS BUSINESS

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