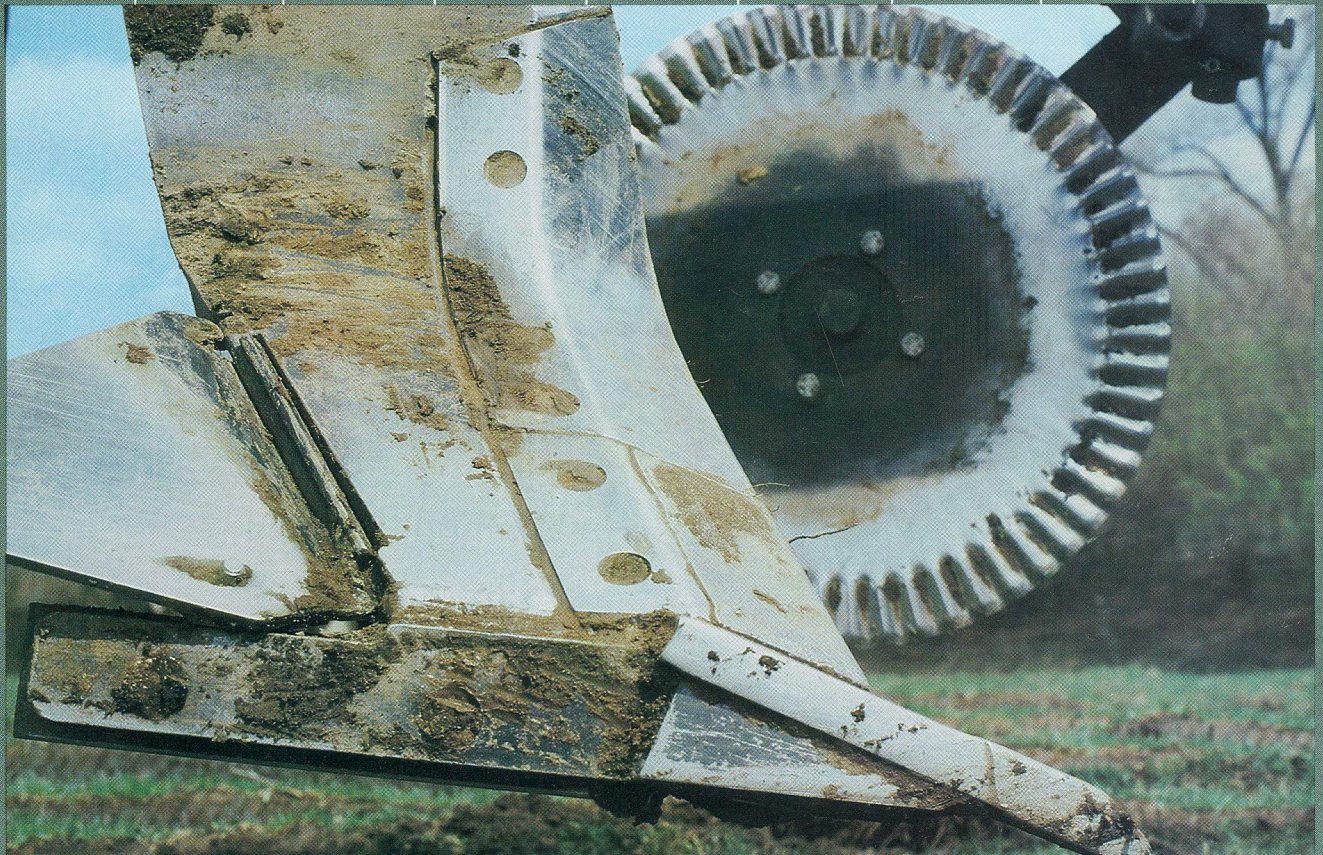


 **HOWARD®**

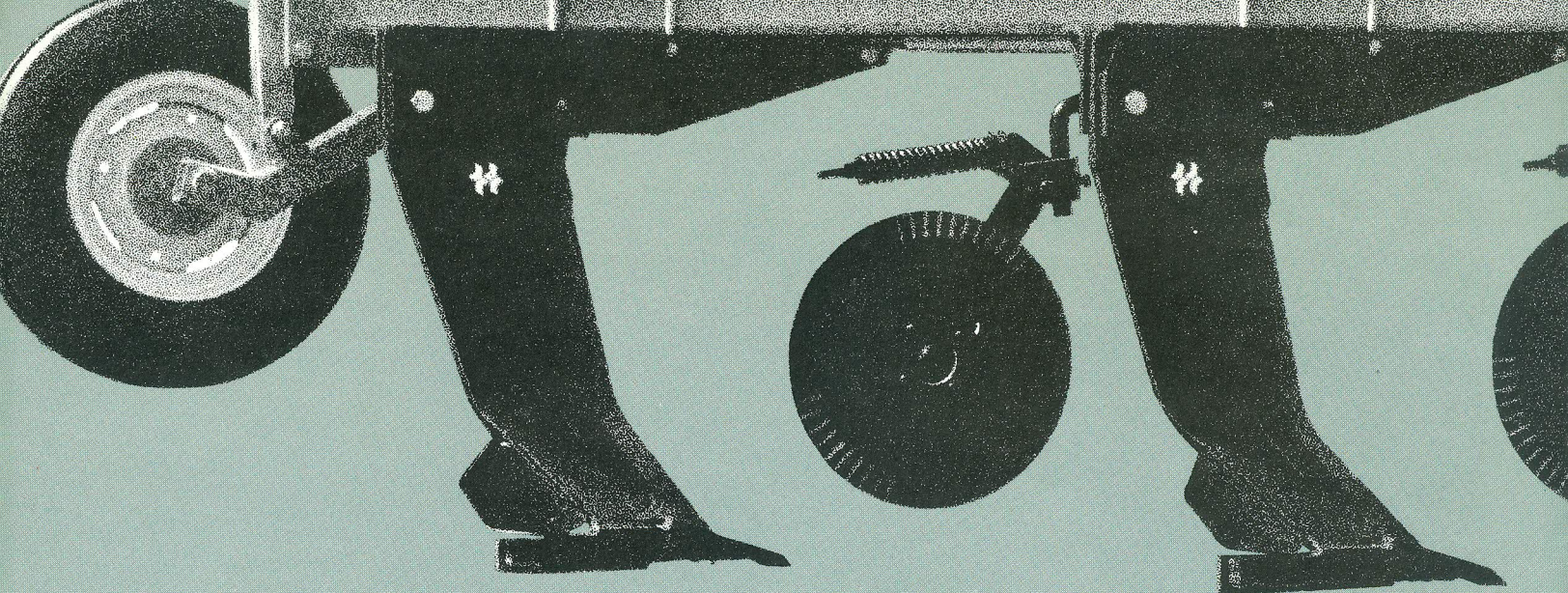
PARAPLOW®

A SIGNIFICANT
BREAKTHROUGH
IN SOIL CARE



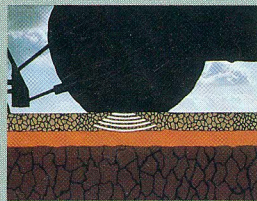
THE CONSERVATION
TOOL TO

- PRESERVE TOPSOIL
- LOOSEN SUBSOIL
- MANAGE MOISTURE

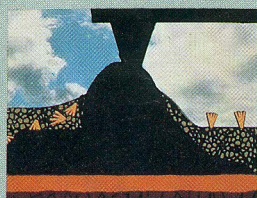


HOWARD®

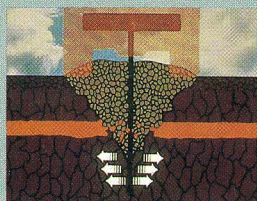
PARAPLOW®



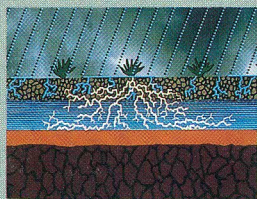
A major cause of soil compaction and hardpan is pressure from today's heavy tractors and farm implements.



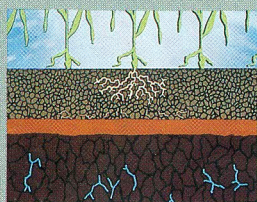
Moldboard plowing does not reach deep hardpan layers and can actually build plowpan.



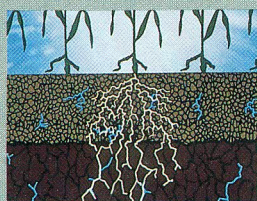
Tests show that even deep chisel plows create zones of compaction laterally between shanks.



Compacted soils lessen crop yields. Hardpan is a barrier to water movement and restricts root development.



In dry weather, roots are unable to reach natural reserves of groundwater moisture below compacted soil.



Soil worked with the PARAPLOW is free of hardpan and compaction. Subsoil moisture is accessible to thirsty roots.

A UNIQUE SOLUTION TO SURFACE AND SUBSOIL PROBLEMS

Soil problems are both God-given and man-made. Some soils are naturally heavy and wet. They warm slowly in spring, drain poorly in summer, and do not promote early germination or vigorous crop growth. Other soils are perennially hard and dry — too compacted for healthy root development. Rainfall quickly turns to runoff and erosion.

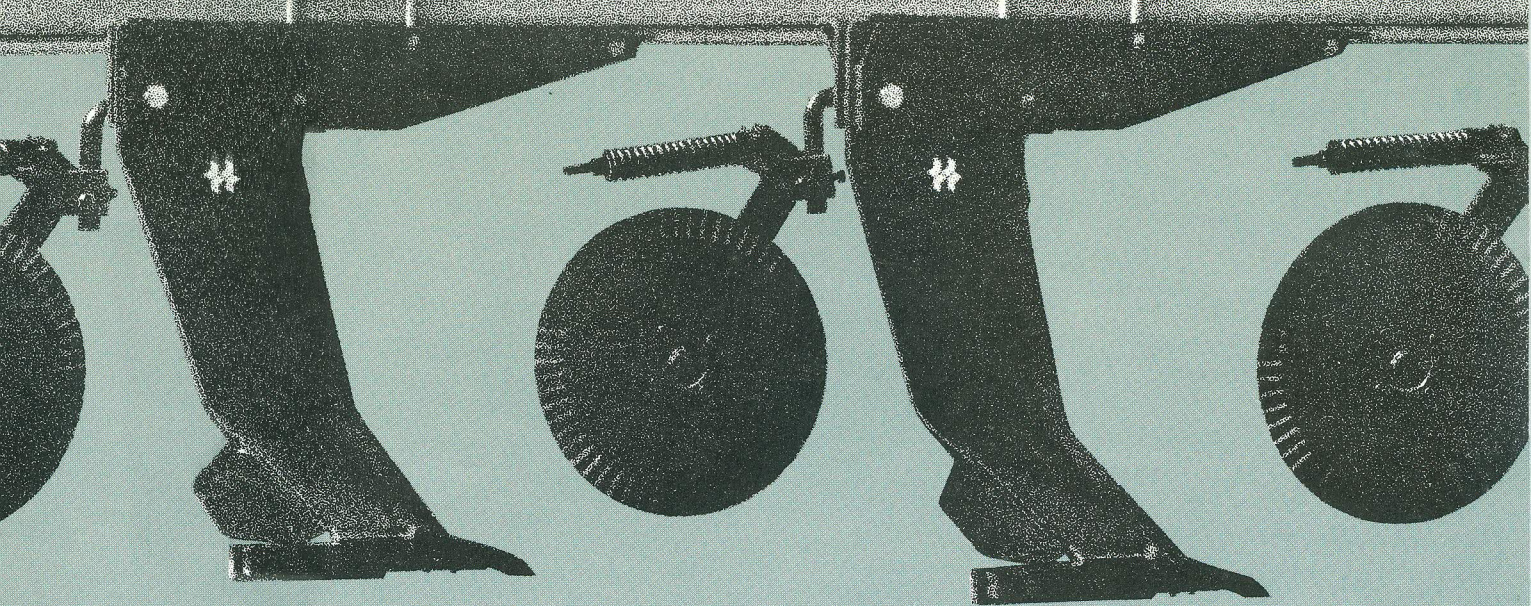
Then there are the soil problems created by modern farming methods. Giant tractors and implements may speed tilling, planting and harvesting, but they also build soil compaction and hardpan. The heavier the traffic and more passes you make, the more compacted your fields become. Tests prove that even deep-working chisel plows, designed to break hardpan and loosen soil, can actually compact it laterally between the shanks. And tillage that buries or reduces surface trash leads to erosion.

Heavy soils. Hard soils. Compacted soils and hardpan. Fields with standing water or wet spots. Fields losing precious moisture and topsoil to water and wind erosion. These are the soil problems. And unfortunately, few farmers do not face at least one of them!

HOW SOIL SCIENTISTS HELPED SOLVE THE PROBLEMS

In designing the new PARAPLOW, Howard joined forces with soil scientists, agronomists and plant biologists to answer the questions: "What's good for the soil and best for the plants?" Their answers led to the PARAPLOW design. That's why it is totally unique.

The PARAPLOW works underground — loosening the soil and assisting water movement — **while leaving the surface virtually undisturbed!** There is no other tillage implement that works in exactly the same way or accomplishes what the PARAPLOW does for your soil.



GETTING HIGHER YIELDS BY IMPROVING THE GROWTH ENVIRONMENT

Your soil is your greatest asset. It can promote crop growth and high yields or hinder them. The key is soil structure and its effect on your crop's root system.

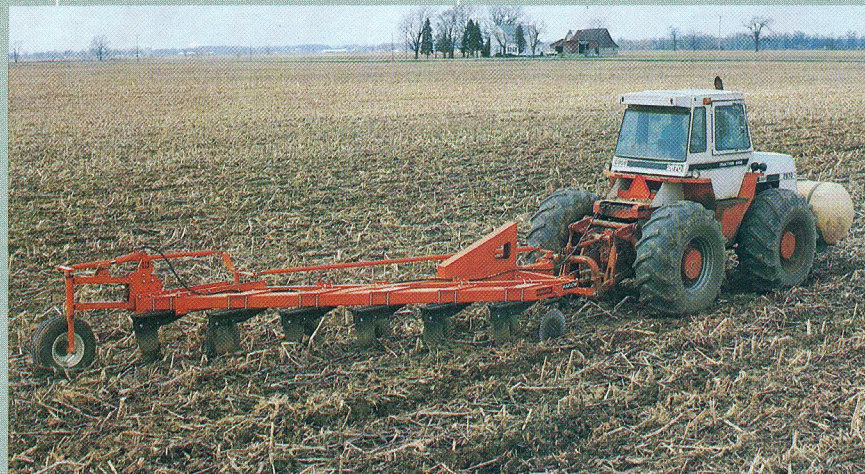


Root systems grow poorly in compacted and hardpan-layered soil because of physical resistance and ineffective movement of moisture. Instead of absorbing life-giving rainfall, compacted soil sheds it — along with topsoil — as runoff. And during dry periods, hardpan is an impermeable barrier to groundwater reserves.

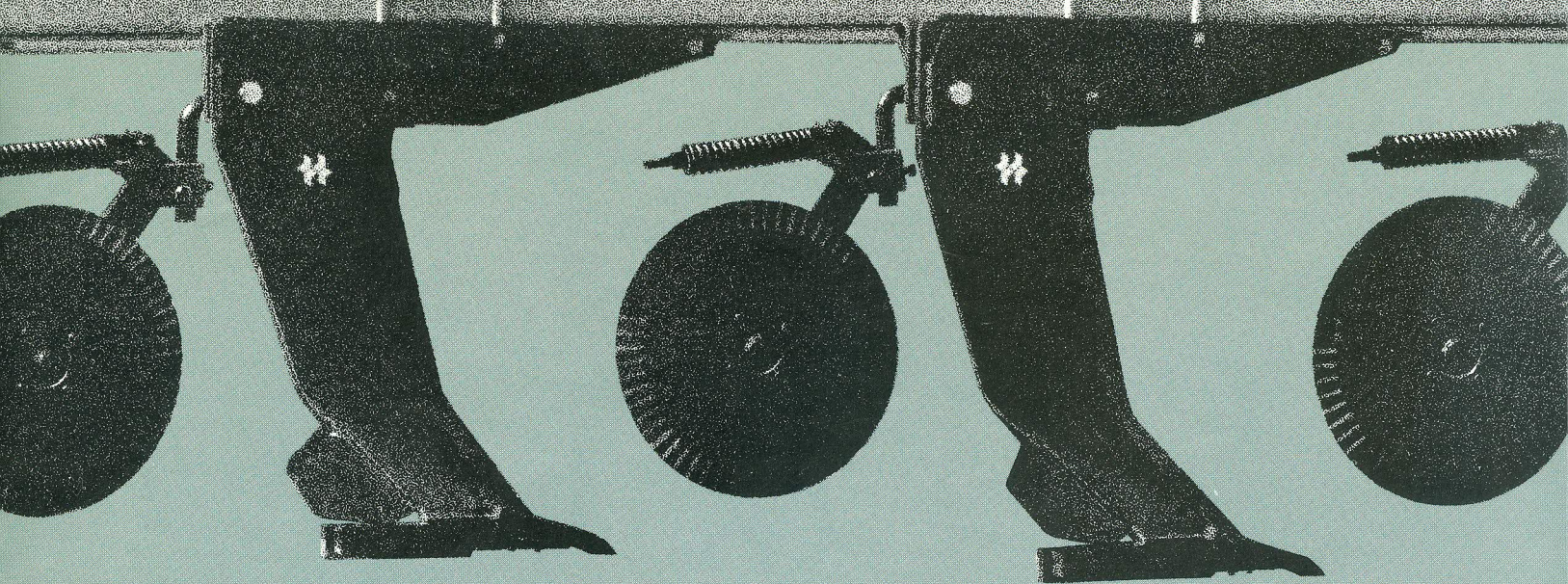
The PARAPLOW improves the root environment by loosening soil to an optimum 14 inches deep. It breaks hardpan uniformly while restoring the soil's continuous pore system. Spring rainfall can be absorbed, excess moisture drained away, and groundwater becomes accessible to roots during dry periods.

And remember, the PARAPLOW does all this while leaving the soil surface virtually undisturbed. Trash and crop residues are left where they belong — protecting your soil from erosion by wind and water.

Fully-mounted
1100 Series models
are available with
3 or 4 legs.



Semi-mounted
1800 Series models
offer 5 or 6-leg
configuration



HOW THE PARAPLOW WORKS

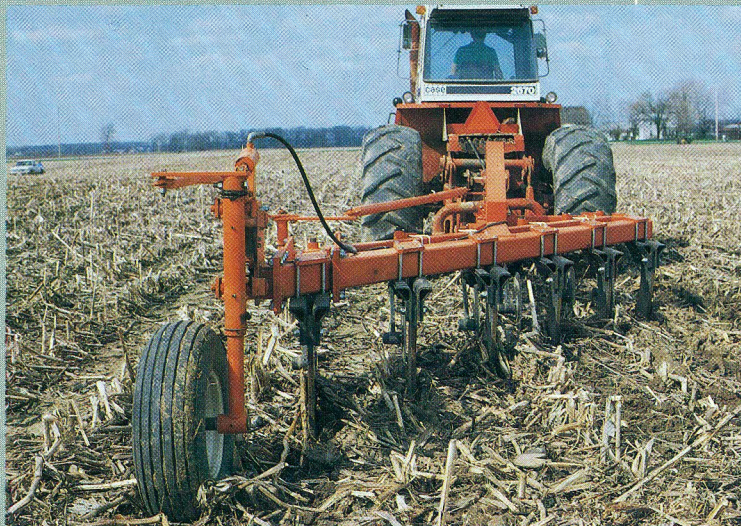
The Howard PARAPLOW is unlike any other tillage implement. Its legs slice through the ground at a 45° angle. They gently lift the soil, allowing it to fracture along natural lines of weakness, then settle back again. The ground flows over each leg like air riding over an airplane wing.

The PARAPLOW fractures the soil by "bending" it — placing it in *tension* rather than *compression*. This loosens the soil underground while leaving the surface undisturbed.

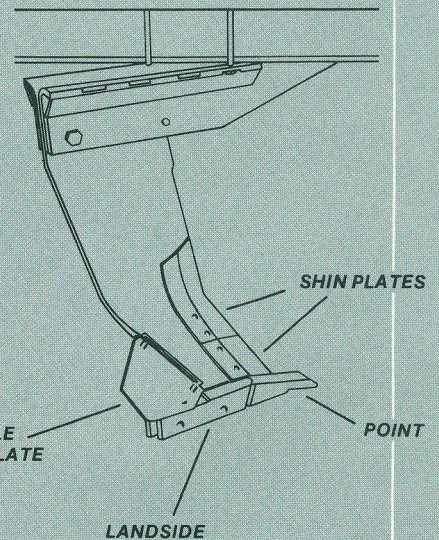
Each leg is fitted with replaceable shin plates, point and landside. At the rear of the leg is a moveable shatter plate which can be adjusted for greater or less fracturing action, depending on the condition of the soil.

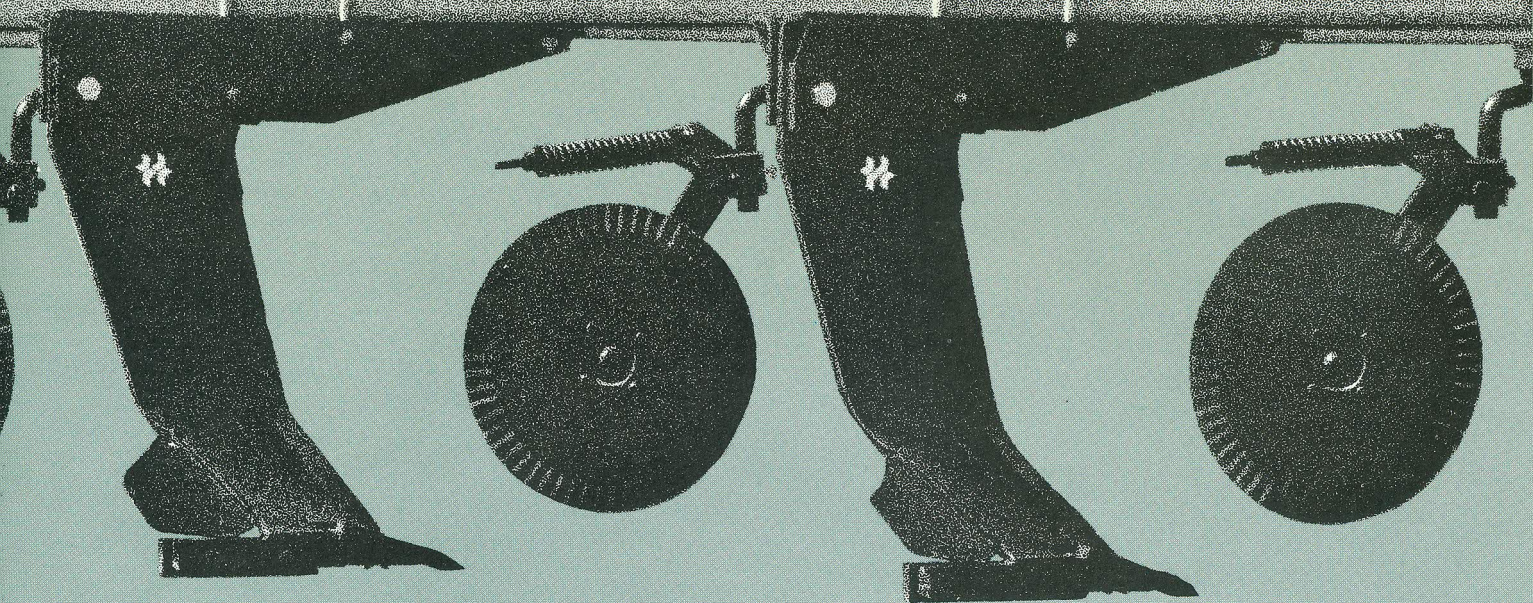
To really appreciate what the PARAPLOW does for your soil, you have to *feel it*. Ground that was once solid and unyielding underfoot becomes mellow without losing its load-bearing capacity.

The PARAPLOW loosens soil to 14 inches deep without disturbing the surface.



Trash is left on top to protect against wind and water erosion.





WHO CAN USE THE PARAPLOW

The answer is any farmer who wants to improve his soil and make it more productive.

No-till farmers may see the PARAPLOW as the greatest boon ever to no-till methods. Difficult, heavy soils once considered marginal or unsuitable for no-till can be loosened efficiently to improve structure and drainage — without disturbing the surface. With the PARAPLOW, land once thought impractical for no-till can become new no-till acreage!

Other conservation-minded or minimum tillage farmers also face soil compaction problems. And while tillage tools that leave crop residues on the surface help prevent erosion, they do nothing to relieve compaction below. Neither do they improve the soil's moisture-handling capability like the PARAPLOW.

The PARAPLOW is a soil loosener. Anyone with a soil compaction problem — whether in arable, grasslands or specialty crops — can bring problem soils back to full productivity.

The PARAPLOW improves soil structure to encourage crop growth and higher yields.



A NEW TILLAGE TOOL WITH AN AWARD-WINNING RECORD

With an extended background of field tests and university trials, the PARAPLOW has won 11 agricultural awards for engineering excellence and contributions to soil management. These include the prestigious Gold Medal of the Royal Agricultural Society of England, the Australian Power Farming Award and a commendation at the Paris SIMA Show in 1982.

PARAPLOW

FEATURES

Pneumatic Depth-Control Wheel is adjustable to permit the maximum working depth of 14 inches.

Leg is high-grade alloy steel with replaceable wearing parts — shin plates, point and landside.

Adjustable Shatter Plate can be set to control the amount of soil fracturing below the surface for different soil types and moisture levels.

Topmast incorporates a distinctively styled container for tools and replacement parts.

Coulter Assembly is spring-loaded and adjustable to meet varying soil and trash conditions.



PARAPLOW SPECIFICATIONS

SOME QUESTIONS & ANSWERS

HOW MUCH POWER DOES THE PARAPLOW NEED?

30 HP per leg is a reasonable guide for most soil conditions.

WHAT FORWARD SPEED SHOULD BE USED?

4 to 5 mph is the normal operating speed. At slower speeds the loosening effect is often reduced, and faster speeds can lead to greater surface disturbance in some conditions.

ARE THE LEG SPACINGS ADJUSTABLE?

Yes. The legs may be moved to meet special applications.

WHAT IS THE PURPOSE OF THE SHATTER PLATE?

This regulates the degree of lift as soil flows over the leg. In dry soils very little upward angle is needed, but as moisture content increases, so should the upward angle.

WILL THE PARAPLOW IMPROVE YIELDS?

The PARAPLOW will help create the best possible soil conditions for crops to grow.

Legs	1100 Series		1800 Series	
	3-leg	4-leg	5-leg	6-leg
Mounting	fully-mounted		semi-mounted	
Overall Length	11'-6"	13'-6"	— 23'-0" —	
Overall Width	6'-4"	8'-0"	— 11'-8" —	
Overall Height				
(trash leg)	— 65" —		— 67" —	
(pasture leg)	— 56" —		— 58" —	
Machine Weight-lbs				
(trash leg)	1875	2300	4050	4400
(pasture leg)	1665	2020	3700	3960
Working Width (max)	60"	80"	100"	120"
Working Depth (max)	— 14" —		— 14" —	
Linkage	cat II & III		cat II & III	
Underbeam Clearance				
(trash leg)	— 36" —		— 36" —	
(pasture leg)	— 27" —		— 27" —	
Disc Coulter				
(trash leg)	22" dia. vertical		22" dia. vertical	
(pasture leg)	17" dia. slant		17" dia. slant	
Depth-Control Wheel	7.60-15-6 ply ribbed implement			
Depth-Control Transport Wheel			11L-15-8 ply ribbed implement	
Depth-Control Front Wheel (optional)			7.60-15-6 ply ribbed implement	
Steering			automatic hydraulic	

DEALER



Howard Rotavator Company, Inc.
A Member of the Howard Group

102 Howard Ave. P.O. Box 7
Muscodia, Wisconsin 53573
(608) 739-3106

Branch in Sacramento, California 95821
(916) 483-2777

