HOWARD®

PREVENTING SOIL BUILDUP AND LOWERING H.P. REQUIREMENT

Let's Talk

A.C. Howard built his first Rotavator (*ROTA*ry Culti*VATOR*) in 1912, and this event represented the birth of rotary tillage, and a movement towards conservation tillage.

The first Rotavator was built on his own farm to break virgin ground. His land in New South Wales, Australia did not have a lot of top soil, and it made little sense for A.C. Howard to bury the most productive soil under subsoil, as everyone else was doing with the moldboard plow.
Natures way of making topsoil is from the top up, with nature providing the necessary growth and decomposition of organic matter to increase productive capacity. The Rotavator is the first really true 'conservation tillage' tool in that it was designed to work with residue, to chop it up and blend it in the surface of the soil. The moldboard plow buries residue and destroys the biological community that thrives near the surface of the soil. Plowing invites wind and water erosion, and may require multiple finishing operations to level the ground the plow made uneven.

The other technological break thru resulting from A.C. Howards work in 1912 was that for the first time in the history of agriculture, a tillage tool was designed to help 'push' the tractor thru the field. A Rotavator can always work better in a greater variety of soil types, moisture conditions and residue conditions, than any other tillage tool. This is accomplished because the blades are pushing the tractor as well as pushing residue and soil through the tool. This direct application of engine power to the soil is a more efficient use of power than a draft application by eliminating wheel slippage and unnecessary dead weight. Additionally, the number of trips over the field with a Rotavator versus draft tillage is reduced because of the precise control of tillage.

His first Rotavator had open rotating blades with no shielding to contain soil and residue. By not interfering at all with the flow of soil and residue the early Rotavators were power efficient and had greater output than the draft alternative.

Shielding around and above the rotor and rotating blades was introduced in the early 1930's. An adjustable rear shield was added shortly after to work the soil more,to more thoroughly blend all the materials together, level and to slightly firm the soil. Depending on the tillage conditions (soil type, amount of residue, moisture content, root structure and degree of compaction, etc.) and the objective for any particular field; the adjustability of the rear soil shield, blade speed, and forward travel speeds allows the Rotavator to do a consistently better tillage job than any other tillage tool or combination of tillage tools. It is this adjustability of the Rotavator to suit present conditions and objectives that makes it so very versatile, and more of a 'one pass' tillage tool than any other. However, the addition of shielding around the rotating blades prevents the free exit of soil and residue immediately away from the rotating blades, and as such the shielding invites certain probiems in moist soil conditions. Moist soil, carried over the top of the rotating blades may stick to the underneath of the shielding just above the blades. Soil may also build up on the adjustable rear soil shield.

Anytime soil builds up underneath the Rotavator shielding two unfortunate consequences occur which should be avoided. The power requirement goes up as the rotating blades are forced to clean soil buildup above the rotor as well as do the intended field tillage.

Additionally, blade wear increases as the blades are forced into cleaning the underneath of the shielding. Soil buildup above and around the rotating blades should be avoided to reduce the power requirement for any tillage operation, and to reduce blade wear.

HOWARD, has experimented with a number of methods to avoid soil buildup. An open rotor (no shielding around the blades) works the best, but soil and stones are thrown about and the risk factor of open rotating blades makes it impractical in our litigous society. An open rotor works well because nothing interferes with the free flow of the soil and residue as it is thrown backward, up, and forward in front of the rotating blades.

Industrial rubber belting bolted to the area above the rotor works on the principle of flex. As the Rotavator moves and shakes the industrial belting flexes and soil is more likely to fall off . The belting is moderately priced but doesn't last long and will tear out if sharp stones get thrown around.

Hydraulically actuated soil scrapers have proven effective and durable in stony conditions, but are expensive and must be custom made and installed by experienced people. Hydraulic scrapers were 'farmer invented' and 'farm tested' in very sticky and abusive conditions, and they work exceptionally well.

Guy Machinery has experimented successfully with an Ultra High Molecular Weight Polyethylene (UHMW Poly) soil shield covering that prevents soil buildup by providing a surface that is too slick for sticky soils to attach to. Soil may build up just a little, but is swept off by the blades easily and with minimum power. The UHMW Poly Liner is attached to the underneath of the rotor shielding using a special 'vise grip' angle bracket at the rear of the shielding, the working width of the frame. As the angle bracket bolts are tightened, it grips the poly the entire width of the Rotavator , and also prevents soil from being jammed between the poly and the metal shielding. Additional plow bolts, pan head bolts or self tapping panhead screws and fender washers hold the poly in place on the front side of the Rotavator. The plow bolt or round head fasteners give a good hold on the poly and also stand up to a good amount of stones.

UHMW Poly can be attached to any model or width Rotavator. It will make a big difference in power, speed, tilth, and blade wear. The Poly will need to be replaced as it wears, but the cost is greatly outweighed by all of the advantages. Poly can also be added to the rear adjustable soil shields to prevent soil buildup and the extra weight problem that soil buildup represents when lifting and turning.

UHMW Poly offers the following features: *NON-STICK SURFACE, HIGH IMPACT AND ABRASION RESISTANCE, LOW COEFFICIENT OF FRICTION, LIGHT WEIGHT , MOISTURE RESISTANCE, CHEMICAL RESISTANCE, NON-MECHANICAL AND COST EFFECTIVE PRICE.*

UHMW Poly is available in 3/8" and 1/2" thick sheets, in a variety of widths and lengths. We recommend the 1/4" or 3/8" widths for abusive conditions. The 3/8" and 1/2" thick UHMW Poly is very difficult to bend, and may require the use of a metal brake. When installed and maintained properly, UHMW Poly will give long life, increase the versatility and performance of the Howard Rotavator.

FOR ADDITIONAL INFORMATION ON HOW TO GET THE BEST PERFORMANCE FROM YOUR ROTAVATOR OR HOW ROTARY TILLAGE CAN BEST FIT YOUR NEEDS, CONTACT GUY MACHINERY.

Guy Machinery P.O. Box 5, Woodstock, Il. 60098
PHONE 815-338-0600 FAX 815-338-2525