

Increase your capacity with lower costs



Kverneland Ecomat™

- a new concept in seedbed preparation
- finished seedbed in one pass

The agricultural industry is constantly looking for new and more efficient tillage methods. Kverneland is committed to this quest.

As part of this, Kverneland have brought to the market a new and revolutionary product: Kverneland Ecomat™ – a lightweight implement that tills the soil extremely effectively.

Compared to conventional tillage, the farmer saves time and energy. The

result: an equally good crop, but with much less effort. In contrast to that of reduced tillage system, the farmer gains a more secure and stable cultivation method with better results. The problem of weeds, fungus and other diseases also decrease. The farmer becomes less dependent on the weather, and can even work if the soil is relatively moist. Seeds will germinate and grow better in a clean, fine soil layer.

Kverneland Ecomat™ is not an “either-or” option, it’s both! Hear what the researcher has found out so far, the experiences gained by some test pilots, and what the inventor has to tell. Everyone believes that the advantages of the plough are utilised for more effective tillage.



Compared to traditional tillage:

- Reduced time
- Reduced pulling force
- Reduced fuel costs
- Reduced weight
- Reduced wear on soil engaging parts
- Reduced equipment costs
- Reduced tractor costs
- More operations in one
- Increased capacity
- BETTER PROFIT

Compared to reduced tillage:

- More economical
- Better soil preparation
- Improved soil structure
- Less problems with weeds, fungi and diseases
- Reduced chemical useage
- Better growth

Working capacity:

- Working width: 2,25 – 3,00 m
- Working speed: 8 – 12 km/hr
- Capacity, seedbed: 2,0 – 3,5 Ha/h
- Capacity, stubble: 2,5 – 4,0 Ha/h
- Working depth: 6 – 18 cm

The Professor - “Good for the soil – and the farmer’s pocket too.”



Tomas Rydberg is a professor at the Swedish University of Agricultural Sciences in Uppsala, outside Stockholm. He has been working on tillage issues since 1974, and today leads the research and testing department of the Soil Management Division.

Tomas Rydberg and his staff have made comparisons with both conventional and reduced tillage.

“In principle, the need for tractive power for ploughing is proportional to the working depth. The normal depth for a conventional plough is 20-30 cm. As the Kverneland Ecomat™ operates at a depth of 10-18 cm, one of the biggest advantages will be the considerable reduction in the need for tractive force. Lightweight tractors are good for the soil and for the farmer’s pocket.

Another advantage is that the Ecomat™ is significantly lighter per metre of working width. This reduces the pressure on the tractor’s rear axle and greatly benefits soil structure.

“In light and medium heavy soil types, sowing can begin without any need for additional harrowing. The preparation of the seedbed will require fewer operations. The farmer will take less time and the tractor will use less fuel. The soil structure will also be less disturbed,” says Tomas Rydberg.

Spring is the future

“In many contexts, spring ploughing is environmentally preferable to autumn ploughing – especially in regards to the risk of nitrogen leaching and run-off.

Our trials have indicated that the Kverneland Ecomat™ can handle spring ploughing in soil with a higher content of clay compared to a conventional plough and ploughing depth,” says the professor and points out that the higher the clay content, the more demanding it is for the farmer. The Ecomat™ produces

particularly good results when the clay content reaches 30 or 40%,” says Tomas Rydberg.

Shallow and good

“Ploughing with the Kverneland Ecomat™ mixes and covers straw and plant remains better than shallow ploughing with a normal plough. This is because the body of the Ecomat™ plough has been specially designed to turn the soil 180°,” says the professor and continues: “Waste grain, plant remains and weeds are mixed into a smaller volume of soil, which leads to a higher content of organic materials in the upper soil layer. And this mix in the soil surface is good for all soils: Water management is improved, the soil becomes easier to work and the risk of crust formation is reduced. This results in good growing conditions.”

Deeper with the Ecoshare

The deeper we plough, the fewer the weeds, and as some soils need deeper ploughing, Professor Rydberg and his staff have carried out trials where they have fitted the Kverneland Ecomat™ with the Ecoshare and compared the results with a conventional plough. “In such cases, the advantages of conventional ploughing are combined with the advantages of superficial stubble cultivation.”

Kverneland Ecomat™ vs. reduced tillage

Professor Rydberg and his staff have also compared the Ecomat™ with a cultivator and a disc harrow.

“If you only cultivate, problems can sometimes arise due to weeds, plant diseases and excessive quantities of waste straw in relation to the soil quantity. The latter means that many seeds do not come into contact with the soil. The Kverneland Ecomat™ buries plant residue more effectively, thereby vastly improving the growing conditions for the seeds and reducing the risk of fungal attack on following crops,” says the researcher before he concludes:

“All work operations have advantages and disadvantages, but the Kverneland Ecomat™ compensates for the disadvantages of conventional deep ploughing and reduced tillage alike,” concludes Professor Tomas Rydberg.



High content of humus in the 10–15 cm top soil layer gives very good growth conditions, tells Tomas Rydberg

The Test Pilot - “Amazing! We get the same crop for half the work and lower costs.”

Knut og Audun Vastveit, Halden



Audun Vastveit and his family run a combined spring and autumn farm with grain and dairy production. The farm, which is located in south eastern Norway, has a total area of 215 Ha – 170 Ha of which are used for cereals.

They also run a dairy farm involving approximately 130 dairy cows and have a total of 350 head of cattle on the farm. The cattle generate about 5,000 tonnes of manure fertiliser annually, which is spread on to the cereals fields and ploughed in.

For Audun Vastveit, getting the most out of the large quantities of manure fertiliser is vital.

“The Ecomat™ is a major factor for us being able to exploit the unbelievable resource that the manure represents. It is fantastic to use the manure to achieve maximum grain yields. The Kverneland Ecomat™ is perfect for our farm,” says Audun Vastveit. Now, after 5 years, we can really state that the Ecomat™ is doing an excellent job for us. We use it both for autumn and spring work.

Almost twice as fast

“We use the Ecomat™ to work in the manure, plough and pack the seedbed, and then we seed and roll once – without additional harrowing. The Kverneland Ecomat™ have such a high capacity that we manage to plough in the natural fertiliser to the ideal depth of 10 - 12cm. This give us optimal utilisation of the fertiliser nutrients.

“Compared with a conventional five furrow plough, which we used to use, we’ve almost doubled the capacity” says Audun Vastveit, who also points out how much less stone they bring up to the surface.

Less odour means more nutrients

“Odour is a known environmental problem in connection with the spreading of natural fertiliser. The fast ploughing means that the neighbours hardly detect any odour. At the same time, less odour for the neighbours also means more nutrients for the plants – which is much

more important. In the course of one hour, 30–50% of the nitrogen disappears into thin air, so it is vital to turn the soil immediately,” says Audun Vastveit.

Handle with care

“It is interesting that we’re getting such good results with much less tillage. Not only have we spent less time on the tractor, we have also cultivated far less. We have reduced our input costs while our income has remained steady. I have a very strong feeling that we made the right choice,” says Audun Vastveit.

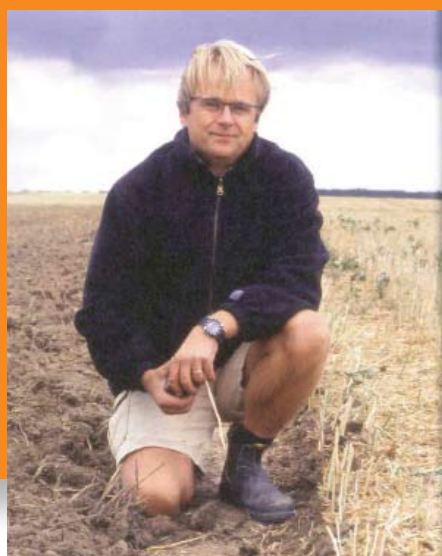
“Soil should be tilled with care. The less tillage the better. Turning and packing the soil immediately retains the soil structure. The moisture in the soil is held and it becomes easier for the seeds to come into contact with it,” concludes a very happy test pilot.



Audun Vastveit and the designer Magne Skjæveland in deep discussion about the features with the Kverneland Ecomat™.

The Test Pilot - "I don't know any other machine that offers better performance."

Johan Karlzén, farm manager



Johan Karlzén is manager of Rydsgård Gods AB, a rather big farm in South Sweden with 1.323 ha, of which 961 ha is arable land.

Field sizes range from 4,5 to 120 ha and some are up to 25 km from the farm. The soil is rather heavy and sticky with up to 35% clay content. And we have stones as well, he adds.

Since Johan Karlzén started to use the Ecomat system his daily output has risen considerably. Even more than when he started to use the Packomat Kombi Seeder system – a machine that already reduced his seedbed preparation time by up to 25% when compared with traditional ploughing and drilling methods. The time saved allows Mr. Karlzén more time for other aspects of his business as Rydsgårds Gods.

The fleet of equipment is rather extensive. In addition to the farms 8-furrow Ecomat, we have 2-3 other ploughs, cultivators and different drilling machines. In addition a co-operation with a neighbouring farms give access to a 12-rows Monopil-S drill and a discs harrow giving us possibilities to chose between conventional or minimum tillage techniques.

Johan Karlzén describes spring rape or peas before wheat as a standard crop rotation. And three consecutive wheat crops is not unusual for us.

Since the early 1990's, the farm has been pursuing min-till techniques. Mr. Karlzén describes the system's low input costs and reduced fuel consumption as making a positive contribution towards profitable farming. However, straw management is a challenge – as are the increase pressure of diseases on the crop rotation. "Ploughing, on the other hand, has two main advantages",

he tells. "It guarantees a good soil structure and keeps the weeds under control."

As mentioned we have tried different techniques and from our notes we can see that when using a traditional method with ploughing, cultivator, drill combination and fertiliser spreader we use 65 to 75 minutes to prepare a ha. We use normally three to four tractors and burn 40-45 litres of diesel on every hectare.

When starting with the Ecomat system in 2002 we even went a step further with including the Kombi Seeder on the Ecomat. This combination give us the possibilities to plough, pack, level, fertilise and seed in one pass and this system has given us a tremendous savings in costs as well in time. With a working width of 3,0 m and a working speed of 8-14 km/h, this combination works one hectare in 20-30 minutes, during which time the tractor only uses 5,6 to 9,0 litres/ha.

Mr. Karlzén is rather enthusiastic about the machine: "I don't know any other equipment that offers better performance," he says. "And we don't need a more powerful tractor for it, either." "And the system is safe in wet as well as in dry conditions," adds Mr. Karlzén.



Yields 2002 - 2006:

450 ha winter wheat	8,8 t/ha
90 ha spring wheat	6,8 t/ha
76 ha peas	5,5 t/ha
60 ha spring rape	2,9 t/ha
40 ha suger beet	60,0 t/ha
26 ha malting barley	6,0 t/ha
20 ha red clover	0,4 t/ha
168 ha set aside land	
275 ha woodland	
87 ha other land	

The Inventor "My goal was to develop an implement that combined the best of conventional and reduced-tillage methods."

Magne Skjæveland, Kverneland Group



Magne Skjæveland has been involved in product development at Kverneland since 1971.

"I was challenged by leading research scientists from several agricultural universities: 'Why plough so deep?' they asked. They wanted a soil preparation method that places the plant remains in the top soil layer, where the greatest decomposition occurs. A shallow, loose top layer maintains the capillary effect and serves as a blotting paper for moisture further down the profile. A seedbed depth of 10 or 15 cm would be optimal for growth. That was the challenge," says Magne Skjæveland.

"The solution was a project that totally integrates a plough and a packer. We have developed an entirely new plough body that turns the soil 180 degrees." The result is total soil inversion and a fine seedbed, in which the seeds are placed without any plant residue and problems associated with slugs and weeds. The Ecomat™ fully exploits the plough's powerful advantages with full penetration, so that the weed roots are cut effectively. "Levelling and packing without holes are essential for achieving good results with this implement."

Shorter and stronger

"The new design means that the implement can be built much shorter. It is closer to the tractor, so making it easier to lift. This means that we can go up in size and increase the capacity," says Magne Skjæveland. He confirms that the low weight and durability would not have been possible without Kverneland's high technological expertise, related to the heat treatment of special steel.

160-180 hp is enough

"An eight furrow Ecomat™ and a 3m Packomat require a lifting capacity of 6000kg. This means that the farmer can efficiently till the soil with a 160-180hp tractor. This means that the pulling costs are almost cut in half in terms of the tractor's purchase price and fuel costs," says the inventor, emphasising the work capacity.

"The Ecomat™ has a working width of 3m. The recommended working depth is 10 to 18cm – depending on how level the field is before ploughing. A 160-180hp tractor has no problem operating at a speed of 8 to 12 km/h."

Two work operations are enough

"The Kverneland Ecomat™ enables the farmer to make with two, possibly three work cycles and considerably reduces his tillage cost," says Magne Skjæveland. "The Ecomat™ handles light and medium soils well and shows good results in heavy soils. In clay soils, one of the problems with conventional preparation is that the seeds do not come into contact with the moisture. The Kverneland Ecomat™ reduces this problem," says Magne Skjæveland

Almost independent of the weather

"Spring work may be the future. Environmental considerations are leading to more and more restrictions on autumn work. The lightweight Ecomat™, which works in the driest soil layers, can be used in early spring. It is almost independent of the weather conditions, as long as you sow immediately. Remember that for every day you have to postpone sowing in the spring, you lose three days in relation to when you can harvest," says the inventor enthusiastically.



To get ideas and practical experiences from all over the world is of vital importance, tells Magne Skjæveland, here in discussion with Johan Carlzén, who is managing a farm of 1.100 Ha in the southern part of Sweden

Kverneland Ecomat™

- a complete new concept in seedbed preparation
- capacity up to 3-4 Ha/h



By working the soil at a depth of 10–18cm it is possible to get a much quicker and better decomposition of surface residue. The content of organic material/humus will improve, the soil will be much better, it will also be easier to work, with less surface crusting. In other words, Kverneland Ecomat™ give better growing conditions.

Deeper work with Kverneland Ecomat™

If required to work 6–7cm deeper, this can be done by adding some Eco-shares to the Ecomat™. These are mounted to the landsides and will work 6–7cm under the normal working depth without bringing the sub-soil up to the surface.

Great capacity in stubble cultivation

Kverneland Ecomat™ is very effective for stubble cultivating. The ideal working depth is 6–10cm, with a speed of 10–15 km/h giving a capacity of 3 to 4 Ha/h.

Ecomat™ – when using manure

Kverneland Ecomat™ offers great possibilities for those using slurry. With Ecomat™ you can bury large quantities within a few minutes after spreading. It will be placed at the required depth of 10 to 15cm and give full effect for the plants.

Clean and even seedbed

Kverneland Ecomat™ inverts the soil in a very effective way. The new body, having a cylindrical form, turns the soil 180 degrees. Straw and other residue are well mixed and placed in the bottom of the furrow, while the top surface is free of trash.



Save time and money with Kverneland Ecomat™

At first glance, the Kverneland Ecomat™ may look like an ordinary plough, but it is much more. It is designed to treat the soil in a quick and effective way, with a significant increase in capacity compared to traditional treatment. The pulling force is reduced considerably with following lower operational costs.

The possibilities for this great increase comes from the fact that the Kverneland

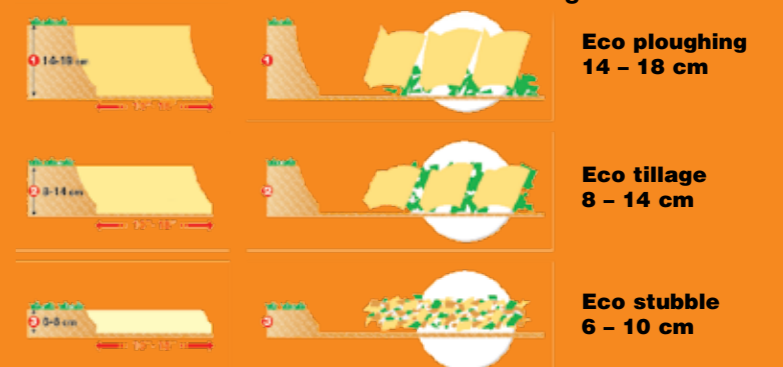
Ecomat™ is working with a width of up to 3m. It is designed for working depths of 8 to 18cm and a speed of 8 to 12 km/h. It is equipped with a very effective intergrated soil packer, (Packomat), which means that the seedbed, in most soils, will be ready for seeding without any further treatment. Limited treatment and tractor operations are very important for a good soil structure, and give the best possible start for good seed germination. The balance between the Ecomat and the

Packomat results in lower traction power as the Packomat reduces the forces pressing the Ecomat against the land/furrow walls.

Shallow treatment of 10–18cm – is that enough?

Leading farmers and agricultural schools together with institutes in Europe and other parts of the world, are looking for new techniques in soil preparation. They are claiming that a working depth of 10–18cm is sufficient in most soils.

Kverneland Ecomat – for 3 different working methods:



Multipurpose implement with proven economical savings

Kverneland Packomat

In most soils the Packomat helps you making a perfect ready seedbed. Well levelled, pressed and ready for seeding after one pass at the same time as the Pacomat is helping you to reduce the pulling force as the landside forces are reduced.

Ecomat without Packomat

The Ecomat can also be delivered without Packomat.



Specifications

No. of furrows	6-Furrows	7-Furrows	8-Furrows
Working width	1,80 - 3,00m	2,10-3,20m*	2,40-3,20m*
Working width per body	30 - 50 cm (12 - 20")		
Working depth	6-18 cm	6-18 cm	6-18 cm
Interbody clearance	650 mm	650 mm	650 mm
Underbeam clearance	720 mm	720 mm	720 mm
Auto-reset force	730 kg	730 kg	730 kg
Release level	220 mm	220 mm	220 mm
Weight with Packomat	2 170 kg	2 320	2 530 kg
Lift requirement with Pacomat	4 800 kg	5 960	7 000 kg
Weight without Packomat	1 570 kg	1 680	1 810 kg
Lift requirement without Pacomat	3 300 kg	4 000	4 780 kg

* The working width of the 7- and 8 furrow Ecomat is limited by the Packomat.

Ecomat here in use without Packomat.



New construction

Only the headstock is the same, all other parts are new compared to a Kverneland plough. They are designed for effective seedbed preparation to a depths of 10 to 18cm.

To achieve a working width of 3m, we had to design the frame shorter compared to standard ploughs. This is done to get the plough closer to the tractor, giving lower weight and consequently, lower lifting requirement. New beams are also used to reduce the weight (20kg/beam) to a minimum.

The new plough body makes the difference

Not to be forgotten, a completely new body. Which is shorter and lower than normal bodies. In fact, it is made in a new way with a weight reduction of 20 kg/body. The body has a more cylindrical form, which gives very effective and fast turning of the soil. In combination with a special skimmer knife, the tops of the furrows are sliced. The furrow is turned 180 degrees with the residue placed in the bottom of the furrow.

3m Packomat – a great challenge

To solve the design technique challenge, Kverneland has used all available "know-how" in steel technology and heat treatment processes. The result is a 3m working unit integrated in the plough. It give possibilities for great time savings in seedbed preparation. It is very important to treat the soil at the

same time as it is inverted. Therefore, the Packomat is fitted with a robust front tine section, which crush clods and levels the soil. Followed by two rows of soil packer rollers, which further crush the clods and consolidate the seedbed. The rear tines then level and loosen the soil surface leaving optimal soil conditions for the following sowing.



Steel or plastic bodies?

The choice is yours. Because of the special form of the Ecomat bodies, it may be difficult to keep the mouldboards free from soil due to its sticky nature. By using bodies of Polyethylene plastic all these challenges are solved.

Plastic mouldboards are used for many years on normal ploughs. Especially in rather sticky soils and light soils without any resistance. As the Ecomat is designed to operate at a shallow working depth, the wear is kept at a very low level.



Skimmer knife

Ideal when ploughing in grassland or at shallow depths. However, the skimmer knife is essential when using plastic mouldboards as they protect the front of the body.



Landside knife

An advantage when using plastic as it protects the front of the mouldboard. Also, an alternative to the skimmer knife, especially when working in light sticky soils.



Trashboard

Depending on conditions, the trashboard fingers can be fitted either on top of the mouldboards or onto the skimmer knife

Plastic cover for leg

When working in conditions with a lot of straw, especially long straw and trash, these plastic covers prevent straw and trash from sticking around the legs.

KVERNELAND GROUP SPARE PARTS

Kverneland Group spare parts are designed to give reliable, safe and optimal machinery performance - whilst ensuring a low cost life-cycle. High quality standards are achieved by using innovative production methods and patented processes in all our production sites.

The Kverneland Group has a very professional network of partners to support you with service, technical knowledge and genuine parts. To assist our partners, we provide high quality spare parts and an efficient spare parts distribution worldwide.

A part of your day





Kverneland Group

Kverneland Group is a leading international company developing, producing and distributing agricultural machinery and services.

Strong focus on innovation allows us to provide a unique and broad product range with high quality. Kverneland Group offers an extensive package of systems and solutions to the professional farming community. The offering covers soil preparation, seeding, forage- and bale equipment, spreading and spraying.



The Product Range

The Kverneland product range is designed to work under the toughest conditions, day after day, year after year. The wide range includes forage harvesting and feeding equipment, ploughing equipment, soil cultivation, seeding systems, sprayers and fertiliser spreaders.

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