Ensure profitable harvests with increased fruit quality and reduced labor bill!

- Controlled thinning that you see directly after execution
- Thins without chemical use
- Increase in fruit size and quality by increasing early sugar allocation to limited number of fruit
- Reduces biennial tendencies
- Fast travel speed ensures high treated area per hour
- Thinning can be performed in all weather conditions
- Can be used for all current cultivars

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Mechanical thinning with Darwin is safer and can be more effective than thinning with chemical substances. It’s also quicker and less labor intensive than manual thinning.

The chemicals used to thin pome fruit are costly, and the success of the thinning depends very much upon weather conditions, the ambient temperature and many other unpredictable factors. A second round of chemical thinning is often necessary and is usually followed thereafter by manual thinning. There are currently no reliable chemical thinning techniques used in stone fruit.

With Darwin you can see your thinning results immediately. You can adjust the level of thinning achieved the first time through the orchard to best fit your production goals. The effect of crop rotation is eliminated, which is very difficult when using chemical solutions because of the very early thinning period.

Then again, thinning by hand doesn’t achieve the same fruit quality and it also leads to constant, high costs. In addition, it is increasingly difficult to find suitable workers for these tasks.

While results will vary based on orchard design and operator competence, research done by PSU suggests that when properly thinning with Darwin, there is never a negative return on the investment.* The Darwin always works on a profitable basis.

The machine is attached to the front hydraulic system of the tractor or to the coupling mouth by means of an expander, if the tractor does not possess front hydraulic system. The hydraulic adjustment of the spindle inclination allows the adaptation to the tree form or to the ground.

The tractor drives closely along the tree rows with the front-mounted spindle directly in the canopy of the tree, and will indiscriminately remove random buds, flower clusters, or individual blooms – leaving behind your desired amount of flowers to set fruit.

Darwin was developed from practical experience and in its almost 20 years of evolution has constantly been optimized and adapted to our customers’ requirements. So today you can benefit from a patented, mature system that can help you to produce quality harvests with reduced labor costs and minimized environmental impact year after year!


Excellent fruit size and quality achieved by mechanically thinning with Darwin
The spindle speed (RPM) can be comfortably and continuously adjusted with push buttons on the control unit in the driver’s cabin to be optimally adapted to the driving speed.

The set spindle speed in RPM is displayed exactly, and remains constantly at the set value, irrespective of whether the motor speed of the tractor is increased or decreased.

By pushing the ESC-button (see image on the right) the spindle can be stopped at any moment, in order to exclude trees with smaller blossoms or to alternate trees in the thinning process.

Summary of Darwin’s control system:

- Exact display of spindle speed (RPM)
- Continuous adjustment of spindle speed
- Set spindle speed remains constant, independently of the motor speed
- Temporarily stop the spindle by pushing the ESC-button
- Comfortable adjustment from the driver’s cabin
Possible mounting options:

**Assembly by 3-point hitch**
For mounting on the front hydraulic system of the tractor.

**Assembly without 3-point hitch**
For mounting without a front hydraulic system.
The mounting plate has to be adapted to the tractor individually.

**Hydraulic lateral shift (optional)**
For hydraulic lateral shift of the machine by 400 mm.
An additional double-acting hydraulic connection to the tractor is necessary.
Using Darwin has positive effects on the harvest result. In the Lake Constance region machines have been used for many years, and therefore there is exact data that can be compared. The district office of Lake Constance has gathered this data under the guidance of Werner Baumann and, in a special study, has proven the profitability of using machinery over manual thinning.

An extract from the study: „In the period between 2005 and 2008 we have measured that, thanks to the use of the thinning machine, the percentage of all the common cultivars of size over 70 mm was on average about 25% higher compared with manually thinned trees.”

### Profitability of mechanical thinning with Darwin

Calculation with an example crop of „Braeburn“ apples (2007 harvest, 44 t, evaluation performed on 4 October, 2007)

<table>
<thead>
<tr>
<th>Selection</th>
<th>Manual thinning</th>
<th>Mechanical = Darwin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>€/100 kg</td>
<td>Percentage</td>
</tr>
<tr>
<td>60/65 mm</td>
<td>20,4</td>
<td>14,0</td>
</tr>
<tr>
<td>65/70 mm</td>
<td>31,4</td>
<td>41,0</td>
</tr>
<tr>
<td>70/75 mm</td>
<td>36,0</td>
<td>34,0</td>
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<tr>
<td>75/80 mm</td>
<td>39,0</td>
<td>11,0</td>
</tr>
<tr>
<td>80/85 mm</td>
<td>38,4</td>
<td>–</td>
</tr>
<tr>
<td>Subtotal</td>
<td>14.194,40</td>
<td>–</td>
</tr>
</tbody>
</table>

- Net of manual thinning (7,00 €/h) 120 h - 840,00 40 h - 280,00
- Net of machine costs (70,00 €/h) 1 h - 70,00

Total 13.354,40 14.976,40

Difference (additional gain thanks to Darwin) ➔ 1.622,56 €

Source: Study by Werner Baumann/Isabel Mühlenz, District office of Lake Constance

### Technical Data

<table>
<thead>
<tr>
<th></th>
<th>Darwin 200</th>
<th>Darwin 250</th>
<th>Darwin 300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working height</td>
<td>1.935 mm</td>
<td>2.395 mm</td>
<td>2.850 mm</td>
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<tr>
<td>Machine height</td>
<td>2.285 mm</td>
<td>2.740 mm</td>
<td>3.200 mm</td>
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<tr>
<td>Weight</td>
<td>148 kg</td>
<td>155 kg</td>
<td>165 kg</td>
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<tr>
<td>Area performance</td>
<td>1,5 - 2,5 ha/h</td>
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<tr>
<td>Driving speed</td>
<td>6 - 18 km/h</td>
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<tr>
<td>Spindle speed (RPM)</td>
<td>150 - 450 1/min</td>
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<tr>
<td>String length</td>
<td>600 mm</td>
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<tr>
<td>Number of strings</td>
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<td>Required oil quantity</td>
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<td>Tractor mounting</td>
<td>Mounting to the front right side with or without front hydraulic system</td>
<td></td>
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</tr>
<tr>
<td>Manual lateral shift</td>
<td>stroke 595 mm</td>
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<td></td>
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<tr>
<td>Hydraulic lateral shift</td>
<td>stroke 400 mm</td>
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</tbody>
</table>

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Darwin  Mechanical blossom thinning

Fruit Tec
Adolf Betz
Schießstattweg 11
D-88677 Markdorf
Tel. +49 (0) 75 44/96 594-0
Fax +49 (0) 75 44/96 594-99
info@fruit-tec.com

www.fruit-tec.com