



# Agroforestry Planting Equipment Guide





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## Introduction to Agroforestry Planting Equipment

### Machinery Listing

<u>Machine Name</u>	<u>Manufacturer</u>
Step	Salixsphere
SP1200 Intermittent Tree Planter	J.E. Love Company
CHR Tree Planter	CHR Design and Testing Inc.
HCP-3 Hardwood Cuttings Planter (MTDC -909)	Advantage Design Engineering
Rod Planter	Turton Engineering
Model ST-630 Side Delivery Heavy-Duty Planter	Whitfield Forestry Equipment
Model 9700-HC Hardwood Semi-Automatic 3 pt Hitch	Whitfield Forestry Equipment
Model SP-3202 Two-Seat Heavy-Duty Transplanter	Whitfield Forestry Equipment
Egedal Transplanter Type Hydromatic	Timm Enterprises Ltd.
Rodster Mark II and Bundler	Salixsphere

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## Introduction to Agroforestry Planting Equipment

The listing is the result of an extensive search that was started by using the Internet, forestry industry contacts, and by completing a patent search for any type of automated agroforestry planting equipment.

The following companies were found to have some type of planting system, which could be pulled behind a tractor. Some of these units are manual planting machines and some are semi automated:

- Salixsphere - Step Planter
- J.E. Love Company - SP1200 Intermittent Tree Planter
- CHR Design and Testing Inc. - CHR Tree Planter
- Advantage Design Engineering - HCP-3 Hardwood Cuttings Planter
- Whitfield Forestry Equipment - Model ST-630  
- Model 9700-HC  
- Model SP-3202
- Timm Enterprises Ltd. - Egedal Transplanter Type Hydromatic

### Salixsphere - Step Planter

The Step Planter is made by a Swedish company and was found during an Internet search. The Technical Development Branch of the United Kingdom Forestry Commission conducted a study and issued a report on the *Further Evaluation Of Planting Machines For Short-Rotation Coppice*. PAMI was unable to obtain the report due to the fact that it was not completed for publication. A summarized report was obtained off the Internet along with a summarized report of *A Trial Of Suitable Planting Machines For Project ARBRE*. The report evaluated four different companies, and the Salixsphere Step planter was rated as giving the best results. The Step Planter is probably the machine that best automates the planting process. The company was contacted and information on the Step Planter was supplied along with information on other types of equipment available. These other types of equipment include a Rodster and Bundler, which are whip-harvesting machines.

### J.E. Love Company- SP1200 Intermittent Tree Planter

Contact was made with the J.E. Love Company through Brian Vachowski who works for the Missoula Technology and Development Centre. Brian contacted the J.E. Love Company, who in turn contacted PAMI about their cuttings planter. This company manufactures two planters and a tree seedling harvesting system. James is willing to supply a quote to design, develop, and manufacture a system to meet the requirements for Saskatchewan planters.





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### **CHR Design and Testing Inc. - CHR Tree Planter**

This planter was discovered through a contact at the University of Minnesota, Wendell Johnson. Clarence Rail is a retired John Deere Engineer who has patented a tree-planting machine. This patent is based on his second design version of the unit. The unit is a two-row system with one person feeding the cuttings into a conveyer. The conveyer then delivers the cutting to the planting mechanism, which drives them into the ground using a hydraulic cylinder. Clarence informed PAMI that 5% of the cuttings do have some slight damage and that they are working on improving the hammering mechanism to prevent wear. This unit is still in the prototype development stage. The machine has planted trees in the states of Oregon and Washington.

### **Advantage Design Engineering - HCP-3 Hardwood Cuttings Planter**

This planter was developed by the US Department of Agriculture, and is based on the tree planter, which originated at the Indian Head Provincial Nursery in Saskatchewan. Advantage Design Engineering (ADE) contracted with a state nursery in South Dakota to build one unit. ADE was contacted and is willing to build more units if required. PAMI has obtained drawings from the US Department Of Agriculture along with a drawing of a hardwood, cutting clamp used to hold the sticks in place while preparing the cuttings.

### **Whitfield Forestry Equipment - Model ST-630, Model 9700-HC, Model SP-3202**

Whitfield is a manufacturer of numerous types of tree planting units. The three models added to the [Agroforestry Planting Equipment](#) guide were selected based on advice from Jim Whitfield.

### **Timm Enterprises Ltd. - Egedal Transplanter Type Hydromatic**

Timm Enterprises is a Canadian company which sells the Egedal line of products. Egedal is located in Denmark and they produce various types of nursery products.

### **Turton Engineering – Rod Planter**

The Turton Rod Planter was developed in the United Kingdom. The planter was discovered when retrieving information on the Salixsphere Step Planter through the Technical Development Branch of the United Kingdom Forestry Commission. The Technical Development Branch had produced a report on the Turton Rod Planter that was produced in 1996 and at the end of the report it was determined that the Turton Rod planter could be competitive with the Step Planter but further development was required. It has now been seven years since the report was published and there has been further development of the Turton Rod planter. Turton Engineering also stated that they are looking at developing an automatic feeding system in the future.

The Turton planters are designed principally for willow coppice with the European standard row spacing of 2.5 ft (0.75 m)/4.9 ft (1.5 m)/2.5 ft (0.75 m)/4.9 ft (1.5 m). However, removing the two inside planting machines from the four-row planter will result in a two-row planter with a row width of 9.8 ft (3 m).





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The control system is based on pairs of planting machines, two, four, or six row. Future development efforts will emphasise the two and six-row planters. The planting machines prepare and plant cuttings by shearing lengths successively from rods in the range of 0.3 to 0.9 in (8 to 22 mm) diameter. Planting occurs immediately after shearing. Pre-cut material cannot be planted. Nominal lengths of cutting for willow are 7.9 in (200 mm) or less. There is some variation in the lengths of cuttings. The depth of planting is adjustable.

An operator riding on a rear platform places each rod successively into the planting machine hopper.

The planters are powered hydraulically with electronic control. Each controller manages the hydraulic valves for two planting machines, triggering each planting operation at an adjustable planting frequency as well as the out and back motion of the planting head independently of the frequency. A simple knob control selects the frequency, which together with the forward towing speed, determines the spacing in the row. In-line or staggered planting is selectable. Oil supply is by integral twin hydraulic systems driven by a dual in-line pump, which can be pto driven or by a constant flow from the tractor pump.

## Cuttings Planter Step

<b>Manufacture:</b>	<b>Salixsphere</b>
<b>Address:</b>	Hamre 1 SE - 776 90 Hedemora Sweden
<b>Country:</b>	Sweden
<b>Phone:</b>	+46 8 411 1068
<b>Fax:</b>	+46 8 21 9049
<b>Contact Person:</b>	Rodolfo Lindqvist - Marketing Director
<b>Email:</b>	rodolfo.lindqvist@salix.se
<b>Website:</b>	www.salix.se
<b>Cost:</b>	Not available
<b>Power Requirements:</b>	Preferably 4 wheel drive standard tractor minimum 70 hp (50 kW) engine
<b>Speed:</b>	Not available
<b>Hydraulics:</b>	Not available
<b>Opener Type:</b>	Coulter
<b>Delivery Mechanism:</b>	Mechanical
<b>Planting Rate:</b>	2 cuttings per second
<b>Number of Rows:</b>	2, 4, or 6
<b>Soil closing/packing:</b>	Steel wheels
<b>Current location of Use:</b>	Europe
<b>Manual Labour:</b>	2 to 4 (1 driver, 1 to 3 planters)
<b>Dimension (4 row):</b>	
<b>Length:</b>	6.23 ft (1.9 m)
<b>Height:</b>	4.92 ft (1.5 m)
<b>Width:</b>	10.20 ft (3.1 m)
<b>Weight:</b>	2,866 lb (1,300 kg) & 66 lb (30 kg) spares box



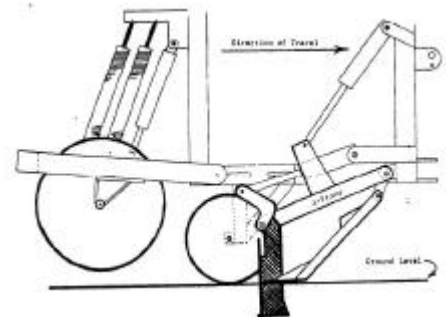
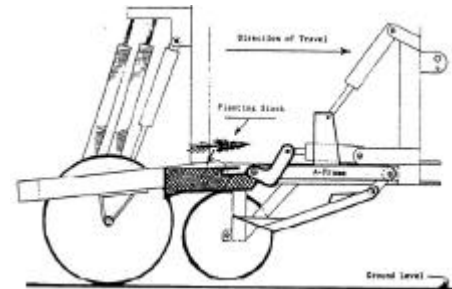
### Description:

- Revolutionary technology created to reduce establishment costs for short rotation coppices, poplar, and other nurseries with a 98% cutting survival rate.
- Able to plant on slopes, in any kind of soil, and within certain limits even in stony soils.
- Supplied in three different models for the plantation of 2, 4, and 6 rows and in two types each, A and B. The plantation modules are mechanically driven from the tractor's pto and those are ingeniously designed to remain stationary for a moment while the tractor moves forward. This ensures that the cuttings are inserted in a vertical position, even at high planting speeds. For example, two cuttings per second and per module.
- Each one of the planting modules will follow the level contour of the ground.
- The cutting length, as well as the insertion height is easily adjustable.
- The planting is performed in a zigzag pattern to allow every plant, at any chosen spacing, the maximum growing space.

## Cuttings Planter

### SP1200 Intermittent Tree Planter

<b>Manufacture:</b>	<b>J.E. Love Company</b>
<b>Address:</b>	309 California Street P.O. Box 188 Garfield, WA 99130-0188
<b>Country:</b>	USA
<b>Phone:</b>	1-509-635-1321
<b>Fax:</b>	1-509-635-1434
<b>Contact Person:</b>	James Love
<b>Email:</b>	j_a_love@msn.com
<b>Cost:</b>	\$20,000.00 US
<b>Power Requirements:</b>	Minimum 90 hp (67 kW)
<b>Speed:</b>	Varies on condition
<b>Hydraulics:</b>	24 gpm at 2,800 psi
<b>Opener Type:</b>	Knife
<b>Delivery Mechanism:</b>	Hydraulic
<b>Planting Rate:</b>	1 cutting per 3 seconds
<b>Number of Rows:</b>	1
<b>Soil Closing/packing:</b>	2, 18 in (45 cm) diameter wheels
<b>Current location of Use:</b>	United States
<b>Manual Labour:</b>	2 (1 driver, 1 planter)
<b>Dimension:</b>	
<b>Length:</b>	From 3 pt hitch mount 86 in (2.2 m)
<b>Height:</b>	75 in (1.9 m)
<b>Width:</b>	63 in (1.6 m)
<b>Weight:</b>	2,500 lb (1,134 kg)



#### Description:

##### Planting Sequence:

- When the machine is in load position, the operator loads the horizontal receptacle on the planting arm.
- The operator then initiates the cycle by depressing the foot switch.
- While the planting arm is still in a horizontal position, the A-frame is lowered.
- The amount the A-frame is lowered is based on the predetermined planting depth.
- Once the A-frame is lowered, the planting arm will rotate vertical and release the cutting.
- The cavity is then closed by the packing wheels.
- The planting arm will then be elevated from the soil while still vertical.
- Once elevated, the planting arm returns to the horizontal position and is then ready to be reloaded.



## Cuttings Planter CHR Tree Planter

<b>Manufacture:</b>	<b>CHR Design and Testing Inc.</b>
<b>Address:</b>	7129 NE 29 <sup>th</sup> Street Ankeny, IA 50021
<b>Country:</b>	USA
<b>Phone:</b>	1-515-964-1162
<b>Fax:</b>	Not available
<b>Contact Person:</b>	Clarence Rail
<b>Email:</b>	Not available
<b>Website:</b>	Not available
<b>Cost:</b>	\$15,000.00 to \$20,000.00 US
<b>Power Requirements:</b>	Minimum 60 hp (45 kW)
<b>Speed:</b>	3.5 mph (5.6 kph)
<b>Hydraulics:</b>	11 gpm (42 L/min)
<b>Opener Type:</b>	Coulter
<b>Delivery Mechanism:</b>	Hydraulic
<b>Planting Rate:</b>	2 plants per 2.2 seconds 17.6 ac/hr (7.1 ha/hr)
<b>Number of Rows:</b>	2
<b>Soil Closing/packing:</b>	Rubber tires
<b>Current location of Use:</b>	USA
<b>Manual Labour:</b>	2 (1 driver, 1 planter)
<b>Dimension:</b>	
<b>Length:</b>	78 in (2.0 m)
<b>Height:</b>	60 in (1.5 m)
<b>Width:</b>	168 in (4.3 m)
<b>Weight:</b>	1,500 lb (680 kg)



### Description:

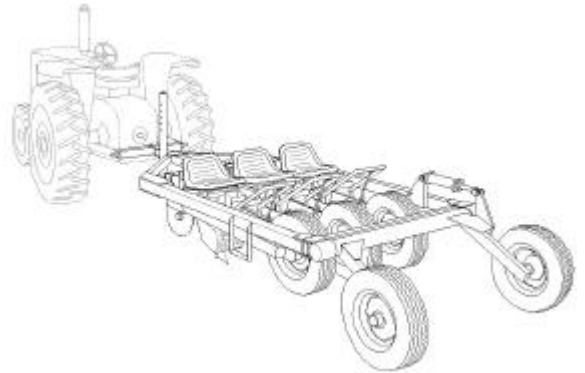
- One person stands on the back and places the cuttings into a slotted conveyer.
- The conveyer then feeds to the planters.
- The planters each have a hydraulic cylinder, which drives the cutting into the ground.
- The cuttings can be 9 in (23 cm) long  $\pm$  0.5 in (1.3 cm) and a maximum cutting diameter of 1in (2.5 cm). The two rows are spaced 8 to 12 ft (2.4 to 3.6 m) apart.
- Currently in prototype stage of development.



## Cuttings Planter

### HCP-3 Hardwood Cuttings Planter (MTDC-909)

<b>Manufacture:</b>	<b>Advantage Design Engineering</b>
<b>Address:</b>	Not available Madison, SD 57042
<b>Country:</b>	USA
<b>Phone:</b>	1-605-446-3413
<b>Fax:</b>	1-605-446-3159
<b>Contact Person:</b>	Eric Lewis
<b>Email:</b>	ademail@adeconsulting.com
<b>Website:</b>	www.adeconsulting.com
<b>Cost:</b>	\$12,000.00 US
<b>Power Requirements:</b>	Minimum 50 hp (37 kW)
<b>Speed:</b>	Less than 1 mph (1.6 kph)
<b>Hydraulics:</b>	Dual 16 gpm (60 L/min)
<b>Opener Type:</b>	Coulter
<b>Delivery Mechanism:</b>	2 hydraulic driven rollers
<b>Planting Rate:</b>	Set by work rate
<b>Number of Rows:</b>	3
<b>Soil Closing/packing:</b>	Rubber tire
<b>Current location of Use:</b>	USA
<b>Manual Labour:</b>	2 to 4 (1 driver, 1 planter per row)
<b>Dimension:</b>	
<b>Length:</b>	203 in (5.1 m)
<b>Height:</b>	56 in (1.4 m)
<b>Width:</b>	96 in (2.4 m)
<b>Weight:</b>	1,500 lb (680 kg)



#### Description:

The Model HCP-3 Hardwood Cuttings Planter is a three-row, production nursery planter for any species of hardwood cuttings up to 0.75 in (1.9 cm) diameter. The planter is designed to plant hardwood cuttings in a prepared soil bed. The cuttings are later lifted as a seedling at the end of the growing season. Production rates for the planter can be as high as 80,000 cuttings per day, with only four to five personnel. Labour savings are substantial, resulting in a return on investment period of 2 years or less, depending on nursery production.

Row spacing is adjustable from 18 to 24 in (46 to 61 cm). The maximum cutting size would be 0.75 in (1.9 cm) and a planting depth of 8 in (20 cm).

This planter is designed for automated planting of cuttings to produce seedlings but should be useful for planting stool beds.

## Cuttings Planter

### Turton Rod Planter

<b>Manufacture</b>	<b>J. Turton Engineering Limited</b>			
<b>Address:</b>	Woodpeckers, Coldharbour Road, Upper Dicker, East Sussex, BN27 3PZ			
<b>Country:</b>	United Kingdom			
<b>Phone:</b>	+44 (1323) 843819			
<b>Fax:</b>	N/A			
<b>Contact Person:</b>	John Turton			
<b>Email:</b>	N/A			
<b>Website:</b>	N/A			
<b>Cost:</b>	\$21,452.02 to \$29,355.40 CDN			
<b>Power Requirements:</b>	<b>One-Row</b>	<b>Two-Row</b>	<b>Four-Row</b>	<b>Six-Row</b>
	13 hp (10 kW)	40 hp (30 kW)	40 hp (30 kW)	
<b>Speed:</b>	Depends on number of rows and spacing			
<b>Hydraulics (3 mph):</b>	3.3 gpm (15 L/min)	6.6 gpm (30 L/min)	13.2 gpm (60 L/min)	19.8 gpm (90 L/min)
<b>Opener Type:</b>	Disc Opener			
<b>Delivery Mechanism:</b>	Hydraulic			
<b>Seeding Rate:</b>	3,000 Cuttings/hr (2 rows at 3.6 km/h)			
<b>Number of Rows:</b>	2, 4, or 6 row			
<b>Soil Closing/packing:</b>	Packing wheels			
<b>Current location of Use:</b>	Europe			
<b>Manual Labour:</b>	1 Driver, 1 planter per 2 rows - Total 2 to 4			
<b>Dimension:</b>	<b>One-Row</b>	<b>Two-Row</b>	<b>Four-Row</b>	<b>Six-Row</b>
<b>Weight (Integral Hydraulic System)</b>	N/A	2,866 lb (1,300 kg)	5,511 lb (2,500 kg)	7,937 lb (3,600 kg)
<b>Weight (Tractor Oil Supply)</b>	882 lb (400 kg)	1,984 lb (900 kg)	4,409 lb (2,000 kg)	6,834 lb (3,100 kg)
<b>Width:</b>	5 ft (1.5 m)	8 ft (2.46 m)	15.5 ft (4.71 m)	23 ft (6.96 m)
<b>Length:</b>	7 ft (2.2 m)	9.5 ft (2.88 m)	9.5 ft (2.88 m)	9.5 ft (2.88 m)
<b>Height:</b>	N/A	N/A	N/A	N/A



#### Description:

Power Requirements are from the pto drive to pump.

The Hydraulic Requirements are based on the rate of flow required for vertical planting and are directly related to the forward speed of the tractor. The requirements listed above are based on a speed of 1.9 mph (3 km/hr).



## Cutters Planter/Seedling Transplanter

### Model ST-630 Side Delivery Heavy-Duty Planter

<b>Manufacture:</b>	<b>Whitfield Forestry Equipment</b>
<b>Address:</b>	6431 Mableton Parkway, SW P.O. Box 188 Mableton, GA 30126-0188
<b>Country:</b>	USA
<b>Phone:</b>	1-770-948-1212
<b>Fax:</b>	1-770-948-0155
<b>Contact Person:</b>	Not available
<b>Email:</b>	treesone@mindspring.com
<b>Website:</b>	www.whitfieldforestry.com
<b>Cost:</b>	\$4,950.00 US
<b>Power Requirements:</b>	50-200 hp (37-149 kW)
<b>Speed:</b>	2-2 1/2 mph (3.2-4.0 kph)
<b>Hydraulics:</b>	Not available
<b>Opener Type:</b>	Coulter
<b>Delivery Mechanism:</b>	Manual
<b>Planting Rate:</b>	Approximately 4 ac/ hr (1.6 ha/hr)
<b>Number of Rows:</b>	1
<b>Soil Closing/packing:</b>	Rubber tires
<b>Current location of Use:</b>	USA
<b>Manual Labour:</b>	2 (1 driver, 1 planter)
<b>Dimension:</b>	
<b>Length:</b>	96 in (2.4 m)
<b>Height:</b>	60 in (1.5 m)
<b>Width:</b>	60 in (1.5 m)
<b>Weight:</b>	1,400 lb (635 kg)



#### Description:

**Hitch:** Heavy-duty seven position 3 pt hitch, Category II. Lift pins to accommodate different height lift arms on tractor 33.5 in (85.1 cm) lifting centers.

**Main Beam:** 0.75 x 5 in (1.9 x 12.7 cm) boxed bar steel. 0.75 x 6 in (1.9 x 15.24 cm) adjustable coulter arms with depth skids. Weight brackets supplied for four 100 lb (45.4 kg) weights (weights not included).

**Coulter assembly:** 0.5 x 32 in (1.3 x 81.3 cm) high carbon steel blade. Six-lug, heavy-duty hub with replaceable, sealed bearings.

**Foot:** 2 in (5.1 cm) high carbon steel trencher foot. Changeable pin-type point equipped with 2 or 3 in (5.1 or 7.62 cm) ID trencher plates. The planting depth is 10 to 12 in (25.4 to 30.5 cm).

**Packing wheel Assembly:** Choice of 12 or 15 in (30.5 or 38.1 cm) pneumatic packing tires. Adjustable packing spindles. Heavy-duty, four-lug hubs. Timken high-speed wheel bearings. Equipped with patented gumbo soil fold bracket.

**Seedling Boxes:** Two removable boxes.

**Operator use:** High back comfort seat, fixed seat bracket (adjustable). Rear opening 48 in (121.9 cm) high. Protective footrest, leg protectors, and handhold bars.



## Seedling Transplanter for Large Seedlings

### Model 9700-HC Hardwood Semi-Automatic 3 pt Hitch

<b>Manufacture Address:</b>	<b>Whitfield Forestry Equipment</b> 6431 Mableton Parkway SW P.O. Box 188 Mableton, GA 30126-0188
<b>Country:</b>	USA
<b>Phone:</b>	1-770-948-1212
<b>Fax:</b>	1-770-948-0155
<b>Contact Person:</b>	Not available
<b>Email:</b>	treesone@mindspring.com
<b>Website:</b>	www.whitfieldforestry.com
<b>Cost:</b>	\$12,320.00 US
<b>Power Requirements:</b>	125 hp (93 kW)
<b>Speed:</b>	Set by work rate
<b>Hydraulics:</b>	Not available
<b>Opener Type:</b>	Coulter
<b>Delivery Mechanism:</b>	Semi automatic planting
<b>Planting Rate:</b>	Set by work rate
<b>Number of Rows:</b>	1
<b>Soil Closing/packing:</b>	Rubber tires
<b>Current location of Use:</b>	USA
<b>Manual Labour:</b>	2 (1 driver, 1 planter)
<b>Dimension:</b>	
<b>Length:</b>	120 in (3.0 m)
<b>Height:</b>	86 in (2.2 m)
<b>Width:</b>	70 in (1.8 m)
<b>Weight:</b>	3,500 lb (1,587 kg)



#### Description:

For use in subsoil trench. Plants hardwood seedlings with 5 to 6 in (12.7 to 15.24 cm) wide root system up to 4 ft (1.2 m) tall. Category II and III 3 pt hitch. Two large seedling trays. Adjustable padded comfort seat, rear wall padding.

## Seedling Transplanter for Larger Seedlings

### Model SP-3202 Two-Seat Heavy-Duty Transplanter

<b>Manufacture:</b>	<b>Whitfield Forestry Equipment</b>
<b>Address:</b>	6431 Mableton Parkway SW P.O. Box 188 Mableton, GA 30126-0188
<b>Country:</b>	USA
<b>Phone:</b>	1-770-948-1212
<b>Fax:</b>	1-770-948-0155
<b>Contact Person:</b>	Not available
<b>Email:</b>	treesone@mindspring.com
<b>Website:</b>	www.whitfieldforestry.com
<b>Cost:</b>	\$6,248.00 US
<b>Power Requirements:</b>	60-150 hp (45-112 kW)
<b>Speed:</b>	Set by work rate
<b>Hydraulics:</b>	Not available
<b>Opener Type:</b>	Coulter
<b>Delivery Mechanism:</b>	Manual
<b>Planting Rate:</b>	Set by work rate
<b>Number of Rows:</b>	1
<b>Soil Closing/packing:</b>	Foam filled packing tires 12 or 15 in (30.5 or 38.1 cm)
<b>Current location of Use:</b>	USA
<b>Manual Labour:</b>	3 (1 driver, 2 planters)
<b>Dimension:</b>	
<b>Length:</b>	96 in (2.4 m)
<b>Height:</b>	38 in (1 m)
<b>Width:</b>	52 in (1.3 m)
<b>Weight:</b>	1,600 lb (726 kg)



#### Description:

**Hitch:** Heavy-duty seven position 3 pt hitch, Category II. Lift pins to accommodate different height lift arms on tractor. The lifting centers are 33.5 in (85.1 cm).

**Main Beam:** 0.75 x 4 in (1.9 x 10.2 cm) boxed bar steel. Adjustable coulter arms with depth skids. Weight brackets supplied for four 100 lb (45.4 kg) weights (not included).

**Coulter Assembly:** 0.5 x 32 in (1.3 x 81.3 cm) high carbon steel blade. Six-lug, heavy-duty hub with replaceable, sealed bearings.

**Scalper -** Choose either 26 or 32 in (1.3 or 81.3 cm) cutting width. Adjustable cutting depth. Replaceable, case-hardened, steel cutting edge.

**Foot:** High carbon steel trencher foot, 2 in (5.1 cm). Changeable pin-type point equipped with 2 and 3 in (5.1 and 7.6 cm) ID trencher plates. Planting depth 14 in (35.6 cm).

**Packing wheel Assembly:** Choice of 12 or 15 in (30.5 or 38.1 cm) foam filled packing tires. Adjustable packing spindles. Heavy-duty, four-lug hubs. Timken high-speed wheel bearings. Equipped with our patented gumbo soil fold bracket.

**Seedling Boxes:** Choice of C-1 center mount or C-2 side mount boxes.

**Operator Use:** Two high back comfort seats. Fixed seat bracket protective footrest and leg protectors. Safety handhold rods.

**Miscellaneous:** High arch opening through rear section for tall 4 and 5 ft (1.2 and 1.5 m) stock painted high gloss safety orange. Leg stands supplied.



## Seedling Transplanter

### Egedal Transplanter Type Hydromatic

<b>Manufacture:</b>	<b>Timm Enterprises Ltd.</b>
<b>Address:</b>	5204 Trafalgar Road PO Box 157 Oakville, ON L6J 4Z5
<b>Country:</b>	Canada
<b>Phone:</b>	1-888-769-8466, 1-905 878 4244
<b>Fax:</b>	1-905 878 7888
<b>Contact Person:</b>	Not available
<b>Email:</b>	mail@timmenterprises.com
<b>Website:</b>	www.timmenterprises.com
<b>Cost:</b>	\$31,401.00 to \$37,761.00 CDN
<b>Power Requirements:</b>	90 hp (67 kW)
<b>Speed:</b>	Set by work rate
<b>Hydraulics:</b>	Max 35 L/min 180 bar (gpm/psi)
<b>Opener Type:</b>	Roller share in combination with adjustable planting share, max. 13.5 in (35 cm) depth.
<b>Delivery Mechanism:</b>	Electric-hydraulic planting wheel where the planting distance is adjusted by means of the electric monitor. Planting distance 20-157 in (50 - 400 cm).
<b>Planting Rate:</b>	Capacity: 2,500 – 3,000 plants / hour
<b>Number of Rows:</b>	1 row
<b>Soil Closing/packing:</b>	The soil is pressed by means of 2 oblique iron pressure wheels
<b>Current location of Use:</b>	Europe
<b>Manual Labour:</b>	2 to 3 (1 driver- 1 to 2 planters)
<b>Dimension:</b>	
<b>Length:</b>	118 in (300 cm)
<b>Height:</b>	55 in (140 cm)
<b>Width:</b>	59 in (150 cm)
<b>Weight:</b>	2,645 lb (1,200 kg)



#### Description:

The Hydromatic is intended for planting bare root plants and smaller container plants on both cultivated as well as non-cultivated soil.

- The machine can handle plants at a height from about 7.5 to 50 in (20 to 130 cm).
- Great capacity for transplanting conifers and hardwood trees in fields, in woods, and in plantations.
- Ergonomically correct working position with specially designed planting wheel.
- Electronic setting of the planting distance.
- Well qualified for all types of land areas.
- Standard 3 pt hitch.

## Cuttings Harvester

### Rodster Mark II and Bundler

<b>Manufacture:</b>	<b>Salixsphere</b>
<b>Address:</b>	Hamre 1 SE - 776 90 Hedemora
<b>Country:</b>	Sweden
<b>Phone:</b>	+46 8 411 1068
<b>Fax:</b>	+46 8 21 9049
<b>Contact Person:</b>	Rodolfo Lindqvist - Marketing Director
<b>Email:</b>	rodolfo.lindqvist@salix.se
<b>Website:</b>	www.salix.se
<b>Cost:</b>	\$65,000.00 to \$130,000.00 CDN
<b>Power Requirements:</b>	Approx 140 hp (104 kW)
<b>Speed:</b>	Not available
<b>Current location of Use:</b>	Europe
<b>Manual Labour:</b>	1 (1 driver)
<b>Dimension:</b>	
<b>Length:</b>	Not available
<b>Height:</b>	Not available
<b>Width:</b>	Not available
<b>Weight:</b>	Not available



#### Description:

**Rodster** - a non-row specific whole stick harvester for stems up to 4 in (10 cm) in diameter. It was introduced in 1996. It guarantees no damage to the stems. Therefore, higher germination rates for the cuttings are achieved.

The Rodster Mark II is the second version of the Rodster. This machine is bigger and simpler than the first version, and it uses only one conveyor. The shoots are laid horizontal by a trip step placed below and in front of the deck – under the conveyor itself. The clearance between the two conveyor chains can be adjusted manually by the action of the telescopic boom that connects them. This way, one can match conveyor clearance to shoot diameter and work with a broader range of stem sizes. The machine can easily harvest 3 in (80 mm) diameter shoots and is suitable for the harvesting of young poplar in nurseries for re-planting to long rotation forestry. The machine is adjustable to a maximum diameter up to 6 in (150 mm), but harvesting stems of this diameter has not yet been tested. The left side of the deck table can fold vertical and if one activates the deck conveyor chains while in this configuration, the machine will “roll” incoming stems and form a tightly packed load. Once the deck is full, one can dump the load in the field or extract to an appropriate collection site. During extraction, the conveyor assembly is raised over the trailer beam, which is then straightened up for fast travel.

**Bundler** - the direct bundling harvesting system was initiated in 1997. This harvesting technique enables the economic storage and sun drying of the harvested biomass for year-round fuel supply i.e. for green power DME-projects.







**Prairie Agricultural Machinery Institute**

P.O. Box 1150

Humboldt, SK S0K 2A0

Phone: (306) 682-5033 Fax: (306) 682-5080

**Toll Free: 1-800-567-PAMI (7264)**

**Email: [www.pami.ca](http://www.pami.ca)**



**saskatchewan forest centre**

**Saskatchewan Forest Centre**

1410 Central Avenue Suite A

Prince Albert, SK S6V 4W5

Phone: (306) 765-2859

Fax: (306) 765-2844

[www.saskforestcentre](http://www.saskforestcentre)

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