Kverneland

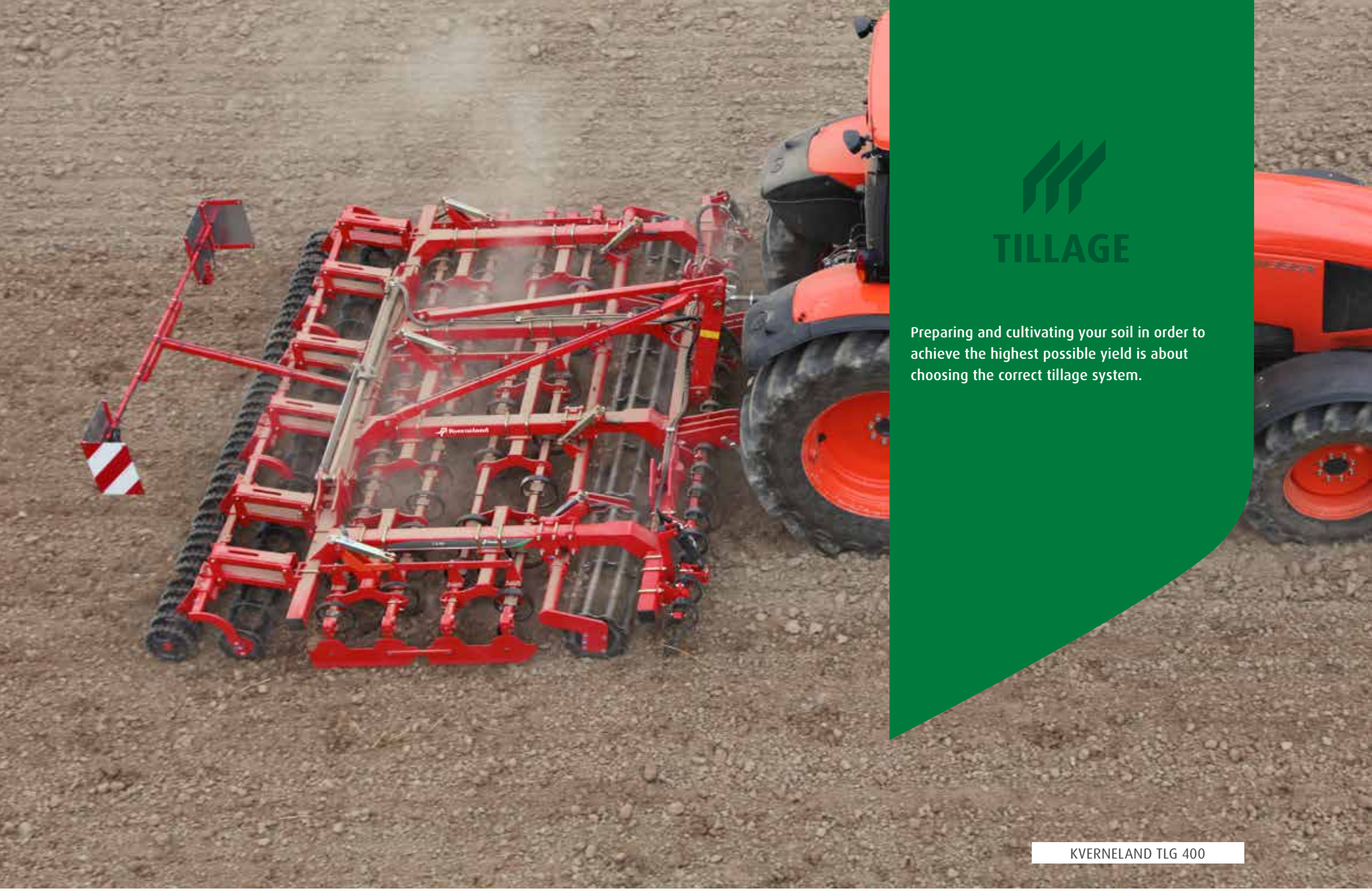
TLD AND TLG

SEEDBED CULTIVATOR

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.

KVERNELAND TLG 400

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 should 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 absorption

CONSERVATION TILLAGE

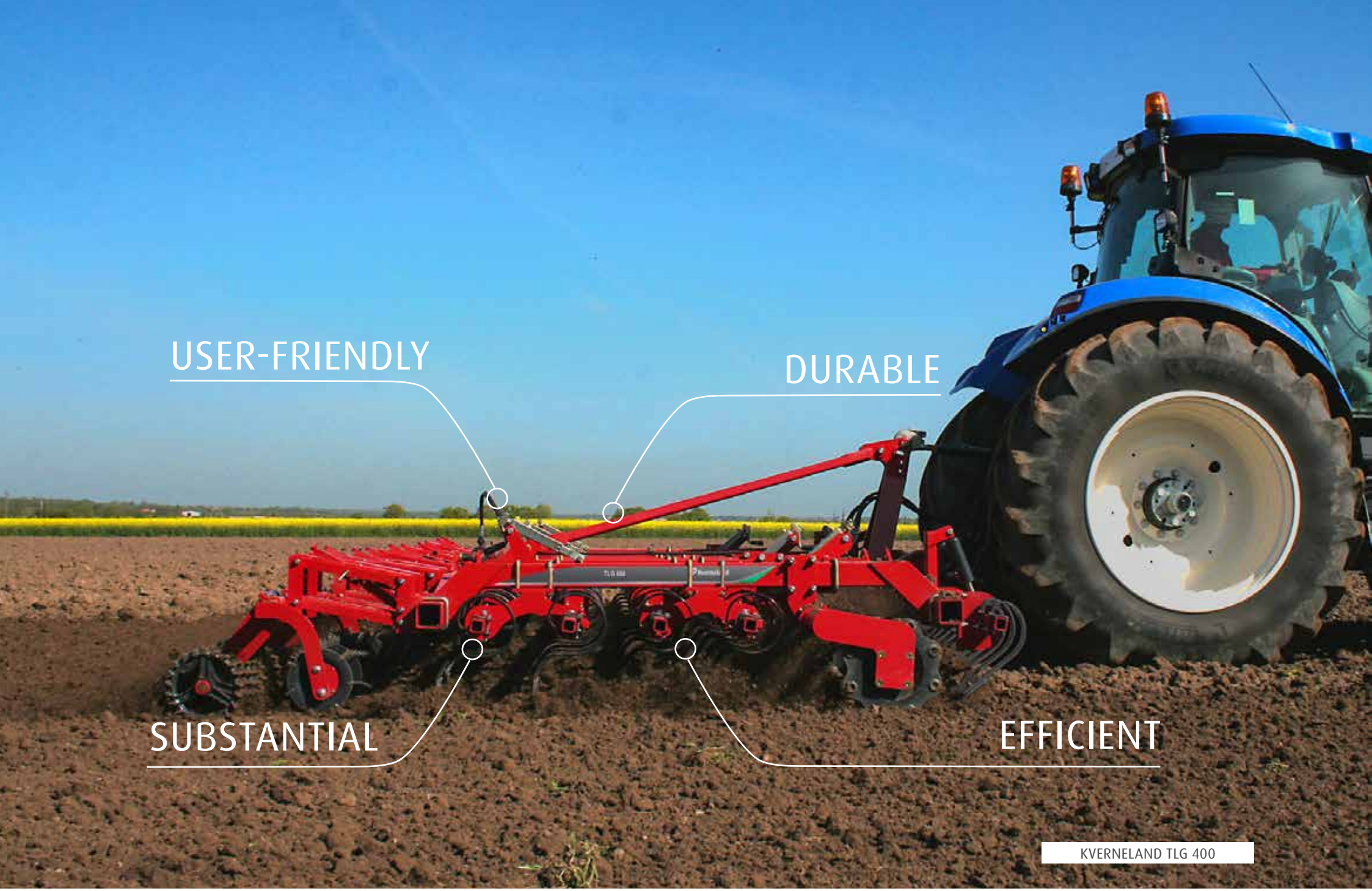
Mulch Tillage
- **Reduced** intensity in terms of depth and frequency
- More than 30% of residues are left on soil surface
- Extended repose period of the soil
- Cultivator and/or discs incorporate the crop residues within the top 10cm of soil for stable bearing soil
- Full-width tillage - seedbed preparation and seeding in one pass
- Protection against soil erosion; reduce soil loss by run-off and improve water storage capacity.
- Improvement of soil moisture retention

Strip Tillage
- **Zonal strip 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 the season, contributing to a higher yield
- A strong set of roots make plants more resistant to wind and drought.
- Lower energy input required

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)



KVERNELAND TLG 400

HIGH PERFORMANCE
WHEN THE TIME IS RIGHT FOR YOUR SOIL

User-friendly
You want a multi-functional seedbed cultivator which is easy to use and you want to be able to adjust items to the very specific conditions. Kverneland seedbed cultivators offer different configurations which fit to your conditions.

Substantial
When the time is right, you want to prepare the soil immediately. Tomorrow conditions may be worse, so you need a substantial machine to finish the job in time. Harvesting starts with seedbed preparation to give your crop a head start.

Durable
You want a machine that lasts and that copes with the stress on the material over a long time but you don't want extra weight. That's why Kverneland designed robust frame sections with an odd number of depth control wheels to optimise the ratio between reliability and weight. Less stress on the frame means long durability.

Efficient
Soil structure is not the same in every field and weather conditions vary. You want the best equipment to finish the seedbed in one pass. Kverneland offers many configurations to meet your requirements. You benefit from a wide range of S-tines and rollers for the best result.

Perfect seedbed preparation at lower costs.

SEEDBED PREPARATION
FOR MAXIMUM FIELD EMERGENCE

Seedbed preparation is a secondary cultivation process. For demanding crops with certain seed vitality and germinating properties, the seedbed will be of major importance and impact on an even field emergence and plant development. On the one hand, seed-to soil contact is needed to give the seeds access to capillary water from deeper soil layers. The seed coverage, on the other hand, requires a weatherproof crumbled and uniform reconsolidated seedbed.

Ideally, seedbed preparation should not be deeper than the sowing depth. Structural weaknesses of the soil must be improved in many places by deeper processing, but should be avoided in wet conditions and heavier soils because it would be fatal. The goal is to reduce the number of passes as much as possible to maintain soil aggregates and to ensure uniform consolidation.

Seedbed preparation is the basis of high yields.

With the TLG and TLD, Kverneland provides two seedbed cultivators with the right configuration for a wide range of applications:

In spring time:
- Opening the soil after frost or winter rainfall, enhancing the air flow for quicker warming up
- Before of spring seeding, for example sugar beet, potatoes or oats to prepare a precise and fine but weatherproof seedbed for a good root development
- Slurry incorporation

In summer:
- Second or third pass to destroy weeds and volunteers saving herbicide but avoiding bringing up clods especially in dry conditions and improving residue management

In autumn season:
- Preparing the soil for a fine weatherproof crumbled seedbed able to enhance germination even for fine seeds such as oil seed rape, grass etc.

THE ONE PASS SYSTEM
REDUCES COSTS AND LOSS OF MOISTURE

TLD 710

With longer periods of drought in some regions and higher focus on ecological and environmental systems, seedbed cultivators will become more important again and provide the ideal solution for the farmers. The finer soil aggregates are deposited in the lower level of the tilth to promote rapid and uniform germination and also prevent loss of moisture, whilst the coarser clods are kept on the surface, in order to reduce the risk of surface capping. With the TLD and TLD seedbed cultivator, you optimise the use of power is optimised and performance is maximised at at lower costs.

High quality seedbed preparation.

1 Levelling the soil

A levelling bar or clod board can be mounted at the front of Kverneland TLG and TLD. The vibrating tines on the clod board ensure a perfect first crumbling. Adjustment is made via a spindle or hydraulically. It can also be lifted out of work.

A cage roller on the TLG increases stability, levelling and firming. It prevents soil build up and reduces the risk of blockage. The flexible "bolt-on" principle allows the cage roller to be placed in front of the tines or between the two tine sections if required.

A finger harrow in combination with a double crumble roller provides the levelling and regulates the soil flow to ensure the following crumble roller is working evenly.

2 Cultivate the soil

The Kverneland TLD is designed with a robust three-section foldable chassis and offers a configuration of 5 tine rows. The constant pitch of 10cm between the tines ensures optimal flow of soil and residue freely through the machine.

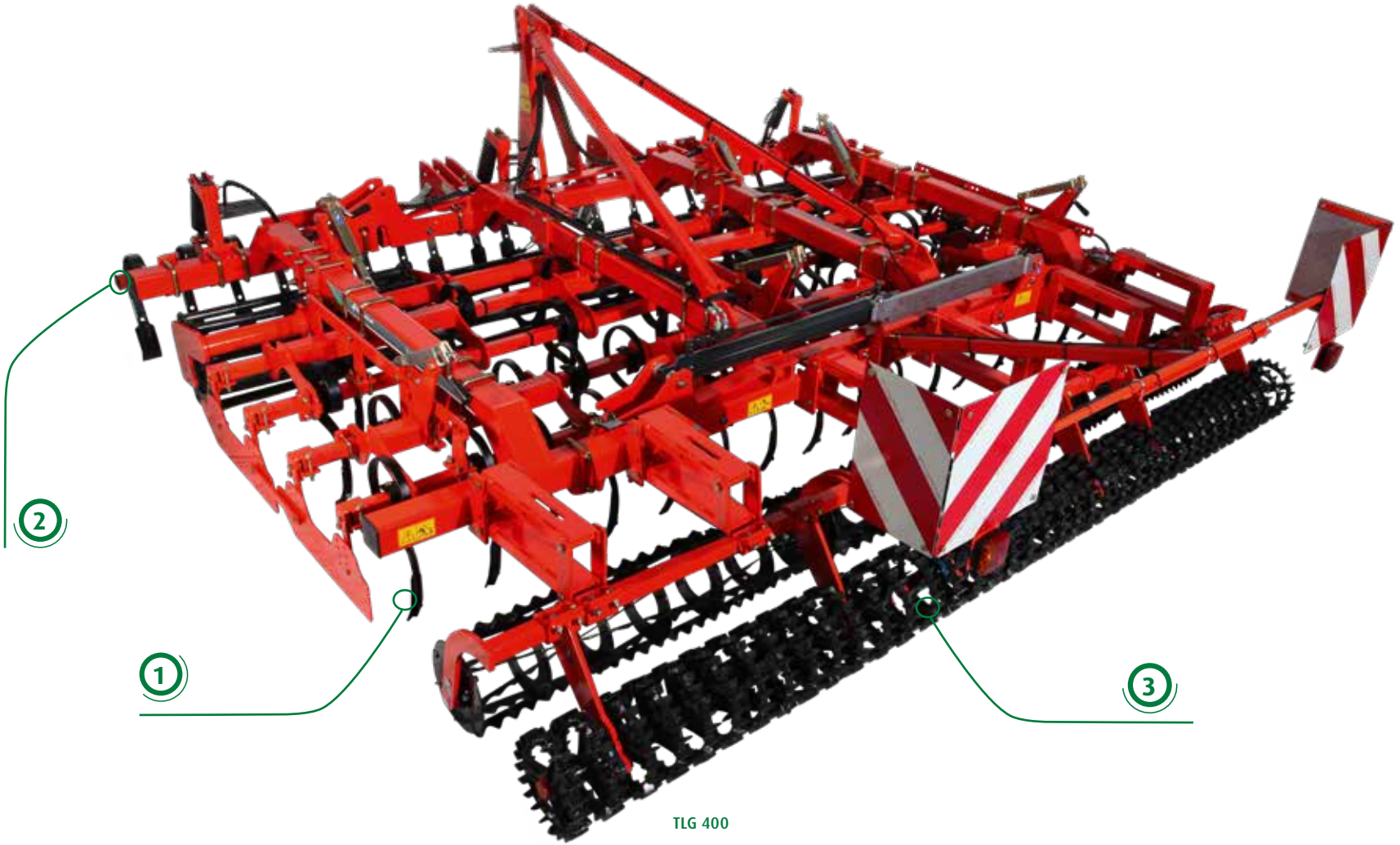
The configuration of the Kverneland TLG is more flexible as it can be equipped with 4 tine rows which are divided into 2 sections. The tines are adjustable by simultaneous handle operation.

4 different type of S-tines are available on TLD, 3 types on TLG.

3 Consolidating the soil

The last step towards a perfect crumbled seedbed is soil consolidation. A level weatherproof seedbed provides the ideal finish, reducing slug damage, preserving moisture and increasing the weed regrowth.

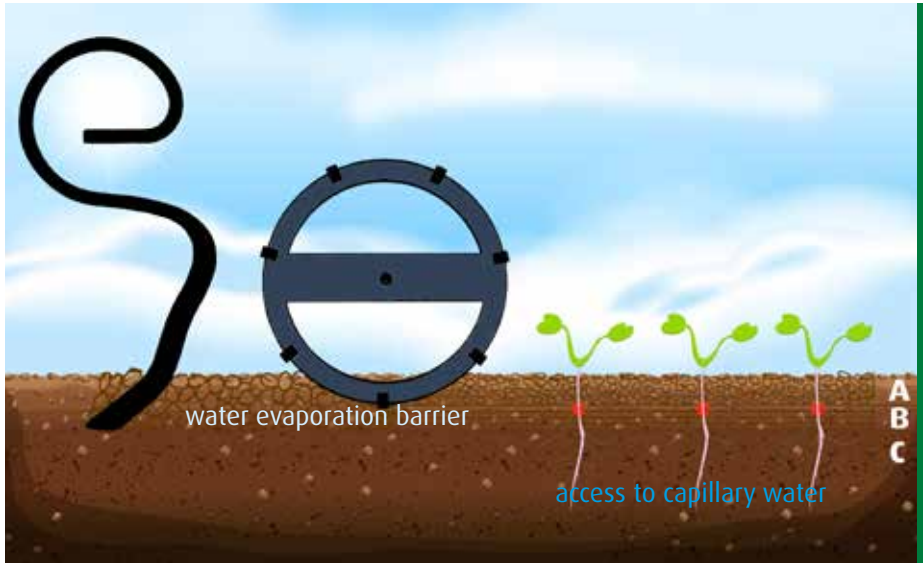
Therefore, a wide range of rollers are available to meet the various conditions and requirements. Finally, the roller is important for machine stability.



TLG 400

EVEN EMERGENCE

SAME CONDITIONS FOR EACH PLANT



Zone A **The top layer must have a stable aggregate size and structure to reduce erosion and capping. Rapid heating of the soil and adequate oxygen supply to the germinating seeds is maintained.**

Zone B **A load-bearing seed horizon into which the seeds can be embedded at an absolutely even depth over the whole area of the field.**

Zone C **An unbroken association between the seed horizon and the capillary water conducting lower layer to ensure germination in the absence of rainfall. A formed barrier keeps the moisture and avoids water evaporation a certain time.**

Disadvantages caused by incorrectly preparing the seedbed:

1. **If it is inadequately compacted and/or at an uneven depth**
   If the soil is cultivated too loose or too deep, the seed has no connection to capillary water conducting ground beneath, meaning it depends primarily on essentially on rainfall for growth. This leads to uneven and delayed germination.
2. **If the soil structure has been harmed** by cultivating incorrectly at the wrong time and wrong speed, the soil can seal, reducing the oxygen supply and resulting in uneven germination.
3. **If the land is cultivated when it is too wet,** the result may be a compacted and coarse seedbed. Root growth may be restricted with reduced access to water and nutrients, causing poor plant growth and a tendency to fork.


ZONE A: SURFACE
Larger aggregates on the surface — weatherproof
ZONE B: SEED HORIZON
Smaller aggregates in the seed zone — good seed-to-soil contact
ZONE C: BELOW SEED HORIZON
Mixed aggregates below seed zone with vertical fractures without restriction — good root development and capillary water access.

REQUIREMENTS FOR A PERFECT SEEDBED
INDIVIDUAL, ADJUSTABLE CULTIVATORS

For today's modern farms the demands for seedbed cultivation have changed. Tight time slots have to be balanced with higher machine performance. Different crop rotations call for an adaption in technology that accomplishes all requirements of modern crop cultivation. In order to obtain the best results from a seedbed cultivator, it is necessary to select the correct tines and crumblers for the type of soil concerned.

High performance at optimum speeds.

Even in the absence of rainfall, a seedbed with the correct specification will ensure even germination over the entire area while providing, at the same time, the best possible protection against erosion and capping during heavy rainfall periods.

Kverneland offers two different seedbed cultivators which are different in their configurations and options:
The **TLD** covers three working zones with a levelling bar or clod board in the front, followed by 5 rows of tines for cultivation and finally a wide range of rollers to ensure the consolidation of the soil to leave a perfectly crumbled and weatherproof seedbed. 5 rows of tines which are evenly positioned on the frame ensure a free soil flow and thus ability to work deeper if required or in trashy conditions without the risk of blocking the machine.

The **TLG** is a heavy-duty precision seedbed cultivator designed for the optimum preparation of seedbeds especially for sugar beet, maize, potatoes and vegetables. It consists of four working zones: the robust levelling board in the front, an effective cage roller for depth control, four rows of effective S-tines for cultivation and crushing followed by a finger harrow or a single or double roller at the rear for crumbling and consolidation. This combination makes the TLG an ideal cultivator for the preparation of a firm, levelled and fine seedbed. The position of the cage roller for the depth control can be changed from the front to the middle between the two tine sections via the flexible "bolt-on" system. Additional side deflectors avoid ridging and guide the soil in the working and consolidation area.

1 Levelling
A straight levelling board or clod board ensures effective levelling and first breaking of clods.

2 Depth control
The roller is fitted at the front, directly following the levelling equipment, to ensure depth control. Due to this position, the risk of soil building up on the roller is reduced.

3 Cultivating / Crushing
Four rows of tines ensure optimum soil flow and arrangement of the soil aggregates. The working depth can be adjusted according to soil condition and seed type.

4 Crumbling / Consolidation
A finger harrow, a single or double crumbler roller or a combination of standard and Crosskill roller provide an excellent seedbed with good seed-to-soil contact. This ensures access to capillary water to start germination quickly.

KVERNELAND TLG 400

VERSATILE: FOUR TYPES OF TINES
SELECTING THE CORRECT TOOLS

In order to prepare a perfect seedbed, a harrow with a relatively narrow tine spacing is needed. The closer spacing of the tines, even on level soils, ensures that the soil is completely loosened. Tines which are spaced too wide must work deeper than required to ensure a complete loosening of the soil.

High vibrating capacity for a good crumbling effect.

Four types of tines are available according to the type of soil or the work required:

- Semi-curved tines (32x10mm and 45x10mm) provide a fine crumbling surface thanks to their high vibration capacity.
- Straight tine (45x10mm) has a high resistance to be used after ploughing and ensures superficial preparation without bringing wet clods to the surface.
- The DK tine is forged from a ring of 22mm diameter in a way to get the maximum thickness (15mm) in the most stressed area of the spring. It guarantees a high resistance for working in the very demanding conditions at high speed while keeping a high vibration capacity.

The adjustable angle of the semi curved tines increases flexibility. In a 90° position the shares work in a more aggressive way. They crumble deeper and actively. In a 50° position the shares act like a passive straight tine and sort clods and fine soil to prepare an ideal seedbed.

Semi-curved
32 x 10mm

Semi-curved
45 x 10mm

Straight
45 x 10mm

DK tine
(only on TLD)

PERFECT LEVELLING

LEAVING AN EVEN AND WEATHERPROOF SURFACE

In order to create an even surface for a fine but weatherproof seedbed, Kverneland offers several options of levelling tools for the TLD and TLG models. The levelling equipment is mounted in the front. The working depth can be adjusted via the roller or depth control wheels and can be fine-tuned via spindle or hydraulic adjustment.

The spring-loaded **levelling bar** is very easy and economic to handle especially on light to medium soil types.

The clod board in the front increases the crumbling effect on ploughed land and ensures active levelling due to the high vibration of the cracker tines. The aggressiveness of the clod board can be adjusted hydraulically from the cab on the move or via a spindle. In very wet conditions or if the optimum soil condition is reached without front levelling to achieve a weatherproof seedbed the clod board bar can be easily be raised out of work.

When it comes to regulating the soil flow the **finger harrow** positioned just in front of the rear roller ensures that soil and residues stay longer in the working zones. The integrated finger harrow (400x10mm) prevents blockages of tines and rear crumble roller and promotes the levelling of the soil. The angled fingers at the end allow a progressive soil flow without the need for more power. The fingers are overload protected to avoid damage especially in stony conditions. Individual springs ensure individual release of the tines and keep levelling quality even.

KVERNELAND TLD 610

USER COMFORT IS KEY
EASY ADJUSTMENT

Kverneland has always focused on safe operation and user comfort. With all the adjustments being done without the need for tools, a lot of precious time is saved!

Adjusting the TLD and TLG is easily done. When setting the working depth of the tines, the roller and gauge wheels can be adjusted infinitely via spindle. In addition, there is hardly any maintenance to be done apart from changing wearing parts.

Simple adjustment.

Perfect depth control

TLD: An odd number of wheels (steel 500x165 or pneumatic 6.00x9, 10 plys to avoid punctures) within the machine frame provides identical pressure on each wheel. A graduated scale on the depth adjusters allows precise individual adjustment for each wheel. The frame side extensions are free floating during operation to allow the machine to follow ground contours. An optional hydraulic accumulator kit for hilly conditions keeps a perfect contour follow-up and protects the frame.

TLG: The cage roller when placed in the front, directly following the levelling equipment ensures depth control without risk of blockages in sticky condition. For a better crumbling effect it can also be fitted between 2nd and 3rd row of tines. Versatile and efficient in all conditions! The three-section frame ensures good ground contour following.

REAR EQUIPMENT
TO FINALISE A WEATHERPROOF CONSOLITATED SEEDBED

Double crumble roller
front Ø 310mm / rear Ø 280mm:

- Diameter variation provides an ideal crumbling effect. The larger at the front and the smaller at the rear, for improved clod breaking. By projecting bigger clods higher higher, small clods remain on top with fine soil underneath, ensuring a perfect final top layer.
- User-friendly adjustment without tools. Mounted on a parallelogram.
- Rear folding cylinder rod protected by a plate.

Double crumble roller with finger harrow
front Ø 310mm / rear Ø 280mm

- Fine crumbling and levelling with the finger harrow ensures soil and residues stay longer in the working zone and get to the roller more evenly.
- Diameter variation provides an ideal crumbling effect. By projecting bigger clods higher, small clods remain on top with fine soil underneath, ensuring a perfect final top layer.
- User-friendly adjustment without tools.
- Rear folding cylinder rod protected by a plate.
- The pressure applied on the crumble rollers can be adjusted by hand, easily with 3 different positions.

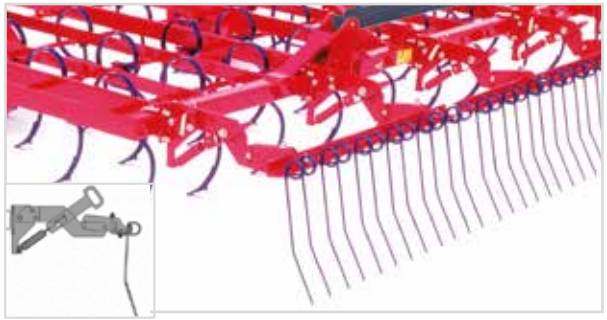
Crumble roller with Crosskill roller
front Ø 310mm / rear Crosskill Ø 290mm
(only on TLG)

- Excellent crumbling effect with more consolidation on the surface due to heavier Crosskill rings.
- Rear folding cylinder protected by a plate.
- User-friendly adjustment by hand.

The choice of the correct rear roller depends on the soil type, soil condition and crop rotation. Also the lifting capacity of the tractor needs to be considered when looking for the right combination.

Single crumble roller ø 310mm

- Good crumbling effect.
- Spring loaded adjustable.
- Rear folding cylinder rod protected by a plate.



Single finger harrow with pressure system

- Spring loaded finger harrow which is angle and pressure adjustable.
- Provides improved weed control.
- Separates soil aggregate sizes for a weatherproof finish.
- Levelling and straw distribution.

The rear equipment on a seedbed cultivator is an elementary tool with different tasks:

1. Consolidation of the soil structure for a weatherproof finish.
2. Cutting and breakdown of large fissures during the wetting and drying process.
3. Finalising the levelling and helping retain valuable moisture.
4. Supporting the depth control.
5. The seed horizon is compacted and it is in contact with the capillary water.

SAFE ON THE ROAD
EASY TO CONVERT

Easy conversion from working to transport position. The three-part hydraulic folding gives a transport width of 2.5m and ensures smooth running and safe road transport.

Due to the close centre of gravity low lifting power is needed.

Both, TLD and TLG have three-section foldable frame, which ensures a transport with less than 3.00m.

KVERNELAND TLD 610

KVERNELAND SOIL KIT
MAINTAINING SOIL STRUCTURE

Without checking the soil profile to identify potential areas of resistance, it is not possible to determine the correct depth of any compaction or barriers. This is important when planning operations to resolve any problems. You may already be aware of soil compaction but not have the tools to confirm the extent of the problem. For example, unnecessary effort to correct soil compaction by tilling to a deeper depth can be a waste of time and money.

The Kverneland soil kit, within a stable case, provides the necessary tools to access the soil profile ahead of any cultivation. It includes: a penetrometer which measures the compaction of soil, a knife, folding ruler, brush, shovel and a pair of working gloves. The Kverneland soil brochure included will also provide useful technical information in choosing the correct cultivation practice.

Please ask your local dealer for the Kverneland SOIL KIT to provide you with the correct equipment to improve your soil health, increase yields, save time and reduce fuel costs.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TECHNICAL DATA

Model	TLD				TLG		
Frame type	folding	folding	folding	folding	folding	folding	folding
Working width (m)	5.10	6.10	7.10	8.10	4.00	5.00	6.00
Transport width (m)	2.50	2.50	2.50	2.50	2.50	2.50	2.50
Tines							
No. of tine rows	5	5	5	5	4	4	4
No. of tines	51	61	71	81	16+31	20+39	24+47
Levelling							
Levelling bar	o	o	o	o	o	o	o
Clod Board	o	o	o	o	o	o	o
Track eradicator	o	o	o	o	o	o	o
Side deflector	-	-	-	-	o	o	o
Frame							
Linkage	Cat. 2/3	Cat. 2/3	Cat. 2/3	Cat. 2/3	Cat. 2/3	Cat. 2/3	Cat. 2/3
No. of wheels (steel or pneu.)	3	3	5	5	-	-	-
Weight* frame (kg)	-	-	-	-	-	-	-
Weight* with double crumble rollers (kg)	1600	1880	2160	2380	1880	2345	2590
Lighting kit	o	o	o	o	o	o	o
Hydraulic accumulator kit in hilly conditions	-	-	o	o	-	-	-
Rear equipment							
Single finger harrow (not with roller)	o	o	o	o	o	o	o
Single crumble roller	o	o	o	o	o	o	o
Double crumble rollers	o	o	o	o	o	o	o
Double crumble rollers with finger harrow	o	o	o	o	o	o	o
Crumble roller + Cross kill roller	-	-	-	-	o	o	o
Cage roller	-	-	-	-	●	●	●
Power requirement							
Min. HP	90	110	130	145	100	120	140
Max. HP	145	170	205	230	180	220	260

* Weights are given as an indication.

● Standard equipment o Option - Not available

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