ADVANCED AG SYSTEMS'S

Crop Soil News

http://www.advancedagsys.com/

January 2010

"It is the crops that feed the cows that make the milk which creates the money."

Advanced Ag Systems
Research, Education, Consulting

Aeration: The Un-Tillage

Aerators were originally designed for improving the air/soil interface of lawns and golf courses. In other countries they developed heavier units to aerate pastures that were compacted from grazing. They have had sporadic use here in the Northeast. There are two basic similar designs with differences in how the blade is designed and enters the soil. Most units have replaced the solid iron holding the shaft (picture at right) with a heavy "C" shaped spring, to cushion the impacts with rocks.

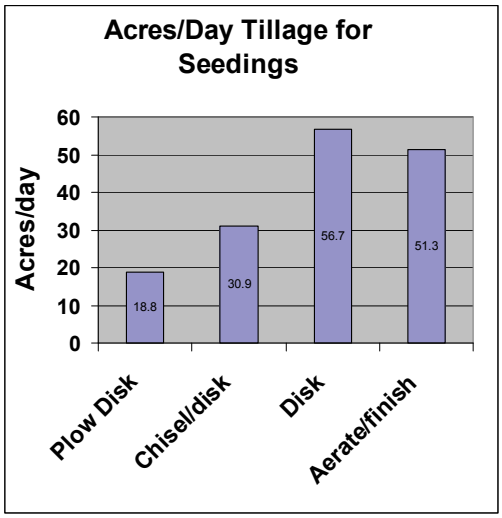
The principle is a triangular tine that enters the soil and leaves a hole upon exiting. When the tine is straight, it simply pokes a hole into the ground. This has been used to incorporate manure into sod fields with minimum disturbance and no runoff. The tines may still tip up an occasional flat rock. When the shaft is at an angle (3 degrees up to 10 degrees), the exiting tine lifts and loosens the soil in the top 3 – 6 inches. It leaves a slightly larger hole, more loosened soil, and a clump of raised soil (see photo at left 3 degree angle).

Of course we had to try it for everything else we till. One of the biggest uses we discovered for aeration tillage is for rapid preparation for legume seedings. The aerator is set at an angle to work the soil slightly more aggressively and is followed by a trailing drag fingers and double rolling basket. (See photo at right from LandView Farms 518-369-8216). The drag fingers break up and level the clumps of soil raised by the tines. The rolling baskets then crumble the soil into a fine seedbed necessary for legume seedings. Any lumps of soil are broken while they are moist and spread over the surface of the field. The results is a

soil that is level, with fine crumbles for good seed soil contact, and few if any stones on the surface (see photo at right). We tested this on Matt Cannon's (518-852-1137) field in Pittstown, Rensselaer County. He had been doing what many farms do, simply lightly disk and then seed (actually the first time we tested disk/seeding was on his farm in the early 1980's). The alfalfa stand under disk/seed was as usual, very thick and had few if any weeds (when weeds are controlled in corn, shallow tillage does not bring up a new supply to affect the seeding). A nearby field was a moldboard plowed and seeded. This had a tremendous amount of weeds yet the alfalfa that was twice as tall. The <u>disk pan</u> in the first

field was limiting the alfalfa root growth until later in the season when rains softened the disk pan and the roots could get through. (Disk pans are a <u>major limit in corn</u> also). Aeration tillage has NO disk pan but the efficiency of disk/seed systems. Both Matt and Dan Requate (518-222-3750) of Schaghticoke, have been using aeration tillage for seedings for the past two years (photo at left). A major advantage both report is that few if any stones, in their very stony soil, are pushed up and many are pushed down or flush. This has greatly reduced stone picking. Both report very smooth fields. Matt indicated that if you have ruts or old dead furrows in the field the aerator will not take them out. It will take more aggressive and expensive tillage for those spots. For fields that are smooth – they stay smooth.

Aeration tillage has the same speed of working the soil as one pass disk (graph at right) yet **<u>does NOT have a disk pan</u>**; does **not** have **as many stones**, and results in much **better seedling root growth** conditions. It also has a tremendous advantage as you are only working the surface which allows earlier seeding than conventional tillage. You can get 66% more work done in a day than you can with chisel plow/disk system and nearly 3X the work that a moldboard/disk system can accomplish. The added bonus is that the residue on the surface and the deeper porous soil allows more rainfall to be captures to feed the newly emerging seedlings.



Watch for February Crop Soil News :Aeration Part II, Control odor & save $50/acre by incorporation of manure with aerator

Sincerely,

Thomas Kilcer,
Certified Crop Advisor

172 Sunnyside Rd
Kinderhook, NY
12106

Tel: 518-421-2132

tfk1@cornell.edu

The Helping Hand to Better Agriculture