



Fuel Reduction During Harvest

Although timber harvest is outside the present scope of this project, harvest offers a good opportunity to reduce the fuel loading as part of logging activities. Weatherspoon (1982) notes that the “National Forests in California have for a number of years included yarding unmerchantable material (YUM) provisions in many of their timber sale contracts. One purpose is to increase utilization.” Utilization of residual small wood or biomass may become economically viable long after the main harvesting activity is over.

John Waverek, fire management officer at the Missoula Ranger District (Lolo National Forest), was interviewed in the early stages of this project. His District is near a cardboard linerboard manufacturing plant that uses wood chips and operates a hog-fuel burner. The District includes a clause in some harvesting contracts that requires extraction of all chippable material down to a 3-inch diameter. To help loggers cope with the sometimes volatile pulp market, the District allows a longer completion time on contracts so that

material may not have to be removed from landings while the pulp market is unhealthy. The sale of the pulp-quality chips and hog fuel currently pays for processing and transporting up to 50 miles. Chip prices and market windows can fluctuate widely and the value of chips varies, depending on whether they are clean (destined for the pulp market) or dirty (destined for hog fuel).

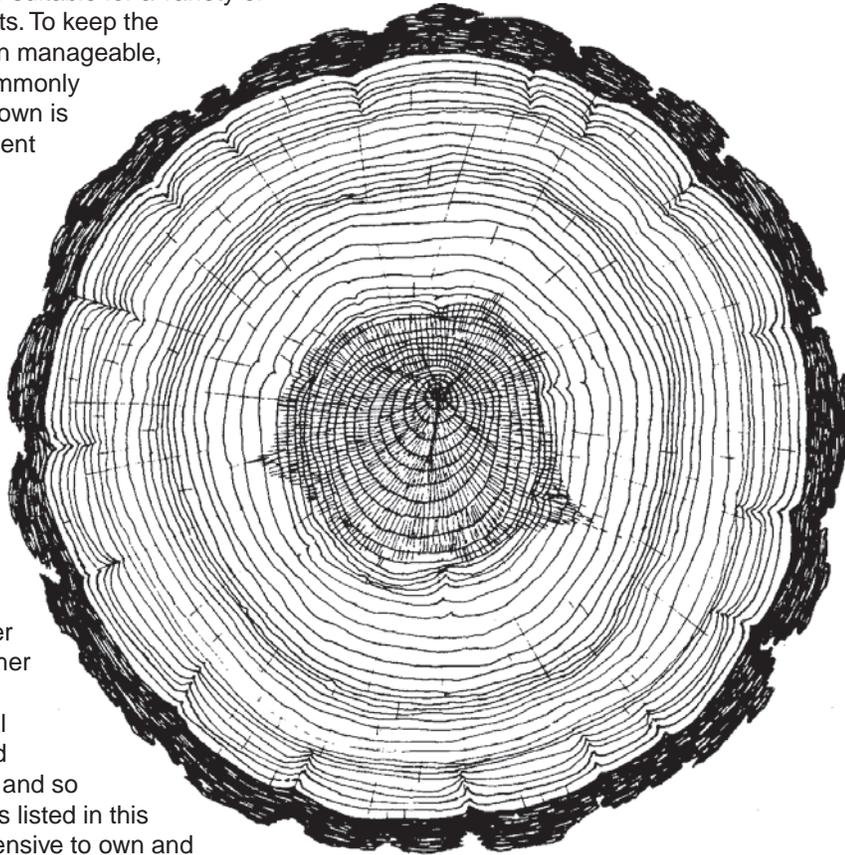
Some areas in need of a preburn treatment were logged long ago or may never have been logged. A simplistic approach would be to harvest as much of the undesirable biomass as possible as merchantable products during fuel treatment. Districts would essentially trade the products to help offset the fuel-treatment expense. Posts, poles, chips, hog fuel, and firewood are some of the possible uses for the smaller material. Some larger trees—especially mature Douglas-fir—could be added if needed. Use of this approach may involve contractual issues beyond the scope of this publication. The primary benefit would be a sharp reduction in the tons per acre of fuel loading on the site. ☞



Catalog of Machines and Specialized Attachments

This catalog is a compilation of specifications for equipment suitable for reducing excess biomass in areas before prescribed burns. It is designed to help forest managers make informed decisions. The catalog profiles a variety of lesser known, small, and large pieces of equipment that are suitable for a variety of situations and budgets. To keep the amount of information manageable, equipment that is commonly available and well known is not included (equipment such as chain saws, winches, skidders, excavators, loaders, non-selfleveling feller-bunchers, harvesters, and so forth).

When looking at machine specifications, forest managers will also want to consider how the equipment relates to such factors as: terrain, soil, timber characteristics, weather and climate, fiscal restraints, silvicultural systems, endangered species, regulations, and so forth. Some machines listed in this section are very expensive to own and operate. They were included for managers who might have some high-value acres to guard against wildfire (such as residential/forest interface) and substantial working budgets. Contact information for manufacturers and sources is in Appendix C.



Equipment Suitable for Reducing Excess Biomass

Although hand methods are mentioned in the body of this report, hand equipment (chain saws, axes, and so forth) is not covered in the catalog section because the equipment is commonly known and commonly available.

Mechanical brush treatment equipment is limited to the terrain and slope it can travel. Dick Karsky of MTDC gives recommended slope considerations for wheeled skidders in Site Preparation Equipment for Steep Slopes (9324-2804-MTDC). "Traveling parallel to the contour on slopes greater than 15% should not be attempted. Slopes up to 25% may be treated up and downhill, but only with spot scarification equipment. Six- or eight-wheel-drive forwarders may treat slightly steeper slopes. Skidders with wide tires provide better stability on sideslopes but are prone to slip on wet slash."

Concerning crawler tractors, Karsky states: "Traveling parallel to the contour should only be attempted on slopes up to 35%. This can vary depending upon equipment and type. Soft track vehicles such as FMC's may treat slopes up to 40%. Slopes up to 45% may be treated up and downhill, but only with spot scarification equipment."

"Excavators can treat slopes up to 50%. Short slopes greater than 50% can be treated off skid trails, depending upon boom reach...Excavators are very maneuverable, exert a low ground pressure, will accept multiple attachments, have reach capabilities that will reduce the number of passes required by the machine and thus reduce the movement required by the prime mover."

Brush-Cutting, Thinning, and Shredding Machines

Concept—This section contains integral brush cutting, precommercial thinning, and shredding machines. Integral machines, for the purpose of this report, are those in which the prime mover and cutting head are generally regarded as one unit, even though the head may be removable.

- The equipment is categorized according to the attachment location and orientation of the shaft the cutters revolve around.
- Heads can be attached directly to the machine (usually to the lift arms), attached to the boom, or machine pulled.
- Shafts can be vertical or horizontal.

Comments—Even though the machines listed are considered integral, many of the heads can be installed on other machines. Contact the manufacturer for additional information.

Other Known Manufacturers or Sources—Check the Timber West or Timber Harvesting annual buyer's guides for additional information on logging machines and related equipment (see Appendix B for details).

Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Vertical-Shaft Brush-Cutters, Machine Mounted

Hydro-Ax 621E and 721E



Make/Model	Hydro-Ax 621E and 721E
Manufacturer/Source	Blount, Inc.
Distributor	Contact Blount, Inc. for dealer information
Price	Contact dealer
Status	In production
Prime Mover	621E and 721E are prime movers
Prime Mover Engine Power	621E: 177 hp; 721E: 210 hp
Gas/Diesel	Diesel
Transmission	Hydrostatic-mechanical with 2-speed transfer case
Max. Travel Speed	621E: Low, 6.2 mph; High, 16 mph. 721E: Low, 4.6; High, 14.6 mph
Width	621E: 9 ft 8 in; 721E: 9 ft 10 in
Length	621E: 26 ft 7 in; 721E: 28 ft 1 in
Height	10 ft 4 in
Weight	621E: 25,800 lb; 721E: 26,100 lb
Ground Clearance	21 in
Turning Radius	Approximately 18 ft
Slope Limitations and Specified Conditions	Recommended up to 20% slope
Attachment Power Supply	Pump delivery to rotary ax is 65 gpm; 5,500 psi
Attachment Mount (lift arms/booms/3-point/other)	Lift arms
Tires: Size and Gpsi	28L x 26 12PR; approximately 9.8 psi
Attachment Type/Model	Rotary ax attachment
Price, if not Included with prime mover	Included in a typically equipped machine
Maximum Treatable Material Size	7 in
Cutting Mechanism	2 free-swinging blades mounted to rotor bar
Cutting Width	8 ft
Shaft (horizontal/vertical)	Vertical
Rotation Speed	950 rpm
Power Source Required	65 gpm; 5,500 psi
Head Weight	4,750 lb
Other Attachments Available	Stump grinder, 20-in bunching saw; 20-in bunching shear
Special Uses/Adaptations/Other Uses	Bi-rotational cutting drive
Manufacturer's Comments Regarding Equipment Application	Data not supplied

Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Vertical-Shaft Brush-Cutters, Machine Mounted

Gyro-Trac GT-18 XP Brushcutter



Make/Model	Gyro-Trac GT-18 XP Brushcutter
Manufacturer/Source	Gyro-Trac, Inc.
Distributor	Gyro-Trac
Price	\$155,000
Status	In production
Prime Mover	GT-18 XP Brushcutter is a prime mover
Prime Mover Engine Power	190 hp
Gas/Diesel	Diesel
Transmission	Hydrostatic
Max. Travel Speed	Data not supplied
Width	100 in
Length	217 in
Height	110 in
Weight	17,300 lb
Ground Clearance	14 in
Turning Radius	0
Slope Limitations and Specified Conditions	70-degrees forward, 45-degrees sideward
Attachment Power Supply	Cutting head: 4,500 psi; 38 gpm
Attachment Mount (lift arms/booms/3-point/other)	Lift arms
Tracks: Size and Gpsi	Rubsel with steel cross-links; 28 in; 2.0 psi
Attachment Type/Model	Gyro-Trac Rotary Mower
Price, if not Included with prime mover	Contact manufacturer
Maximum Treatable Material Size	Maximum 8 in; working material, 0 to 5 in
Cutting Mechanism	2 rotary discs
Cutting Width	8 ft
Shaft (horizontal/vertical)	Vertical
Rotation Speed	2,000 rpm
Power Source Required	38 gpm; 4,500 psi
Head Weight	Data not supplied
Other Attachments Available	GT-18 also available with: ROWMEC 7007PH drum shredder (ROWMEC also distributes GT-18 with rotary cutter or drum shredder.)
Special Uses/Adaptations/Other Uses	Seismic lines, pipe lines, transmission/distribution power line rights-of-way, roadside brush clearing, agricultural clearing, precommercial strip thinning
Manufacturer's Comments Regarding Equipment Application	Easily transportable with small truck/trailer, minimizing costs and permits; extremely stable; impressive power/traction performance; dependable, versatile.

Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Vertical-Shaft Brush-Cutters, Machine Mounted

Kendall Brush Cutters 484 and 684



Make/Model	Kendall Brush Cutters: 484; 684
Manufacturer/Source	Kendall Manufacturing
Distributor	Kendall Manufacturing
Price	Contact manufacturer
Status	Built upon request
Prime Mover	484 and 684 are prime movers
Prime Mover Engine Power	484: 114 hp; 684: 152, 170, or 185 hp
Gas/Diesel	Diesel
Transmission	Variable hydrostatic-mechanical with 2-speed transfer case
Max. Travel Speed	First gear: 1.5 mph; Second gear: 3 mph; Third gear: 10 mph
Width	484: 7 ft 6 in; 684: 7 ft 10 in. Size varies with tire sizes
Length	484: 22 ft 10 in; 684: 23 ft 10. Size varies with engine type.
Height	9 ft to 10 ft 5 in, depending on tire size
Weight	484: approximately 17,500 lb; 684: approximately 19,000 lb
Ground Clearance	16 ¹ / ₂ in
Turning Radius	16 ft
Slope Limitations and Specified Conditions	Not calculated
Attachment Power Supply	42 to 55 gpm; 5,000 psi
Attachment Mount (lift arms/booms/3-point/other)	Lift arms
Tires: Size and Gpsi	18-4, 23-1, or 28-L (gpsi not calculated)
Attachment Type/Model	Kendall Cutter head
Price, if not Included with prime mover	\$28,000
Other Suitable Prime Movers	Hydro-Ax 621, 721; Trackhoe; Barko machines
Maximum Treatable Material Size	10 in
Cutting Mechanism	Two free-swinging blades, one on each end of elliptical bar
Cutting Width	7 ft 6 in
Shaft (horizontal/vertical)	Vertical
Rotation Speed	1,100 rpm
Power Source Required	Closed loop 44 gpm; 5,000 psi
Head Weight	Approximately 3,500 lb
Other Attachments Available	Heavy duty Fecon Bull Hog cutter head; Seppi mower
Special Uses/Adaptations/Other Uses	Mowing rights-of-away, clearing land, precommercial thinning
Manufacturer's Comments Regarding Equipment Application	Oversize shaft, heavy-duty plating, oversize bearings; simple design; easily maintained; articulated; rough-terrain vehicle



Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Vertical-Shaft Brush-Cutters, Machine Mounted

Kendall 690A Cutter



Make/Model	Kendall 690A Cutter
Manufacturer/Source	Kendall Manufacturing
Distributor	Kendall Manufacturing
Price	Contact manufacturer
Status	In production
Prime Mover	690A is a prime mover
Prime Mover Engine Power	185 hp
Gas/Diesel	Diesel
Transmission	Hydrostatic 2 speed
Max.Travel Speed	Low: 5 mph; High: 13 mph
Width	8 ft 6 in with 23.1 tires
Length	25 ft
Height	10 ft
Weight	24,000 lb
Ground Clearance	18 in
Turning Radius	16 ft
Slope Limitations and Specified Conditions	Not calculated
Attachment Power Supply	45 gpm; 5,000 psi
Attachment Mount (lift arms/booms/3-point/other)	Lift arms
Tires: Size and Gpsi	23.1 x 26: 8 psi; 28L x 26 to 6.5 psi; 67/34.00-26: 5.5 psi
Attachment Type/Model	Kendall Cutter head
Price, if not Included with prime mover	Contact manufacturer
Other Suitable Prime Movers	Hydro-Ax 621, 721; Trackhoe; Barko machines
Maximum Treatable Material Size	10 in
Cutting Mechanism	Two free-swinging blades, one on each end of elliptical bar
Cutting Width	7 ft 6 in
Shaft (horizontal/vertical)	Vertical
Rotation Speed	1,100 rpm
Power Source Required	Closed loop 44 gpm; 5000 psi
Head Weight	Approximately 3,500 lb
Other Attachments Available	Heavy-duty Fecon Bull Hog cutter head; Seppi mower
Special Uses/Adaptations/Other Uses	Mowing rights-of-away, clearing land, precommercial thinning
Manufacturer's Comments Regarding Equipment Application	Oversize shaft, heavy-duty plating, oversize bearings; simple design; easily maintained; articulated; rough-terrain vehicle



Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Vertical-Shaft Brush-Cutters, Machine Mounted

Kershaw Klearway 800-1 and 1200



Make/Model	Kershaw Klearway 800-1 and 1200
Manufacturer/Source	Kershaw Manufacturing Co, Inc.
Distributor	Contact manufacturer for dealer information
Price	Contact manufacturer or dealer
Status	In production
Prime Mover	Kershaw 800-1 and 1200 are 4x4 prime movers
Prime Mover Engine Power	800-1: 185 hp at 2,400 rpm; 1200: 225 hp at 2,200 rpm
Gas/Diesel	Diesel
Transmission	1200: Hydrostatic 2 speed; 800-1: Power shift
Max. Travel Speed	800-1: Low, 5.5 and High, 15 mph; 1200: Low, 4.5 and High, 14 mph
Width	800-1: 7 ft 9 in; 1200: 10 ft
Length	800-1: 22 ft 7 in; 1200: 26 ft 8 in
Height	800-1: 8 ft 7 in; 1200: 10 ft 2 in
Weight	800-1: 19,000 lb; 1200: 24,500 lb
Ground Clearance	Data not supplied
Turning Radius	Data not supplied
Slope Limitations and Specified Conditions	Data not supplied
Attachment Power Supply	800-1: Single- and double-vane pumps power cutter head motors, raise/lower cylinders and winch. Max. hydraulic pressure is 2,200 psi. 1200: Cutter head motors, raise/lower cylinders, and winch are powered by two double-vaned pumps. Max. hydraulic pressure is 2400 psi.
Attachment Mount (lift arms/booms/3-point/other)	Lift arms
Tires: Size and Gpsi	800-1: 28L x 26; 1200: 67 x 34.00-25; high flotation
Attachment Type/Model	Kershaw Cutter Head
Price, if not Included with prime mover	Contact manufacturer or dealer
Maximum Treatable Material Size	800-1: 6 in; 1200: 8 in
Cutting Mechanism	Twin rotor discs with two free-swinging knives each
Cutting Width	800-1: 7 ft 8 in; 1200: 9 ft 9 in
Shaft (horizontal/vertical)	Vertical
Rotation Speed	800-1: 2,000 rpm; 1200 : 2,080 rpm
Power Source Required	Data not supplied
Head Weight	Data not supplied
Other Attachments Available	Bullhog 120 Mulcher. 1200 has 30,00-lb winch, optional logger tires, and 8-ft cutter head
Special Uses/Adaptations/Other Uses	Articulated frame; twin cutter heads have independent rotation control to enhance mulching and control direction of debris discharge; blades strike with the highest force in the industry.
Manufacturer's Comments Regarding Equipment Application	Rotary cleans heavy brush and trees up to 8-in dia. Bullhog Mulcher attachment cleans up to 20-in-dia. material.

Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Horizontal-Shaft Brush-Cutters, Machine Mounted

FS4000 Brown Bear Forestry Shredder Tractor



Make/Model	FS4000 Brown Bear Forestry Shredder Tractor
Manufacturer/Source	Brown Bear Corp.
Distributor	Contact manufacturer for dealer information
Price	\$235,000
Status	In production
Prime Mover	FS4000 is a prime mover
Prime Mover Engine Power	225 hp
Gas/Diesel	Diesel
Max. Travel Speed	20 mph
Transmission	Hydrostatic, 4-speed
Width	9 ft 5 in
Length	22 ft 6 in
Height	10 ft 8 in
Weight	28,000 lb
Ground Clearance	25 ¹ / ₂ in
Turning Radius	18 ft 6 in inside
Slope Limitations and Specified Conditions	Data not supplied
Attachment Power Supply	105 gpm; 5,500 psi pressure limited
Attachment Mount (lift arms/booms/3-point/other)	Machine mount
Tires: Size and Gpsi	23.1 x 26LS2 (standard); 28L x 26LS2 (optional). Ground pressure approx. 10 psi
Attachment Type/Model	Flail shredder
Price, if not included with prime mover	Included in base price of prime mover
Other Suitable Prime Movers	Excavators
Maximum Treatable Material Size	8 to 10 in
Cutting Mechanism	54 free-swinging knives
Cutting Width	8 ft 2 in
Shaft (horizontal/vertical)	Horizontal
Rotation Speed	1,400 rpm
Power Source Required	105 gpm; 5,500 psi
Head Weight	Included with prime mover weight
Other Attachments Available	Brush-cutter, snow blower, angle/straight blades
Special Uses/Adaptations/Other Uses	6-way head (lift, tilt, pitch)
Manufacturer's Comments Regarding Equipment Application	Stirrup-shaped, single-edge cutters with overlapping pattern, each individually pinned



Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Horizontal-Shaft Brush-Cutters, Machine Mounted

Kershaw Klearway 1200 With Bull Hog 100 Head



Make/Model	Kershaw Klearway1200 with Bull Hog 100 Head
Source	Estill's Windbreak Trimming, Inc.
Distributor	Estill's Windbreak Trimming, Inc.
Price	Contact source
Status	In production
Prime Mover	Kershaw 1200 is a prime mover
Prime Mover Engine Power	225 hp at 2,200 rpm
Gas/Diesel	Diesel
Transmission	Hydrostatic 2 speed
Max. Travel Speed	Low, 4.5 mph; High 14 mph
Width	10 ft
Length	26 ft 8 in
Height	10 ft 2 in
Weight	24,500 lb
Ground Clearance	Data not supplied
Turning Radius	Data not supplied
Slope Limitations and Specified Conditions	Data not supplied
Attachment Power Supply	Cutter head motors, raise/lower cylinders, and winch are powered by two double-ported pumps. Max. hydraulic pressure is 2400 psi.
Attachment Mount (lift arms/booms/3-point/other)	Lift arms
Tires: Size and Gpsi	67 x 34.00-25 high flotation
Attachment Type/Model	Bull Hog 100 Wood Shredder
Price, if not Included with prime mover	Contact source
Maximum Treatable Material Size	Maximum practical size is 10 in
Cutting Mechanism	42 fixed hammers on rotor
Cutting Width	6 ft 6 in
Shaft (horizontal/vertical)	Horizontal rotor
Rotation Speed	1,700 rpm
Power Source Required	PTO: 1000 rpm, 100 to 140 hp; hydraulic is 42 to 52 gpm; 4,500 desired psi
Head Weight	3,800 lb
Other Attachments Available	Can also be fitted with a Bull Hog 250 head
Special Uses/Adaptations/Other Uses	Data not supplied
Manufacturer's Comments Regarding Equipment Application	Data not supplied

Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Horizontal-Shaft Brush-Cutters, Machine Mounted

Bull Hog Track Machine, Self-Propelled Mulcher/Grinder



Make/Model	Bull Hog Track Machine, Self-Propelled Mulcher/Grinder
Manufacturer/Source	Fecon Resource Recovery Equipment Systems
Distributor	Fecon Resource Recovery Equipment Systems
Price	Contact source
Status	In production
Prime Mover	RT350
Prime Mover Engine Power	350 hp
Gas/Diesel	Diesel
Transmission	Hydrostatic
Max. Travel Speed	Data not supplied
Width	8 ft 2½ in
Length	20 ft 6 in with Bull Hog attached
Height	9 ft 6 in
Weight	29,700 lb with Bull Hog 250 head
Ground Clearance	20 in
Turning Radius	Turns in own radius
Slope Limitations and Specified Conditions	45 degrees in all directions
Attachment Power Supply	PTO or hydraulically powered
Attachment Mount (lift arms/booms/3-point/other)	Category III 3-point hitch
Track: Type; Width (options); and Gpsi	Steel
Attachment Type/Model	Bull Hog 250 shredder
Price, if not Included with prime mover	Contact source
Other Suitable Prime Movers	Tractors, excavators, front end loaders in same class, with 3-point hitch
Maximum Treatable Material Size	Practical maximum is 16 to 20 in
Cutting Mechanism	48 fixed hammers individually mounted on rotor
Cutting Width	7 ft 6 in
Shaft (horizontal/vertical)	Horizontal
Rotation Speed	1,300 rpm
Power Source Required	1,000 rpm for PTO models 200 hp and up; for hydraulic models, flow = 119 to 95 gpm; desirable pressure is 4,500 psi
Head Weight	BH 250 PTO: 7,100 lb; BH 250 hydraulic is 6,200 lb plus mount
Other Attachments Available	Roto Hog brush and stump shredder, hydraulic stump and brush-cutter, flail mulcher, stone crusher, Root Hog/Mixer-Shredder
Special Uses/Adaptations/Other Uses	Slash reduction, preplanting, land preparation, thinning, roadway clearing, stump grinding, brush and slash piles, yard waste recycling, land clearing, handling orchard prunings, pasture renovation
Manufacturer's Comments Regarding Equipment Application	Maneuverability; tool life in excess of 300 hours; tools can work in the dirt; smaller particle size; safe operation; one of highest-powered machines available for this application



Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Horizontal-Shaft Brush-Cutters, Machine Mounted

Delta DT-535 Track-Mounted Mulcher



Make/Model	Delta DT-535 Track-Mounted Mulcher
Manufacturer/Source	Fecon Resource Recovery Equipment Systems
Distributor	Fecon Resource Recovery Equipment Systems
Price	Contact source
Status	In production
Prime Mover	DT-535 is a prime mover
Prime Mover Engine Power	Gross 350 hp, net 325 hp
Gas/Diesel	Diesel
Transmission	Hydrostatic
Max. Travel Speed	Data not supplied
Width	94 in
Length	21 ft or 106 in without mulching head
Height	108 in
Weight	30,000 lb fully equipped
Ground Clearance	14.2 in
Turning Radius	0
Slope Limitations and Specified Conditions	45-degrees up/downslope, 40-degrees sidehill
Attachment Power Supply	Single attachment/Bull Hog
Attachment Mount (lift arms/booms/3-point/other)	Lift arms
Track: Type; Width (options); and Gpsi	Steel, 26 in, 4.77 psi
Attachment Type/Model	BH250 Delta 75
Price, if not Included with prime mover	Included
Maximum Treatable Material Size	Cut 10-in-diameter trees
Cutting Mechanism	Fixed
Cutting Width	7 ft 6 in
Shaft (horizontal/vertical)	Horizontal
Rotation Speed	1,400 rpm
Power Source Required	278 minimum engine horsepower to hydraulics (Fecon specs)
Head Weight	6,196 lb
Special Uses/Adaptations/Other Uses	Slash reduction, preplanting, land preparation, thinning, roadway clearing, stump grinding, at transfer stations, brush and slash piles, yard waste recycling, land clearing, handling orchard prunings and pasture renovation
Manufacturer's Comments Regarding Equipment Application	Tool life in excess of 300 hours; tools can work in the dirt; smaller particle size; safe operation; one of the highest-powered machines available

Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Horizontal-Shaft Brush-Cutters, Machine Mounted

Delta DT-953C Track-Mounted Mower/Brush Rake



Make/Model	Delta DT-953C Track-Mounted Mower/Brush Rake
Manufacturer/Source	Fecon Resource Recovery Equipment Systems
Distributor	Fecon Resource Recovery Equipment Systems
Price	Contact source
Status	In production
Prime Mover	DT-953C is a prime mover
Prime Mover Engine Power	240 hp (optional 450 hp called the 15-in tree-mulching machine)
Gas/Diesel	Diesel
Transmission	Hydrostatic
Max. Travel Speed	Data not supplied
Width	9 ft 6 in
Length	27 ft 9 in with head
Height	10 ft 1 in
Weight	29,100 lb
Ground Clearance	14.8 in
Turning Radius	0
Slope Limitations and Specified Conditions	45-degrees up/downslope; 40-degrees sidehill
Attachment Power Supply	Single attachment/Bull Hog
Attachment Mount (lift arms/booms/3-point/other)	Lift arms
Track: Type, Width (options), and Gpsi	Steel, 26 in , 4.7 psi
Attachment Type/Model	BH 250 Delta 75
Price, if not Included with prime mover	Included
Maximum Treatable Material Size	Continuously cut: 6-in-diameter trees, (240 hp); 15-in-diameter trees, (450 hp)
Cutting Mechanism	Fixed
Cutting Width	7 ft 6 in
Shaft (horizontal/vertical)	Horizontal
Rotation Speed	1,400 rpm
Power Source Required	278 minimum engine horsepower to hydraulics (Fecon specs)
Head Weight	6,196 lb
Special Uses/Adaptations/Other Uses	Slash reduction, preplanting, land preparation, thinning, roadway clearing, stump grinding, at transfer stations, brush and slash piles, yard waste recycling, land clearing, handling orchard prunings, pasture renovation
Manufacturer's Comments Regarding Equipment Application	Tool life in excess of 300 hours; tools can work in the dirt; smaller particle size; safe operation; one of the highest powered machines available for this application

Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Horizontal-Shaft Brush-Cutters, Machine Mounted

Delta DT-200 Skid-Steer Multi-Task Mower



Make/Model	Delta DT-200 Skid-Steer Multi-Task Mower
Manufacturer/Source	Fecon Resource Recovery Equipment Systems
Distributor	Fecon Resource Recovery Equipment Systems
Price	Contact source
Status	In production
Prime Mover	DT200 is a prime mover
Prime Mover Engine Power	195 hp at 2,000 rpm
Gas/Diesel	Diesel
Transmission	Hydraulic
Max. Travel Speed	Data not supplied
Width	70 in
Length	150 in overall
Height	90 in operating height
Weight	8,700 lb operating weight
Ground Clearance	8 in
Turning Radius	0
Slope Limitations and Specified Conditions	45 degrees up and downslope; 40 degrees sidehill
Attachment Power Supply	30 gpm
Attachment Mount (lift arms/booms/3-point/other)	Lift arms
Track Type, Width (options), Gpsi	Rubber, 20 in, 3.5 psi
Tire Size and Gpsi	15-in tires with rubber-track system
Attachment Type/Model	BH80H-275
Price (if not Included with prime mover)	Included
Maximum Treatable Material Size	Maximum practical is 8 to 10 in; continuously cut 6-in-diameter trees
Cutting Mechanism	Fixed
Cutting Width	4 ft 10 in
Shaft (horizontal/vertical)	Horizontal
Rotation Speed	1,700 rpm
Power Source Required	Mower pump 65 gpm; 5,200 psi
Head Weight	2,317 lb
Other Attachments Available	Machine can use any standard skid-steer attachment
Special Uses/Adaptations/Other Uses	Slash reduction, preplanting, land preparation, thinning, roadway clearing, stump grinding, at transfer stations, brush and slash piles, yard waste recycling, land clearing, handling orchard prunings, pasture renovation
Manufacturer's Comments Regarding Equipment Application	Versatile; gets into narrow spaces; minimal impact; tool life in excess of 300 hours; tools can work in the dirt; smaller particle size; safe operation

Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Horizontal-Shaft Brush-Cutters, Machine Mounted

Franklin Tree Farmer Brush-Cutter C4550 and C4950



Make/Model	Franklin Tree Farmer Brush-Cutters C4550 and C4950
Manufacturer/Source	Franklin Equipment Co.
Distributor	Information not supplied
Price	C4550: \$154,600; C4950: \$183,000 (f.o.b. Franklin, VA, less attachments)
Status	In production
Prime Mover	Four-wheel articulated feller-buncher
Prime Mover Engine Power	C4550: 185 hp; C4950: 215 hp
Gas/Diesel	Diesel
Transmission	Hydrostatic variable displacement
Max. Travel Speed	Low: 6 mph; High 13 mph
Width	C4550: 105 to 125.13 in; C4950: 110 to 126 in (tire dependent)
Length	C4550: 200.25 in; C4950: 225.6 in (less cutter heads)
Height	C4550: 127 in; C4950: 127.75 in
Weight	C4550: 22,200 lb; C4950: 30,400 lb (less cutter heads)
Ground Clearance	C4550: 22.5 in; C4950: 21.19 in
Turning Radius	C4550: 12.3 ft; C4950: 13.9 ft
Slope Limitations and Specified Conditions	Depends on terrain and ground conditions
Attachment Power Supply	C4550: 5,000 psi, 58 gpm; C4950: 5,000 psi, 68 gpm
Attachment Mount (lift arms/booms/3-point/other)	Lift arms
Tires: Size and Gpsi	C4550: 23.1 x 26, 8.7 psi; C4950: 24.5 x 32, 9 psi (options available)
Travel speeds	Low: 0 to 6 mph; high: 0 to 13 mph
Attachment Type/Model	Fecon Bull Hog 120 for C4550; Fecon Bull Hog 150 for C4950
Price (if not Included with prime mover)	BH 120: \$30,700 (incl. mounts); BH 150: \$35,700 (incl. mounts)
Maximum Treatable Material Size	Best efficiency in material up to 8 in; requires more time to cut larger trees.
Cutting Mechanism	Horizontal drum with fixed carbide teeth
Cutting Width	BH 120: 85 in; BH 150: 88 in
Shaft (horizontal/vertical)	Horizontal
Rotation Speed	1,700 rpm
Power Source Required	BH 120: 5,000 psi, 42 gpm; BH 150: 5,000 psi, 57 gpm
Head Weight	BH 120: 4,000 lb; BH 150: 5,800 lb
Other Attachments Available	Can run a variety of attachments (with engineering approval).
Special Uses/Adaptations/Other Uses	Rights-of-way; fire breaks; fuel/slash reduction; flood-control channels; clearing lots, parks, recreational trails; tree removal; stump grinding; land clearing.
Manufacturer's Comments Regarding Equipment Application	Bull Hog attachments are contained-debris heads and operate safer and cleaner than rotary cutters.

Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Horizontal-Shaft Brush-Cutters, Machine Mounted

**Geo Boy Brush-Cutter Tractor
With Seppi M Midi Forest 225 Cutter Head**



Make/Model	Geo Boy Brush-Cutter Tractor with Seppi M Midi Forest 225 Cutter Head
Manufacturer/Source	Geo-Boy
Distributor	Geo-Boy
Price	Contact manufacturer
Status	In production
Prime Mover	Geo Boy is a prime mover
Prime Mover Engine Power	208 to 250 hp
Gas/Diesel	Diesel
Transmission	Hydrostatic
Max. Travel Speed	8 to 9 mph
Width	8 ft 3 in
Length	21 ft
Height	112 in
Weight	Approximately 20,000 lb
Ground Clearance	Data not supplied
Turning Radius	0
Slope Limitations and Specified Conditions	Depends on ground conditions
Attachment Power Supply	Hydrostatic
Attachment Mount (lift arms/booms/3-point/other)	Lift arms
Track Type, Width (options), and Gpsi	Rubber with steel bars; 33 in; 1.9 psi
Attachment Type/Model	Seppi M Midi Forest 225
Price, if not Included with prime mover	Contact manufacturer
Other Suitable Prime Movers	Data not supplied
Maximum Treatable Material Size	9.75 in
Cutting Mechanism	38 free-swinging or fixed hammers
Cutting Width	7 ft 5 in
Shaft (horizontal/vertical)	Horizontal
Rotation Speed	Operates at approximately 1,900 rpm
Power Source Required	Minimum 180 hp
Head Weight	5,070 lb
Other Attachments Available	All rubber track with chevron tread
Special Uses/Adaptations/Other Uses	Works with most drum type or rotary cutters within weight limits
Manufacturer's Comments Regarding Equipment Application	Clearing brush and small trees; maintaining wilderness road and trails; general right-of-way clearance maintenance
MTDC Comment	This company is developing a more capable rubber-tracked machine called the Heavy-Duty Geo Boy. It can be seen at: http://www.geo-boy.com

Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Horizontal-Shaft Brush-Cutters, Machine Mounted

Magnum 500 Mulching Mower



Make/Model	Magnum 500
Manufacturer/Source	Magnum Mulching Mowers, Inc.
Distributor	Magnum Mulching Mowers, Inc.
Price	\$335,000
Status	In production
Prime Mover	Partial 938 chassis provided by Caterpillar Industrial Products, Inc.
Prime Mover Engine Power	Caterpillar 3406E, 492 hp
Gas/Diesel	Diesel
Transmission	Hydrostatic
Max. Travel Speed	Low: 6 mph; High: 15 mph
Width	11 ft 6 in
Length	25 ft
Height	11 ft 6 in
Weight	39,000 lb
Ground Clearance	21 in
Turning Radius	18 ft
Slope Limitations and Specified Conditions	Data not supplied
Attachment Power Supply	Prime mover
Attachment Mount (lift arms/booms/3-point/other)	Lift arms
Tires: Size and Gpsi	30.5 x 32
Attachment Type/Model	Magnum mulching mower head
Price, if not Included with prime mover	Data not supplied
Maximum Treatable Material Size	30 in
Cutting Mechanism	Hammer Mill, 5 rows, 14-lb hammers
Cutting Width	8 ft
Shaft (horizontal/vertical)	Horizontal
Rotation Speed	1,700 rpm
Power Source Required	Data not supplied
Head Weight	10,100 lb
Other Attachments Available	None
MTDC Comments	Head uses dual hydraulic drives. Unit comes with an 800-lb slide bar that allows the head to be moved 16 in left or right.



Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Horizontal-Shaft Brush-Cutters, Machine Mounted

Rayco T185 With FM7200 Forestry Mower/Mulcher



Make/Model	Rayco T185 with FM7200 Forestry Mower/Mulcher
Manufacturer/Source	Rayco
Distributor	Rayco
Price	Contact manufacturer
Status	In production
Prime Mover	T185
Prime Mover Engine Power	185 hp
Gas/Diesel	Diesel
Transmission	Hydrostatic, 2-speed range
Max. Travel Speed	Data not supplied
Width	8 ft 10 in
Length	20 ft
Height	9 ft 8 in
Weight	26,420 lb with mower
Ground Clearance	No hindrance in normal application
Turning Radius	Turns in own radius
Slope Limitations and Specified Conditions	Not to exceed 45-degree slope, continuous
Attachment Power Supply	85 gpm, 6,000 psi
Attachment Mount (lift arms/booms/3-point/other)	Machine
Cutting Head Dimensions	101-in wide; 39-in deep; 82-in high
Track Type, Width (options), Gpsi	24-in pad, 5.0 psi, double-bar grouser
Attachment Type/Model	FM7200 Mower/Mulcher
Price, if not Included with prime mover	Contact manufacturer
Maximum Treatable Material Size	4 in continuous and 6 in intermittent
Cutting Mechanism	36 swing hammers
Cutting Width	101 in
Shaft (horizontal/vertical)	Horizontal
Rotation Speed	2,000 rpm
Power Source Required	85 gpm; 6,000 psi; high pressure hydrostatic
Head Weight	3,740 lb
Other Attachments Available	Hydra-Stumper stump grinder
Special Uses/Adaptations/Other Uses	Site prep, rights-of-away
Manufacturer's Comments Regarding Equipment Application	Brush-cutting, thinning, and shredding

Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Horizontal-Shaft Brush-Cutters, Machine-Mounted

Rayco T725 With 7260 Mower/Mulcher System

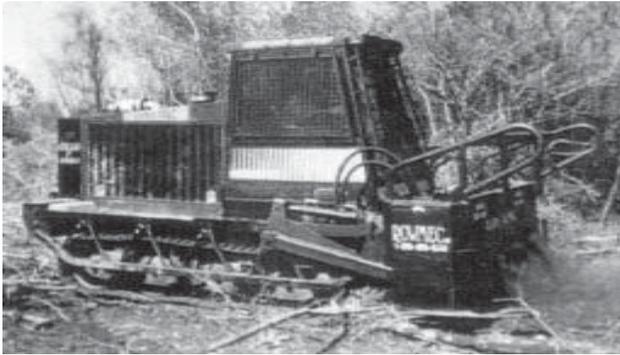


Make/Model	Rayco T725 with 7260 Mower/Mulcher System
Manufacturer/Source	Rayco
Distributor	Rayco
Price	Contact manufacturer
Status	In production
Prime Mover	T275
Prime Mover Engine Power	275 hp
Gas/Diesel	Diesel
Transmission	Hydrostatic, 2-speed range
Max. Travel Speed	Data not supplied
Width	8 ft 10 in
Length	20 ft 2 in
Height	9 ft 8 in
Weight	33,500 lb with mower
Ground Clearance	No hindrance in normal application
Turning Radius	Turns in own radius
Slope Limitations and Specified Conditions	Not to exceed 45-degree slope, continuous
Attachment Power Supply	110 gpm; 7,000 psi
Attachment Mount (lift arms/booms/3-point/other)	Machine
Cutting Head Dimensions	101-in wide; 43-in deep; 85-in high
Track Type, Width (options), and Gpsi	24-in double-bar grouser, 6.4 psi
Attachment Type/Model	FM726 Forestry Mower/Mulcher
Price, if not Included with prime move)	Contact manufacturer
Maximum Treatable Material Size	8 in
Cutting Mechanism	84 carbide-tipped fixed tools
Cutting Width	7 ft 9 in
Shaft (horizontal/vertical)	Horizontal
Rotation Speed	1,600 rpm
Power Source Required	110 gpm; 7,000 psi; high-pressure hydrostatic
Head Weight	8,000 lb
Other Attachments Available	Hydra-Stumper stump grinder
Special Uses/Adaptations/Other Uses	Site prep, rights-of-way
Manufacturer's Comments Regarding Equipment Application	Safety (debris is not thrown); end product is neater; spot turns result in greater production; multifunctional capacities at professional levels

Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Horizontal-Shaft Brush-Cutters, Machine Mounted

R.O.W. King Land Clearing Machines, GT-18 and T-7



R.O.W. King Model GT-18



R.O.W. King Model T-7

Make/Model	R.O.W. King Land Clearing Machines, Models GT-18; T-7
Manufacturer/Source	Right-of-Way Maintenance Equipment Co. (ROWMEC)
Distributor	ROWMEC
Price	Contact manufacturer
Status	In production
Prime Mover	GT-18: Gyro-Trac GT-18; T-7: 411 EX Tractor. Also mounts on New Holland 9030 Versatile (T-5)
Prime Mover Engine Power	GT-18: 182.5 hp; 2,600 rpm. T-7: 150 hp continuous
Gas/Diesel	Diesel
Transmission	Hydrostatic
Max. Travel Speed	T-7: Low, 5mph; High, 14 mph. GT-18: Data not supplied
Width	GT-18: 100 in; T-7: 8 ft
Length	GT-18: 229 in; T-7: 23 ft 6 in
Height	GT-18: 113 in; T-7: 11 ft
Weight	GT-18: 17,300 lb; T-7: 23,500 lb
Ground Clearance	GT-18: 13 in; T-7: 20 in
Turning Radius	GT-18: 0 degrees; T-7: 42 degrees
Slope Limitations and Specified Conditions	GT-18: 50 degrees; T-7: data not supplied
Attachment Power Supply	Varies with prime mover
Attachment Mount (lift arms/booms/3-point/other)	PH (hydraulic) models, lift arms; DH (self-contained) model, 3-point hitch
Track Type, Width (options), Gpsi	GT-18: Rubber and nylon with steel crosslinks, 28 in, 2.0 psi on flat terrain
Tires: size and Gpsi	T-7: Four Firestone Forestry Special 23.1-26, 7.49 psi
Attachment Type/Model	Heads: 7 ft 10 in; 7010H: 4 ft 10 in; 4010H: PTO and self-contained versions available
Price, if not Included with prime mover	Contact manufacturer
Other Suitable Prime Movers	International Harvester, Trackhoe, Caterpillar, Tiger Cat, John Deere, New Holland, Hydro-Ax, and Gyro-Trac
Maximum Treatable Material Size	8 to 15 in
Cutting Mechanism	Drum shredder with free-swinging stirrup knives
Cutting Width	4 ft 10 in or 7 ft 10 in
Shaft (horizontal/vertical)	Horizontal
Rotation Speed	2,300 rpm
Power Source Required	7010H and 4010H: Hydraulic circuit is 45 gpm at 5,000 psi. PTO is 80 hp, 1,000 rpm. Self-contained is diesel engine that powers the rotor with hydraulics.
Head Weight	7010H: 3,000 lb; 4010H: 2,700 lb
Other Attachments Available	GT-18 is also available with the Gyro-Trac rotary cutter
Special Uses/Adaptations/Other Uses	ROWMEC's T-5 R.O.W. King features a modified Ford 9030 Versatile tractor with hydraulic implement drive, forestry package
Manufacturer's Comments Regarding Equipment Application	Forestry, right-of-way, geophysical and general land clearing

Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Vertical-Shaft Brush-Cutters, Boom Mounted

Rottne 2004 With MK 70 Cutting Head



Make/Model	Rottne 2004 with MK 70 Cutting Head
Manufacturer/Source	Blondin, Inc.
Distributor	Blondin, Inc.
Price	Contact source
Status	In production
Prime Mover	Rottne 2004 (2002)
Prime Mover Engine Power	125 hp (93kW)
Gas/Diesel	Diesel
Transmission	Hydrostatic
Max. Travel Speed	Data not supplied
Width	72 in
Length	78 in without boom
Height	113 in
Weight	Service weight without head is 13,340 lb
Ground Clearance	Maximum 39 in, minimum 8 in
Turning Radius	Data not supplied
Slope Limitations and Specified Conditions	Data not supplied
Attachment Power Supply	Pumping capacity at engine speed is 40 gpm; working pressure is 2850 psi
Attachment Mount (lift arms/booms/3-point/other)	Boom
Boom Type and Reach	Parallel-acting knuckle boom with 21.3 ft outreach
Rires: Size and Gpsi	500/50 x 26.5 T159 Standard
Attachment Type/Model	Cutting Head MK70
Price, if not Included with prime mover	Contact source
Maximum Treatable Material Size	10 cm
Cutting Mechanism	Fixed
Cutting Width	70 cm
Shaft (horizontal/vertical)	Vertical
Rotation Speed	2,800 rpm
Power Source Required	20 to 25 Mpa
Head Weight	220 kg
Other Attachments Available	EGS 400 single-grip harvester
Special Uses/Adaptations/Other Uses	Harvesting, thinning
Manufacturer's Comments Regarding Equipment Application	MK 70 used in planted stands to clean out brush, give more open space for growing; 2004 usually equipped with ESG 400 harvesting head for thinning and MK 70 often used when thinning operations are down in spring

Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Vertical-Shaft Brush-Cutters, Boom Mounted

Shar 20 Cutter



Make/Model	Shar 20 Cutter
Manufacturer/Source	Shur Shar Manufacturing
Distributor	Shur Shar Manufacturing
Price	\$150,000
Status	In production
Prime Mover	Shar 20 is a prime mover
Prime Mover Engine Power	128 hp
Gas/Diesel	Diesel
Transmission	Mechanical 4 speed with variable hydraulic drive
Max. Travel Speed	Data not supplied
Width	93 in
Length	18 ft 5 in without cutter head
Height	108 in
Weight	17,500 lb
Ground Clearance	15 in
Turning Radius	Data not supplied
Slope Limitations and Specified Conditions	60% slope; 30% sideslope
Attachment Mount (lift arms/booms/3-point/other)	Boom
Boom Type and Reach	Stick boom, 60 in
Track Type, Width (options), and Gpsi	Rubber belt with steel shoes; 26 in; 4 to 5 psi
Attachment Type/Model	Shar 20
Price, if not Included with prime mover	Included in base price of prime mover
Other Suitable Prime Movers	None
Maximum Treatable Material Size	14 in
Cutting Mechanism	Fixed-tooth (also available as swinging)
Cutting Width	14 ft 6 in
Shaft (horizontal/vertical)	Vertical
Rotation Speed	400 rpm
Head Weight	Included with gross vehicle weight
Other Attachments Available	Shar 20 Cutter Head
Special Uses/Adaptations/Other Uses	See manufacturer's comments
Manufacturer's Comments Regarding Equipment Application	Rugged enough for slash reduction, dense brush, precommercial thinning; accurate enough for use in new plantations without damage to small trees



Brush-Cutting, Thinning, and Shredding Machines

Integral Units: Vertical-Shaft Brush-Cutters, Boom Mounted

Silvana Selective Cutter



Make/Model	Silvana Selective Cutter
Manufacturer/Source	Silvana Import Trading, Inc.
Distributor	Silvana Import Trading, Inc.
Price	Contact source
Status	In production
Prime Mover	Modified Ford 9030, articulated
Prime Mover Engine Power	Ford 9030 (about 105 hp)
Gas/Diesel	Diesel
Transmission	Hydrostatic mechanical
Max. Travel Speed	Data not supplied
Width	2,400 mm
Length	Rear axle to boom-mount is 3,160 mm
Height	2,975 mm
Weight	Data not supplied
Ground Clearance	580 mm
Turning Radius	Data not supplied
Slope Limitations and Specified Conditions	Data not supplied
Attachment Power Supply	Data not supplied
Attachment Mount (lift arms/booms/3-point/other)	Boom
Boom Type and Reach	Articulated, parallel acting; fully extended from mount to tip of head is 5,850 mm
Tires: Size and Gpsi	4 x 4; data not supplied
Attachment Type/Model	Specially designed clearing head and boom
Price, if not included with prime mover	Contact source
Maximum Treatable Material Size	Data not supplied
Cutting Mechanism	Data not supplied
Cutting Width	0.8-m diameter
Shaft (horizontal/vertical)	Vertical
Rotation Speed	2,500 rpm
Power Source Required	80 l/m; 200 to 250 bar
Head Weight	EK 804 Trimcut head: 160 kg
Other Attachments Available	Optional high ground clearance for straddling trees up to 3 m
Special Uses/Adaptations/Other Uses	Data not supplied
Manufacturer's Comments Regarding Equipment Application	Developed in collaboration with Forest Engineering Research Institute of Canada (FERIC)



Self-Propelled Whole-Tree Chippers

Concept—Certain situations may warrant chipping onsite, especially if burning is prohibited. Chips can be blown back or hauled out. In some areas chip markets may make this option economically more feasible than in other areas. Consideration should be given to the results of removing the nutrient-rich chips from the site.

Comments—Chipping, in general, is an expensive option for reducing biomass onsite, especially if the chipper must be hauled to the landing and material must be brought to the chipper. A tree/brush cutter must precede the chipper. If a loader is required, it adds to the cost. A trailer-mounted self-loading chipper, such as those produced by Bandit or Morbark and Vermeer could conceivably be towed through the stand, but the machines' turning radius and tree spacing could present major problems.

The two whole-tree chippers are presented here as an option in areas where conditions may allow. We are only aware of two manufacturers of self-propelled whole-tree chippers.

Other Manufacturers or Sources—Self-propelled whole-tree chippers are not common. In addition to sources listed in this catalog, other manufacturers of non-self-propelled whole-tree chippers include Peterson Pacific Corporation and Vermeer Manufacturing.

Check the Timber West or Timber Harvesting annual buyer's guides for logging and related equipment (see Appendix B for details).

Other unconfirmed sources of whole-tree chippers listed in Timber West 1999/2000 Buyer's Guide & Directory include:

- Acrowood Corp.
- Diamond Z Manufacturing
- Dura Tech Industries, International
- Forest Processing Equipment
- Forest Tool Co.
- Nicholson Manufacturing Co.
- Peterson Pacific Corp.
- Precision Husky Corp.
- Strong Manufacturing
- Timber Machine Technologies
- Valon Kone Brunette, Ltd.

Self-Propelled Whole-Tree Chippers

1900 Track Bandit



Make/Model	1900 Track Bandit Self-Propelled Whole-Tree Chipper
Manufacturer/Source	Bandit Industries, Inc.
Distributor	Contact manufacturer for dealer information
Price	Track mounted models: \$250,000 to \$275,000, depending on options
Status	In production since 1990
Prime Mover	Caterpillar 325 undercarriage
Prime Mover Engine Power	Choice of 425 to 500 hp
Gas/Diesel	Caterpillar, Cummins, and John Deere diesels
Transmission	Hydrostatic
Max. Travel Speed	4.2 mph
Width	10 ft 6 in
Length	28 ft
Height	11 ft 4 in
Weight	57,000 lb
Ground Clearance	20 in
Turning Radius	Turnability ratio: 0.57
Slope Limitations and Specified Conditions	Approximately 26 degrees
Track Type, Width (options) and Gpsi	30 in; under 6 psi
Boom Type and Reach	Knuckleboom with 18 ft reach, 35 in, 180-degree grapple rotation
Maximum Treatable Material Size	19-in diameter
Cutting Mechanism	3-knife chipper with 60-in chipper disc; size of knives depends on chip size wanted
Chipper Drum Speed	Approximately 900 rpm
Size of Chip Produced	0.75 in is standard
Attachment Power Supply	475 hp; 2,200 rpm
Special Uses/Adaptations/Other Uses	220-degree swivel discharge. Bandit also makes the 1900 as a towable model, and other sizes of self-propelled chippers.
Manufacturer's Comments Regarding Equipment Application	Processing logging slash, clearing land, harvesting whole trees. Chips used for raw material for paper and board, fuel, wood chips, mulch, logging road beds, and as soil enhancer.



Self-Propelled Whole-Tree Chippers

Morbark 50/48 Mountain Goat



Make/Model	Morbark 50/48 Mountain Goat
Manufacturer/Source	Morbark, Inc.
Distributor	Contact Morbark, Inc.
Price	Contact manufacturer
Status	In production
Prime Mover	50/48 Mountain Goat is a prime mover
Prime Mover Engine Power	650 to 860 hp
Gas/Diesel	Diesel
Transmission	Hydraulic
Max. Travel Speed	2.4 mph
Width	11 ft 6 in
Length	22 ft
Height	11 ft 6 in
Weight	77,000 lb
Ground Clearance	34 in
Turning Radius	Data not supplied
Slope Limitations and Specified Conditions	Data not supplied
Track Type, Width (options) and Gpsi	750 mm triple grouser shoes; 6.3 psi
Boom Type and Reach	Knuckleboom with 18-ft reach; 180-degree swing; 360-degree continuous-rotation grapple
Maximum Treatable Material Size	24 in
Cutting Mechanism	10 Babbitt-style knives, 10 ¹ / ₂ x 4 ³ / ₈ x 1 ¹ / ₂ in; Drum, 48-in diameter, 52-in wide
Chipper Drum Speed	828 rpm
Size of Chip Produced	Data not supplied
Attachment Power Supply	Data not supplied
Special Uses/Adaptations/Other Uses	50/48 Mountain Goat comes with skidder style blade for extra stability and flexibility; Morbark makes a 30/36 Mountain Goat (425 to 460 hp) and trailer-mounted versions of 30/36 and 50/48
Manufacturer's Comments Regarding Equipment Application	Where chips can be broadcast back over terrain, Mountain Goat eliminates the need for skidding and forwarding material

Multipurpose, Low-Ground-Pressure, Rubber-Tracked Vehicles

Concept—These specially designed machines look similar to skid steers with tracks, but they are in a class by themselves. They are tracked machines designed for superior performance on all types of terrain, have a low center of gravity, and very low ground pressure (less than 3 psi), making them an advantageous choice where the ground conditions are sensitive, such as riparian areas.

Comments—These rubber-tracked vehicles are extremely versatile because they accept a wide range of hydraulic and PTO-driven attachments.

Other Manufacturers or Sources—Also check out the following rubber-tracked, low-ground-pressure machines included in this report: Gyro-Track GT-18 XP (2.0 psi); and Geo Boy (1.9 psi).

Melroe's Bobcat has just recently introduced their G-Series Model 864 compact track loader that is a rubber-tracked skid steer with a 73-hp diesel engine. The 17.7-inch track exerts just 3.8 psi. It has 11 inches of ground clearance. Slope limitations are unknown at this time. The machine can be seen at: <http://www.bobcat.com>.

Check the Timber West or Timber Harvesting annual buyer's guides for additional logging and related equipment (see Appendix B for details).



Multipurpose, Low-Ground-Pressure, Rubber-Tracked Vehicles

ASV Posi-Track All-Purpose Crawler



Make/Model	ASV Posi-Track All-Purpose Crawler: 4810, 2810, 2800. MD-70 special order only. Contact manufacturer for specs. No sealed undercarriage on MD-70. HD-4520 and HD-4500 discontinued.
Manufacturer/Source	All Season Vehicles, Inc. (ASV)
Distributor	Contact manufacturer for dealer information
Price	\$45,000 to \$55,000
Status	In production
Prime Mover	ASV is a prime mover
Prime Mover Engine Power	4810: 105 hp (net); 2810: 83 hp; 2800: 70 hp
Gas/Diesel	Diesel
Transmission	Hydrostatic
Max. Travel Speed	4810 6 mph; 2810 and 2800: 7 mph;
Width	4810, 2810, and 2800: 69 in
Length Without Loader	4810: 114.75 in; 2810 and 2800: 113 in
Height	4810, 2810, and 2800: 82.5 in
Weight With Loader	4810: 8,640 lb; 2810 and 2800: 7,150 lb
Ground Clearance	4810, 2810, and 2800: 16 in
Turning Radius	0
Slope Limitations and Specified Conditions	33% gradability sidehill
Attachment Power Supply	High-flow auxiliary hydraulic circuit: 4810, 30 gpm at 3,200 psi; 2810 and 2800, 25 gpm at 2,750 psi. Low-flow auxiliary hydraulic circuit: 4810, 19 gpm at 2,950 psi; 2810 and 2800, 19 gpm at 2,750 psi.
Attachment Mount (lift arms/boom/3-point/other)	Loader arms and 3-point hitch
Track Type, width (options), and Gpsi	Kevlar-reinforced rubber. Ground pressure, 18-in track: 4810, 3.0 psi; 2810 and 2800, 2.3 psi without loader; and 2.5 psi with loader. Ground pressure, 24-in track: 2810 and 2800, 2.7 psi without loader; and 1.9 psi with loader.
Attachment Usable by this Machine	Snowblower, 6-way dozer blade, snowblade, hydraulic brush-cutter, trencher, auger, backhoe, forks, grapple bucket, log grapple, 4-in-1 bucket, power rake, tiller, sweeper, 3-point hitch, HD bucket, limb risers, stump grinder, tree shear, hydraulic winch, flail mower, grader, drills, rock pickers, cable plow, crushers, rollers, mixers
Special Uses/Adaptations/Other Uses	Useful where low gpsi and maximum traction is essential
Manufacturer's Comments Regarding Equipment Application	Data not supplied

Multipurpose, Low-Ground-Pressure, Rubber-Tracked Vehicles

LMC Trackmaster 85 Rubber-Tracked Crawler



Make/Model	LMC Trackmaster 85 Rubber-Tracked Crawler
Manufacturer/Source	LMC Corp.
Distributor	Contact manufacturer for dealer information
Price	\$42,900
Status	In production
Prime Mover	Trackmaster 85 is a prime mover
Prime Mover Engine Power	88.5 hp
Gas/Diesel	Diesel
Transmission	Hydrostatic
Max. Travel Speed	7.2 mph
Width	66 in
Length	157.7 in
Height	78.8 in
Weight	7,100 lb
Ground Clearance	10 in
Turning Radius	0 in (counter rotation)
Slope Limitations and Specified Conditions	Data not supplied
Attachment Power Supply	Optional PTO; high flow is 30 gpm; maximum working pressure is 3,000 psi; hydraulic pump capacity is 16 gpm; maximum working pressure is 2,500 psi
Attachment Mount (lift arms/boom/3-point/other)	Lift arms and optional 3-point mount
Lift Arm Reach	Loader arms, 110.5-in lift height
Track Type, Width (options) and Gpsi	Rubber on steel; 18-in tracks; 1.9 psi with loader arms and bucket
Attachments Usable by this Machine	Model 5601-A Brush-Cutter, double-flighted auger, dozer blades, mud/concrete haulers, rake, grader blade, cold planer, flail mower, vibratory roller, tiller, stump grinder, rock wheel, cutting wheel, scarifier, landscape rake, 4 -in-1 bucket, pallet forks, trencher, post pounder, snow blower, concrete accessories, and more. Bobcat-style tool plate allows use of most skid-steer attachments.
Special Uses/Adaptations/Other Uses	Loader, dozer or tool carrier; designed for jobs requiring high traction on soft ground with minimal damage
Manufacturer's Comments Regarding Equipment Application	Ultra-low ground pressure; ideally suited for wetlands, marshes, orchards, vineyards, landscaping nurseries, excavating



Other Machines and Miscellaneous Attachments

Concept—These machines and attachments are not easily categorized. Some are built for applications other than brush cutting. Others are general application machines, but may apply to this project because of unusual characteristics or their size.

Comments—The tree trimmers were chosen for their ability to cut down ladder fuels both in stands and along the forest/residential interface. The Sweco trail dozer was included based on its size and versatility.

Although excavators are not included in this catalog, they usually are not cost-effective skidders. In general, they can run a variety of attachments and are excellent platforms for attachments that can reduce biomass. If there is an excavator onsite from another operation, and the area to be treated is small, it may be more cost effective to use the excavator than to bring in a specialized machine.

Other Manufacturers or Sources—Check the annual excavator issue in *Equipment Today* for information on excavators, and the annual buyer's guides from Timber West or Timber Harvesting for other logging-related equipment (see Appendix B for details).

Other Machines and Miscellaneous Attachments

Tree Trimmers

Jarraff All-Terrain Tree Trimmer



Jaraff Tree Trimmers, wheeled and tracked.

Make/Model	Jarraff All Terrain Tree Trimmer: 4 x 4; Crawler Models
Manufacturer/Source	Jarraff Industries, Inc.
Distributor	Jarraff Industries, Inc.
Price	Contact manufacturer
Status	In production
Prime Mover	Jarraff is a prime mover
Prime Mover Engine Power	106 hp
Gas/Diesel	Diesel
Transmission	Hydrostatic
Max. Travel Speed	12.5 mph
Width	4 x 4: depends on tires
Length	4 x 4: 37 ft (25 ft from winch to blade)
Height	4 x 4: 10 ft
Weight	4 x 4 is approximately 18,500 lb; crawler is approximately 19,000 lb
Ground Clearance	Data not supplied
Turning Radius	4 x 4: 25 ft; crawler: 0
Slope Limitations and Specified Conditions	Hydraulically powered turntable provides 360-degree range of motion and 40-degree lateral tilt
Attachment Power Supply	Hydraulic
Attachment Mount (lift arms/boom/3-point/other)	Boom
Boom Type and Reach	Non-conductive high-tensile fiberglass
Track Type, Width (options) and Gpsi	Crawler is rubber; 33-in tracks; 1.8 psi
Tires, Size and Gpsi	4 x 4: 23.1 x 26; 20 x 20; 28L x 20; 30 x 26; 66 x 4300-25
Attachment Type/Model	Jarraff Tree Trimmer
Price, if not included with prime mover	Included
Maximum Treatable Material Size	24 in
Cutting Mechanism	Rotary blade, 24 in
Cutting Width	Maximum cutting height is 75 ft
Shaft (horizontal/vertical)	Vertical
Rotation Speed (rpm)	3,200 rpm
Power Source Required	Integral
Head Weight	80 lb
Other Attachments Available	Has 8 ft x 2 ft dozer blade and 20,000-lb line pull winch (capacity for 200 ft of 1/2-in line). Crawler has optional grouser bar; 4 x 4 articulated in middle
Special Uses/Adaptations/Other Uses	Good for rural/urban interface or urban rights-of-away where low impact needed
Manufacturer's Comments Regarding Equipment Application	No outriggers needed, lightweight boom

Other Machines and Miscellaneous Attachments

Tree Trimmers

Kershaw Klipper Tree Trimmers, Models 55-4 and 70-10



Make/Model	Kershaw Klipper 55-4 and 70-10 Tree Trimmers
Manufacturer/Source	Kershaw Manufacturing Co., Inc.
Distributor	Estill's Windbreak Trimming, Inc.
Price	Contact manufacturer or dealer
Status	In production
Prime Mover	Klipper 55-4; 70-10 are prime movers
Prime Mover Engine Power	185 hp at 2,200 rpm
Gas/Diesel	Data not supplied
Transmission	Hydrostatic 4-wheel drive
Max. Travel Speed	Data not supplied
Width	Data not supplied
Length	32 ft 8 in, folded for transport
Height	12 ft to top of cab
Weight	55-4 is approximately 28,000 lb; 70-10 is approximately 22,000 lb
Ground Clearance	Data not supplied
Slope Limitations and Specified Conditions	Data not supplied
Attachment Power Supply	55-4: engine-driven triple pump drive; 70-10: engine-driven double pump drive
Attachment Mount (lift arms/boom/3-point/other)	Boom
Boom Type and Reach	55-4 is fiberglass-insulated boom with 60-ft reach; 180-degree boom turret rotation; 360-degree cutter head rotation; 70-10 is steel and fiberglass insulated boom with 43-ft reach; 270-degree boom turret rotation; 300-degree cutter head rotation
Tires, Size and Gpsi	55-4: 67 x 34.00-25 flotation; 70-10: 54 x 37.00 flotation
Attachment Type/Model	Saws
Price, if not included with prime mover	Contact manufacturer or dealer
Maximum Treatable Material Size	Data not supplied
Cutting Mechanism	55-4 is three 20-in saws or one 32-in cutter head saw; 70-10 is three 20-in saws
Cutting Width	55-4 trims from below grade to 60-ft high
Shaft (horizontal/vertical)	Data not supplied
Rotation Speed	Data not supplied
Power Source Required	Integral
Head Weight	Data not supplied
Other Attachments Available	55-4 has optional 66 x 43-25 high flotation tires and optional rail wheels; 70-10 has optional 66 x 34.25 high flotation tires
Special Uses/Adaptations/Other Uses	Data not supplied
Manufacturer's Comments Regarding Equipment Application	70-10: Roadside slope trimmer; 55-4: High-production tree-trimming right-of-way applications

Other Machines and Miscellaneous Attachments

Tree Trimmers

Timberland Tree Trimmer



Make/Model	Timberland Tree Trimmer
Manufacturer/Source	T.S.E. International, Inc.
Distributor	Contact T.S.E. International, Inc.
Price	Contact manufacturer
Status	In production
Prime Mover	Timberland Tree Trimmer is a prime mover
Prime Mover Engine Power	150 hp
Gas/Diesel	Diesel
Transmission	Power shift
Max. Travel Speed	18 mph
Width	10 ft 3 in with 67 x 34 tires
Length	25 ft (for transport)
Height	10 ft
Weight	30,000 lb
Ground Clearance	Approximately 22 in
Turning Radius	Approximately 22 ft
Slope Limitations and Specified Conditions	Front slopes up to 30%; tilt frame allows head to remain vertical on sideslopes up to 7 degrees
Attachment Mount (lift arms/boom/3-point/other)	Boom
Boom Type and Reach	Non-conductive insulated fiberglass; two boom heights available, 60 or 70 ft; reaches from ground level up to 70 ft maximum cutting height
Tires, Size and Gpsi	67 x 34-26; approximately 6.0 psi
Attachment Type/Model	Timberland Five Blade Cutting Head
Price, if not included with prime mover	Included
Maximum Treatable Material Size	6 in
Cutting Mechanism	Five 18-in circular blades on a wand; wand swings 170 degrees, rotates 180 degrees; cutter head can be positioned left to right approximately 50 ft from ground level to 70-ft maximum cutting height
Cutting Width	60 in; unit is designed to side trim trees and residual plant growth from ground level to 70-ft maximum cutting height
Shaft (horizontal/vertical)	Saw blades are mounted vertically in wand
Rotation Speed	3,200 rpm
Power Source Required	Integral
Head Weight	500 lb
Other Attachments Available	Has 30,000-lb hydraulic, rear-mounted recovery winch with capacity for 270 ft of ⁵ / ₁₆ -in cable; rear tow hitch; optional front recovery winch tow hitch
Special Uses/Adaptations/Other Uses	Each axle has selectable differential lock that reduces site damage on sensitive sites; dozer blade used in lieu of outriggers; dozer blade also available for limited dozing work
Manufacturer's Comments Regarding Equipment Application	Clearing powerline, pipeline rights-of-away, other similar trimming operations; one continuous mile per day, easily attainable in most applications

Other Machines and Miscellaneous Attachments

Trail Dozer

Sweco 480 Trail Dozer



Make/Model	Sweco 480 Trail Dozer
Manufacturer/Source	Sutter Equipment Co.
Distributor	Sutter Equipment Co.
Price	\$49,800
Status	In production
Prime Mover	Sweco 480 is a prime mover
Prime Mover Engine Power	80-hp turbo
Gas/Diesel	Diesel, water cooled
Transmission	Twin hydrostatic pumps
Max. Travel Speed	5 mph
Width	4 ft
Length	13 ft 1 in (with blade and rippers)
Height	6 ft 8 in
Weight	9,000 lb
Ground Clearance	8 in
Turning Radius	Counter rotation
Slope Limitations and Specified Conditions	35 degrees
Attachment Power Supply	10 to 30 gpm; 2,200 psi auxiliary circuit
Attachment Mount (lift arms/boom/3-point/other)	Machine and 3-point hitch
Track type, Width (options), and Gpsi	Steel; 11 in; 7.3 psi
Attachment Type/Model	Sweco Flail Mower
Price, if not included with prime mover	\$6,800
Other Suitable Prime Movers	None
Maximum Treatable Material Size	2 in
Cutting Mechanism	Hammer-knife teeth
Cutting Width	4 ft
Shaft (horizontal/vertical)	Horizontal
Rotation Speed	2,000 rpm
Power Source Required	23 gpm; 2,000 psi
Head Weight	Data not supplied
Other Attachments Available	Sweco 8- and 9-ft backhoes with optional hydraulic thumb, hydraulic auger, heavy-duty brush rake, dozer slope board, hydraulic winch, roller
Special Uses/Adaptations/Other Uses	Firefighting, building fire breaks, timber thinning
Manufacturer's Comments	6-way blade and rippers are standard.

Other Machines and Miscellaneous Attachments

Three-Point-Hitch Grapples

ImpleMax Three-Point-Hitch Grapples



Make/Model	ImpleMax 6042R, 6042 Rw; 4836R, 4836Rw; FS48, FG48w; FG60 and FG60w
Manufacturer/Source	ImpleMax
Distributor	Contact manufacturer
Price	6042R, \$6,632; 6042Rw (12,000 lb), \$8,905; 4836R, \$5,611; 4836Rw \$7,421; FG60, \$4,932; FG60w (12,000 lb), \$7,189; FG60w (9,000 lb), \$6,942; FG48, \$4,185; FG48w, \$6,180
Status	In production
Preferred Prime Mover	6042R: 55- to 110-hp tractors; 6042Rw: 55- to 110-hp tractors; 4836R and 4836Rw: 30- to 55-hp tractors; FG48, FG48w, FG60, and FG60w: over 30 hp
Other Suitable Prime Movers	Rubber tire or track crawlers
Attachment Mount (lift arms/boom/3-point/other)	(3-point): 6042R, FG60, FG60w: Category II; all others Category I
Grapple Weight	6042R: 940 lb; 6042Rw: 1,118 lb; 4836R: 604 lb; 4836Rw: 740 lb; FG60: 750 lb; FG60w: 850 lb; FG48: 615 lb; FG48w: 715 lb
Grapple Capacity	6042R, FG60, 6042Rw, FG60w: 9.0-sq-ft enclosure area, 60-in max. opening width, 42-in max. opening height. 4836R and FG48: 6.94-sq-ft enclosure area, 48-in max. opening width, 36-in max. open height
Winch Type (built into boom)	6042Rw: 12,000-lb, 10-in drum, up to 185 ft of ³ / ₈ -inch cable, reel speed 48 fpm at 15 gpm; 4836Rw: 9,000-lb, 8-in drum, max. 148 ft of ³ / ₈ -in cable, reel speed 72 fpm at 15 gpm; FG48W and FG60w: 9,000-lb, 10-in drum, max 104 ft of ³ / ₈ -in cable, reel speed 72 fpm at 15 gpm; FG60w: 12,000-lb, 8-in drum, max. 185 ft of ³ / ₈ -in cable, reel speed 48 fpm at 15 gpm
Hydraulics	6042R, 4836R, FG60, and FG48: 3,000 psi, unlimited gpm; 6042Rw, 4836Rw, FG60w, and FG48w: 3,000 psi, 10 to 21 gpm
Other Attachments	Implemax also makes models (with/without winches) that attach to skid steers.
Special Uses/Adaptations/Other Uses	Works in narrow spaces, grabs from difficult angles, excellent visibility, low capital investment, reduces man hours. Custom attachment bracket for special applications.



Other Machines and Miscellaneous Attachments

Three-Point-Hitch Grapples
“Little Red” Logger



Make/Model	“Little Red” Logger
Manufacturer/Source	Taylor Machine Works, Inc.
Distributor	Contact Taylor Machine Works, Inc.
Price	\$5,500
Status	In production
Preferred Prime Mover	50 to 80-hp tractors
Attachment Mount (lift arms/boom/3-point/other)	3-point hitch
Height	Data not provided
Weight	750 lb
Opening Specifications	Fully open grapple is 35 in; fully closed grapple is 3.5 in
Power Source Needed	Requires one hydraulic function on tractor and two quick-disconnect hydraulic outlets
Other Attachments	“Big Red” Tree Cutter; “Little Red” Logger, Jr. (500 lb)
Special Uses/Adaptations/Other Uses	Data not supplied
Manufacturer’s Comments Regarding Equipment Application	Grapple rotates 85 degrees in either direction

Other Machines and Miscellaneous Attachments

General Wood Shear

LaBounty Mobile Wood Shears, MWS 40 and MWS 80



Make/Model	LaBounty MWS-Series Mobile Wood Shear, MWS 40 and MWS 80
Manufacturer/Source	LaBounty
Distributor	Contact manufacturer or visit web site for dealer information
Price	Contact manufacturer or dealer
Status	In production
Preferred Prime Mover	MWS 40: 40 to 60,000-lb excavator; MWS 80: 70 to 95,000-lb excavator
Attachment Mount (lift arms/boom/3-point/other)	Mounts in place of bucket, at end of stick (arm)
Height	Data not supplied
Length	Data not supplied
Width	See Opening Specifications below
Weight	MWS 40 is 3,000 lb; MWS 80 is 5,100 lb
Opening Specifications	Jaws: MWS 40: 30 to 40 in; MWS 80: 50 to 60 in
Jaw Depth	MWS 40: to 29 in; MWS 80: 41 in
Cutting Mechanism	Shears
Power Source Needed	Shears pin on in place of excavator bucket, eliminating the need for additional hydraulics
Other Attachments	LaBounty makes a full line of attachments
Special Uses/Adaptations/Other Uses	Log/wood processing and handling; land clearing
Manufacturer's Comments Regarding Equipment Application	Data not supplied