

The Rotary Hoe

A classic, reinvented

Jan Hinrich Löken (state-certified engineer)
J.Loeken@industriehof.com



When I first saw the Rotary Hoe during a demonstration on hoeing technology, I thought that this method of mechanical weed control was no more than a niche product that could only be used on a few types of crops. It was only once I took a closer look at it - when adding it to our portfolio - that I realised how huge the scope of application could be.

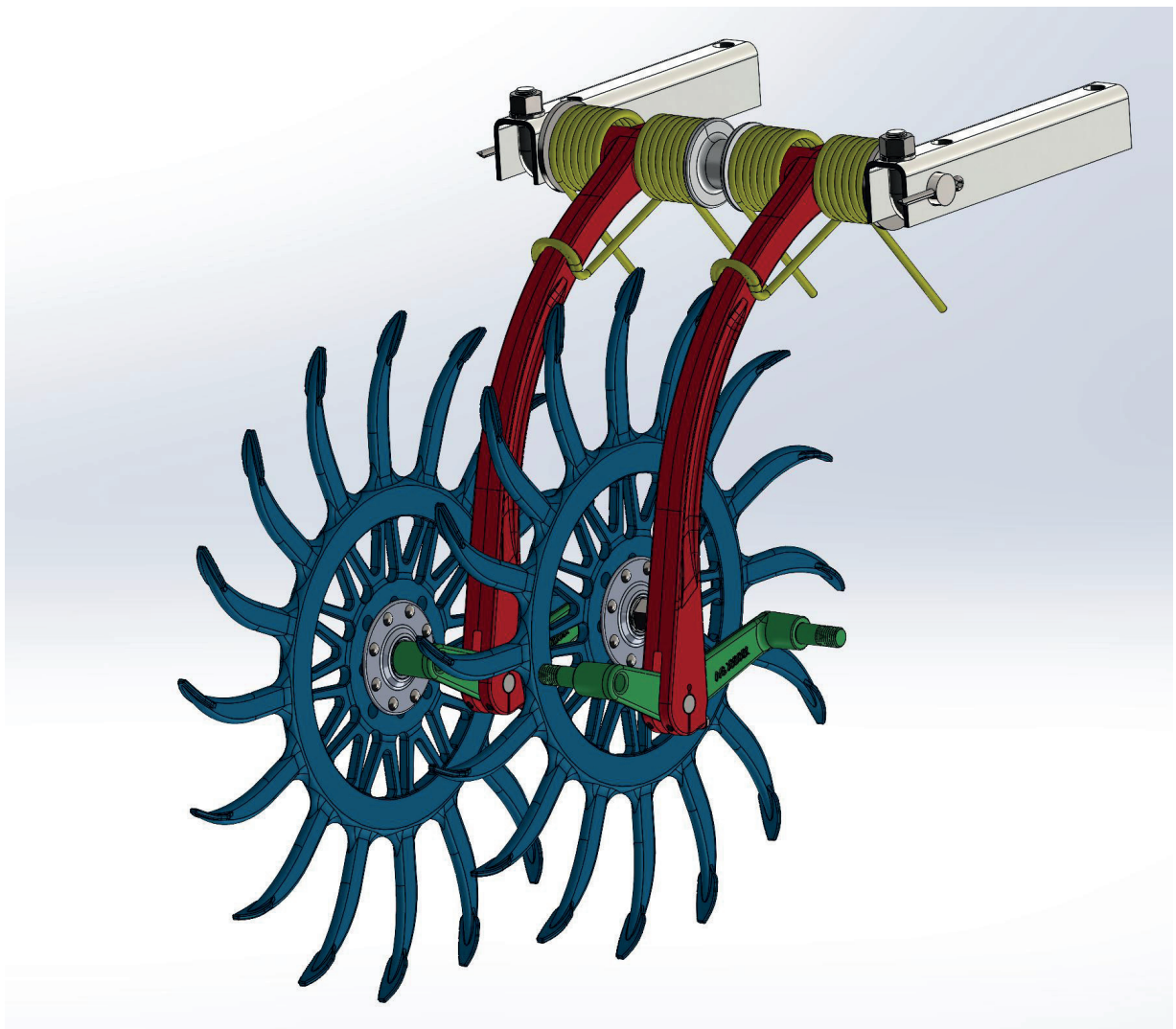
Origins

The Rotary Hoe has been used in North America since the 1920s. Initially, it was designed solely to break up crusts of soil on the field surface. The design of the machine has changed a little since then, but the way it works has stayed the same. Its current design means that the Rotary Hoe is suited to a range of different crops.



Construction

The complete Rotary Hoe unit consists of a frame tube, usually rectangular, to which support arms (red) are attached via shafts. These support arms are equipped with coil springs (yellow), which should generate a certain level of pressure. Each arm guides two rotary hoe wheels (blue) at the lower end. These hoe wheels are attached to a freely-mounted pendulum (green) in front of and behind the arm. This means that the Rotary Hoe can adapt to uneven ground while maintaining constant pressure. The hoe wheels themselves have tines that are shaped like spoons at the end. Thanks to the flexible support arms, the unit could - theoretically - also be adapted to all possible row widths. However, the major advantage of this machine is the full-surface, row- and direction-independent cultivation. This is because cultivation also takes place directly in the row here. With standard hoes this is only possible if you use additional tools, such as finger weeders.



How it works

The spoons penetrate the soil, loosen it up and then throw soil and small weeds that are in the thread stage onto the surface, where they then dry out. Larger weeds, however, cannot be removed in this way and are only cut up. It is worth doing this in bright sunlight so that the uprooted weeds do not have a chance to grow again before they wither. The encrusted soil layers are also broken up and loosened. This enriches the tilth with oxygen and nutrients, providing the perfect growth medium for crop plants that are already in the earliest stage of growth. The Rotary Hoe is also highly suitable for draining areas in spring and for the crop-friendly incorporation of slurry or substrate fertiliser, even in standing crops. Another cost-effective use of the Rotary Hoe is for preventive weed control prior to crop establishment.

The working speeds that can be achieved with this machine range from 15 to 20 km/h. This, combined with large working widths, enables large daily hectare outputs and therefore a high efficiency. The only drawback is that the spoon tips and rotary hoes can pick up all sorts of items that do not belong in a field, such as plastic, foil, cords, wires and other inorganic residues. This means that the machine needs to be cleaned at the end of each day as any remaining residues can damage bearing units if they are left. However, many users see this as an extra advantage: Everything that I have to pull out of the machine in the evening is no longer littering my field. In this way, the Rotary Hoe also helps to make a small contribution to environmental protection and nature conservation.

Areas of application

The main areas of application here in Europe are with maize, cereals, legumes, sunflowers and beets, but the Rotary Hoe is also occasionally used with ridge crops, such as potatoes, to break up surface crusts on the ridges. The design and the fact that this machine is used for full-surface cultivation mean that the Rotary Hoe can only be used with plants up to a certain size as it can damage larger plants. Another advantage with the cultivation is the cultivating direction. Depending on the crop, the cultivation can be done transversely to the seed row. As a general rule, the crops can be worked until tillers begin to form. With maize, for example, care must be taken to not transport too much of the thrown-up soil into the leaf axils of the plant. The Rotary Hoe is not suitable for use with crops with large leaves close to the ground as too much damage can be done to the foliage, which then inhibits the plant's growth.

Summary

All in all, the Rotary Hoe is a versatile, efficient machine that can also be used effectively on conventional farms. No chemical residues, independent of the rows, fast and low traction, regulating weeds and enriching the tilth: these are all the advantages of the Rotary Hoe. In view of the significant and growing demand for these machines, it can be assumed that we are now at the beginning of a renaissance of this technology that is over 100 years old.

