

# 3.0 Soil Preparation



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After the existing crop has been removed from the field, bareroot nursery managers go through a series of cultural procedures to prepare the soil for sowing. These tasks are usually accomplished with agricultural equipment and basic farming techniques.

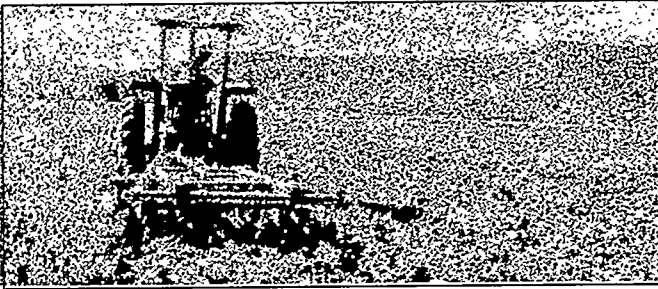
Growing bareroot tree seedlings is an intensive form of agriculture and, therefore, forest nurseries use crop rotation to maintain soil productivity. Most bareroot seedlings reach shipping size in 1 to 3 years. Nurseries produce one or two crops before rotating the land with a 1 to 2 year rest or fallow period. During this time, some nurseries remove all vegetation from the soil surface with frequent cultivation to discourage the buildup of soilborne pests. Others grow green manure to maintain the soil's organic matter level or grow cover crops to protect the exposed soil between crops. Before the tree crop can be sown, all existing vegetation and debris that could hinder sowing or subsequent cultivation must be removed from the site. This is important because even relatively small pieces of debris can plug seed-sowing equipment.

To produce quality tree seedlings, the soil must be in the proper physical condition. Tree seedlings require a well-drained soil with good aeration for both proper root growth and ease of harvesting during the wet winter months. The soil profile should be deep-ripped to below the normal rooting zone to promote draining excessive moisture and all large clods should be broken up so the soil achieves a crumb structure. The field should be leveled and crowned to encourage surface water to drain away from the growing area.

The final presowing activities include fumigating to eliminate soil pests and incorporating fertilizers and other soil amendments into the soil.

## 3.1 - Tractors and Other Draft Equipment

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*Today's tractors are the result of an evolutionary process over the last century. Many different designs and attachments have been developed for general as well as specific crop and field conditions. There are two basic types of tractors: Wheel tractors and crawler tractors. This catalog discusses wheel tractors.*

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### Tractors

Most modern tree seedling nurseries use tractors for a variety of purposes from presowing cultivation to transporting harvested seedlings from the field. The best tractor will depend on the specific task. Large nurseries may have several different sizes ranging from small models for light hauling and within-row cultivation to large four-wheel-drive models for deep ripping. For one-time tasks, it may be prudent to rent or contract a specialized tractor or piece of equipment. The current trend is toward four-wheel-drive or front-wheel-assist tractors for added drawbar pull in less than desirable field conditions. Many small, high clearance and speciality tractors have recently become available. Tractors are usually purchased through local dealers.

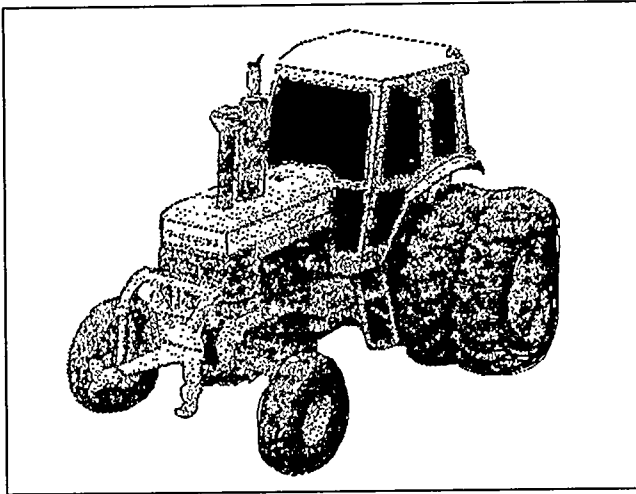


**Tractors:**

Agro-Util Div. Kalamazoo International Inc. P.O. Box 271 South Haven, MI 49090-0271 (616) 637-2178	Cub Cadet Corp. P.O. Box 360930 Cleveland, OH 44136 (216) 273-4550	Kubota Tractor Corp. 550 W Artesia Blvd. Compton, CA 90220 (213) 537-2531	Rokon International, Inc. P.O. Box 189 Jaffrey, NH 03452 (800) 632-2481
Belarus Machinery, Inc. P.O. Box 23608 Milwaukee, WI 53223 (414) 355-2000	Deere & Co. John Deere Rd. Moline, IL 61265 (309) 765-5678	Landini 7049 NW 4th St. Plantation, FL 33317 (305) 321-9711	SAME Tractors P.O. Box 127 St. Nazianz, WI 54232 (414) 773-2121
Big Bud Mfg. Co. P.O. Box 1790 Havre, MT 59501 (406) 265-1247	Deutz-Allis Corp. 3883 Steve Reynolds Blvd. Norcross, GA 30093 (404) 564-7100	W.F. Larson, Inc. P.O. Box 1967 Plainview, TX 79073-1967 (806) 293-1353	Simplicity Mfg., Inc. 500-T N Spring St. Port Washington, WI 53074 (414) 284-5535
Bolens Corp. 215 S Park St. Port Washington, WI 53074 (414) 284-5521	Eagle Tractor Co., Inc. P.O. Box 806 367 N Freedom St. Ravenna, OH 44266 (216) 297-1484	Lely Kioti, Inc. P.O. Box 1060 Wilson, NC 27894-1060 (919) 291-7050	Sprayrite Mfg. Co. P.O. Box 3289 West Helena, AR 72390 (501) 572-6737
Bombardier, Inc. Industrial Equipment Div. Walcourt Quebec Canada J0E 2L0 (514) 523-2211	Engineering Products Co. P.O. Box 1510 Waukesha, WI 53187 (414) 785-0786	Long Mfg. N.C., Inc. P.O. Box 1139 Tarboro, NC 27886 (919) 823-4151	Steiger Tractor, Inc. P.O. Box 6006 Fargo, ND 58108 (701) 293-4714
Brown Bear Corp. Blue Grass Industrial Pk. Corning, IA 50841 (515) 322-4220	Ferrari Tractors, Inc. P.O. Box 278 Poynette, WI 53955 (608) 635-7350	Manitoba Industry Trade & Technology 500-155 Carlton St. Winnipeg, Manitoba Canada R3C 3H8 (204) 945-2466	Timm Enterprises, Ltd. P.O. Box 157 5204 Trafalgar Rd. Oakville, Ontario Canada L6J 4Z5 (416) 878-4244
J.I. Case, A Tenneco Co. 700 State St. Racine, WI 53404 (414) 636-5399	Ford New Holland, Inc. 500 Diller Ave. New Holland, PA 17557-0903 (717) 355-1121	Massey-Ferguson, Inc. 1901 Bell Ave. Des Moines, IA 50315 (515) 247-2233	Wengers Farm Machinery, Inc. 251 S Race St. Myerstown, PA 17067 (717) 866-2130
Caterpillar 100 NE Adams St. Peoria, IL 61629 (309) 675-1000	Graveley International, Inc. P.O. Box 5000 Clemmons, NC 27012-5000 (919) 766-4721	MF Industrial 1700 Belle Meade Ct. Lawrenceville, GA 30243 (404) 822-3072	White Farm Equipment 123 W Sycamore St. Coldwater, OH 45828 (419) 678-5311
CBT/USA, Inc. 4575 Hilton Parkway Colorado Springs, CO 80907 (719) 590-1118	Hagie Mfg. Co. P.O. Box 273 Clarion, IA 50525 (515) 532-2861	Mid-America Agricultural, Ltd. 12800 Pflumm Olathe, KS 66062 (913) 829-6007	Yanmar Tractor (USA), Inc. 951 Corporate Grave Dr. Mt. Prospect, IL 60089 (708) 459-7800
Cheap Tractors P.O. Box 658 Bethlehem, CT 06751 (203) 266-7387	The Hamby Co. 5200 N. Columbia Plainview, TX 79072 (806) 293-1010	Nibex, Inc. P.O. Box 8585 Emeryville, CA 94662 (415) 428-0871	Zetor Tractors American Jama, Ltd. 7301 Allentown Blvd. Harrisburg, PA 17112 (717) 540-5618
Comaway, Inc. P.O. Box 303 Lawrence, PA 15055 (412) 746-2550	Hesston Corp. 245 E North Ave. Carol Stream, IL 60188 (312) 260-4490	Power King Tractors P.O. Box 1510 Waukesha, WI 53187 (414) 785-0786	
Crandel-Hicks Co. P.O. Box 5012 30 Oak St. Westboro, MA 01581 (508) 898-2808	JCB, Inc. P.O. Box 209 10939 Philadelphia Rd. White Marsh, MD 21162-0209 (301) 335-2800	Robinson & Grissom Tractor Co., Inc. P.O. Box 36 Rt. 2 Guntown, MS 38849 (601) 869-1028	

## Front Hitch Converters

Manufacturers offer kits that allow a 3-point implement to be attached to the front of a tractor. The hitches can be used for tillers, sprayers, fertilizer tanks, cultivators, rope wick applicators, and other tasks.



### Front Hitch Converters:

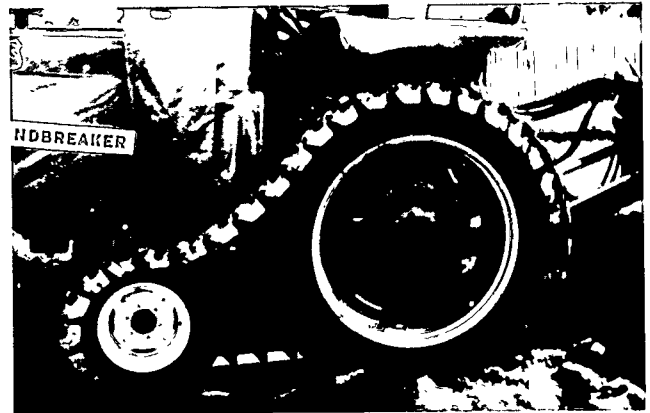
Edwards Equipment Co., Inc.  
4312 Main St.  
Yakima, WA 98903  
(509) 248-1770

Wil-Rich  
Farm Equipment Div.  
Lear Siegler, Inc.  
P.O. Box 1013  
Wahpeton, ND 58074  
(701) 642-2621

Worksaver  
P.O. Box 1000  
Litchfield, IL 62056  
(217) 324-5973

## Tire Crawler Tracks

Many nurseries use after-market devices such as crawler tracks to increase traction and floatation of their tractors during lifting operations. These systems can make the difference in being able to operate in the fields under adverse conditions.



### Tire Crawler Tracks:

Grouser Products  
P.O. Box 545  
West Fargo, ND 58078  
(701) 282-7710

Intertractor American Corp.  
P.O. Box 627  
Elkhorn, WI 53121

Loeering Mfg., Inc.  
P.O. Box 870 IT  
Casselton, ND 58012  
(701) 347-5441

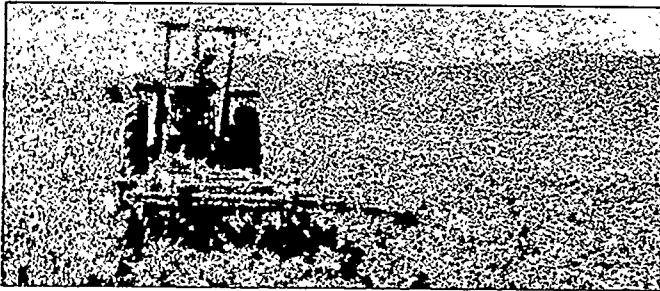
C.F. Struck Corp.  
P.O. Box 307  
Cedarburg, WI 53012  
(414) 377-3300

Trac 4, Inc.  
P.O. Box 58  
Wilmington, IL 60421  
(815) 476-6778

Trademark Sales &  
Marketing, Inc.  
1920 American Ct.  
Neeah, WI 54956  
(414) 727-1818

## 3.2 - Sowing Cover or Green Manure Crops

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*"Cover crops" are plants sown during the fallow year to protect the soil from wind or water erosion. Green manure crops are plants that have been sown to improve the fertility or organic matter content of the soil. These crops are typically grown to fortify the soil before the area is converted into a seedbed, or for protection during the fallow year in the crop rotation.*

*Nurseries use a variety of standard agricultural equipment to sow the seed.*

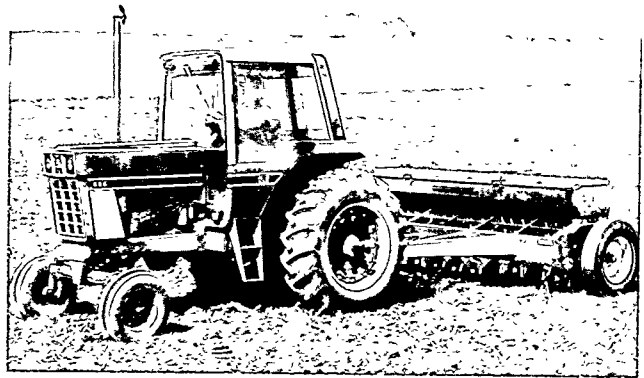
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### Agricultural Seeders

These are two basic types of seeders: grain drills (planters) and broadcast seeders. Grain drills are designed to plant seeds as evenly as possible in rows. To do this they must 1) open a furrow in the soil; 2) meter the seed; 3) place the seed; 4) cover the seed; and, 5) firm the seed bed.

Broadcast seeders are designed to broadcast small grains and grass or legume seeds (See *Section 5.2*). Seeds are scattered on a random, non-row basis, on top of the seedbed. Another field operation is required to cover the seed.

Both types of seeders are used for sowing cover crops, but grain drills are preferred.



**Agricultural Seed Drills:**

Barber Engineering Co.  
N. 1404 Regal  
Spokane, WA 99202

Blanchard Co.  
P.O. Box 1607  
Minot, ND 58702  
(701) 852-1924

Brown Mfg. Corp.  
P.O. Box 339  
Rt. 3  
Highway 27 E  
Ozark, AL 36360  
(205) 795-6603

Buffalo Farm Equipment  
Fleischer Mfg, Inc.  
P.O. Box 848  
Columbus, NE 68601  
(402) 564-3244

J.I. Case,  
A Tenneco Co.  
700 State St.  
Racine, WI 53404  
(414) 636-5399

Deere & Co.  
John Deere Rd.  
Moline, IL 61265  
(309) 765-5678

Deutz-Allis Corp.  
3883 Steve Reynolds Blvd.  
Norcross, GA 30093  
(404) 564-7100

Farnam Equipment  
P.O. Box 34820  
Phoenix, AZ 85067  
(602) 285-1660

Gandy Co.  
528 Gandrud Rd.  
Owatonna, MN 55060  
(507) 451-5430

Garber Seeders  
Div. of Riburn, Inc.  
P.O. Box 770  
St. Paris, OH 43072  
(513) 663-4865

Great Plains Mfg., Inc.  
P.O. Box 218  
Assaria, KS 67416  
(913) 667-4755

Haybuster Mfg.  
P.O. Box 1940  
Jamestown, ND 58401  
(701) 252-4601

Hege Equipment, Inc.  
P.O. Box 34A  
Rt. 1  
Colwich, KS 67030  
(316) 796-0992

Herd Seeder Co., Inc.  
P.O. Box 448  
Logansport, IN 46947  
(219) 753-6311

Johnson's Industrial Supply Co.  
1941 Karlin Dr.  
St. Louis, MO 63131  
(314) 966-2420

Kelley Mfg. Co.  
P.O. Drawer 1467  
Tifton, GA 31793  
(912) 382-9393

Kinze Mfg., Inc.  
P.O. Box 806  
Williamsburg, IA 52361  
(319) 668-1300

Kirby Mfg. Inc.  
P.O. Box 989  
Merced, CA 95341  
(209) 723-0778

Kuhn Farm Machinery, Inc.  
P.O. Box 224  
Vernon, NY 13476  
(315) 829-2620

The Lely Corp.  
P.O. Box 1060  
Wilson, NC 27893  
(919) 291-7050

Lift-it/PCM Corp.  
P.O. Box 106  
Industrial Park  
Unionville, MO 63565  
(816) 947-2446

Marliss Supply Co., Inc.  
P.O. Box 9370  
Jonesboro, AR 72403  
(501) 932-7550

My-D Han-D Mfg., Inc.  
Rt. 1 W McArtor  
Dodge City, KS 67801  
(316) 225-0263

New Idea Farm Equipment Div.  
123 W Sycamore St.  
Coldwater, OH 45828  
(419) 678-5311

Powell Mfg. Co., Inc.  
P.O. Drawer 707  
Bennettsville, SC 29512  
(803) 479-6231

Stanhay Webb, Ltd.  
Exning, Suffolk  
Newmarket  
England CB8 7HD  
44 63877 206

The Tye Co.  
P.O. Box 218  
Lockney, TX 79241  
(806) 652-3376

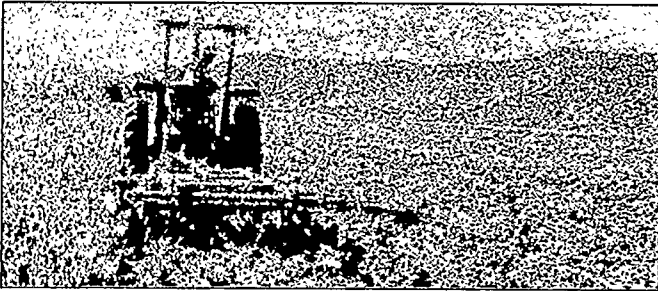
United Farm Tools, Inc.  
P.O. Box 4026  
Glasgow, KY 42142  
(502) 651-7121

Vada Covington Corp.  
Covington Planter  
P.O. Box 2  
Albany, GA 31702  
(912) 888-2032

White Farm Equipment  
123 W Sycamore St.  
Coldwater, OH 45828  
(419) 678-5311

Worksaver, Inc.  
P.O. Box 1000  
Litchfield, IL 62056  
(217) 324-5973

## 3.3 Presowing Cultivation



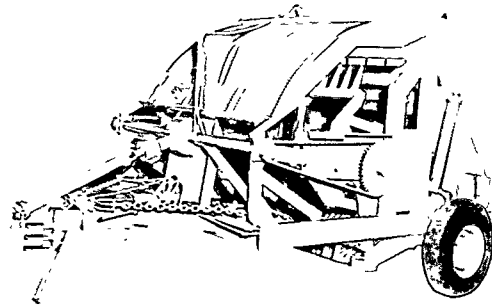
Nursery soil must be prepared for sowing through a series of sequential operations, each with a different implement. Primary cultivation is the process of breaking-up the undisturbed soil. Secondary cultivation refers to working the soil into the proper crumb-like structure.

After the residual vegetation has been incorporated, the soil must be prepared for sowing. This may involve rock picking if the topsoil is shallow. Nursery soils that have been in cultivation for several years often develop compacted layers called "pans" at various depths in the soil. These pans inhibit drainage and limit root development and must be broken-up so the entire soil profile has a uniform, friable texture. Quality bareroot seedlings should have a well-developed, fibrous root system of 10 to 12 inches, and therefore the soil profile must be prepared to a 12- to 18-inch depth. This is much deeper than most agricultural crops.

A variety of different tractor-drawn implements are used to prepare the soil for sowing.

## Rock Pickers and Rakes

Rock pickers and rakes are used to remove rocks from land so that it can be cultivated. Rock pickers are tractor-drawn and have incline teeth that travel on or under the soil surface, some to a depth of 7 inches. The rocks are lifted by the teeth and moved to a hopper in the rear. Some pickers are equipped to dump hydraulically. Potato-picking machines are used as rock pickers by some nurseries. Rock rakes are tractor-drawn implements used to gather or windrow rocks so that they can be picked up and removed from the field.



### Rock Pickers:

Armor Metal Products  
P.O. Box 4609  
2500 Phoenix Ave.  
Helena, MT 59604  
(406) 442-5560

H. Barber & Sons, Inc.  
15 Ray Tkwich Rd.  
Naugatuk, CT 06770  
(203) 729-9000

Beaver Valley Supply  
Atwood, KS 67730  
(913) 626-3251

Degelman Industries, Inc.  
P.O. Box 490  
Minot, ND 58701  
(701) 852-1876

Gallenberg Equipment, Inc.  
W 9112 Cherry Rd.  
Amfigo, WI 54409  
(715) 623-3754

Glenmac, Inc.  
P.O. Box 2135  
Jamestown, ND 58402  
(800) 437-9779

Harmon International Industries, Inc.  
P.O. Box 1444  
2401 Millar Ave.  
Saskatoon, Saskatchewan  
Canada S7K 3P7  
(306) 931-1161

Haybuster Mfg.  
P.O. Box 1940  
Jamestown, ND 58401  
(701) 252-4601

Leon-Ram Enterprises, Inc.  
135 York Rd. E  
Yorkton, Saskatchewan  
Canada S3N 3Z4  
(306) 783-6592

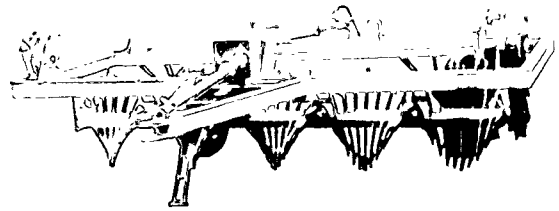
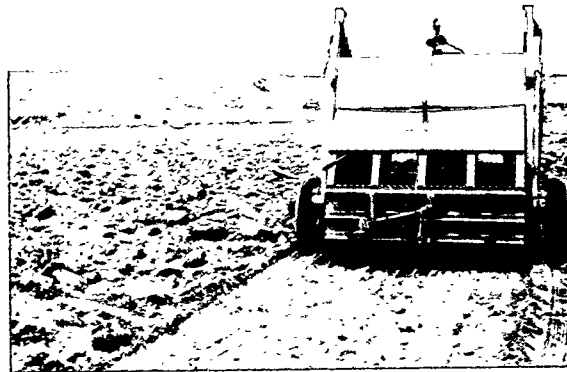
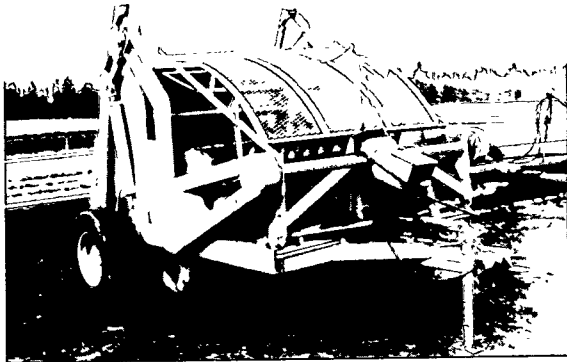
Maritime Farm Implements, Ltd.  
P.O. Box 209  
Middletown, Nova Scotia  
Canada B0S 1P0  
(902) 825-4040

Norcan Farm Equipment, Ltd.  
P.O. Box 1237  
Cambridge, Ontario  
Canada N1R 6C9  
(519) 623-8261

Rite Way Mfg. Co., Ltd.  
P.O. Box 3344  
1891 Albert St. N  
Regina, Saskatchewan  
Canada S4P 3H1  
(306) 543-6777

Roseman Tractor Equipment, Co.  
2620 Crawford Ave.  
Evanston, IL 60201  
(312) 864-1842

Schulte Industries, Ltd.  
P.O. Box 70  
Englefeld, Saskatchewan  
Canada S0K 1N0  
(306) 287-3715



**Rock Pickers:**

Summers Mfg. Co.  
338 Railway Ave.  
Maddock, ND 58348  
(701) 438-2855

Union Tools  
P.O. Box 1940  
Columbus, OH 43216  
(614) 222-4400

United Farm Tools, Inc.  
P.O. Box 4026  
Glasgow, KY 42142  
(502) 651-7121

Vermeer Mfg. Co.  
P.O. Box 200  
Pella, IA 50219  
(515) 628-3141

Viel Mfg. Co.  
P.O. Box 632  
Billings, MT. 59103  
(406) 252-6808

Wishek Steel Mfg., Inc.  
P.O. Box 185  
Wishek, ND 58495  
(701) 452-2449

Worksaver Inc.  
P.O. Box 1000  
S State St.  
Litchfield, IL 62056  
(217) 324-5973

**Rock Rakes:**

Armor Metal Products  
P.O. Box 4609  
2500 Phoenix Ave.  
Helena, MT 59604

Beaver Valley Supply  
Atwood, KS 67730  
(913) 626-3251

Degelman Industries, Inc.  
P.O. Box 490  
Minot, ND 58701  
(701) 852-1876

Gill Industries  
P.O. Box 7324  
Charlotte, NC 28241-7324  
(800) 476-1511

Hiniker Co.  
P.O. Box 3407  
Mankato, MN 56002  
(507) 624-6621

Leinback Machines Co.  
P.O. Box 11786  
Winston-Salem, NC 27116  
(919) 924-4115

Nicholls Farm Equipment  
Rt. 3  
Wainfleet, Ontario  
Canada L0S 1V0  
(416) 732-2000

Roseman Tractor Equipment Co.  
2620 Crawford Ave.  
Evanston, IL 60201  
(312) 344-1842

Viel Mfg. Co.  
P.O. Box 632  
Billings, MT. 59103  
(406) 252-6808

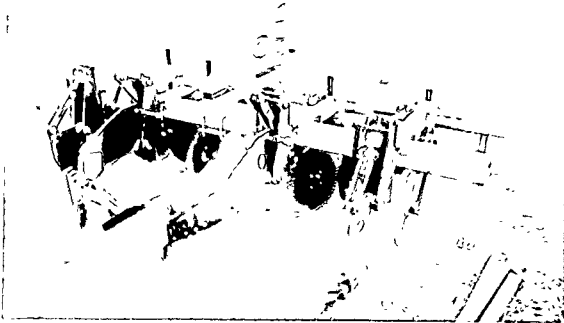
Worksaver, Inc.  
P.O. Box 1000  
S State St.  
Litchfield, IL 62056  
(217) 324-5973

York Modern Corp.  
P.O. Box 488  
Umadilla, NY 13849  
(607) 369-7111



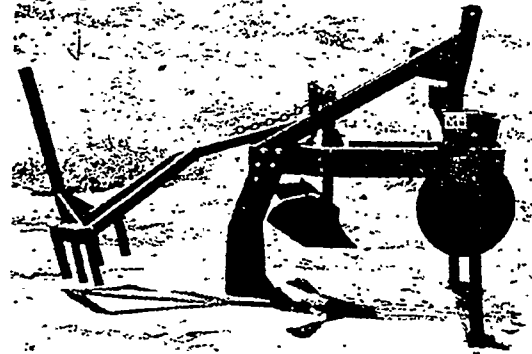
## Subsoilers and Rippers

Subsoiling and deep ripping reduce soil compaction by fracturing the soil profile at a depth of 1 to 3 feet. Although it doesn't mix the topsoil and subsoil, subsoiling can reduce the energy needed to plow. Subsoilers are composed of two to six heavyweight, straight or curved shanks mounted on a conventional 3-point hitch. Parabolic-shaped shanks are most effective. Some models have winged shanks that increase the degree of fracturing and allow effective ripping at greater depths.



## Whitfield Subsoiler

Whitfield's heavy-duty subsoiler turns compacted sod into a bed suitable for planting. A coulter opens the sod. Underneath the coulter is a rigid undercutting blade that severs vertical roots. A subsoiler behind the coulter then widens and deepens the furrow. The long shank subsoiler behind the share deepens the cut and breaks up the subsoil. Finally, a rear projection of heavy-duty harrow tines smooths the soil and breaks up clumps of weeds.



R.A. Whitfield Mfg. Co.  
P.O. Box 188  
Mableton, GA 30059  
(404) 948-1212

### Subsoilers and Rippers:

Agri-disc & Implements Corp.  
5502 NW 72nd Ave.  
Miami, FL 33166  
(305) 884-6100

E.L. Anderson Mfg., Inc.  
P.O. Box 5602  
Eugene, OR 97405  
(503) 344-4932

Beaver Valley Supply  
Atwood, KS 67730  
(913) 626-3251

Bigham Brothers, Inc.  
P.O. Box 3338  
Lubbock, TX 79452  
(806) 765-8201

Blessent Mfg. Co.  
5 Triumph Dr.  
Urbana, IL 61801  
(217) 367-3636

Brillion Iron Works, Inc.  
200 Park Ave.  
Brillion, WI 54110  
(414) 756-2121

Brown Mfg. Corp.  
P.O. Box 339  
Rt. 3, Highway 27 E  
Ozark, AL 36360  
(205) 795-6603

Bush Hog Div.  
Allied Prod. Corp.  
P.O. Box 1039  
Selma, AL 36702-1039  
(205) 872-6262

J.I. Case  
A Tenneco Co.  
700 State St.  
Racine, WI 53404  
(414) 636-5399

Chem-Farm Inc.  
P.O. Box 6510  
Evansville, IN 47719  
(812) 423-8017

Deere & Co.  
John Deere Rd.  
Moline, IL 61265  
(309) 765-5678

Dickey Machine Works  
P.O. Box 5610  
Pine Bluff, AR 71611  
(501) 536-1300

DMI, Inc.  
P.O. Box 65  
Goodfield IL 61742  
(309) 965-2233

ED-KA Mfg. Co.  
P.O. Box 37  
Garfield, WA 99130  
(509) 635-1521

The Ferguson Mfg. Co., Inc.  
P.O. Box 1098  
Suffolk, VA 23434  
(804) 539-3409

Forest City Machine Works, Inc.  
P.O. Box 984  
Forrest City, AR 72335-0984  
(501) 633-1514

Forest Soil Restoration  
36195 SE Boitono Rd.  
Sandy, OR 97055  
(503) 668-4405

Graham-Hoeme  
P.O. Box 3779  
Amarillo, TX 79106  
(214) 475-0405

G.T., Inc.  
P.O. Box 525  
Clay Center, KS 67432  
(913) 632-2151

Haven Steel Products, Inc.  
P.O. Box 430  
Haven, KS 67543  
(316) 465-2271

Holland Hitch Western, Ltd  
17909 Roam Place  
Surray, British Columbia  
Canada V36 5K1

Howse Implement Co., Inc.  
P.O. Box 86  
Laurel, MS 39441  
(601) 428-0841

Kelley Mfg. Co.  
P.O. Drawer 1467  
Tifton, GA 31793-1467  
(912) 382-9393

Kello-Bilt Industries, Ltd.  
P.O. Box 1119  
Stettler, Alberta  
Canada T0C 2L0  
(403) 742-3663

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**Subsollers and Rippers:**

Kewanee Farm Equipment Co.  
1516 Burlington Ave.  
Kewanee, IL 61443  
(309) 852-2191

Kirchner Machine, Ltd.  
2419 Second Ave. N  
Lethbridge, Alberta  
Canada T1H 0C1  
(403) 328-5569

Lehman H. Feeder & Plow, Inc.  
P.O. Box 53  
Rt. 3  
Corpus Christi, TX 78415  
(512) 855-0049

Maritime Farm Implements, Inc.  
P.O. Box 209  
Middletown, Nova Scotia  
Canada B0S 1P0  
(902) 825-4040

Marvin Landplane  
P.O. Box 1880  
Woodland, CA 95695  
(916) 662-2871

Miskin Scraper Works, Inc.  
P.O. Box 218  
Ucon, ID 83454  
(208) 522-2139

Orthman Mfg., Inc.  
P.O. Drawer B  
Lexington, NE 68850  
(308) 324-4654

Powell Mfg. Co., Inc.  
P.O. Drawer 707  
Bennettsville, SC 29512  
(803) 479-6231

Rome Industries  
P.O. Box 48  
Cedar Town, GA 30125  
(404) 748-4450

R&R Agri-Products, Inc.  
P.O. Box 121  
Rt. 1  
Wilbur, WA 99185  
(509) 647-5707

Shaver Mfg. Co.  
P.O. Box 358  
Graettinger, IA 51342  
(712) 859-3293

Taylor/Pittsburgh Implements  
P.O. Box 769  
Athens, TN 37303  
(615) 745-3110

Tebben Mfg.  
P.O. Box 140  
Rt 2  
Clara City, MN 56222  
(612) 847-2200

Temco H-M Parts Co.  
P.O. Box 40210  
Memphis, TN 38174-0210  
(901) 274-1158

Tilth, Inc.  
26979 Dawson Rd.  
Monroe, OR 97456  
(503) 847-6200

Timm Enterprises, Ltd.  
P.O. Box 157  
5204 Trafalgar Rd.  
Oakville, Ontario  
Canada L6J 4Z5  
(416) 878-4244

Thurston Mfg. Co.  
Blu-Jet Products  
P.O. Box 218  
Thurston, NE 68062  
(402) 385-3041

The Tye Co.  
P.O. Box 218  
Lockney, TX 79241  
(806) 652-3367

The Vassar Co.  
P.O. Box 609  
207 N Main  
Perkins, OK 74059  
(405) 547-2454

W&A Mfg. Co.  
P.O. Box 5238  
Pine Bluff, AR 71611  
(501) 534-7420

R.A. Whitfield Mfg. Co.  
Whitfield Forestry Equipment  
P.O. Box 188  
6431 Gordon Circle SW  
Mableton, GA 30059  
(404) 948-1212

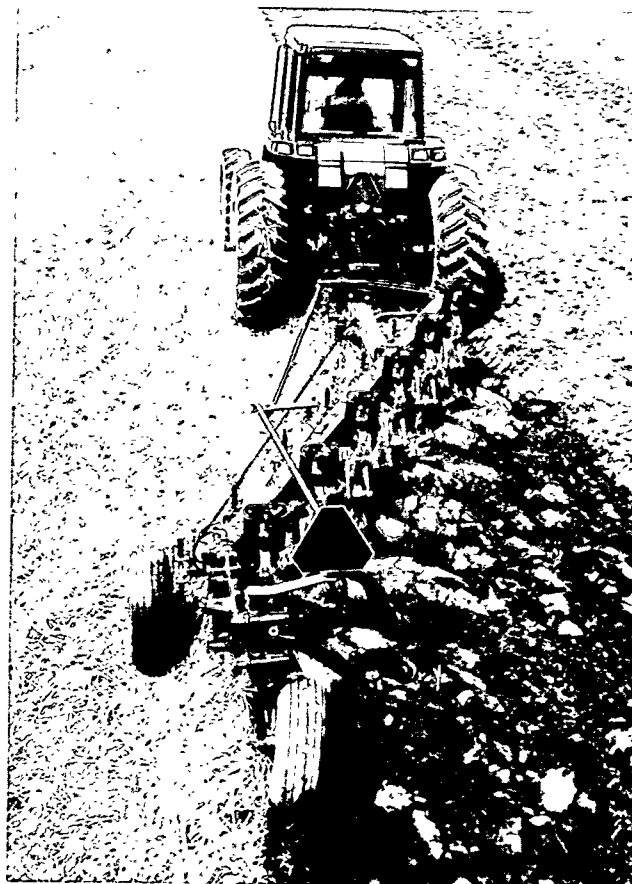
Wil-Rich  
P.O. Box 1030  
Wahpeton, ND 58074  
(701) 642-2621

Worksaver, Inc.  
P.O. Box 1000  
S State St.  
Litchfield, IL 62056  
(217) 324-5973

Year-A-Round Cab Corp.  
P.O. Box 2075  
Mankato, MN 56001  
(507) 624-9381

## Plows

Plows are tractor-drawn primary tillage implements that are used to invert the soil profile. There are basically two types of plows: the moldboard and the disc. Plows are usually mounted on the rear 3-point hitch of a tractor and are adjustable to an operational depth of 12 inches. The curved blade of a moldboard plow is known as the "bottom" or "share" and different models range in size from 1-bottom to 12-bottom. Common plowing widths vary from 14 to 18 inches. Disc plows contain large circular, concave discs and are mounted in gangs. Plows are available for all categories of tractors.



### Plows:

Ace Supply Inc.  
P.O. Box 1098  
Caldwell, ID 83606-1098  
(208) 459-0731

Arts-Way Mfg. Co.  
P.O. Box 288  
Armstrong, IA 50514  
(712) 864-3131

Brinly-Hardy Co. Inc.  
P.O. Box 1116  
Louisville, KY 40201  
(502) 585-3351

Callahan Implement Mfg., Inc.  
107 11th Ave. N  
Nampa, ID 83651  
(208) 466-0871

J.I. Case  
A Tenneco Co.  
700 State St.  
Racine, WI 53404  
(414) 636-5399

Central Tractor Farm &  
Family Center  
P.O. Box 3330  
Des Moines, IA 50316  
(515) 266-3101

Chapin Equipment Co.  
202 Fulton St.  
Fresno, CA 93721  
(209) 233-7141

Conway Technologies Corp.  
P.O. Box 350  
McAllen, TX 78502  
(512) 687-7500

CrustBuster/Speed King, Inc.  
P.O. Box 1438  
Fort Dodge Rd.  
Dodge City, KS 67801  
(316) 227-7106

Deere & Co.  
John Deere Rd.  
Moline, IL 62165  
(309) 765-5678

ED-KA Mfg. Co.  
P.O. Box 37  
Garfield, WA 99130  
(509) 635-1521

Engineering Products Co.  
P.O. Box 1510  
Waukesha, WI 53187  
(414) 785-0786

Ford New Holland, Inc.  
500 Diller Ave.  
New Holland, PA 17557  
(717) 355-1121

Forage King Industries, Inc.  
P.O. Box 215  
Ridgeland, WI 54763  
(715) 949-1020

Hester Plow Co., Inc.  
P.O. Box 340  
Lake City, FL 32056-0340  
(904) 755-0960

Howse Implement Co., Inc.  
P.O. Box 86  
Laurel, MS 39441  
(601) 428-0841

Kello-Bilt Industries, Ltd.  
P.O. Box 1119  
Stettler, Alberta  
Canada T0C 2L0  
(403) 742-3663

Kewanee Farm Equipment Co.  
1516 Burlington Ave.  
Kewanee, IL 61443  
(309) 852-2191

King Kutter, Inc.  
P.O. Box 480  
Winfield, AL 35594  
(205) 487-3202

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**Plows:**

KMN Modern Farm Equipment, Inc.  
P.O. Box 1896  
West Memphis, AR 72301  
(501) 732-4270

Leinback Machines Co.  
P.O. Box 11786  
Winston-Salem, NC 27116  
(919) 924-4115

M&M Plow & Equipment Mfg. Co., Inc.  
P.O. Box 831  
San Angelo, TX 76902  
(915) 653-7231

Marvin Landplane  
P.O. Box 1880  
Woodland, CA 95695  
(915) 662-2871

Massey-Ferguson, Inc.  
1901 Bell Ave.  
Des Moines, IA 50315  
(515) 247-2011

May-Wes Mfg. Inc.  
P.O. Box 33  
Gibbon, MN 55335  
(507) 834-6572

Mil-Rich  
P.O. Box 1030  
Wahpeton, ND 58074  
(701) 642-2621

Morris Industries, Ltd.  
85 York Rd.  
Yorkton, Saskatchewan  
Canada S3N 2X2  
(306) 783-8585

MTD Products, Inc.  
P.O. Box 36900  
Cleveland, OH 44136  
(216) 225-2600

The Murray Ohio Mfg., Co.  
P.O. Box 268  
Brentwood, TN 37027  
(615) 373-6500

Nibex, Inc.  
P.O. Box 8585  
Emeryville, CA 94662  
(415) 428-0871

Norcan Farm Equipment, Ltd.  
P.O. Box 1237  
Cambridge, Ontario  
Canada N1R 6C9  
(519) 623-8261

Overun Farm Machinery, Inc.  
866 Langs Dr.  
Cambridge, Ontario  
Canada N3H 2N7  
(519) 653-8880

Power King Tractors  
P.O. Box 1510  
Waukesha, WI 53187  
(414) 785-0786

Rokon International, Inc.  
P.O. Box 189  
Jaffrey, NH 03452  
(800) 632-2481

Taylor/Pittsburgh Implements  
P.O. Box 769  
Athens, TN 37303  
(615) 745-3110

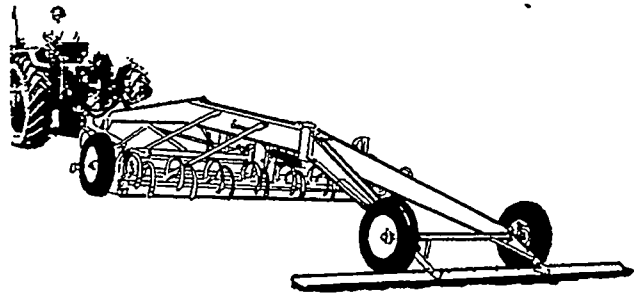
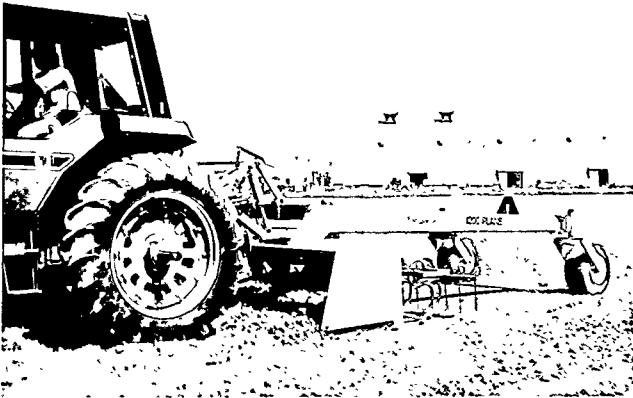
The Vassar Co.  
P.O. Box 609  
207 N Main  
Perkins, OK 74059  
(405) 547-2454

White Farm Equipment  
123 W Sycamore St.  
Coldwater, OH 45828  
(419) 678-5311

Wishek Steel Mfg., Inc.  
P.O. Box 185  
Wishek, ND 58495  
(701) 452-2449

## Levelers

Levelers are available in various sizes and are used to level and crown nursery fields to promote good surface drainage. They are typically used before secondary tillage.



### Levelers:

E. L. Anderson Mfg., Inc.  
P.O. Box 5602  
Eugene, OR 97405  
(503) 344-4932

Ashland Industries, Inc.  
P.O. Box 717  
Ashland, WI 54806  
(715) 682-4622

Automatic Equipment Mfg. Co.  
One Mill Rd.  
Pender, NE 68047  
(402) 385-3051

Bowman Mfg. Co., Inc.  
P.O. Box 705  
Rt. 3  
Newport, AR 72112  
(501) 523-2785

Conway Technologies Corp.  
P.O. Box 350  
McAllen, TX 78502  
(512) 687-7500

Degelman Industries, Inc.  
P.O. Box 490  
Minot, ND 58701  
(701) 852-1876

Enid Fabricators Inc.  
P.O. Box 3411  
Enid, OK 73702  
(405) 233-3111

Eversman, Inc.  
P.O. Box 390336  
Denver, CO 80239  
(303) 371-0333

House Mfg. Co., Inc.  
P.O. Box 214  
Cherry Valley, AR 72324  
(501) 588-3307

Hurricane Ditcher Co.  
2815 Old Decker Rd.  
Vincennes, IN 47591  
(812) 886-9663

Kirchner Machine, Ltd.  
2419 Second Ave. N  
Lethbridge, Alberta  
Canada T1H 0C1  
(403) 328-5569

Marvin Landplane  
P.O. Box 1880  
Woodland, CA 95695  
(916) 662-2871

Leon-Ram Enterprises, Inc.  
135 York Rd. E  
Yorkton, Saskatchewan  
Canada S3N 3Z4  
(306) 783-6592

Miskin Scraper Works, Inc.  
P.O. Box 218  
Ucon, ID 83454  
(208) 522-2139

Pathfinder Snowplows  
Rt. 3  
Exeter, RI 02822  
(401) 397-5053

Prime Mfg. Co., Inc.  
P.O. Box 433  
Poplarville, MS 39470  
(601) 795-4553

Rayne Land Planes Inc.  
P.O. Box 549  
Rayne, LA 70578  
(318) 334-2101

Reiten Inc.  
P.O. Box 589  
Cooperstown, ND 58425  
(701) 797-2751

Rome Industries  
P.O. Box 48  
Cedartown, GA 30125  
(404) 748-4450

Rowse Hydraulic Rakes Co., Inc.  
P.O. Box 42  
HC 80  
Burwell, NE 678823  
(308) 348-2276

T.G. Schmeiser Co., Inc.  
P.O. Box 1047  
Fresno, CA 93714  
(209) 268-8128

Soilmover Mfg. Corp.  
P.O. Box P  
Pender, NE 68047  
(402) 385-3051

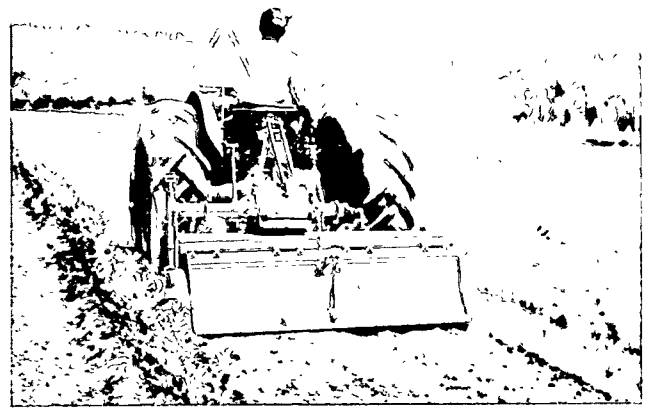
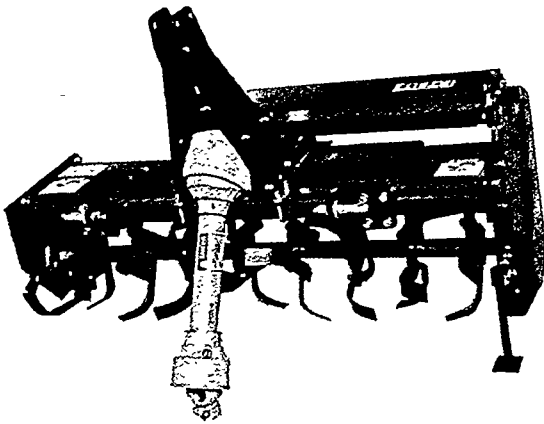
The Vassar Co.  
P.O. Box 609  
207 N Main  
Perkins, OK 74059  
(405) 547-2454

Westendorf Mfg., Co., Inc.  
P.O. Box 29  
Onawa, IA 51040  
(712) 423-2762

York Modern Corp.  
P.O. Box 488  
Umadilla, NY 13849  
(607) 369-7111

## Rotary Tillers

Rotary tillers are secondary tillage implements designed to loosen, mix, and blend soils to a uniform structure for planting. They are available in a wide selection of sizes. The actual tillers are small, hooked blades that are gang-mounted on an rotating axle. Most rotary tillers have adjustments for rotation speed (the faster the rotation, the smaller the size of the soil particles) and depth (from 1 to 8 inches).



### Rotary Tillers:

Alloway Mfg. and Dist. Co.  
P.O. Box 2825  
Fargo, ND 58108  
(701) 282-7014

Beaver Valley Supply  
Atwood, KS 67730  
(913) 626-3251

BEFCO, Inc.  
P.O. Box 6036  
Rocky Mount, NC 27801  
(919) 977-9920

Bush Hog Division  
Allied Prod. Corp.  
P.O. Box 1039  
Selma, AL 36702-1039  
(205) 872-6261

J.I. Case  
A Tenneco Co.  
700 State St.  
Racine, WI 53404  
(414) 636-5399

Continental Belton Co.  
P.O. Box 660  
920 E 6th St.  
Belton, TX 76513  
(817) 939-3731

CrustBuster/Speed King, Inc.  
P.O. Box 1438  
Fort Dodge Rd.  
Dodge City, KS 67801  
(316) 227-7106

Deere & Co.  
John Deere Rd.  
Moline, IL 61265  
(309) 765 5678

Eversman, Inc.  
P.O. Box 390336  
Denver, CO 80239  
(303) 371-0333

The Ferguson Mfg. Co., Inc.  
P.O. Box 1098  
Suffolk VA 23434  
(804) 539-3409

Great Plains Mfg., Inc.  
P.O. Box 218  
Assaria, KS 67416  
(913) 667-4755

The Green Hoe Co., Inc.  
W Main Rd.  
Portland, NY 14769  
(716) 792-9433

HCC, Inc.  
1501 First Ave.  
Mendota, IL 61342  
(815) 539-9371

Hester Plow Co., Inc.  
P.O. Box 340  
Lake City, FL 32056-0340  
(904) 755-0960

Impex International, Inc.  
115A Belton Dr.  
Spartanburg, SC 29304  
(800) 274-4410

Kelley Mfg., Co.  
P.O. Drawer 1467  
Tifton, GA 31793-1467  
(912) 382-9393

KMN Modern Farm Equipment, Inc.  
P.O. Box 1896  
West Memphis, AR 72301  
(501) 732-4270

Kubota Tractor Corp.  
550 W Artesia Blvd.  
Compton, CA 90220  
(213) 537-2531

Kuhn Farm Machines, Inc.  
P.O. Box 224  
Vernon, NY 13476  
(315) 829-2620

Long Mfg. NC, Inc.  
P.O. Box 1139  
Tarboro, NC 27886  
(919) 823-4151

Marvin Landplane  
P.O. Box 1880  
Woodland, CA 95695  
(916) 662-2871

Mitchell, Lewis & Staver Co.  
9925 SW Commerce Circle  
Wilsonville, OR 97070  
(503) 682-0991

M&W Gear Co.  
Rt. 47 S  
Gibson City, IL 60936  
(217) 784-4261