OLIVER AGRO

INTER ROW WEEDING MACHINES RANGE

www.oliveragro.com

Index

Discover our weeding machines suita




	Rotosark	Rotovert	Colibrì	Optyma
BEETS				
SUGAR BEET	●			
BULB				
GARLIC	●	●		
ONIONS		●	●	
LEEKS	●			
ARTICHOKES				
ARTICHOKES	●			
CARDOON	●			
CEREALS				
CORN	●			
SORGHUM	●			
RICE		●	●	
CRUCIFERS				
CABBAGE	●			●
BROCCOLI	●			●
CAULIFLOWER	●			●
FLOWERS				
SUNFLOWER AND CANOLA	●			
LEAVES				
LETTUCE	●	●		●
RADICCHIO	●	●		●
CHICORY	●	●		●
BEET GREENS		●	●	●
CHARD	●			●
FRUIT				
TOMATOES	●			
STRAWBERRIES	●			
PUMPKIN	●			
BUSHES				
FENNEL	●			
CELERY	●			

ble for your crop

OLIVER AGRO




	Rotosark	Rotovert	Colibrì	Optyma
AROMATIC HERBS				
PARSLEY		●	●	
BASIL		●	●	
FOURTH RANGE				
VALERIAN			●	
MIXED GREENS			●	
MESCLUN			●	
ROCKET		●	●	
TRANSPLANTS				
SHOOTS		●		
ROOTSTOCK	●			
ROSES	●	●		
LEGUMES				
SOYA	●			
BEANS-GREEN BEANS	●			
PEANUTS	●			
CHICKPEAS	●			
LENTILS AND PEAS	●			
FAVA BEANS	●			
ROOTS				
CARROTS		●	●	
PARSNIP		●	●	
RADISHES		●	●	
TURNIPS		●	●	
TUBERS				
POTATOES	●			
OTHER CROPS				
MEDICINAL HERBS	●			
TOBACCO	●			
HEMP	●			

MULCHED CROPS: **ROTOFILM**
CROPS ON SMALL RIDGES: **ROTOCLEAN**
CROPS ON LARGE RIDGES: **ROTODISK**

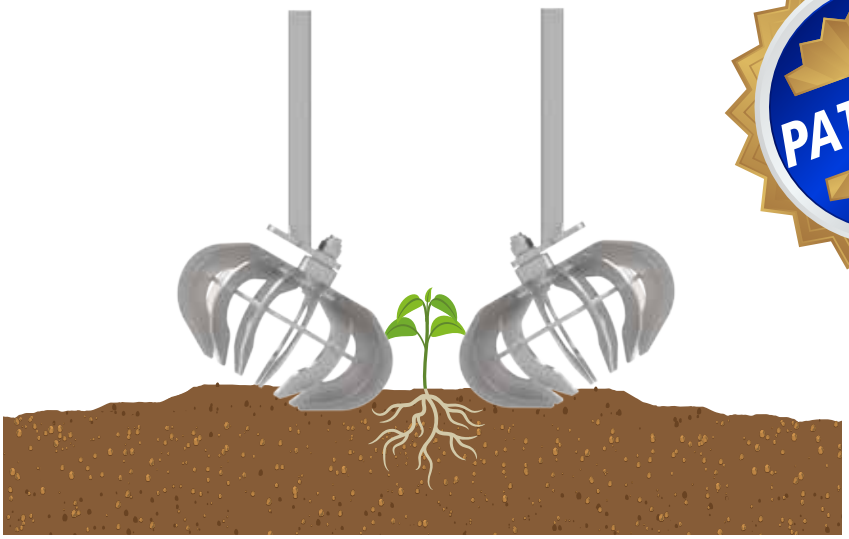
*Our **technology***

Innovative aspects and efficiency

Oliver Agro was **the first company in the world** to **produce steel rotors** for weeding machines, developing further **unique models** for **long-lasting but also effective use**:
Rotoblizz, Rotovert, Rotoclean, Rotodisk and Colibrì discs.

Rotoblizz rotors

WORKING **ON FLAT**



Rotoblizz rotors work directly on the row of plants without damaging the roots or leaves due to their round shape.

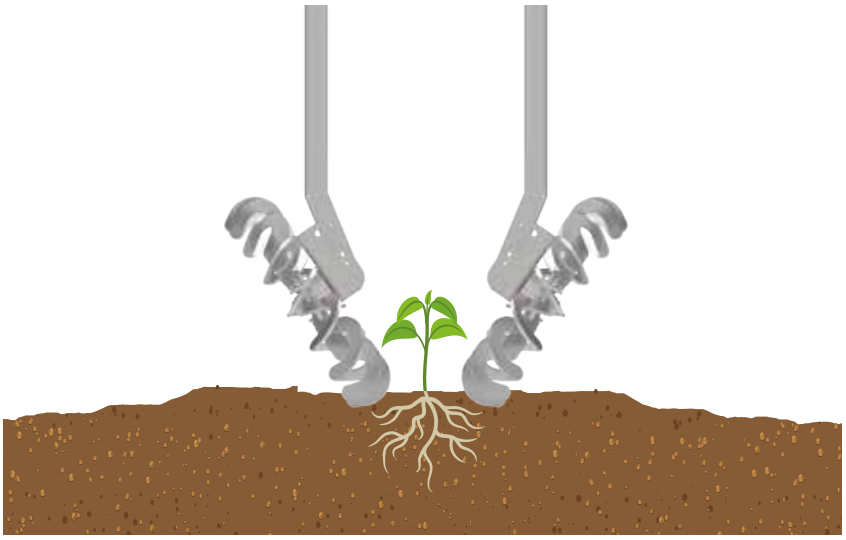
The anti-intrusion reinforcement rod welded inside the rotor allows even heavy, stony soil to be worked.
Rotating counter to each other at the same depth of 3–4 cm, they keep the plant straight, pushing the top of the soil towards the centre of the row and breaking it into pieces. In the meantime, the blades rotate to move weed sprouts or the weeds themselves outwards.

They are made of steel and have a fixed inclination of 28 cm towards the plant. They rotate due to a sealed bearing and are welded with curved, hook-shaped blades with a width of 3 cm.

ROTOBLIZZ DIMENSIONS				
DIAMETER	**30 cm**	**35 cm**	**40 cm**	**Rotofilm**
INTER-ROW SPACING	40-45 cm	50-60 cm	> 60 cm	Mulched crops
USABLE WORKING SURFACE AREA FROM THE PLANT	12 cm	14 cm	16 cm	2 cm from the mulch
DISTANCE FROM THE PLANT	2 cm			

Rotovert rotors

WORKING **ON FLAT**



Rotovert rotors, that is, vertical rotors, act like Rotoblizz rotors, but can be used on narrower inter-row spaces due to their shaped profile: 13–45 cm.

Rotating counter to each other at the same depth of 2–3 cm, they keep the plant straight, pushing the top of the soil towards the centre of the row and breaking it into pieces. In the meantime, the blades rotate to move weed sprouts or the weeds themselves outwards.

They are made of steel and have an inclination that is adjustable in 5 positions from 67° to 42° towards the plant. They rotate due to a sealed bearing and are welded with curved blades with a width of 3 cm.

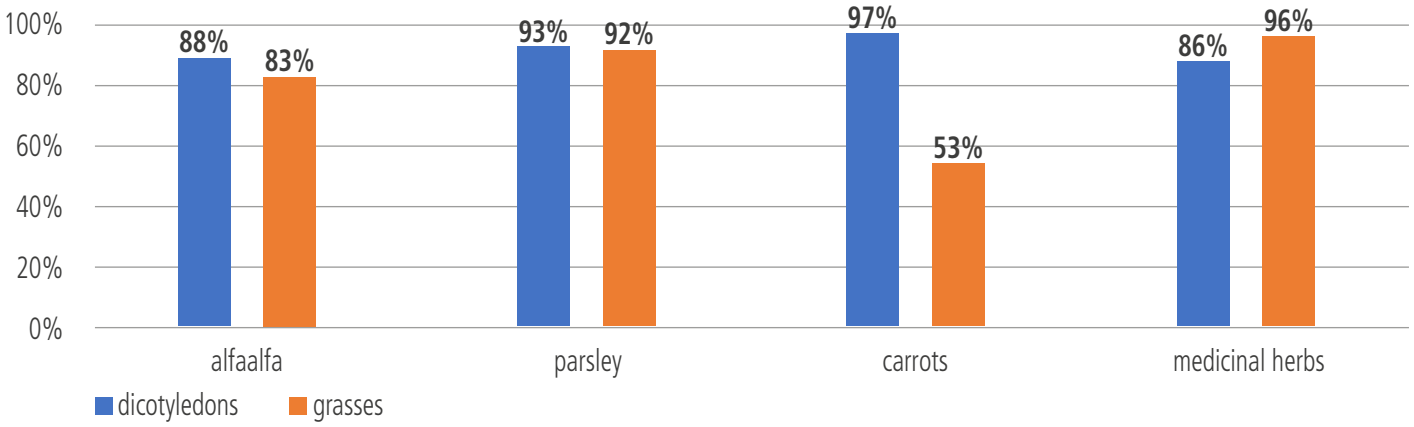
Usable working surface area from the plant 4,5-5,5 cm.

Efficiency results

Source BULLETIN SEMENCES N°6

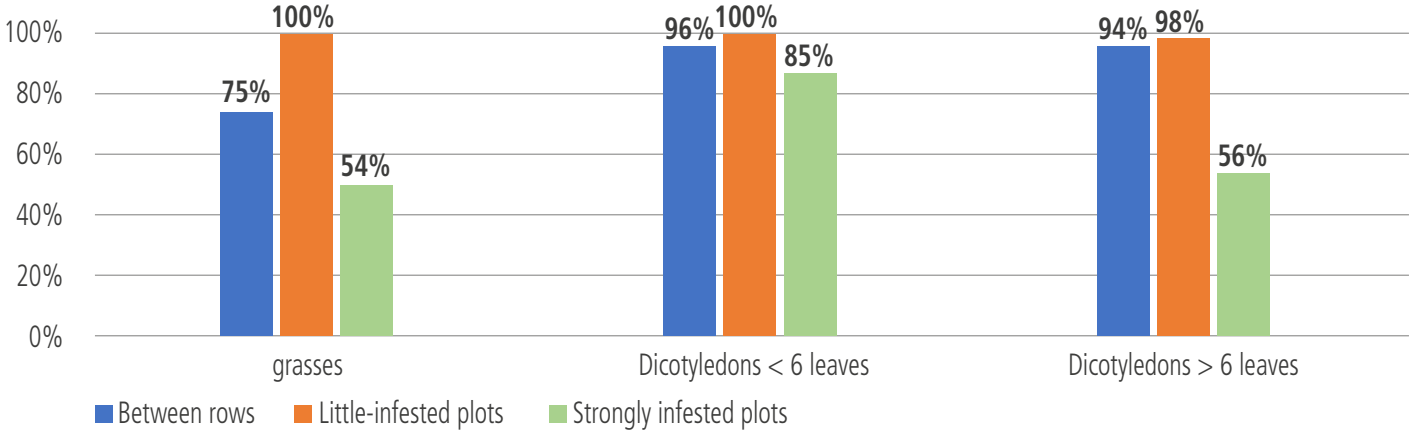
Optimal conditions: dry soil, loose with few stones.
Weed density: variable.
Crops: alfalfa, medicinal herbs, carrots, parsley.
Stage of development: cotyledon.
Passing at 7–8 km/hr.
Moderate amounts of soil were observed on the row, smothering the weeds in the initial stage.
The test showed good results 7 days later, with 83–97% effectiveness.
Only the weeding of grasses on carrots is 57%, because they were too developed in the row.

Effectiveness after 7 days (No. of weeds per m2 before and after 7 days)



Source: BULLETIN SEMENCES N°6

Effectiveness



Source Arvalis Institut du Vegetal

Effectiveness in eliminating weeds with different degrees of infestation

Source AGROÉQUIPEMENT

Colibrì *discs*

WORKING **ON FLAT**

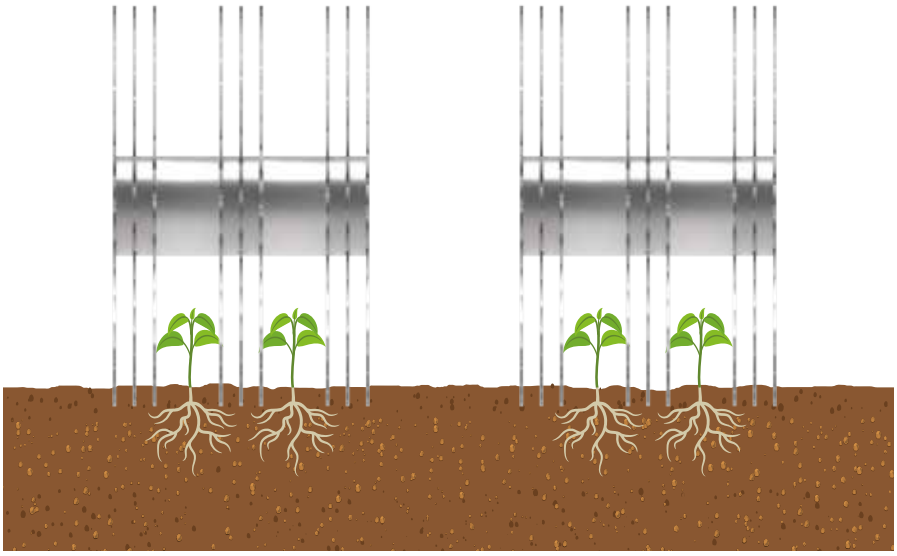


Figure 1
Colibrì, Straight teeth
(inter-row spacing 4.5–5 cm)

Figure 2
Colibrì, Angled teeth
(inter-row spacing 6–7 cm)

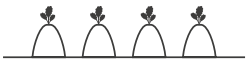
The COLIBRÌ motorized disc pack weeds actively, working at a depth of 2 cm. The height is adjusted via a hydraulic piston controlled electrically via a linear potentiometer to determine the actual working depth.
Weeding with COLIBRÌ allows for work in several rows at once starting from 5 cm, with a coverage of 80% of the surface tilled by the COLIBRÌ disc, equal to 60% of the surface of the entire bed.
The COLIBRÌ weeding machine used on fourth-range crops increases and improves production:
1. The seedlings sprout earlier so they can be harvested earlier than non-tilled crops.
2. For rocket, a further benefit - aeration - is seen after the first pass.

A unique characteristic on the market, there are two types of COLIBRÌ disc teeth:
Teeth are straight (Fig. 1) or angled opposite to the plants, protecting the plant by pushing the soil outwards. Suitable for narrow inter-row distances of 4.5 cm, or when the plant is in the first stages of growth and therefore very delicate.
Curved sawtooth teeth (Fig. 2) arranged in the spaces not occupied by the seedlings remove weeds and increase the working range of the weeding action.
The discs have a diameter of 320 mm, while the teeth are 40 mm in height and work at an adjustable depth equal to or less than 30 mm, to preserve the leaf collar of the plant.
Both the speed and configuration of the discs can be adjusted based on the stage of plant growth and soil type.

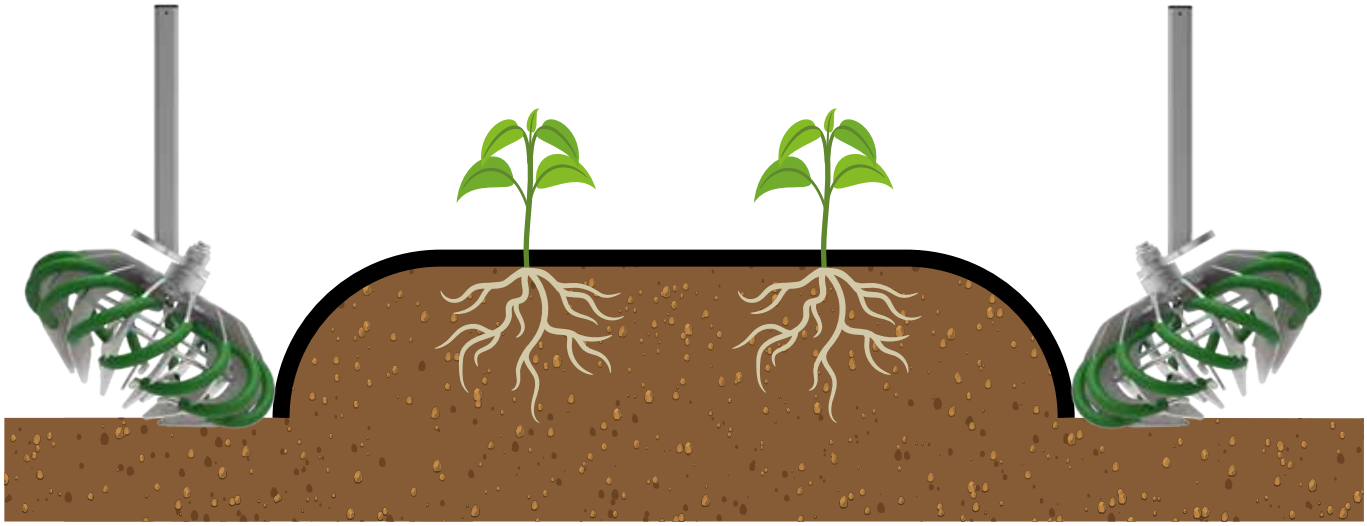
Rotofilm rotors

NEW

WORKING **ON BEDS**



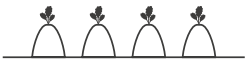
WORKING **ON RIDGES**



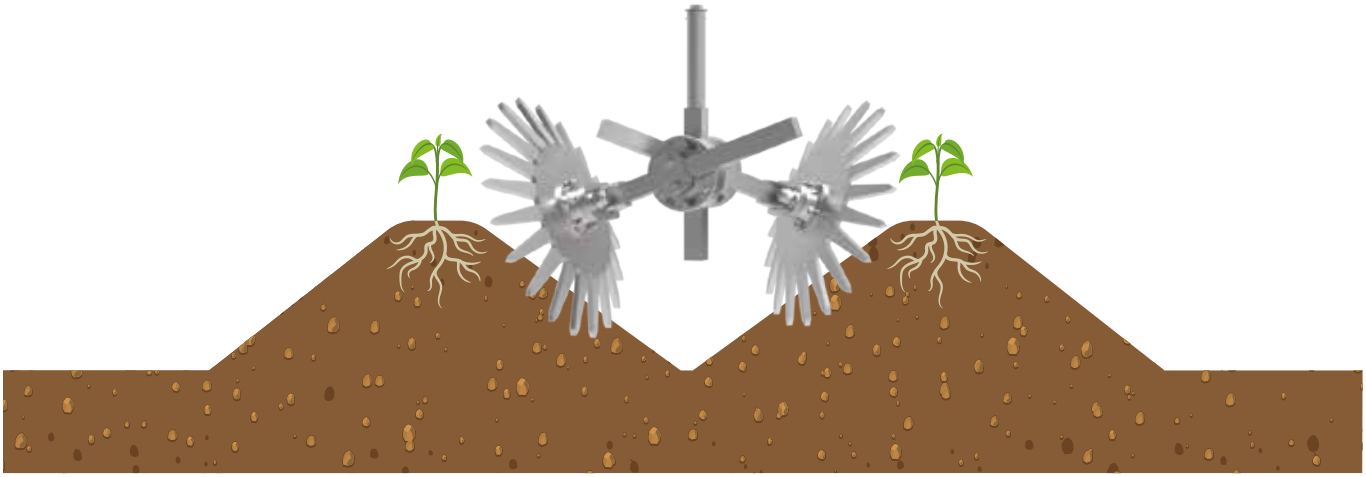
The Rotoblizz rotors have been covered with rubber tubing to work on the plastic film near the bed without damaging it. The rounded shape of the rotor and rubber coating prevent the film from tearing and curling, both at the beginning of the season when it has just been laid, or later when it has deteriorated and is more delicate. It can also be applied to biodegradable film, which is more delicate and prone to breakage.
The rotors work closer to the sheet than any other weeding machines on the market.
Weeds are removed via the mechanical action of the rotor, and the soil is then turned onto plastic film with a ridger or furrower.

Rotoclean *discs*

WORKING **ON BEDS**



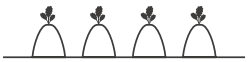
WORKING **ON RIDGES**



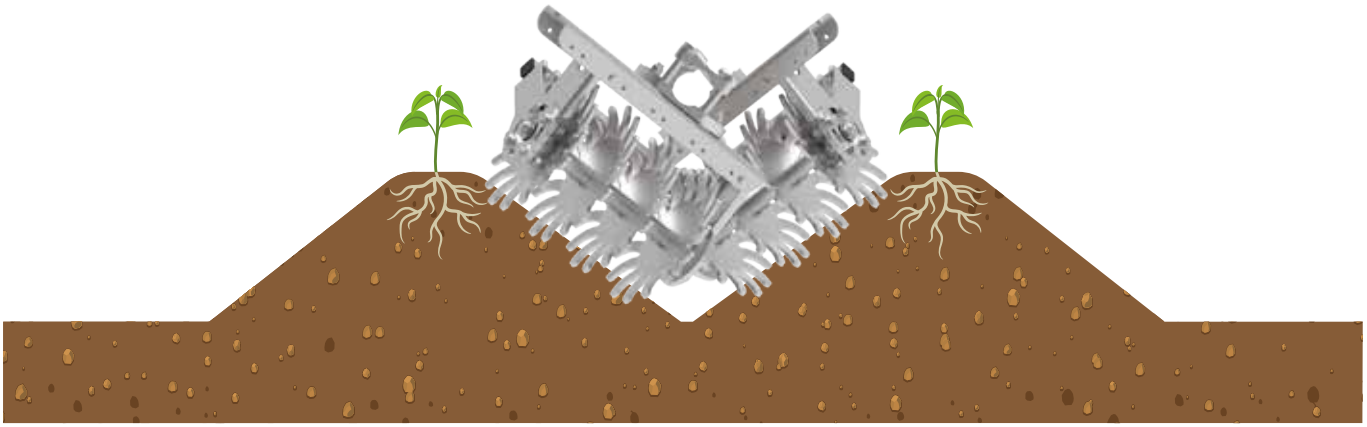
ROTOCLEAN discs are designed to loosen and work the soil to a depth of about 2 cm from the side of the mound and turn it over, dropping any weeds and stopping their germination. When in contact with the soil, the special star-shaped disc with 20 radial points allows the tiller to move forward easily. Given the convexity (to the right or left depending on the position on the ridge) with an angle of 20°, it turns over weeds growing on the side, allowing the soil to fall and drying out the weeds.

Rotodisk discs

WORKING **ON BEDS**



WORKING **ON RIDGES**

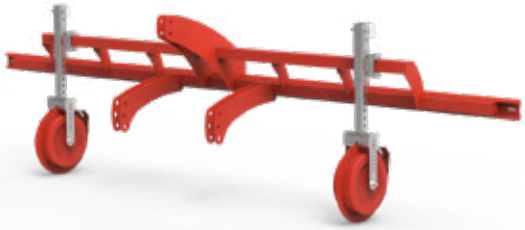


Rotodisk discs are designed to loosen the soil and turn it towards the upper part of the ridge. When in contact with the ground, the special curved 15-point star shape allows the tiller to move forward easily. Given the convexity (to the right or left depending on the position on the mound) with an angle of 15°, the soil is lifted as with a simple convex disc, with the difference that the soil is not retained and thus compacted at the sides, but is released, mixing along the side and removing any weeds that may have formed.

Frames

Frames and machine alignment with crops

1. **Fixed Frame**, with wheels of height/fixed with no guide.



2. **Fixed frame with guiding wheels, handlebar steering, and operator seat.**
Mechanical steering via a handlebar acts on the front wheels of the machine; a rear operator is required for control; suitable for light machines.

3. **Fixed frame with rotating wheels, electro-hydraulic steering with joystick and operator seat.**
The joystick acts on the front wheels of the machine; a rear operator is required for control. Suitable for heavier machines. Wings/side sections can be made to fold for road transport.

4. **Hydraulic shifting frame, fixed wheels, joystick driving and operator seat.**
The frame consists of 2 sections: a fixed part attached to the tractor and a second driven by hydraulic cylinders. Steering via a joystick (which can be removed) moves the elements on the second frame. Suitable for heavier machines. An operator is required if there is no automatic camera.

With RTK on the tractor, the driver can move the weeding machine elements, controlling 1 or more rows on a 10.4" HD monitor using the joystick in the cab.
Wings/side sections can be made to fold for road transport

5. **Hydraulic shifting frame, fixed wheels, automatic guiding with TILLETT & HAGUE (T&H) camera, no rear operator.**
Wings/side sections can be made to fold for road transport.

Automatic systems

The TILLETT & HAGUE AUTOMATIC ALIGNMENT AND PLANT RECOGNITION SYSTEM

Our Tillett & Hague optical guidance system analyses data from digital cameras to identify features of interest, for example, rows, individual plants, or weeds. The area considered is as large as necessary to maximize the data used for steering.

The system analyses a green/red ratio to identify the crop and weeds from the background containing soil, stones, and other materials, enabling crops of different colours to be worked.
The display shows a shot of part of the plants sufficient for analysis. Guide lines or traces are shown on the touch-screen display, showing the quality of the correspondence, that is, the exact settings of both the camera and software. When weeds are detected, a graph showing the perimeter is overlaid on the image.

The position of the traces serves to align the elements of the weeding machine with the rows identified. Last but not least, using Optyma, the aperture of the tiller element is synchronized as individual plants pass under the equipment.

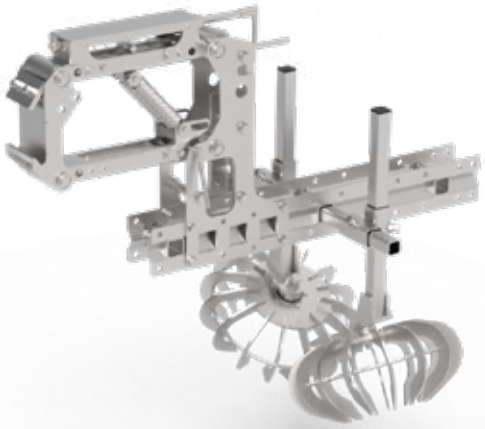
AUTOMATIC WORKING DEPTH MANAGEMENT SYSTEM

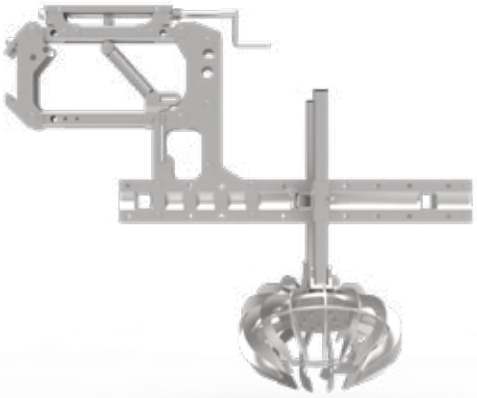
The depth management system is specific to Optyma and Colibri and has the following features:
- Manual depth positioning for each individual element with 3-mm steps
- The desired depth is automatically maintained
- Speed adjustment of the discs, either manually or by synchronizing the disc revolutions per minute with the speed of the tractor (only for Colibrì)
- Automatic adjustment of the reaction time from the probe to the discs in Colibrì or to the blades in Optyma (suitable for low speeds 0.5–1 km/hr)
- Dedicated function for aligning all elements horizontally
- Zero setting set in the factory
- Possibility of setting a dedicated dead band before the probe gives the signal to correct the height
- Screen display of machine values
- Screen for displaying routine maintenance
- Screen for displaying and modifying parameters (only accessible to specialized technicians)
- Possibility of implementing remote assistance
- Alarms if the machine is used improperly
- Alarm and machine block if the oil overheats excessively
- Alarm and machine block if any stones/crop residues get jammed in the discs, via a pressure switch for each element in Colibrì and via an inductive sensor in Optyma
- Alarm for blocked discharge filter
- Inductive sensor to detect the machine raised from the tractor or resting on the ground to activate and deactivate the self-levelling system

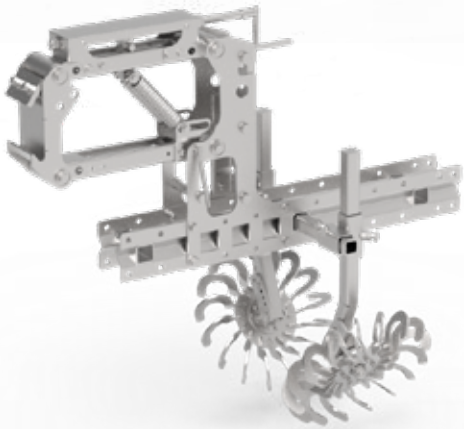
Elements

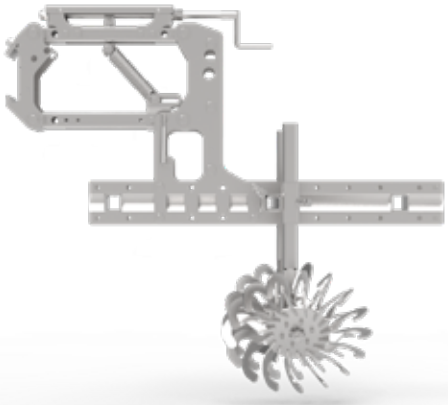
*Standard **Rotosark** / **Rotovert** element*

The elements consist of a parallelogram with parallel bars, a crank-operated variable-load spring, and a strut with 3 slots for various tools and accessories, such as surface-breaking hoes or the Colibrì disc kit, a pair of opposing steel Rotoblizz/Rotovert/Rotoclean rotors with sealed bearing, a pair of rear swallow-tailed hoes for working in between the rows, or accessories such as the Rotodisk kit or the pair of deflectors for earthing up plants. The two opposing rotors straddle the cultivated row, guaranteeing constant pressure and yielding greater precision and proximity than in an inter-row parallelogram, where uneven terrain can exacerbate drift due to excessive steering.
The configuration of the parallelogram allows for vertical movement perpendicular to the ground, acting directly on the pair of rotors. Positioned thus, the rotors act as a level, making a support wheel unnecessary.



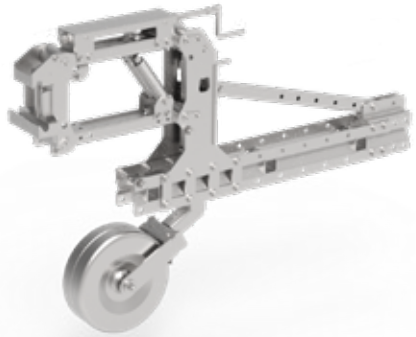


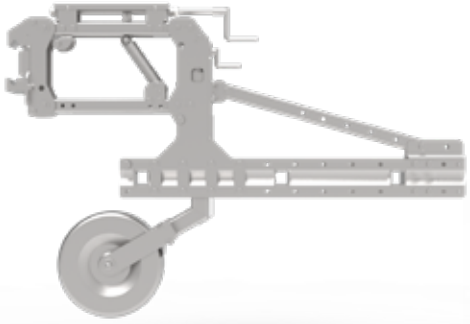




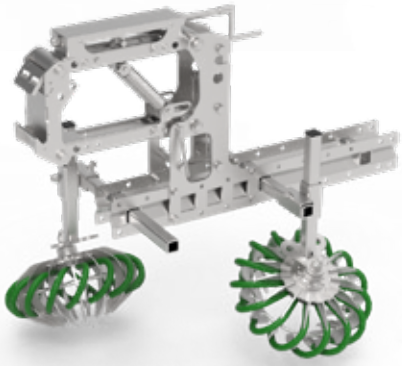
Inter-row element for Rotosark, Rotofilm, Rotodisk and Rotoclean

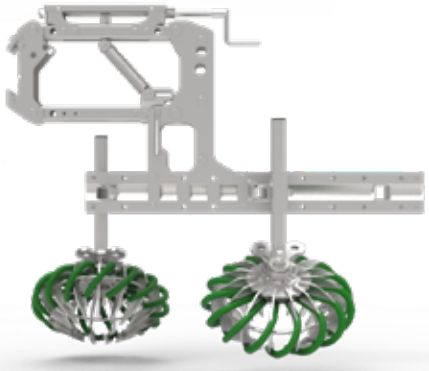
The levelling wheel is a kit designed for use on all elements, allowing for height adjustments depending on the necessary work. Oliver Agro uses levelling wheels on all elements without spring support systems that work between the rows so that the element is directly controlled by the contour of the ground.



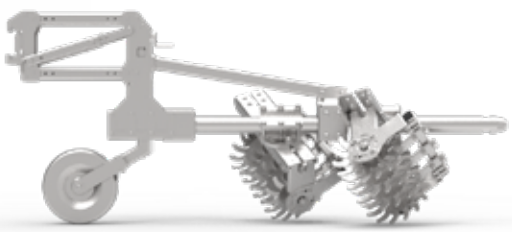


BASIC ELEMENT





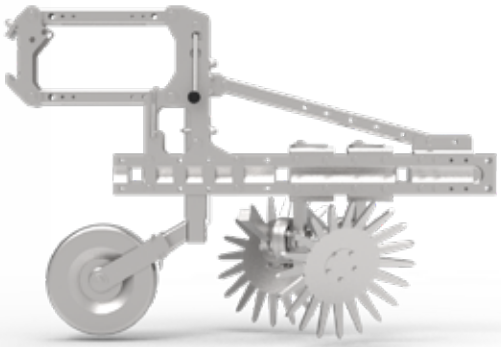
ROTOFILM ELEMENT



ROTODISK ELEMENT

Rotoclean *elements*

The ROTOCLEAN elements consist of a parallelogram with parallel bars, a crank-operated variable-load spring, an adjustable support wheel, and a strut with 3 slots for various tools and accessories, a pair of steelRotoclean rotors with sealed bearing, a rear swallow-tailed hoe for working in between the rows, and a deflector for earthing up plants.



Rotovert TILT *element*

Independent tilting element with load variation on the ground via a spring.

The TILT elements consist of 2 hinged parallel bars bearing a pair of Rotovert elements with and without guards opposite each other above the cultivated row. The pressure is regulated by a variable-load spring and the tilting movement ensures a constant level of work in the soil. Since the two parallel bars are independent, the work is guaranteed to be uniform, with greater proximity than for standard parallelograms, working on inter-row spacings from 13 cm to 25 cm.
A front inter-row element with a support wheel and a pair of swallow-tailed hoes completes the work by hilling at the same time.

Benefits of weeding

Weeding breaks up and mixes the surface layer of the soil between rows, yielding certain benefits, such as:

1. breaking up the surface to interrupt the vertical channels created in the soil after prolonged periods of drought, thereby aggravating the water deficit;

2. a more uniform incorporation of rainwater during precipitation, which enables better absorption for the upper part of the root system and a reduction in surface runoff, which is one of the causes of erosion;

3. effective mechanical weeding, that is, a viable alternative to chemical weeding, eliminating and reducing the application of chemicals and therefore costs.

Our weeding machines combine these aspects, benefitting crops and production.

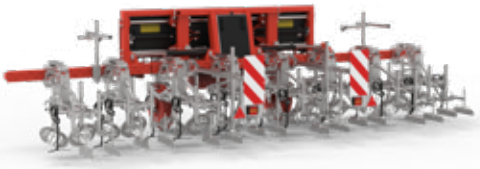
Use

As can be seen from the graphs, we recommend weeding as a preventive method, ideally 7 days after transplanting or 10 days after sowing, and whenever weeds are in the cotyledon or germinating stage, for optimal aeration and breaking up the surface, while a second pass is required if the weeds are already grown.

Smart Farming 4.0

Our machines can be equipped with the 4.0 Kit for connectivity and custom job data collection.

Our **precision weeding machines** proposal



Rotosark

Rotoclean

Rotohemp

Rotodisk

Rotofilm

Colibrì

Rotovert

Optyma

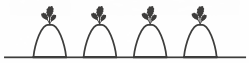
Rotovert TILT

Rotosark

Rotosark weeding machine with fixed, shifting, or folding frame; modular with one or more parallelograms that work on sown or transplanted rows.

WORKING **ON FLAT**

WORKING **ON BEDS**



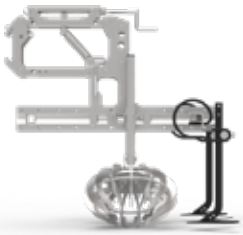
WORKING **ON RIDGES**

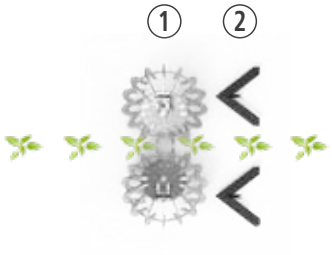
TYPE OF SOIL	Sandy/medium texture and stony (with small stones: about 3–4 cm in diameter)
INTER-ROW DISTANCE	Minimum 40 cm/16″ – 80 cm/31.5″
INTER-PLANT DISTANCE	-
ROTOR DIMENSIONS	Fixed inclination 28° Rotoblizz: Ø 30 cm; Ø 35 cm; Ø 40 cm;
WORKING SPEED	3 - 9 Km/hr
REQUIRED PREPARATION OF THE TERRAIN	Good and without crop residues
N. OF ROWS	Depending on the transplanter/seed drill in use, also on multiple ridge
TYPE OF SYSTEM	Mechanical
USE	Intuitive and modular

Rotosark *elements*

ROTOSARK ELEMENT
STANDARD

WORKING ON THE ROW

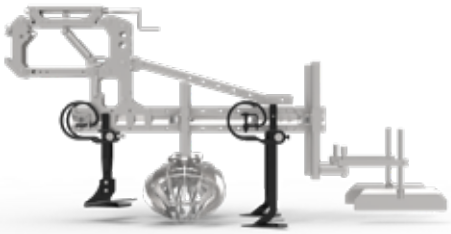


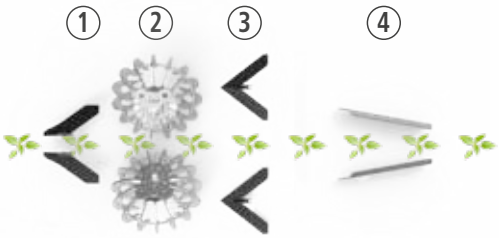


1. **Rotoblizz rotors.**
2. **Inter-row weeding kit:** works in areas of the soil not worked by the Rotoblizz rotors.

ROTOSARK ELEMENT
STANDARD with accessories

WORKING ON THE ROW

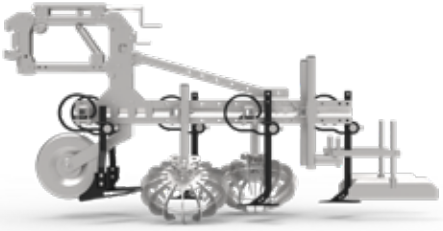


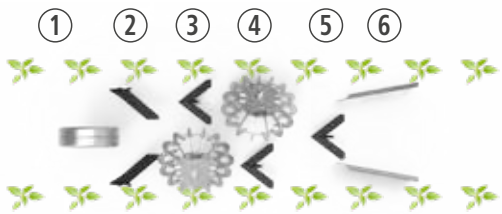


1. **Front side hoes:** to break up the soil and removing stones. Suitable for heavy soils.
2. **Rotoblizz rotors.**
3. **Inter-row weeding kit**: works in areas of the soil not worked by the Rotoblizz rotors.
4. **Pair of ridgers:** to mound up the soil.

ROTOSARK ELEMENT
INTER-ROW

WORKING BETWEEN ROWS





1. **Levelling wheel:** to regulate the working depth.
2. **Front side hoes:** to break up the soil and removing stones. Suitable for heavy soils.
3. **Inter-row weeding kit**: works in areas of the soil not worked by the Rotoblizz rotors.
4. **Rotoblizz rotors.**
5. **Track loosener hoe:** to move the soil following the pass of the levelling wheel.
6. **Pair of ridgers:** to mound up the soil.

Rotohemp

NEW

Rotosark with fixed frame, manual steering on rotating wheels with handlebar and seat, with 1 parallelogram with leaf lifter and side tilling elements.
For crops such as pumpkin, artichokes, hemp, and cauliflower.

WORKING **ON FLAT**

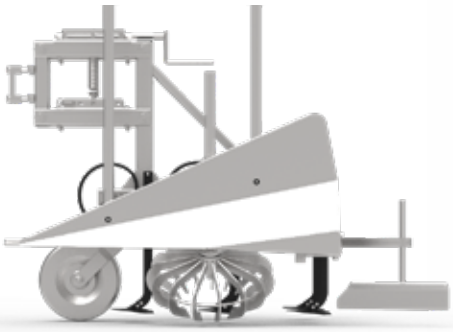
WORKING **ON RIDGES**

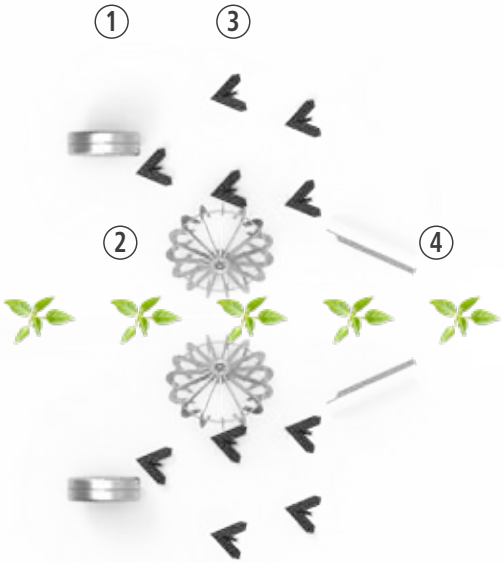
TYPE OF SOIL	Sandy/medium texture and stony (with small stones: about 3–4 cm in diameter)
INTER-ROW DISTANCE	80 cm/31,5"
INTER-PLANT DISTANCE	-
ROTOR DIMENSIONS	Fixed inclination 28° Rotoblizz: Ø 40cm;
WORKING SPEED	3 - 9 Km/hr
REQUIRED PREPARATION OF THE TERRAIN	Good and without crop residues
N. OF ROWS	Depending on the transplanter, even on multiple ridge
TYPE OF SYSTEM	Mechanical
USE	Intuitive and modular

Rotohemp *element*

ROTOHEMP ELEMENT
STANDARD

WORKING ON THE ROW





1. **Levelling wheel:** to regulate the working depth.
2. **Rotoblizz rotors.**
3. **Inter-row weeding kit**: works in areas of the soil not worked by the Rotoblizz rotors.
4. **Pair of ridgersi:** to mound up the soil.

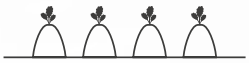
   *** Pair of leaf-lifters:** when the plant is well developed.

Rotofilm

NEW

ROTOFILM: THE WEEDING MACHINE FOR RIDGE WITH PLASTIC MULCH.
Rotofilm weeding machine with fixed frame, shifter with parallelograms working on the side of the mound or mulched ridge.

WORKING **ON MULCHED BEDS**



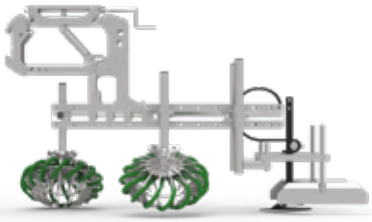
WORKING **ON MULCHED RIDGES**

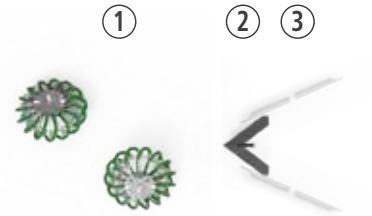
TYPE OF SOIL	All
RIDGE DISTANCE	Minimum 70 cm
ROTOR DIMENSIONS	Fixed inclination 28° Rotoblizz Ø 35 cm with ROTOFILM Kit
WORKING SPEED	4 - 7 Km/hr
REQUIRED PREPARATION OF THE TERRAIN	With bed former/mulcher
N. OF ROWS	On one or more beds/ridges
TYPE OF SYSTEM	Mechanical/Fixed machine
USE	Intuitive and modular

Inter-row **Rotofilm element**

ROTOFILM ELEMENT
STANDARD

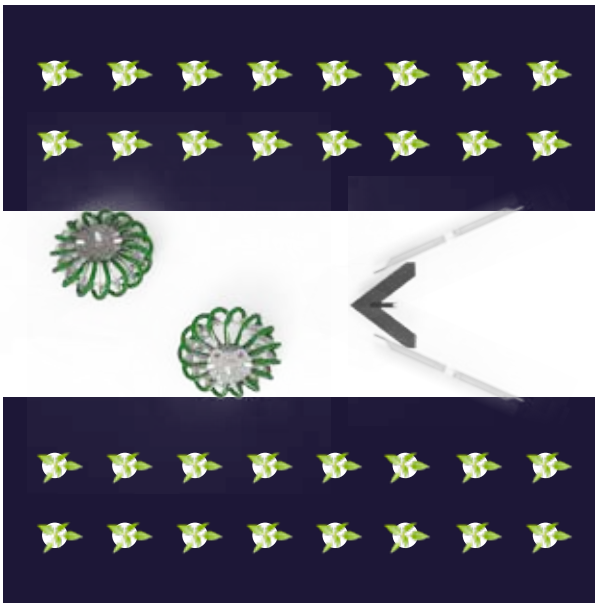
WORKING BETWEEN ROWS





① **Rotofilm rotors:** for working the sides of the mound or mulched ridge without ruining it.
② **Track loosener hoe:** to move and eradicate the track and lift the soil.
③ **Pair of ridges or deflector:** to mound up the soil.

WORKING SCHEME



TECHNICAL CHARACTERISTICS

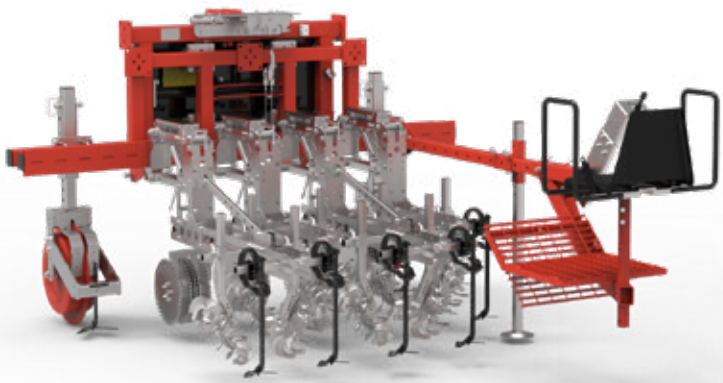
Rotofilm® weeding machine with fixed frame or shifting frame with multiple inter-row parallelograms and a pair of Rotoblizz rotors Ø 350 mm with an anti-intrusion reinforcement rod per row with the ROTOFILM kit, inter-row weeding hoes of 240 mm per row, support wheels Ø 320 mm with depth adjustment, and ridges units when necessary.

ADVANTAGES OF INNOVATION

In addition to the proven benefits of weeding (breaking up the surface, incorporating rainwater and increasing water uptake by the root system, mechanical weeding), safe cleaning work in the presence of PVC or biodegradable weed control fabric is also an advantage.
The Rotofilm® weeding machine is the only mechanical means that can work at a speed of approximately about 6–8 km/hr at the side of the weed control fabric throughout the season. Arranged in this way, the machine can be used on all types of mulched crops (lettuce, strawberries, etc.). It can also be used in nurseries for cleaning rootstocks and shoots.

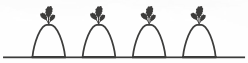
Rotovert

Rotovert weeding machine with fixed, shifting, or folding frame; modular with one or more parallelograms that work on sown or transplanted rows.



WORKING **ON FLAT**

WORKING **ON BEDS**



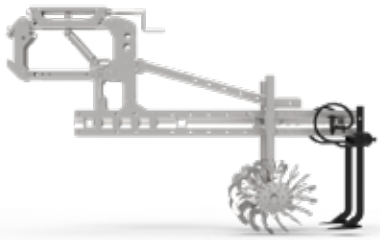
WORKING **ON RIDGES**

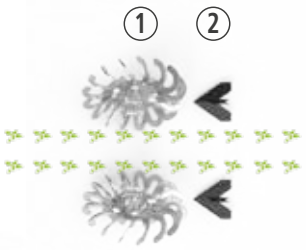
TYPE OF SOIL	Sandy/medium texture and stony (with small stones: about 2–3 cm in diameter)
INTER-ROW DISTANCE	Minimum 25 cm, 10" , maximum 40 cm 15"
INTER-PLANT DISTANCE	-
ROTOR DIMENSIONS	A unique Rotovert model with adjustable angle
WORKING SPEED	2 - 5 Km/hr
REQUIRED PREPARATION OF THE TERRAIN	Good without crop residues
N. OF ROWS	Depending on the transplanter/seed drill in use, also on multiple ridge
TYPE OF SYSTEM	Mechanical
USE	Intuitive and modular

Rotovert *elements*

ROTOVERT ELEMENT
SINGLE

WORKING ON THE ROW

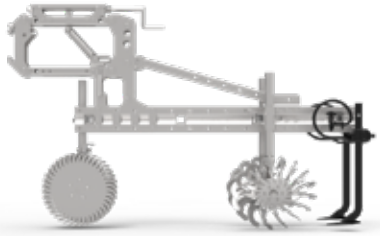


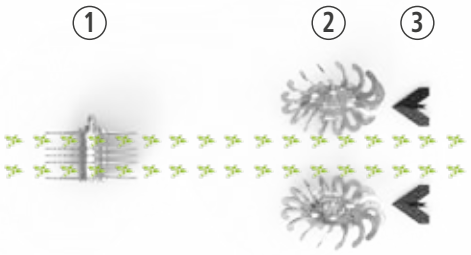


1. **Rotovert rotors.**
2. **Rear side hoes:** for inter-row weeding.

ROTOVERT ELEMENT
WITH ACCESSORIES

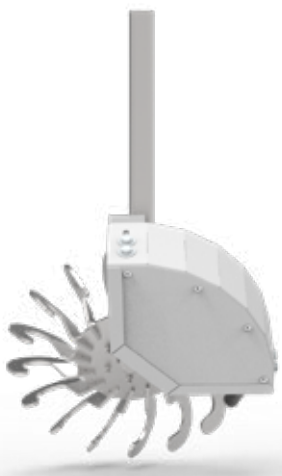
WORKING ON THE ROW





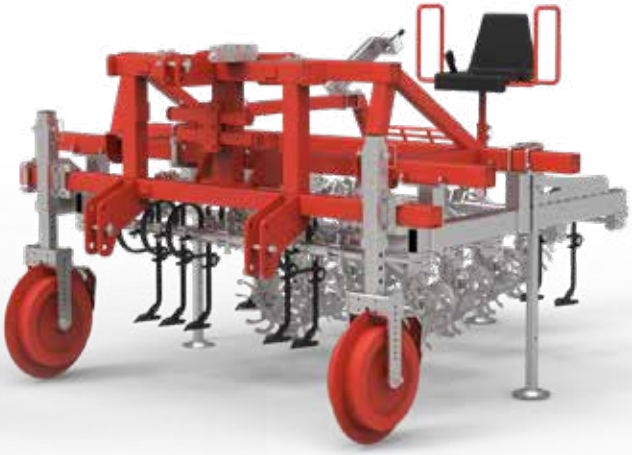
1. **Front side hoes/Colibrì disc kit:** for breaking up the ground and removing stones and for heavy soils, while the COLIBRÌ kit is used to work in 7–8-cm inter-row spaces.
2. **Rotovert rotors with protection.**
3. **Rear side hoes:** for inter-row weeding.

Rotovert *rotor with protections*



Rotovert TILT

Rotovert TILT weeding machine with shifting frame; modular with variable-load 'tilting' parallelograms that work on sown or transplanted rows.



WORKING **ON FLAT**

WORKING **ON BEDS**

TYPE OF SOIL	Sandy/medium texture and stony (with small stones: about 2–3 cm in diameter
INTER-ROW DISTANCE	Minimum 12.5 cm, 6"
INTER-PLANT DISTANCE	-
ROTOR DIMENSIONS	A unique Rotovert model with adjustable angle
WORKING SPEED	2 - 5 Km/hr
REQUIRED PREPARATION OF THE TERRAIN	Good without crop residues
N. OF ROWS	Depending on the transplanter/seed drill in use, also on multiple ridge
TYPE OF SYSTEM	Mechanical
USE	Intuitive and modular

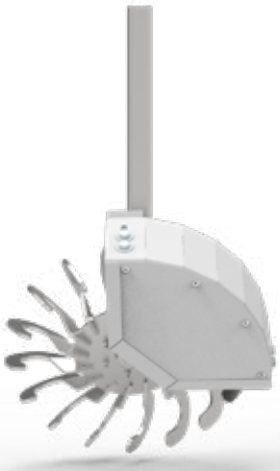
Rotovert TILT element

ROTOVERT TILT ELEMENT
STANDARD

WORKING ON THE ROW

① Rotovert rotor.

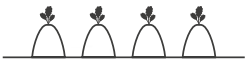
Rotovert rotor with protections



Rotoclean

ROTOCLEAN weeding machine with fixed frame; modular with multiple inter-row parallelograms with support wheel to work at the base of the mound or ridge.

WORKING **ON FLAT**



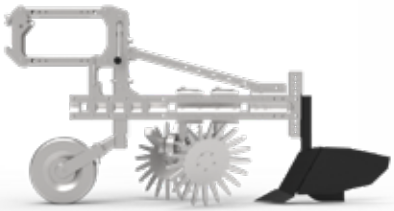
WORKING **ON RIDGES**

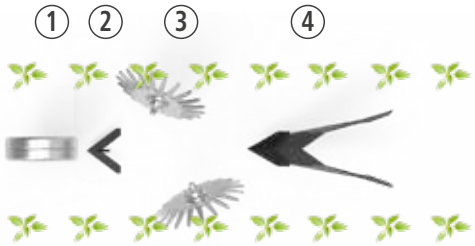
TYPE OF SOIL	Sandy/medium texture and stony (with small stones: about 2–3 cm in diameter
INTER-ROW DISTANCE	60-75 cm
INTER-PLANT DISTANCE	-
ROTOR DIMENSIONS	A unique ROTOCLEAN model with adjustable angle
WORKING SPEED	2 - 5 Km/hr
REQUIRED PREPARATION OF THE TERRAIN	Good
N. OF ROWS	Depending on the bed former being used
TYPE OF SYSTEM	Mechanical
USE	Intuitive and modular

Rotoclean *element*

ROTOCLEAN ELEMENT
STANDARD

WORKING BETWEEN ROWS





1. **Dual-adjustment element:** for pressure on the ground with crank-operated variable-load parallelogram and for depth with wheel adjustment.
2. **Track loosener hoe**.
3. **Rotoclean Rotors:** steel, with straight star-shaped blades, variable inclination towards the side of the mound to work at a depth of 2 cm, dropping weed sprouts or the weeds themselves at the base of the furrow.
4. **Other accessories such as the adjustable or fixed deflector.**

ROTOCLEAN fixed frame, 1 element Rotoclean + 2 ½ with fixed wheels and depth adjustment

TECHNICAL CHARACTERISTICS

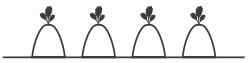
Rotoclean on the lift with 3-point attachment consisting of a simple fixed frame with 3 or 5 inter-row elements and a pair of Rotoclean rotors each, adjustable deflectors; 2 support wheels diam. 400 mm with depth adjustment, for crops on ridge, such as carrot and potatoes.

Rotodisk

ROTODISK weeding machine with fixed frame; modular with multiple inter-row parallelograms with support wheel to work at the base of the ridge.

ROTODISK modular frame with multiple Rotodisk elements mounted on a shifter with Rotoblizz.

WORKING **ON FLAT**



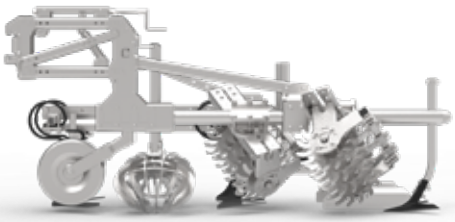
WORKING **ON RIDGES**

TYPE OF SOIL	Sandy/medium texture and stony (with small stones: about 2–3 cm in diameter)
INTER-ROW DISTANCE	> 75 cm
INTER-PLANT DISTANCE	-
ROTOR DIMENSIONS	A unique ROTODISK model with adjustable angle, shift, and rotation
WORKING SPEED	6 - 8 Km/hr
REQUIRED PREPARATION OF THE TERRAIN	Good
N. OF ROWS	Depending on the bed former being used
TYPE OF SYSTEM	Mechanical
USE	Intuitive and modular

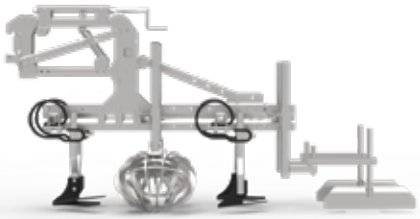
Rotodisk element

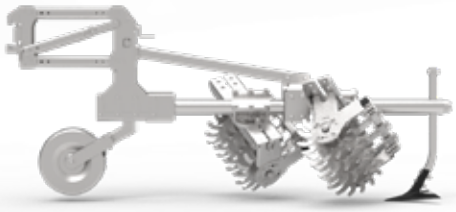
ROTODISK ELEMENT
SINGLE

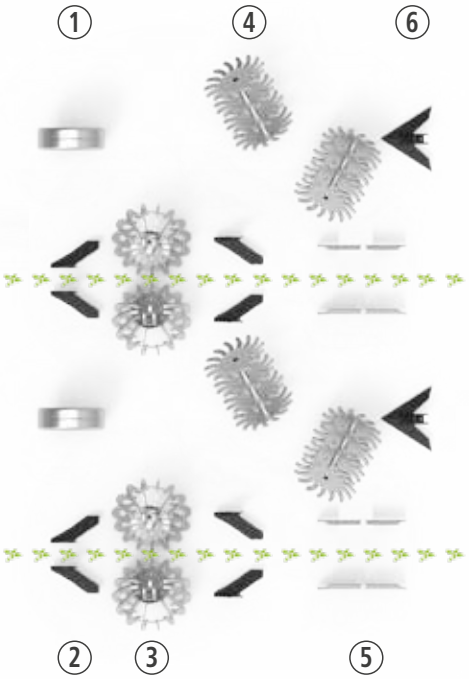
WORKING BETWEEN ROWS



BODIES AND WORKING SCHEME







1. **Dual-adjustment element:** for pressure on the ground with crank-operated variable-load parallelogram and for depth with wheel adjustment
2. **Front side hoes:** to break up the soil and removing stones. Suitable for heavy soils
3. **Rotovert or Rotoblizz rotors**
4. **Rotodisk rotors:** steel, with straight star-shaped blades, variable inclination towards the side of the ridge to work at a depth of 2 cm, dropping weed sprouts or the weeds themselves
5. **Pair of ridgers:** to hearth the soil
6. **Fixed furrow**

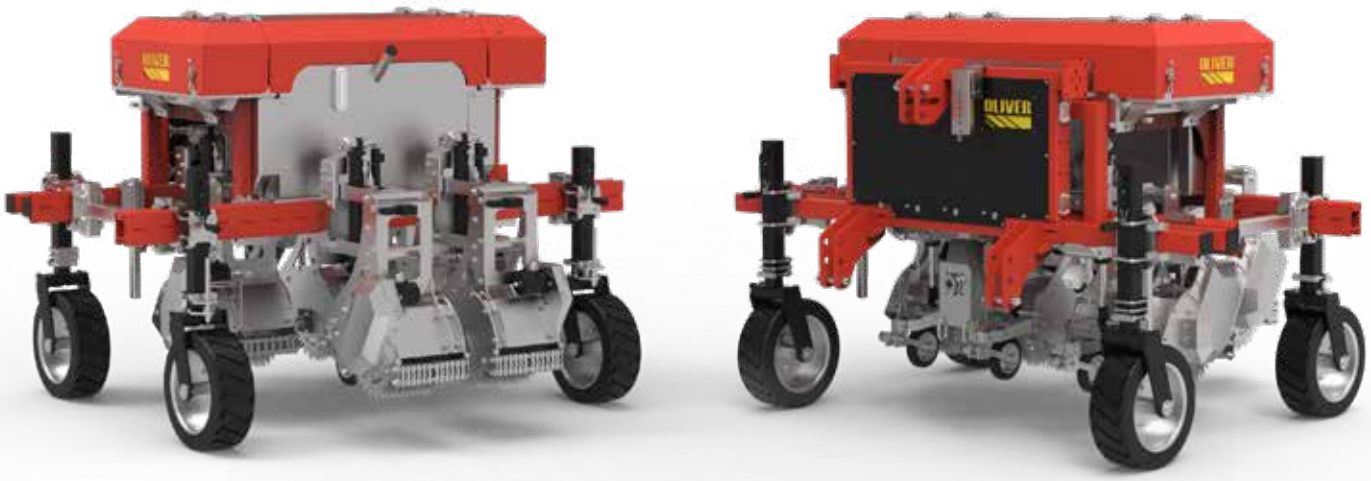
TECHNICAL CHARACTERISTICS

Rotodisk on the lift with 3-point attachment consisting of a simple fixed frame with 3 or more inter-row elements, a pair of Rotodisk rotors each, and fixed deflectors; 2 support wheels diam. 400 mm with depth adjustment, for crops on ridge, such as potatoes and tobacco.

Colibrì

The COLIBRI weeding machine works right next to the sown row at a distance of 2 cm from the plant, with minimum inter-row distances of 4.5 cm for carrots and 6 cm for baby leaves, without damaging the leaf and root system and preventing weeds from germinating.

The active weeding system actuated by the motorized rotation of the discs means the COLIBRÌ gently breaks up the soil without causing the plant to shift. Both the speed and configuration of the discs can be adjusted and requested depending on the plant growth stage and type of soil.



WORKING **ON FLAT**

WORKING **ON BEDS**

WORKING **ON RIDGES**

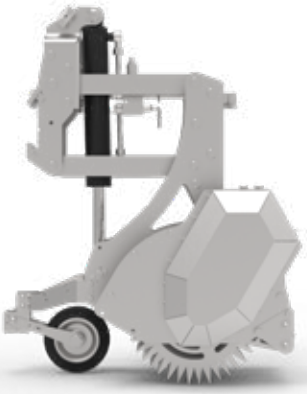
TYPE OF SOIL	Sandy, medium texture, without stones/rocks
INTER-ROW DISTANCE	CARROTS: Min. 4.5 cm FOURTH RANGE or FRESH-CUT products: 5 cm
ROTOR DIMENSIONS	Standard disc dimension Ø 320 mm
WORKING SPEED	1,5 - 3,5 Km/hr
REQUIRED PREPARATION OF THE TERRAIN	Stone burier, bed former with smooth levelling roller, use of RTK GPS for soil preparation, sowing, and weeding.
SOWING/TRANSPLANTING	Centred on the mound
NO. OF ROWS	Depending on the seed drill in use, on one mound at a time
TYPE OF SYSTEM	Automatic
USE	Some attention to camera settings and depth sensors

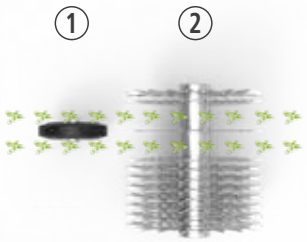
Colibrì element

Each COLIBRÌ element consists of a covered parallelogram with a series of COLIBRÌ discs with cleaners, hydraulically POWERED by a 50-cc orbital motor with transmission unit and probe with angle sensor for self-levelling at the front, configured according to the customer's settings. The elements are moved up or down by a hydraulic piston electrically controlled by a linear potentiometer to relay the actual working depth. Each disc has a diameter of 320 mm, with a 3-mm thickness. The useful working surface of each disc is 240 mm.

COLIBRÌ ELEMENT
STANDARD

WORKING ON THE ROWS

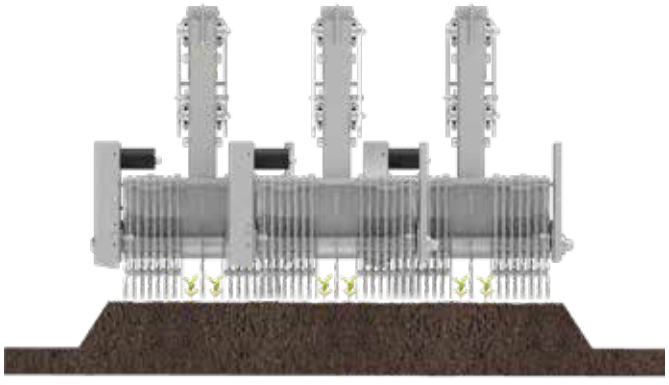


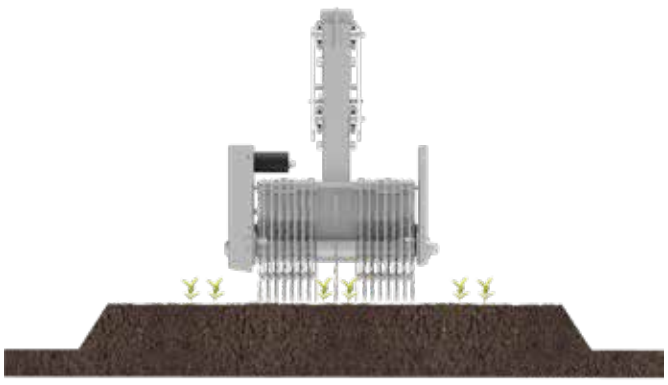


1. **Levelling wheel:** to regulate the working dept.
2. **Colibì discs system.**

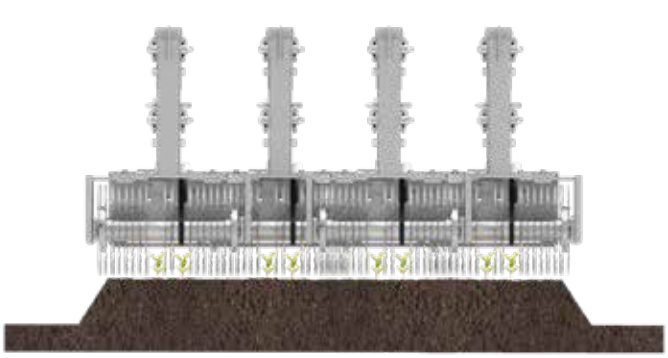
Some **Colibrì** *configurations*

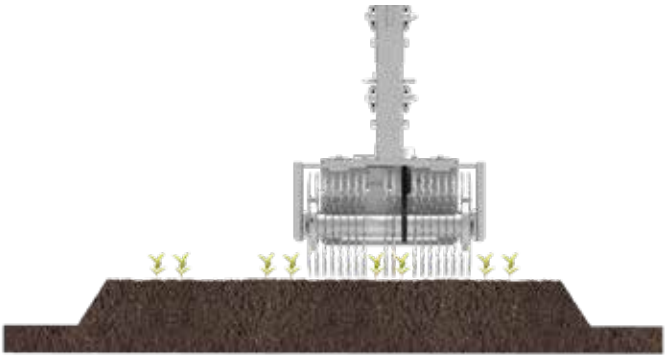
1 bed, 3 double rows

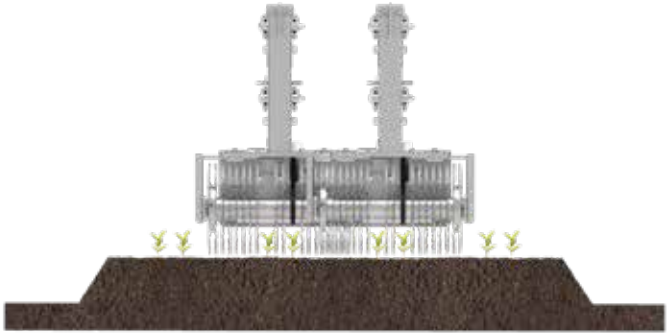




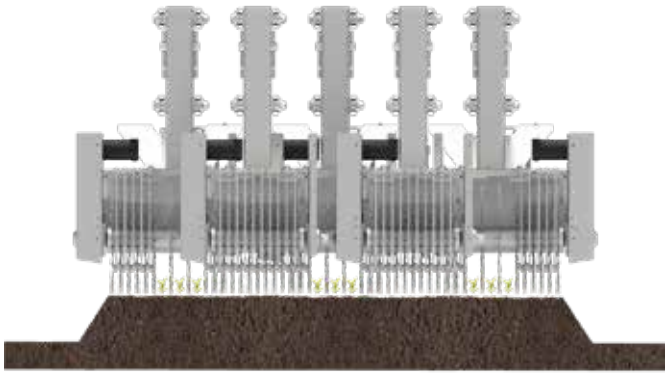
1 bed, 4 double rows

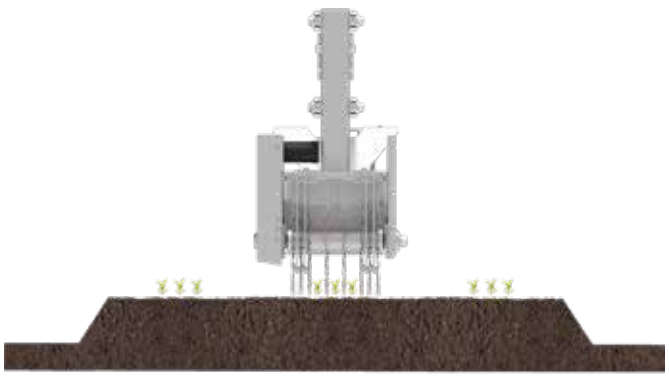




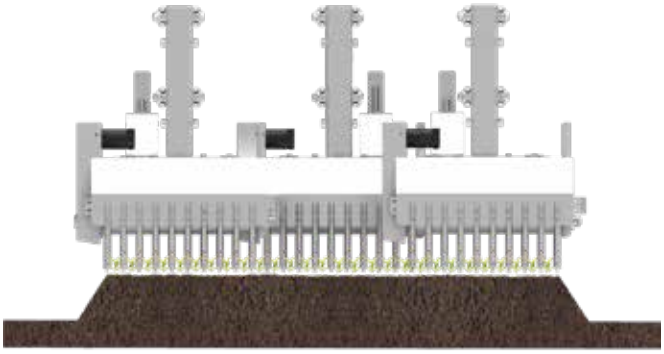


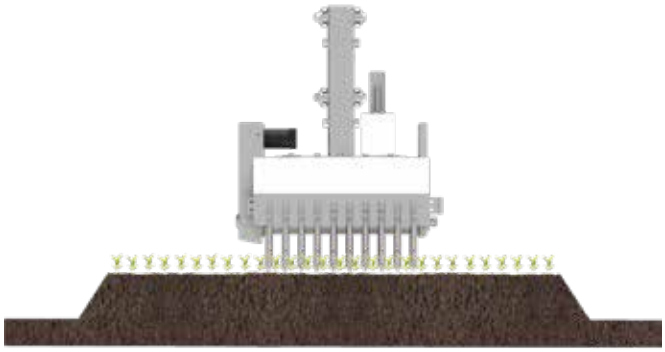
1 bed, 3 triple rows

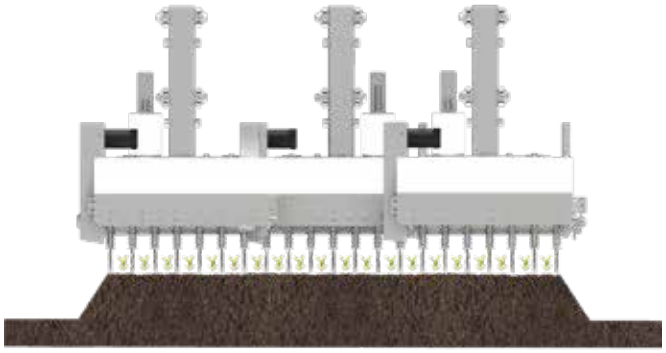




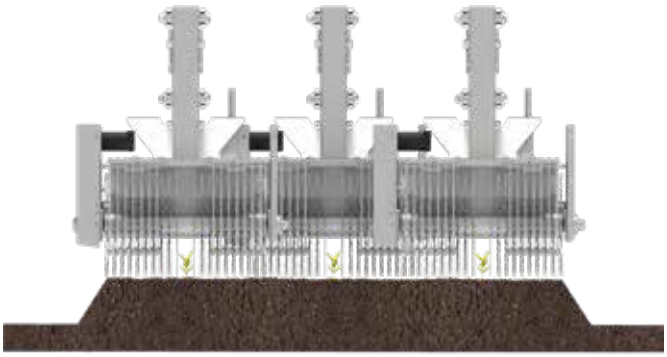
1 bed, multiple rows ≥ 6 cm

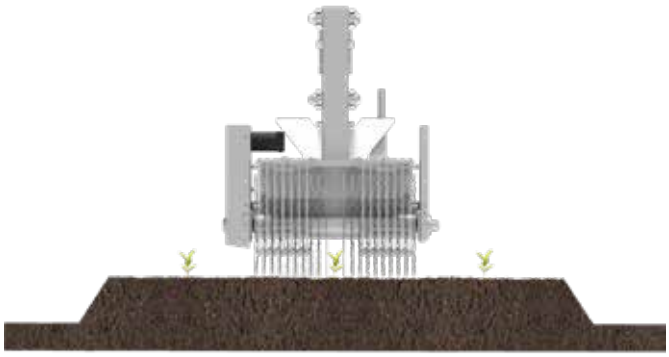






1 bed, single row ≥ 3





Colibrì

Machine ***specifications***

OPERATION

The COLIBRÌ precision inter-row weeding machine is designed to work between rows of only 4.5 cm for carrots and 5 cm for baby leaves. The machine is designed for use as early as the cotyledon stage of the crop, ensuring unparalleled cleanliness between the rows.
The hydraulic system is already prepared for both gear pumps and direct connection to the tractor via a variable displacement pump and/or with load sensing.
The COLIBRÌ hydraulic system is designed for smoother work and linear, precision weeding. It consists of a proportional single-block distributor used to both rotate the discs and maintain a constant depth (self-levelling).

TECHNICAL CHARACTERISTICS

Towed COLIBRÌ weeding machine with 2.40-m double-bar hydraulic shifting frame resting on 4 wheels with manual levelling, 2 fixed wheels with crest and 2 rear pivoting rubber wheels. Each COLIBRÌ element consists of a covered parallelogram with a series of steel COLIBRÌ discs. The discs are MOTORIZED and have a sensor on the front to detect the angle for self-levelling. The disks rotate at a speed 1.5 times higher than the tractor speed to allow for better and more effective mechanical weeding.

Figure 1 – Colibrì disc package

Figure 2 – Unworked vs. worked with Colibrì

INNOVATIVE TECHNICAL ASPECTS

The proportional hydraulic system controlled by an angular sensor and linear potentiometer on the element (PLC) allows for a constant working depth with variations of ± 3 mm in the soil profile to avoid interfering with the seedling root system. Adjusting the disc depending on the soil variables optimizes the tilling in sandy or medium-textured soils.

Optyma

OPTYMA is our automatic weeding machine, an inter-row and inter-plant hoe with distances greater than 21 cm between the rows.

The OPTYMA 2.0 precision inter-row weeding machine is designed to work specifically on head and leaf vegetables with a minimum inter-row spacing of 21 cm and an inter-plant distance of 15 cm. It is designed mainly for work at an early stage of growth to prevent weed infestation.
The machine is designed for use starting 10 days after planting the crop, ensuring total cleanliness, even between the plants.

WORKING **ON FLAT**

WORKING **ON BEDS**

TYPE OF SOIL	Sandy, medium texture, without stones/rocks
INTER-ROW DISTANCE	Minimum 21 cm
ROTOR DIMENSIONS	Minimum 15 cm
WORKING SPEED	1,2 - 1,5 Km/hr
REQUIRED PREPARATION OF THE TERRAIN	The ground must be levelled and free of stones (Stone burier, bed former with smooth levelling roller)
NO. OF ROWS	Depending on the transplanter/seed drill in use, also on multiple ridge
TYPE OF SYSTEM	Automatic
USE	Some attention to camera settings and photosensors

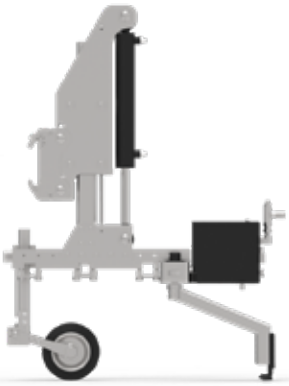
Optyma *element*

Each OPTYMA element consists of a linear vertical upright activated by a hydraulic cylinder controlled via a linear potentiometer with a ± 150-mm stroke, a longitudinal strut with several slots for different tools, a wheel probe with angle sensor for self-levelling at the front, and a hydraulic mechanism at the rear for opening and closing the blades between the plants.

The blades work perpendicular to the tractor path and are electrically controlled by the T&H plant recognition system, which activates the opening and closing mechanism.
The opening and closing speed and force can be managed at will and depending on the soil consistency using the flow regulator on each element, creating the right compromise between speed and tilling, while keeping the plants clean.

OPTYMA ELEMENT
STANDARD

WORKING ON THE ROWS



1. **Levelling wheel:** to regulate the working dept.
2. **Automatic hoes system:** for a precision inter-row weeding.

Optyma

Machine ***specifications***

INNOVATIVE TECHNICAL ASPECTS

The OPTYMA 2.0 hoeing tool actively weeds and works the soil between the plants at a depth of 2–3 cm.

The mechanism activates two synchronized blades that close between the plants, cutting and moving the soil while removing weeds and preventing them from germinating.
The space between the rows is worked using specific flat, sharpened hoes placed on the front of the hoeing tool to facilitate and complete the action of the blades.

Weeding or hoeing with OPTYMA 2.0 can be done at various stages of crop development, working 90% of the area close to the plant.
Weeding not only fights weeds; it increases aeration of the plant's root system, resulting in a more vigorous crop in less time.
The proportional hydraulic system allows for smooth work during weeding. It is controlled by an angular sensor and linear potentiometer on the element (PLC) allows for a constant working depth with variations of ± 3 mm in the soil profile to avoid interfering with the root system of the seedling.

ELECTRICAL SYSTEM

The electrical system consists of a specific PLC control unit for mobile machines with a push-button display and 7" dedicated touch screen, with the possibility of connecting cameras to the 12-V display.

Differences
from competitors

We work with parallelograms straddling the cultivated row to a span of 50–60 cm from the surface, keeping the **element stable** even without a support wheel and guaranteeing the **highest precision and support** close to the plant.

We have developed **steel tools with sealed bearings**, materials that allow even clay soil to be worked while guaranteeing **aeration, mechanical weeding, and long-lasting effects**.

Flexibility in the element being pushed or pulled.

Modularity in the **configuration**.

OLIVER
AGRO

AGRICULTURAL **TECHNOLOGY**
FOR **CONSCIOUS NUTRITION**

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V. 1.0

Andrea Donini
GRAPHICS