

Small Dozer
Sweco Trail Dozer

Model: Sweco 480

Manufacturer:
 Sutter Equipment Company
 80 Chamberlain Avenue
 Novato, CA 94947
 Phone: (415) 898-5955

Purchase Price: \$49,800



Sweco 480 trail dozer.

Status: In production
Prime mover: Sweco 480 is a prime mover.
Engine power: 80 hp
Gas or diesel: Diesel
Transmission: Hydrostatic
Width: 4 ft
Length: 11 ft 1 inch with blade and rippers
Height: 6 ft 4 inches

Ground clearance: 8 inches
Weight: 9,000 lb
Ground pressure: 7.3 psi
Boom type: Backhoe
Boom reach: 13 ft
Turning radius: Zero, counter rotation
Slope limitations: 35°
Travel speed: 0 to 5 mph

Track: Steel
Track width: Two 11-inch
Hydraulic pressure: (minimum) 2,200 psi, auxiliary circuit
Flow: 10 to 30 gpm, auxiliary circuit
Dedicated attachments: Blade, three-point hitch, others

Tracked Brush Cutter
Gyro-Trac

Model: GT-18 XP

Manufacturer:
 Gyro-Trac, Inc.
 603 Fairington Drive
 Summerville SC. 29485
 Phone: (888) 490-8722, (843) 821-1588
 Fax: (843) 821-1587
 E-mail: gyrotrac@gyrotrac.com
 Web site: <http://www.gyrotrac.com>

Purchase Price: \$155,000 (U.S.)



Gyro-Trac GT-18 Series II brush cutter (shown) has been replaced with the GT-18 XP.

Status: In production
Prime mover: GT-18 XP brush cutter is a prime mover.
Engine power: 180 or 190 hp
Gas or diesel: Diesel
Transmission: Hydrostatic
Width: 100 inches
Length: 229 inches
Height: 113 inches

Ground clearance: 14 inches
Weight: 17,300 lb
Ground pressure: 2.0 psi
Turning radius: Zero
Track: Two, rubber with steel cross links
Track width: 28 inches
Brush-cutting head: Two disks, each disk has two swinging blades; max. size material is 8 inches
Full width of cut: 8 ft

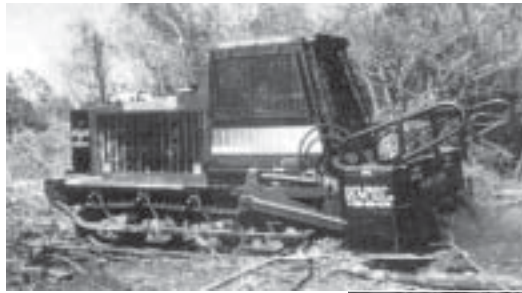
Hydraulic pressure: Cutting head: 4,500 psi; primary: 6,000 psi; auxiliary: 1,200 psi.
Flow: Cutting head: 38 gpm; primary: 38 gpm; auxiliary: 10 gpm.
Other potential uses: Precommercial strip thinning
Other attachments: Flail mower. Contact manufacturer for information on other attachments.

Tracked Brush Cutter
ROWMEC R.O.W.
King Mower

Models: T-7 and GT-18 XP

Manufacturer:
 ROWMEC
 11443 Old Highway 105 East
 Conroe, TX 77303
 Phone: (409) 539-5488 or 800-259-9548
 Fax: (409) 539-5648
 E-mail: rowmec@lcc.net

Purchase Price: T-7: \$185,000;
 GT-18: \$180,000



R.O.W. King GT-18 XP mower mounted on a Gyro-Trac utility vehicle.



R.O.W. King T-7 mower mounted on a Hydro-Ax 411 EX feller-buncher.

Status: In production
Cutting-head mechanism: Drum type
Cutters: 5-ft drum has 38 teeth; 7-ft, 2-inch drum has 54 teeth
Timing: The blades are arranged in four rows and are designed to be fully recovered in full extension and forward momentum on the next revolution.
Cutting width: 5 ft or 7 ft 2 inches, depending upon head.
Maximum cutting size: 15 inches

Practical outside: 12-inch diameter
Type drive: Dual drive hydraulic and PTO
Rotation speed: 2,100 rpm
Prime mover: T-7 mounted on Hydro-Ax 411EX (150 hp); GT-18 mounted on Gyro-Trac GT-18 (180 or 190 hp)
Gas or diesel: Diesel
Transmission: Hydrostatic
Width: T-7: 8 ft; GT-18: 100 inches
Length: T-7: 23 ft 6 inches; GT-18: 229 inches
Height: T-7: 11 ft; GT-18: 113 inches

Ground clearance: T-7: 20 inches; GT-18 XP: 13 inches
Weight: T-7: 23,500 lb; GT-18: 17,300 lb
Slope limitation: GT-18: 50°
Ground pressure: T-7: 7.49 psi; GT-18: 2.0 psi
Turning Radius: T-7: 42°; GT-18: 0°
Track: Rubber and nylon w/steel crosslinks
Track width: GT-18: 28 inches
Wheels: T-7: four Firestone Forestry Special 23.1-26

Feller-Buncher
Hydro-Ax Tri-Wheel

Model: Hydro-Ax 321 Tri-Wheel shown as an example. Other manufacturers include Morbark and Bell.

Distributor:
 Blount, Inc.
 Forest and Industrial Equipment Division
 P.O. Box 568
 Owatonna, MN 55060
 Phone: (507) 451-8654
 Fax: (507) 455-4268

Purchase Price: With shear, \$130,000



Hydro-Ax Tri-Wheel feller-buncher.

Status: In production
Engine power: 116-hp Cummins
Gas or diesel: Diesel
Transmission: Hydrostatic
Width: 112 inches with 23.1x26 tires
Length: 215 inches
Height: 119 inches
Ground clearance: 20 inches
Weight: 20,150 lb with thinning shear
Ground pressure: Not available
Wheels: 20x26 drive wheels; 23.1x26 tire

size. Optional tire sizes up to 67/34x25, 21.5Lx16.1 tail wheel
Hydraulic pressure and flow: 27 gpm at 2,650 psi with thinning-saw attachment; 27 gpm at 3,500 psi with 16-inch bunching attachment; 54 gpm at 3,200 psi with shearing and gathering attachment.
Flow: 37 gpm, auxiliary circuit
Attachments: Thinning saw attachment, 20-inch-diameter maximum saw cut. Sixteen-inch bunching shear attachment;

two-blade adjustable shears, maximum shear blade capacity 16 inches, bunching capacity 2.5 square ft. Thinning shear attachment, two-blade pivotal adjustable shears, cuts 15-inch-maximum-diameter softwood, bunching capacity 2.75 square ft.
Safety Note: The Tri-Wheel is stable only on relatively flat ground. It is very effective in plantation settings.

Feller-Buncher Bell Tracked Slewboom

Model: TF 120 B

Distributor:
Bell Equipment
2843 Highway 80 West
Garden City, GA 31408-2999
Phone: (912) 966-2615
Fax: (912) 964-1594

Purchase Price: Contact manufacturer.



Bell Tracked Slewboom feller-buncher.

Status: In production
Prime mover: TF 120 B is the prime mover.
Engine power: 113 hp gross power, 106 hp net power
Gas or diesel: Diesel
Transmission: Hydrostatic
Width: 89 inches
Length: 14 ft 1 inch, without felling attachment

Height: 10 ft
Ground clearance: 2 ft 1 inch
Weight: 24,970 lb, with felling head
Ground pressure: 6.71 psi with 16-inch shoe; 5.41 psi with 20-inch shoe
Turning Radius: Zero
Tracks: Two. Shoe width 16 or 20 inches
Hydraulic pressure: 2,538 psi, main circuit

Flow: 39.6 gpm, main circuit
Felling head: Standard: 23 inches maximum cutting diameter; optional head: 28 inches maximum cutting diameter
Crane: Slewing range: 170°; reach: 13 ft 5 inches

Low-Impact Skidder Turboforest

Model: TF-42C

Manufacturer:
Turboforest Nova Sylva, Inc.
73, Chemin St-Georges Nord
Asbestos, PQ, Canada J1T 3M7
Phone: (819) 879-4343 or 800-567-7318
Fax: (819) 879-4999
E-mail: info@turboforest.com

Canadian Purchase Prices: TF-42C Mini-Skidder (double drum): \$80,000; TF-42C Mini-Skidder (grapple): \$96,000



Turboforest TF-42C mini-skidder.

Status: In production
Prime mover: TF-42C is a prime mover.
Engine power: 50 hp (37 kw)
Gas or diesel: Diesel
Transmission: Hydrostatic
Width: 74.8 inches (1,900 mm)
Length: 201.2 inches (5,110 mm)
Height: 100.3 inches (2,548 mm)
Ground clearance: 20.0 inches (500 mm)
Weight: 9,140 lb (4,155 kg)

Ground pressure: Front with 14.9x24 tires: 7.4 psi/51 kPa; rear: 4.9 psi/33.8 kPa. Front with 500-60x26.5 tires: 5.4 psi/37.2 kPa; rear: 3.6 psi/24.8 kPa.
Tires: Standard: 14.9x24, 14 PR. Optional: 500-60x26.5, 14 PR (PR refers to ply rating.)
Hydraulic pressure: System pressure 2,540 psi (175 bars)
Flow: (at 2,200 rpm) 22 gpm (83.6 L/min)
Secondary hydraulic system: Hydraulic

pump: 6 gpm (22.7 L/min) for steering and dozer blade. System pressure: 3,000 psi (207 bars).
Attachments and Implements: TF-42C winches, double drum (11,500 lb, 65 fpm); or single drum, 12,000 lb, 65 fpm. TF-41G grapple, 13,000-lb capacity, opening 59.1 inches; Dozer blade, overall width 56 inches, overall height 27.7 inches.

Low-Impact Skidder
KMC Track Skidder

Model: KMC 1000 Series

Manufacturer:
 Kootenay Manufacturing Company, Ltd.
 606 Lakeside Drive
 Nelson, BC Canada V1L 5S7
 Phone: (250) 352-5303
 Fax: (250) 352-5302

Purchase Price: From about \$200,000 to \$300,000 (U.S.). Price varies according to options.



KMC 1000-series track skidder with arch grapple.

Status: In production
Prime mover: KMC 1000 is a prime mover.
Engine power: Mechanical drive: 128-hp Cummins. Hydrostatic drive: 174-hp Cummins.
Gas or diesel: Diesel
Transmission: Mechanical drive, 3-speed, power-shift transmission with integral torque converter or hydrostatic drive.
Width: 96 inches (2.44 m)
Length: 17 ft 4 inches (4.67 m), bare machine
Height: 10 ft 6 inches (2.87 m)

Ground clearance: 1 ft 7 inches (0.5 m)
Weight: With choker arch: 23,860 lb (10,832 kg); with single arch grapple: 26,031 lb (11,808 kg); with dual arch grapple: 26,280 lb (11,921 kg); with swing grapple: 27,350 lb (12,432 kg).
Ground pressure: 6.03 psi (41.58 kPa) at 0 penetration; 3.95 psi (27.24 kPa) at 6-inch penetration
Tracks: Two steel
Track width: 22 inches
Attachment hydraulics: 37 gpm at 3,500 psi

Travel speed: 0 to 15 mph
Dedicated attachments: Winch; dozer blade; single-arch or dual-function grapple; swing grapple; backhoe; extendable choker arch; crane and auger attachment; dump bed. Contact manufacturer for additional information on these attachments.
Attachments under development: Wood processor or thinning machine that can be converted to brush-cutter/strip-thinning machine; clam-bunk forwarder.

Small Yarder
Bitterroot Mini Yarder

Developed by:
 USDA Forest Service
 Missoula Technology & Development Center
 Building 1, Fort Missoula
 Missoula, MT 59804
 Phone: (406) 329-3900
 Fax: (406) 329-3719

Purchase Price:
 Varies, depending upon your fabricator.



Bitterroot Mini Yarder and control panel (inset).

Status: Custom made. Plans are available from MTDC.
Prime mover: Can be mounted on the back of a 3/4-ton truck or a trailer
Engine: 18-hp Briggs & Stratton
Gas or diesel: Gas
Transmission: Hydrostatic
Weight: Rigged: 1,600 lb
Boom: 2.5 inch pipe A-frame, 17.5 ft long, 180° swivel head, hydraulically raised and lowered
Controls: 15 ft mechanical push/pull cable
Skyline and mainline drums: 800 ft of 1/4-inch cable, or 625 ft of 3/8-inch cable. Zero- to 2,000-lb line pull; 0- to 400-fpm line speed

Small Yarder
Clearwater Yarder

Developed by:
 USDA Forest Service
 Missoula Technology & Development Center
 Building 1, Fort Missoula
 Missoula, MT 59804
 Phone: (406) 329-3900
 Fax: (406) 329-3719
 E-mail: wo_mtdc_pubs@fs.fed.us

Purchase Price: Varies, depending upon your fabricator.



Clearwater Yarder and control panel (inset).



Status: Custom made. Plans available from MTDC.

Prime mover: Recommended size is 5-ton flatbed truck (2½-ton truck is acceptable)

Engine power: Detroit Diesel Allison, 3-53N, rated 97 BHP at 2,800 rpm

Gas or diesel: Diesel

Transmission: Hydrostatic

Weight: 13,500 lb, fully rigged
Mast: 10x10x½-inch wall square tubing, 170° fairlead swivel, hydraulically raised and lowered
Controls: Remote up to 50 ft, 12-volt dc electric over hydraulic
Skyline drum: 800 ft of ½-inch cable; 7,500-lb maximum line pull; 0- to 500-fpm line speed

Mainline drum: 900 ft of ⅜-inch cable; 3,500-lb maximum line pull; 0- to 1,000-fpm line speed

Haulback: 1,800 ft of ⅜-inch cable; 3,500 lb maximum line pull; 0- to 1,000-fpm line speed

Yarding distance: Up to 800 ft

Small Yarder
Koller Cable Yarder

Model: K 300

Manufacturer:
 Koller USA Corporation
 8828 NE Killingsworth Street
 Portland, OR 97220
 Phone: (503) 257-9778
 Fax: (503) 257-9780

Purchase Price:
 Contact manufacturer.



Koller K 300 Cable Yarder.

Status: In production
Prime mover: Can be transported by ¾-ton truck (minimum), or 1-ton truck (preferred).
Engine power: Three-point hitch tractor mounted 50-hp engine, minimum. Trailer mounted, 62 hp with hydrostatic drive
Gas or diesel: Diesel

Weight: 9,000 lb (3 drum, trailer mounted)
Boom: 23 ft 6 inches
Drums: 2 or 3
Cable capacity: Mainline: 1,200 ft of ⅜-inch cable; skyline: 1,200 ft of ⅝-inch cable; guylines: 100 ft of ⅝-inch cable; haulback: 2,100 ft of ⅝-inch cable

Line pull: Mainline: 4,000 lb at medium drum; skyline: 9,700 lb. bare drum
Line speed: Mainline, 985 fpm, trailer mounted

Note: Koller manufactures a variety of different yarders, including the K301, K500, and K501.

Small Yarder
Miller Mono-Cable

Manufacturer:
 Miller Timber Services
 24745 Alsea Highway
 Philomath, OR 97370
 Phone: (541) 929-2840
 Fax: (541) 929-4489
 Website: <http://www.forestnet.com/miller>

Purchase Price: Varies. Systems start around \$18,000.



Miller Mono-Cable Yarder.

Status: In production
Engine power: 13- or 18-hp Honda
Gas or diesel: Gas
Starting system: Rope or electric
Drum: Holds 2,000 ft of 7/8-inch wire cable.

Mainline pull: About 1,000 lb
Gear train: Line speeds of 59 to 82 fpm
Weight: 1,500 lb
Note: Uses one zigzag block about every 75 ft.

Small Yarder
Howe-Line Mono-Cable

Model: M.C.
Distributor:
 Howe-Line
 P.O. Box 2831
 Pietermaritzburg, South Africa 3200
 Phone: (27) 331-942146 or
 (27) 823-721310
 Fax: (27) 335-691646 or
 (27) 331-947260
 E-mail: howeline@netactive.co.za

Purchase Price:
 \$25,000 (U.S., plus S&H)



Howe-Line Mono-Cable Yarder.



Status: In production
Engine power: 14 hp
Gas or diesel: Diesel
Line pull: Custom designed to suit operation by choice of capstan diameter. For instance, 3.5 metric tons at 20 m per minute, 2.6 metric tons at 30 m per minute.
Cable length: Standard 600 m. Note: With 600 m of cable, you have a working

range of 250 m. With 900 m of cable, you have a working range of 400 m. Cables are joined by special couplers provided by Howe-Line. Cable is 10 mm in diameter.
Choker system: Cable system uses bailing twine in place of steel chokers to yard material to landing site. In-line bailing-twine cutter is available. Standard chokers are also available.

Note: The Howe-Line Mono Cable system does not use zigzag blocks. It uses its own design of inline supports and corner blocks to change direction. Under this system, cables can be laid out in any pattern to suit the operation. The hydraulic design system allows the use of relief valves for overload protection.



Appendix C—Attachments and Implements

I N D E X

(Prices subject to change)

NOTE: Some of these implements are designed for larger tree diameters than those this report focuses on. These implements can be mounted on the smaller prime movers.

Brush Mower, Davco _____	26
Brush Cutter, Rotary Brushcat (for Bobcat only) _____	26
Tree Cutter/Mower, Brown _____	27
Shredder, Seppi _____	27
Shredder, Alamo _____	28
Shredder, Bull Hog _____	28
Shredder, Slashbuster _____	29
Shredder, Brontosaurus _____	29
Tree Shear, Dymax _____	30
Tree Shear, Agra Axe and L'il Snip _____	30
Tree Shear, E-Z Shear Delite _____	31
Tree Shear, Big Red Little Mite Tree Cutter _____	31
Small Harvesting Head/Feller-Buncher Head, Davco _____	32
Small Harvesting Head, Hahn _____	32
Tractor Grapples/Grapple With Winch, ImpleMax _____	33
Tractor Grapple, Little Red Logger _____	33
Scarification Rake, FERIC _____	34
Scarification Head, VH Mulching Head _____	34
Spot Site Preparation Tool, Hawk Power Scalper _____	35



Brush Mower
Davco

Model: Davco BC 704

Manufacturer:

Davco Manufacturing, Ltd.
Box 17, Site 1, Rural Route 3
Grande Prairie, AB, Canada T8V-5N3
Phone: (780) 532-1850
Fax: (780) 532-3626
E-mail: davco@telusplanet.net
Web site: <http://www.forestindustry.com/davco>

Distributor:

ASV, Inc.
P.O. Box 5160, 840 Lily Lane
Grand Rapids, MI 55744
Phone: 800-346-5954 or (218) 327-3065
Fax: (218) 327-2376
E-mail: sales@asvi.com

Purchase Price: From Davco, \$6,800 (U.S.)



Davco BC 704 brush mower.

Cutting mechanism: Disk
Cutting width: 70 inches
Cutting capacity: 4 inches
Weight: 1,400 lb

Hydraulic pressure: 2700 psi
Flow: 25 to 30 gpm
Suggested prime mover: ASV Posi-Track or large skid-steer machine, universal quick attach

Brush Cutter
Rotary Brushcat
(Bobcat only)

Distributor:

Melroe Company
P.O. Box 6019
Fargo, ND 58108-6019
Phone: (701) 241-8705
Fax: (701) 241-8779

Purchase Price:

\$4,900 for cutting head



Brushcat rotary cutter made for the Bobcat.

Status: In production
Prime mover: Bobcat 700- and 800-Series skid-steer loaders
Cutting capacity: Brush material up to 3 inches in diameter

Cutting width: 60 inches
Overall width: 62 inches
Blade tip speed: 11,190 fpm at 13-gpm minimum flow; 24,100 fpm at 28-gpm maximum flow

Weight: 1350 lb (1200 kg)
Other Bobcat attachments: Bobcat makes numerous other dedicated attachments that may address a small forest operation. Contact a dealer or the manufacturer for a complete listing.

Tree Cutter/Mower
Brown

Models: Open Decks: TCO-2515, 2615 and 2620; Folding Decks: TCF-2615 and 2620

Manufacturer:
Brown Manufacturing Corporation
Route 3, Box 339
Ozark, AL 36360
Phone: (334) 795-6603
Fax: (334) 795-3029

Purchase Price: TCO-2515, \$4,200; TCO-2615, \$4,380; TCO-2620, \$5,970; TCF-2615, \$5,470; TCF-2620, \$7,335



Brown tree cutter, Model TCF 2620.

Status: In production

Cutting mechanisms: TCO-2515: four blades, double offset, 1/2x5 inches. TCO-2615: four blades, double offset, 1/2x6 inches. TCO-2620: four blades, double offset, 5/8x6 inches. TCF-2615: four blades, double offset, 1/2x6 inches. TCF-2620: four blades, double offset, 5/8x6 inches.

Weight: TCO-2515: 1,700 lb; TCO-2615: 2,050 lb; TCO-2620: 2,250 lb; TCF-2615: 2,300 lb; TCF-2620, 2,600 lb

Cutting width: TCO-2515: 60 inches; TCO-2615 and 2620: 72 inches; TCF-2615 and 2620: 72 inches

Cutting height: All models 1 1/2 to 12 inches

Deck width: TCO-2515: 69 inches. All other models: 81 inches.

Maximum material size: TCO-2515, 2516, and TCF-2615: 6 inches; all other models: 8 inches.

Recommended prime mover: Rear tractor mount, PTO operated: TCO-2515, 50 to 90 hp; TCO-2615, 60 to 90 hp; TCO-2620, 70 to 100 hp; TCF-2615, 70 to 90 hp; and TCF-2620, 80 to 100 hp

Shredder
Seppi

Models: Midiforest 125, 150, 175, 200, 225, and 250 tractor/loader mounted; and BMS 100, 125, and 150 excavator mounted

Distributor:
Seppi M/Carlson Tractor and Equip. Co.
P.O. Box 69
Rosemount, MN 55068
Phone: (651) 423-2222 or 800-624-4441
Fax: (651) 423-4551
E-mail: carlson@ct-e.com

Purchase Price: Contact distributor.



Seppi Midiforest mounted on a skid steer.

Status: In production

Cutting mechanisms: Hammers, 20 to 24, depending on model

Weight: 1,750 to 3,300 lb, depending on model

Cutting width: 3 ft 3 inches to 8 ft 3 inches, depending on model

Cutting height: All models 1 1/2 to 12 inches

Cutting capacity: Largest Midiforest models can cut and shred whole standing trees up to 9 3/4 inches in diameter. BMS

Models can cut and shred whole standing trees up to 8 inches in diameter.

Overall width: 4 ft 3 inches to 9 ft 3 inches, depending on model

Hydraulics: Midiforest models: 6,200 psi, 30 gpm. BMS models: 4,000 psi to 6,000 psi, 25 to 50 gpm.

Recommended prime mover: Midiforest models require a minimum of 40- to 90-hp, depending on model. They are designed to be mounted on tractors and loaders. BMS

models require a minimum of 40- to 60-hp, depending on the model, and are designed to be mounted on excavators. Maximum on both is 120 hp. Double drive available on some models to increase max. to 140 hp.

Additional models: Larger models of mulching mowers are available that will fell and chip standing trees up to 18 inches in diameter. These models are in the Forest, Forest-V, and Forest-M series. Contact the manufacturer for additional information.

Shredder
Alamo

Model: FML 100H, FMH 100H, FML 175, FMH 125H, FML 200, FMM 125H, FMM 200, and FMM 225

Manufacturer:
Alamo Industrial
1502 East Walnut Street
Seguin, TX 78155
Phone: (830) 379-1480 or 800-882-5762

Purchase Price: Contact manufacturer.



Alamo FM-Series tree shredder.

Status: In production

Cutting mechanism: 14 to 36 knives, depending on model. Horizontal drum shredder with free-swinging knives.

Cutting width: 3 ft 2 inches to 7 ft 2 inches, depending on model

Cutting capacity: FML series: 6 inches; FMM series: 10 inches; FMH series: 15 inches

Weight: 1,127 to 4,162 lb, depending on model

Hydraulics: 1,710 to 2500 psi, 20 to 40 gpm

Recommended prime mover: Tractor mount using three-point hitch (models with *H* designation are to be boom mounted). Minimum horsepower required: FML 100H, 35 hp; FML 175, 60 hp; FML 200, 70 hp;

FMM 125H, 60 hp; FMM 200, 90 hp; FMM 225, 100 hp; FMH 100H, 70 hp; FMH 125H, 90 hp

Options: Mounting kits and boom extensions available.

Additional models: Larger loader-mount shredders available, and larger excavator boom-mount shredders.

Shredder
Bull Hog

Models: BH80H (Hydraulic), BH80 (PTO), BH100H (Hydraulic), and BH100 (PTO)

Manufacturer:
Fecon, Inc.
10350 Evendale Drive
Cincinnati, OH 45241
Phone: (513) 956-5700 or 800-528-3113
Fax: (513) 956-5701
E-mail: fecon@fuse.net
Web site: <http://www.fecon.com>

Purchase Price: Contact manufacturer.



Bull Hog wood shredder.

Status: In production

Cutting mechanism: BH80: 30 fixed hammers on horizontal drum; BH100: 42 fixed hammers on horizontal drum

Working width: BH80: 4 ft 8 inches; BH100, 6 ft 3 inches

Weight: BH80H and BH80 2,700 lb; BH100H and BH100 3,800 lb

Hydraulics: BH80H: 2,500 psi, 61 gpm;

BH100H: 2,500 psi, 84 gpm

Prime mover: Tractor mounted, BH80 and BH100 are PTO operated. All models require hydraulic connections to the supply and return lines of the trapdoor cylinder and top-link cylinder.

PTO horsepower required: BH80: 80 to 100 hp; and BH100: 100 to 140 hp

PTO speed: BH80: 540 rpm; and BH100: 1,000 rpm

Additional models: Larger models are also available. Some models mount on front-end loaders.

Shredder
Slashbuster

Models: HD 422 and LW 420B featured here. Slashbuster also makes smaller models such as the mini 360.

Manufacturer:
D&M Machine Division, Inc.
12 Monte-Brady Road
Montesano, WA 98563
Phone: (360) 249-3366
Fax: (360) 249-1171
Web site: <http://www.slashbuster.com>

Purchase Price: HD 422: about \$50,000 installed. LW 420B: about \$60,060 installed.

Status: In production
Cutting mechanism: Hardened teeth on wheel
Cutting width: HD 422: 46-inch cutting swath; LW 420B: 46-inch cutting swath
Cutting capacity: Both models cut and mulch trees up to 14 inches in diameter.
Weight: HD 422: 2,300 lb total weight. LW 420B: 2,600 lb total weight.



Slashbuster LW 420B shredder.

Hydraulics: HD 422: Continuous-service priority flow required, 32 gpm minimum flow, 44 gpm maximum flow, 3,600 psi maximum pressure. LW 420B: Motor-circuit, continuous-service priority flow required, adjustable flow of 32 to 44 gpm, pressure of 3600 psi. Cylinder circuit, intermittent-service secondary flow of 15 to 20 gpm.
Recommended prime mover: HD 422:

30,000- to 100,000-pound excavators. LW 420B: 30,000- to 60,000-pound excavators.
Options: Optional tilt-mount, 45° either side of center
Additional models: Larger tractor-mount shredders and larger excavator boom-mount shredders available. Contact manufacturer. Mini 360 available on special order.

Shredder
Brontosaurus

Models: Standard 4-ft head, 3-ft head, and 2.5 model

Manufacturer and distributor:
John Brown and Sons, Inc.
14 B&B Lane, Sawyer Industrial Park
Weare, NH 03281
Phone: (603) 529-7974
Fax: (603) 529-7976

Purchase price: Standard 3- and 4-ft heads without auxiliary power pack, \$26,500. With power pack, rock guards, and frame-strengthening, \$72,500. 2.5 model, \$22,500—power pack not available.



Brontosaurus shredder/brush-mowing head mounted on a CAT 312.

Status: In production
Cutting mechanisms: Horizontal drum shredder with free-swinging knives. Standard 4-ft head: 24 knives, high-carbon steel. Standard 3-ft head: 20 knives, high-carbon steel. 2.5 Model: 16 knives, high-carbon steel.
Cutting capacity: 3 and 4 ft (steady): 6-inch hardwood, 8-inch softwood; (random): 8-inch hardwood, 10-inch softwood; 2.5 model: 4 to 5 inches

Weight: Standard 4 ft: 4,200 lb; standard 3 ft: 3,600 lb; and 2.5 model: 3,000 lb.
Cutting width: Standard 4 ft: 48 inches; standard 3 ft: 36 inches; 2.5 model: 30 inches.
Hydraulics: Standard 4 ft: 3,500 to 5,000 psi, up to 50 gpm; standard 3 ft: 3,500 to 5,000 psi, up to 50 gpm; 2.5 model: 2,500 to 4,000 psi, 29 gpm.
Recommended prime mover: Designed

for tracked or rubber-tired excavators in the 15- to 20-ton class using the auxiliary power pack. Larger excavators (including some 20-ton machines) have sufficient hydraulics to power the head.
Options: Three- and 4-ft models available with optional auxiliary power pack, John Deere 4045T, 117 hp.

Tree Shear
Dymax

Models: 10- and 14-inch land-clearing shears, and 14-inch forestry tree shear

Manufacturer:
New Dymax, Inc.
P.O. Box 297, 402 Miller Drive
Wamego, KS 66547
Phone: (785) 456-2081
Fax: (785) 456-8328

Distributors: Bobcat, ASV Posi-Track, New Holland, Case, and Gehl

Purchase Price: Contact distributor.



Dymax 14-inch forestry tree shear with accumulator, mounted on a skid steer.

Status: In production

Cutting mechanism: Two steel shear blades

Maximum tree diameter: 10 to 14 inches

Overall width: 10-inch land-clearing shear: 68 inches. 14-inch land clearing shear and forestry tree shear: 63 inches

Weight: 10-inch land-clearing shear: 720 lb; 14-inch land-clearing shear: 1,310 to 1,420 lb;

and 14-inch forestry tree shear: 1,810 lb without accumulator; 1,950 lb with accumulator

Drive: Hydraulic

Hydraulics: Auxiliary required. 10-inch land-clearing shear: 10 to 18 gpm, 1,700 to 3,000 psi; 14-inch land-clearing shear: 13 gpm, 2,500 to 3,000 psi; 14-inch forestry tree

shear: 13 gpm, 2,500 to 3,000 psi

Recommended prime mover: Skid steer ASV Posi-Track (minimum 40 hp required)

Other attachments: Stacking forks, longwood/lumber grapple forks, buckets, hoe, universal mounting plate, and 20-inch forestry tree shear

Tree Shear
Agra Axe and L'il Snip

Models: Agra Axe and L'il Snip

Manufacturer:
Agra Axe International, Inc.
East Highway 166 Industrial Park
P.O. Box 250
Caney, KS 67333
Phone: 888-394-6598 or (316) 879-5858
Fax: (316) 879-5844
E-mail: ese-intec@terraworld.net

Purchase Price: Contact dealer.



Agra Axe L'il Snip tree shear mounted on a skid steer.

Status: In production

Cutting mechanism: Blades

Weight: Agra Axe: 1120 lb; L'il Snip: 570 lb

Frame width: Agra Axe: 66 inches, and L'il Snip: 54 inches

Frame height: Agra Axe: 7.5 inches; L'il Snip: 6 inches

Overall height: Agra Axe: 26 inches; L'il Snip: 19 inches

Blade length: Agra Axe: 21.5 inches; L'il Snip, 18.5 inches

Blade width: Agra Axe: 11 inches; L'il Snip: 8 inches

Cutting capacity: Agra Axe: 24 inches; L'il Snip: 14 inches

Recommended prime mover: Designed to be attached to most skid-steer machines

Options: Accumulator

Additional models: Mega Axe for shearing 30-inch trees

Tree Shear
E-Z Shear Delite

Model: Shear Delite

Manufacturer:
 E-Z Implements, Inc.
 3311 NW 166th Street
 Jordan, MN 55352
 Phone: (612) 492-2867 or 800-278-2531
 Fax: (612) 492-7706

Purchase Price: \$2,995 for tree shear alone, and \$3,995 for tree shear with accumulator



E-Z Shear Delite tree shear mounted on a skid steer.

Status: In production
Cutting mechanism: Two hard-tooled steel blades on horizontal shaft, 1/8-inch spacing between blades. Below-ground cutting ability with no damage to blades.

Weight: Tree shear, 700 lb; tree shear with grapple, 750 lb
Maximum cutting diameter: 8 inches
Hydraulics: Free flowing blades, non-hydraulic cutting action. Hydraulics required

for accumulator, 2,200 to 2,400 psi.
Flow: 8 gpm, for accumulating grapple only.
Recommended prime mover: Skid-steer machine with minimum of 37 hp

Tree Shear
Big Red Little Mite Tree Cutter

Model: Big Red Little Mite Tree Cutter

Manufacturer:
 Taylor Machine Works, Inc.
 650 North Church Avenue
 Louisville, MS 39339-2017
 Phone: (662) 773-3421
 Fax: (662) 773-9146
 Web Site: <http://www.taylorbigred.com>

Purchase Price: \$6,500



Big Red Little Mite tree cutter mounted on a skid steer.

Status: In production
Prime mover: Designed to be mounted on farm tractors or front-end loaders/skid steers, with a minimum of 50 hp
Cutting capacity: 12-inch softwood, 6-inch hardwood
Note: For additional information, contact manufacturer directly.

Small Harvesting/Feller-Buncher Head
Davco

Models: TP 1000 Tree Harvester Head, and QC 1200 Feller-Buncher Head

Manufacturer:
Davco Manufacturing, Ltd.
Box 17, Site 1, Rural Route 3
Grande Prairie, AB, Canada T8V 5N3
Phone: (780) 532-1850
Fax: (780) 532-3626
Web site: <http://www.forestindustry.com/davco>

Distributors: Manufacturer or Posi-Track dealers

Purchase Price: TP 1000, \$42,850; QC 1200, \$20,900 (U.S., freight not included)



Davco TP 1000 tree harvester.

Status: In production

Cutting mechanism: TP 1000: 404 harvester chain; QC 1200: 36-inch, high-speed saw

Maximum tree diameter: TP 1000: 12-inch cutting capacity; QC 1200: 14-inch cutting capacity

Accumulator: QC 1200 has a spring-loaded accumulator arm.

Weight: TP 1000: 1100 lb; QC 1200: 1100 lb

Dimensions: TP 1000: 54 inches high, mounting width 49 inches; QC 1200: 57 inches high, 42 inches wide

Hydraulics: TP 1000: 3,450 psi, 30 gpm; QC 1200: 3,450 psi, 30 gpm

Recommended prime mover: Posi-Track HD4500 or Posi-Track HD4520

Small Harvesting Head
Hahn

Models: HSG-140 and HSG-160

Manufacturer:
Hahn Machinery, Inc.
P.O. Box 220
Two Harbors, MN 55616
Phone: (218) 834-2156
Fax: (218) 834-5640
E-mail: hahnmach@lakenet.com
Web site: <http://www.forestnet.com/hahn>

Purchase Price: HSG-140: \$49,805, and HSG-160: \$53,275



Hahn harvesting head mounted on an excavator.

Status: In production

Cutting-head mechanism: Chain saw

Cutters: 11 BC 3/4-inch pitch

Maximum material size: HSG-140: 16 1/2-inch stumps. HSG-160: 18-inch stumps.

Type drive: Hydraulic

Prime mover: Small excavator, skid-steer loaders, or three-wheel carriers

Engine power: Minimum 55 hp required

Width: HSG-140: 38.50 inches; HSG-160: 42.0 inches

Height: HSG-140: 66.5 inches; HSG-160: 66.5 inches

Weight: HSG-140: 1,850 lb; HSG-160: 2,050 lb

Hydraulic pressure: 3,300 psi maximum operating pressure

Flow: Minimum two pumps delivering total of 34 gpm

Suggested prime movers: Small excavators, skid-steer loaders, or three-wheeled carriers with minimum 55 hp

Note: This head shown as an example, and

more processing heads are available through other manufacturers and distributors. Some heads to review are:

- Keto 2000 series, Single-grip harvester by Hakmet; P.O. Box 248; Vaudreuil-Dorion, Quebec J7V 7J5

Phone: (514) 455-6101 or 800-361-2288

Fax: (514) 455-1890

Web site: <http://www.hakmet.com>

- Fabtek Series 2000 13-inch processor head

Web site: <http://www.fabtek.com/series200013.html>

Tractor Grapples/Grapple With Winch ImpleMax

Models: 6042R, 4836R, FG60, FG48, 6042Rw, 4836Rw, FG60w, FG48w, 4836L, and 4836Lw

Manufacturer:
ImpleMax Equipment Company, Inc.
P.O. Box 549
Bozeman, MT 59771-0549
Phone: (406) 587-2662
Fax: (406) 587-2808

Purchase Price: 6042R, \$6,632; 4836R, \$5,611; FG60, \$4,932; FG48, \$4,185; 6042Rw (9,000 lb), \$8,518; 6042Rw (12,000 lb), \$8,905; 4836Rw, \$7,421; FG60w (9,000 lb), \$6,942; FG60w (12,000 lb), \$7,189; FG48w, \$6,180; 4836L, \$5,870; and 4836Lw, \$7,643

Status: In production
Grapple type: 6042R/FG60: Category II 3-pt-hitch tractor grapple; 4836R/FG48: Category I 3-pt-hitch tractor grapple; 6042Rw/FG48w: Category I 3-pt-hitch tractor grapple/winch; 4836L: Loader-arm grapple; 4836Lw: Loader-arm grapple/winch
Grapple capacity: 6042R/FG60/6042Rw/FG50w: 9.0-sq-ft enclosure area, 60-inch maximum opening width, 42-inch maximum opening height. 4836R/FG48/4836L/4836Lw: 6.94-sq-ft enclosure area, 48-inch maximum opening width, 36-inch maximum opening height



ImpleMax tractor-mounted grapple.

Grapple weight: 6042R: 940 lb; 4836R: 604 lb; FG60: 750 lb; FG48: 615 lb; 6042Rw: 1,118 lb; 4836Rw: 740 lb; FG60w: 850 lb; FG48w: 715 lb; 4836L: 640 lb; 4836Lw: 800 lb
Winch type: 6042Rw: 12,000-lb winch built into boom, 10-inch drum, up to 185 ft of $\frac{3}{8}$ -inch cable, with reel speed 48 fpm at 15 gpm; 4836Rw/4836Lw: 9,000-lb winch built into boom, 8-inch drum, up to 148 ft of $\frac{3}{8}$ -inch cable, with reel speed 72 fpm at 15 gpm; FG48w/FG60w: 9,000-lb winch built into boom, 10-inch drum, up to 104 ft of $\frac{3}{8}$ -inch cable, with reel speed 72 fpm at 15 gpm; FG60w: 12,000-lb winch built

into boom, 8-inch drum, up to 185 ft of $\frac{3}{8}$ -inch cable, with reel speed 48 fpm at 15 gpm.
Hydraulics: 4836R/6042R/4836L/FG48: 3,000 psi, unlimited gpm; 4836Rw/6042Rw/4836Lw/FG60w: 3,000 psi, 15 to 24 gpm
Recommended prime mover: 6042R designed for 55-hp tractors; 6042Rw designed for 55- to 110-hp tractors; 4836R/4836Rw designed for 30- to 55-hp tractors; FG48/FG48w/FG60/FG60w designed for tractors over 30 hp; 4836L/4836Lw designed for skid steer or front-end loader with minimum 1,500-lb lift capacity.
Other attachments: Custom attachment brackets for special applications

Tractor Grapple Little Red Logger

Models: Little Red Logger

Manufacturer:
Taylor Machine Works
650 North Church Avenue
Louisville, MS 39339-2017
Phone: (601) 773-3421
Fax: (601) 773-9146
Web site: <http://www.taylorbigred.com>

Purchase Price: \$5,500



Little Red Logger tractor-mounted grapple.

Status: In production
Prime mover: 50- to 80-hp tractors with a three-point hitch
Length: 40 inches
Weight: 750 lb

Grapple fully opened: 35 inches
Grapple fully closed: 3.5 inches
Grapple rotation: 85° either direction
Hydraulic requirements: One hydraulic function on tractor and two quick-disconnect hydraulic outlets

Scarification Rake
FERIC

Manufacturer:
Forest Engineering Research Institute
of Canada
580 Boulevard Saint-Jean
Pointe-Claire, PQ Canada H9R 3J9
Phone: (514) 694-1140
Fax: (514) 694-4351
E-mail: admin@mtl.feric.ca

Purchase Price: \$2,500 (Canadian)



FERIC scarification rake mounted on a Kubota 101 excavator.

Status: Prototype, special order only
Scarification mechanism: Three-prong rake with bucket tooth tips. Wings for subsoil ripping. Moldboard side attachments. Kickback tines for pushing away logging debris.

Width: 70 cm
Weight: No information from manufacturer
Hydraulics: Implement not powered
Suggested prime mover: Mini-excavator (such as the Kubota 101)

Scarification Head
VH Mulching Head

Models: VH Mulcher (spot site-preparation attachment)

Manufacturer:
West-Northwest Forestry, Ltd.
370 Armour Place
Kamloops, BC, Canada V2H 1L2
Phone: (250) 578-6966
Fax: (250) 578-6967
Web site: <http://www.vhmulcher.com>

Purchase Price: \$30,000 (U.S.)



VH Mulching Head.

Status: In production
Scarification/mulching mechanism: Circular tool plate with nine cutting bits and blocks.
Scarification diameter: 41 inches
Scarification depth: 18 to 36 inches

Height: 4 ft
Weight: 3,200 lb
Hydraulics: 3,200 to 3,400 psi, 50 gpm
Recommended prime mover: Can be mounted on most 15- to 20-ton excavator-type machines.

**Spot Site Preparation Tool
Hawk Power Scalper**

Manufacturer:
Hawk Forest Enterprises
1667 Rebman Crescent
Prince George, BC Canada V2L 4Z9
Phone: (250) 563-0727
Fax: (250) 563-6067

Modification Developed By:
USDA Forest Service
Missoula Technology & Development Center
Building 1, Fort Missoula
Missoula, MT 59804-7294
Phone: (406) 329-3900
Fax: (406) 329-3719

Purchase Price: Contact manufacturer for basic tool. MTDC highly recommends its modification (see below for information).

Status: In production

Cutting mechanism: OEM head uses four tines attached to a metal hub. MTDC advises not using OEM heads and has developed an alternative head to reduce the chance of head failure. Contact MTDC for information and engineering drawings. Documents: *Hawk Power Scalper* (9824-2336-MTDC),



MTDC head modification.



Hawk Power Scalper.

and *Hawk Scarifier* (9624-2842-MTDC).
Drawing Number: MTDC-937

Weight: About 27¾ lb with modifications mounted on a Stihl 044 chain saw

Bar length: 24 inches

Cutting width: Teeth contacting the ground is about ½ inch. Tool is used in a sweeping motion to make a swath of any size.

Cutting capacity: MTDC recommends about 1½-inch-diameter stems. Larger stems and rotten logs can be gradually chewed away.

Cutting head rotation speed: About 8,500 rpm

Recommended power head: Stihl 044 chain saw

Appendix D—Setting Priorities for Tasks Identified by the Small-Area-Forestry Equipment Survey

Numerical Ranking of Categories and Individual Tasks

Analysis approach. Every Region was given one full vote for each category and each individual task. If a Region submitted multiple votes, the votes were weighted appropriately (five responses from the same Region would be given 0.2 votes each). Votes placed in the high-priority box were multiplied by 5, votes in the medium-priority box were multiplied by 3, and

votes placed in the low-priority box were multiplied by 0. The total points for each item in the *Category* section were compared to establish the relative

significance of each category (thinning's relative significance to planting, for instance). The total points for each item in the *Individual Task* section were multiplied by the relative significance factor (depending on the category they belonged to). The final numerical value was used to rank the need Servicewide for each development effort.

Regions 2, 6, 9, and 10 returned one response each. Regions 1 and 3 each returned two responses, Regions 4 and 5 each returned five responses, and Region 8 did not return a form.

Category	Points ¹
Thinning	35.2
Brush/slash disposal	30.7
Site preparation for planting	19.7
Site prep for natural regeneration	15.1
Planting	14.2

¹ Also used as relative significance factor [rsf].

Final Ranking ²	Individual Task
1003.89	Equipment with ability to extract small wood products (firewood, posts and poles, small sawlogs, fiber) at low cost, with low site damage, in conjunction with thinning or brush disposal. (0 to 60%, \$10,000)
862.67	Figure out something to do with biomass residue.
781.44	Small version of feller-buncher/forwarder to facilitate removal of thinning slash/fiber.
752.15	Portable chipper/shredder that can be pulled by ATV.
742.72	Mechanized thinning equipment capable of safe operation on 65% slope.
736.80	Small, lightweight equipment with ability to work on steep slopes and close to residual trees without damaging them (no root damage, minimal soil disturbance).
715.31	Small masticating, grinding, or chipping system to reduce fuel loading after unit is harvested.
715.31	Expand idea of skidding with ATV's. Comparison of ATV's for cost of operation.
675.40	Smaller machine that could operate within 12- to 15-foot tree spacing and not exceed 10 to 12 feet in height. Equipment that works with arm should have multiple attachments (bucket, grapple, rotary head).
630.08	Thinning of numerous seedlings without the use of heavy equipment.
601.72	Ground-based cable systems to harvest or perhaps remove residue (i.e., precommercial thinning slash) from unit economically and do something with it.
580.80	Motorized hand-held equipment for thinning on steep slopes.
574.09	Portable chipper/shredder that can be pulled behind crawler-type tractor on steeper slopes. Engine must be designed to operate in a tilted position so that oil flows to all parts.
561.81	Develop a grapple for ATV.
549.53	Equipment that is less than 12-ft wide to be transported on roads. Should be able to reach 25 feet (to minimize tracked area) and be capable of picking up partially rotten logs 18 inches in diameter on small end and returning them to the cut-over area from cull decks and slash piles.

Continued 

Final Ranking ²	Individual Task
439.01	Design excavator bucket that allows soils to fall through easier.
436.48	Remote-controlled, cable-stabilized mechanical thinner for steep slopes.
417.64	Application methods and equipment for chemical site preparation
408.32	A more economical Slashbuster head for use with low ground-pressure prime mover.
359.19	Look for track material that may prevent fires or slippage on rocks.
309.76	Come up with an improved bowbar for thinning that is lightweight and safe.
299.15	Subsoiler to help alleviate soil compaction.
294.72	Remote-controlled cable-stabilized equipment capable of working on steep slopes
289.59	Develop implement to be used in conjunction with ATV. Must be able to yard logs 10-feet long and 10 inches in diameter. A head with attachments that could masticate, grapple pile, or chip with the flick of a lever.
282.10	Less expensive and more versatile modification of Salmon blade to work in shallow soils. Possible replacement of wear tips on brush blade with a curved blade to provide tilling action similar to Salmon blade.
260.04	Remote controlled, cable-stabilized scalper for steep slopes.
249.55	Need equipment to do site preparation on steep slopes, 35 percent or steeper, especially on pinegrass sites.
249.05	Power increment borer.
232.32	Propane torch equipment to burn small trees.
223.20	Small machine that is light on the land, low ground base, with extension arm for reaching 25 feet.
183.04	Product report on industrial/continuous-use brush-cutting saws.
165.78	A shield (or dangling chains) for Slashbuster that would deflect material.
124.96	Alternative auger power heads for planting (such as gas-powered hand drills, cordless drills).
116.44	Need improved muffler system on auger power heads.
110.52	Operator's manual for safe use of Lipke Arch.
95.04	Improved mechanized equipment to thin junipers.
88.35	A narrow version of the Rangeland or Towner Disk. A disk width of 10 to 12 feet, or one that has variable width.
85.96	Tilt meter in cab.
52.80	Cryogenic equipment to freeze small trees.
24.80	Teflon or rubber grousers.
18.42	Improved ignition source for Terra Torch.

²The formula used to arrive at these final rankings: $rsf \times [(number\ of\ points\ for\ high\ priority \times 5) + (number\ of\ points\ for\ medium\ priority \times 3) + (number\ of\ points\ for\ low\ priority \times 0)]$.

Responses To “Most Significant Equipment Need” Question

Northern Region (R-1)

“Current harvesting techniques in this area are primarily feller-bunchers and grapple skidders. This results in nearly all tops being skidded to landings, with subsequent loss of nutrients and seed in serotinous cones. We don’t need or want to keep all tops onsite, but would like to have equipment that can safely and economically sever and retain 25 to 35 percent of the tops. Current techniques are hand sawing some of the tops and hoping they fall out of the drag or taking all tops to a landing and then bringing some of them back. The first causes safety concerns and is not very effective. The second involves additional soil impact by traveling twice over the same ground with loaded equipment. This problem is more of a concern on large rather than small units.”—*Alfred Gilbert*

Rocky Mountain Region (R-2)

“For POL thinning, we need equipment that can work in 12-foot or tighter spacing, both for skidding and cutting. For site prep, we have modified the Salmon blade by removing three of the seven teeth. With seven teeth and working in the amount of residual slash on the Black Hills, the blade clogged up, not allowing the soil to flow through. To address issues of soil compaction, it would be valuable to have a Salmon blade that could be pulled behind the dozer. The standard rippers on a dozer are too narrow and don’t open a furrow. There are two modifications to the Salmon blade that have been identified in our Region, one would be a narrower version of a Salmon blade mounted on a track vehicle that has low ground impact to accomplish site prep in

smaller openings after group selection prescriptions have been implemented. The second modification would be a pull-behind Salmon blade that could be 10 or 12 feet wide to cover more ground with fewer passes.”—*Susan Gray*

Southwestern Region (R-3)

“Tracking them on the ground and in a data base.”—*Jim Dick*

“Small, mobile, economical unit to reduce need for burning when thinning dense understories (urban interface fuelbreaks, goshawk sub- to 4-acre groups, spotted owl PAC protection). Need not chip as finely as a chipper, but needs to masticate enough so that residue will lie relatively flat (1 foot or so) in scattered condition. Residual spacings may be tight and treatment units scattered, so ATV-sized and ATV-transported equipment would be ideal.”—*Doug Beal*

Intermountain Region (R-4)

“Thinning/brush disposal power tool.”—*Salmon National Forest*

“Need equipment to perform site preparation without producing soil compaction.”—*Payette National Forest*

Pacific Southwest Region (R-5)

“Our most significant need stems from fuels management. We can usually get the needed site prep from fuels treatment. The Slashbuster-type configuration is probably most versatile.”—*Dennis Haas*

“We are into thinnings of natural and older plantation stands for fire protection and general health of the stands as well as finishing up planting of the harvested areas. Some reforestation of brushfields. And we are completing overstory removals on the TF/MC stands of 10 years

ago. So we have a high interest in biomass removal in natural stands that could be used in plantations.”—*Mike Nolen*

Eastern Region (R-9)

“Spot-planting machine that can be transported on small trailer instead of a lowboy. This equipment should have the features of a commercially available 4- or 6-wheel ATV, but be bigger with heavy-duty components.

Equipment suitable for air blast herbicide treatment on steep or rocky slopes (>35%).

Low ground pressure feller bunchers and skidders. A small, powered clipper operated from a standing position to clip undesirable competition (birch, striped maple, and beech) overtopping desirable tree seedlings.”—*Monty Maldonado*

Alaska Region (R-10)

“About 95% of Region 10’s reforestation is natural regeneration without site preparation. Most planting is done by hand. Existing equipment meets our needs.”—*Richard Zaborske*

Other Suggested Development Projects

Thinning

Small-scale spot scalper that does not cause unnecessary soil disturbance.—*Monty Maldonado*

Site Preparation for Natural Regeneration

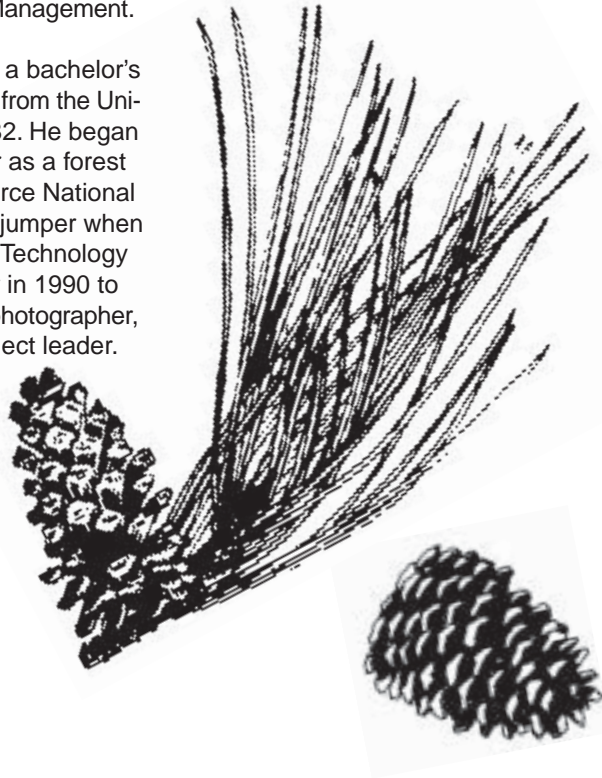
Mechanized herbicide application on steep slopes (35%).—*Monty Maldonado*



About the Authors

Keith Windell is Project Leader for reforestation, fire, and residues projects. He has a bachelor's of science degree in mechanical engineering from Montana State University, and has an extensive field background. He has worked for the California Department of Forestry and the Bureau of Land Management.

Bob Beckley received a bachelor's degree in political science from the University of Montana in 1982. He began his Forest Service career as a forest technician on the Nez Perce National Forest. Bob was a smokejumper when he came to the Missoula Technology and Development Center in 1990 to work as a videographer, photographer, and project assistant/project leader.



Library Card

Windell, Keith; Beckley, Bob. 1999.
Small-area forestry equipment. Tech.
Rep. 9924-2820-MTDC. Missoula, MT:
U.S. Department of Agriculture, Forest
Service, Missoula Technology and
Development Center. 40 electronic p.

Describes equipment that can be used
in small-area forestry operations, defined
here as operations on areas 10 acres or
smaller. The traits that were considered
desirable for small-area forestry equip-
ment were high maneuverability, ability
to work in tight spaces, ready availability,
reliability, and the ability to work lightly
on the land. Appendixes contain listings
of machinery and attachments that can
be used for small-area forestry opera-
tions as well as the addresses of
manufacturers.

Keywords: attachments, dozers,
excavators, feller-bunchers, grapples,
mowers, yarders

Additional single copies of this document may be ordered from:

USDA Forest Service, MTDC
Bldg. 1, Fort Missoula
Missoula, MT 59804-7294
Phone: 406-329-3978
Fax: 406-329-3719
E-mail: wo_mtdc_pubs@fs.fed.us

For further technical information, contact Keith Windell or Bob Beckley at the address above.

KEITH WINDELL
Phone: 406-329-3956
Fax: 406-329-3719
Lotus Notes: Keith N Windell/WO/
USDAFS
E-mail: kwindell@fs.fed.us

BOB BECKLEY
Phone: 406-329-3996
Fax: 406-329-3719
Lotus Notes: Robert G Beckley/WO/
USDAFS
E-mail: rbeckley@fs.fed.us

Electronic copies of MTDC's doc- uments are available on the Forest Service's FSWeb Intranet at:

<http://fsweb.mtdc.wo.fs.fed.us>