

Soil Compaction Worth Preventing

ROBERT LEIBY
DAVID DUNBAR

Lehigh Co. Extension Agents

Soil compaction is defined as a process of rearranging soil particles to decrease pore space and increase bulk density (weight per unit of volume).

An ideal soil might have 50 percent pore space. Compaction reduces the movement of gases and water in the soil, increases soil strength, and reduces crop yields significantly.

Soil oxygen is essential for seed germination, root development, nutrient uptake, and soil microb activity. Restricted water movement prevents beneficial drainage

when soils are wet and limits the availability of water to roots when soils are dry. The increased soil strength caused by compaction directly blocks root growth.

Plants growing in compacted soils are slow to emerge. Stand and plant size are variable. Leaves may be off-color due to nutrient deficiency. Roots are shallow and malformed. Plants are especially susceptible to moisture stress (from either too much or too little water).

Compaction symptoms that may be observed in soil include crusting and cracking of soil surfaces, excessive erosion, ruts and standing water, higher power re-

quirements for tillage, and only partial decomposition of crop residues.

Because water lubricates soil particles, wet soils compact more readily than dry soils. Fine-textured soils and soils with variable particle sizes compact more easily than uniformly coarse textured soils. Organic matter helps prevent soil compaction and reduces bulk density.

Freezing/thawing and wetting drying help to correct compaction in surface soil, but deep compaction is difficult to treat. Mechanical subsoiling gets limited and/or temporary results. The best approach is to minimize compaction

by the following means:

- Reduce tillage. Consider using minimum tillage or no-till planting practices.

- Don't till or move equipment (or animals) on wet soils. The drier, the better. If it's too wet to till, it's also too wet to spread manure.

- Reduce traffic on fields. Aerial applications or wider equipment could help.

- Reduce weight of tractors and implements. However, remember that excessive tire slippage also causes compaction. Tandem wheels can distribute weight and

reduce compaction.

- Increase soil organic matter. Use cover crops, manure, crop residue, mushroom compost, deep-rooted forage crops, and a rotation cropping system.

- Improve both surface and subsurface drainage when appropriate.

Most of the previous observations and guidelines relating to soil compaction were gleaned from a presentation by Doug Beegle, Penn State agronomist, at our recent Crops Days.

BUY, SELL, TRADE OR RENT THROUGH THE
CLASSIFIED ADS

BUSH HOG®

DIVISION OF  ALLIED PRODUCTS CORPORATION

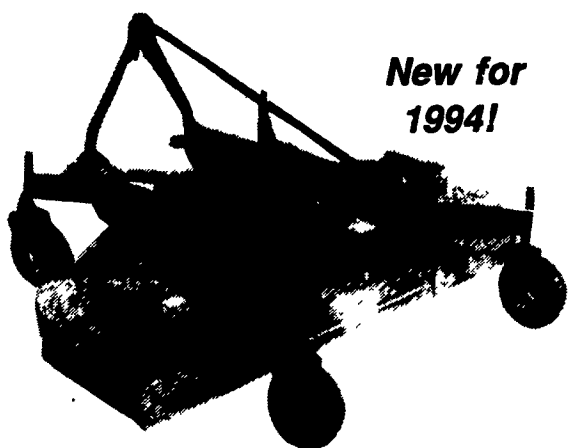
Winning with quality.

NEW... NEW... NEW FOR 1994!

BUSH HOG®

ATH-900 SERIES

FINISHING MOWERS



New for
1994!

Designed for use by commercial operators and owners of homes with large lawns to maintain, Bush Hog's ATH-900 Finishing Mower features a full 90-inch cutting width.

The unique tunnel design of the ATH-900 allows you to mow in heavier, thicker conditions. And the special design of the deck eliminates "dead spots." Floating top and lower linkage work to prevent the scalping problems often encountered when mowing on uneven terrain. And the four pneumatic tires are standard equipment to help reduce the shock loads of rugged cutting requirements.

Maintenance is easy, with quick access to all grease zerts.

BUSH HOG®

BB SERIES

BOX BLADES

New For 1994!



Four models designed for a wide variety of jobs around the farm, and applicable for landscaping and construction chores.

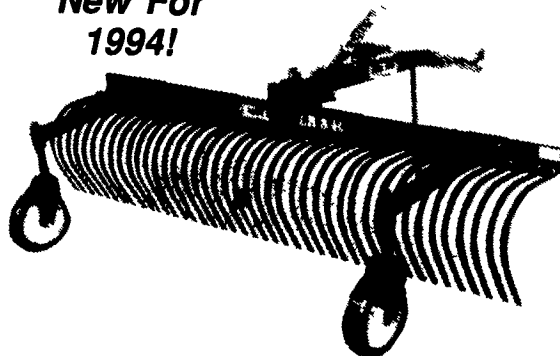
- Choice of widths - 48" to 84"
- Two cutting edges work in forward or reverse
- Mounts to a wide range of tractors, maximum of 40 HP
- Scarifier teeth are standard equipment
- Heavy reinforced A-frame
- Excellent for grading, backfilling, leveling topsoil and gravel

BUSH HOG®

LR SERIES

LANDSCAPE
RAKES

New For
1994!



Here's your best choice in a dependable tool that's ideal for seedbed preparation, landscaping, spreading gravel or topsoil and removing rocks and debris from fields and farmyards. Bush Hog's Landscape Rakes are recommended for tractors with a maximum 35 HP, and are available in 5, 6, or 7-foot widths. High carbon spring steel tines are spaced at 1" intervals, for more thorough leveling or rock removal. These rakes pivot a full 360 degrees, a feature that assures a more versatile operation. And the pivot pin is 1 1/4" solid steel- for greater durability.

SEE YOUR LOCAL BUSH HOG DEALER

ANDERSON TRACTOR SALES, INC.
Shrewsbury, PA 717-235-0213

CHAMBERSBURG FARM SERVICE
Chambersburg, PA 717-264-3533

NORMAN D. CLARK & SON, INC.
Loysville, PA 717-789-3117

**FARMER'S EQUIPMENT &
SUPPLY CO., INC.**
Airville, PA 717-862-3967

FARMERSVILLE EQUIPMENT CO.
Ephrata, PA 717-354-2150

GEORGE N. GROSS, INC.
Dover, PA 717-292-1673

**GROWER'S EQUIPMENT
CENTER, INC.**
Biglerville, PA 717-677-7133

A. L. HERR & BROS.
Quarryville, PA 717-786-3521

KELLER'S FARM MACHINE, INC.
Quakertown, PA 215-536-4046

MARSHALL EQUIPMENT CO.
Beyer, PA 412-783-6333

MARSHALL MACHINERY, INC.
Honesdale, PA 717-729-7117

NICARRY EQUIPMENT INC.
Reading, PA 215-926-2441

NICHOLS FARM EQUIPMENT
Bloomsburg, PA 717-784-7731

**NORTH-EAST DISTRIBUTORS
& EQUIP.**

West Clifford, PA 717-222-9020

CHARLES S. SNYDER, INC.
Tamaqua, PA 717-386-5945

STANLEY'S FARM SERVICE
Klingerstown, PA 717-648-2088

STOLTZFUS FARM SERVICE
Cochranville, PA 215-593-2407

STRALEY FARM SUPPLY, INC.
Dover, PA 717-292-2631

TRACTOR PARTS COMPANY
Bloomsburg, PA 717-784-0250

UMBERGER'S OF FONTANA
Lebanon, PA 717-867-5161

C. J. WONSIDLER-BROS.
Quakertown, PA 215-536-1935
New Tripoli, PA 215-767-7611
Oley, PA 215-987-6257

LESLIE G. FOGG, INC.
Bridgeton, NJ 609-935-5145

PEACH COUNTRY FORD TRACTOR
Richwood, NJ 609-589-3953

RODIO TRACTOR SALES
Hammonont, NJ 609-561-0141

FRANK RYMON & SONS
Washington, NJ 201-689-1464