"VERTICAL MULCHING"

Straw-Filled Trenches Help Reduce Erosion

Researchers developed mulching machine to fill trenches with straw to increase water infiltration and reduce erosion.

Stuffing trenches full of straw may reduce erosion and save runoff water for crop production, according to studies in the Palouse area of Eastern Washington and Oregon and Northern Idaho.

USDA researchers in the area are resurrecting "vertical mulching" — even using one of the machines built for the same idea some 20-25 years ago. According to Keith Saxton, USDA ag engineer at Washington State University, Pullman, they are seeking ways to reduce heavy water runoff from winter rains when the land may be frozen from 4 to 6 in. deep. By opening trenches about 8-10 in. deep and filling them with straw, water is able to penetrate into the soil and be absorbed below the frost line because straw in the trenches seldom if ever freezes solid. Significant reduction in erosion and increased infiltration have been obtained in winters when soil was frozen for extended periods of time. However, in winters with less freezing, there was less apparent benefit. In addition, in years of short precipitation, the extra moisture caught and held in the soil should appreciably increase crop yields.

The machines built about 20 years ago included a flail chopper to shred corn stalks, straw or other residue and blow it into a trench opened by a chisel or subsoiler-type opener on the rear. Interest in these machines and their performance was short-lived at that time.

Saxton blames the lack of results on subsequent tillage operations:

"After trenches were filled with crop residue, conventional tillage immediately worked the entire soil surface and effectively closed off the trenches preventing surface water from entering the soil. Now, with more reduced, minimum or no-tillage, it is possible to keep the slots open longer to catch and hold more moisture," Saxton explains.

In many areas, he notes, excessive straw interferes with later tillage and planting. Thus, stuffing some of the excess residue into trenches could help alleviate that problem, too. Researchers are still investigating trench spacing, but in most cases, 12 to 24 ft. between trenches appears reasonable. It may prove feasible to simply remove the combine straw spreader and follow it with a vertical mulcher.

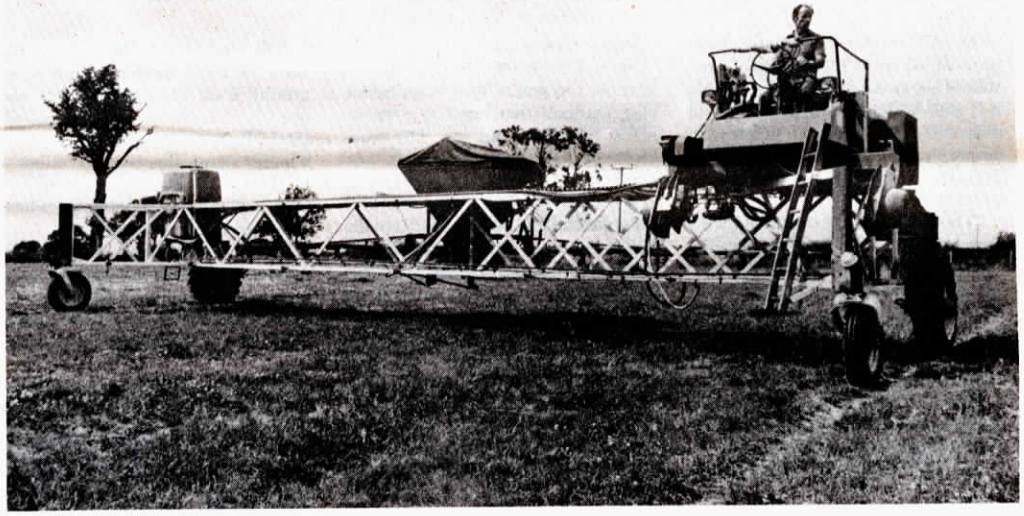
Trenches should follow the contour as near as practical, suggests Saxton, and the trench should be completely filled with straw or other residue to avoid water flow along the trench. Saxton also believes the straw should extend above the surface to help catch moisture and keep the slot open longer.

Recent tests indicate that longer straw may be more effective in keeping trenches open and improve water flow into the soil. Fine chopping by the original vertical mulching machines may have caused residue to quickly pack together and reduce vertical moisture movement through the trench, says Saxton. He notes, however, that corn stalks and similar material would probably have to be chopped or broken up some as they are placed in the slot.

The success of vertical mulching in various soils, says Saxton, will depend on whether there is a water restricting layer in the soil and at what depth, and whether soil below that level can absorb additional surface water.

Although one of the old vertical mulching machines has been used in some Oregon tests, and other machines designed or modified for use in field studies, vertical mulching machines are not now commercially available. (The one shown is strictly a research model.) But studies are continuing, and the USDA researchers involved hope to soon draw up performance requirements and make them available to equipment designers who could then build machines to meet those needs.

For more information, contact: FARM SHOW Followup, Keith Saxton, Hydraulic Engineer, USDA-SEA-AR, Washington State U., Pullman, Wash., 99164 (ph 509 335-2724).



British-built Straddle Carrier has 72 hp engine which powers two hydraulic motors on two drive wheels.

40 FT. WIDE AND WEIGHS 3 TONS

Radical Concept In Tractor Design

Except for size, basic tractor design hasn't changed much since mechanization kicked the horse out of agriculture 40 or more years ago.

B & W Mechanical Handling, of Cambridgeshire, England, has unveiled a 40-ft. wide, 3-ton tractor that may change all that. Dubbed the "Straddle Carrier", the new-style tractor now being marketed in Europe was built and designed by British farmer David Dowler.

His radical new concept in tractor design features two support wheels at each end, one a drive wheel and the other a castered wheel. The control "cockpit", as he calls it, is mounted 8 ft. above the ground at one end, along with the 72 hp. engine powering the machine. The engine belt drives two hydraulic motors which, in turn, power two wheel motors.

(The Straddle Carrier is similar in design to a 30-ft. wide experimental machine featured in FARM SHOW's March-April issue earlier this year. That machine, built by Bill Wilson of Woodland, Calif., is not yet commercially available.)

Since the wheels can turn a full 180°, the new-style tractor can move endwise down roads or along the ends of fields. According to the manufacturer, the machine causes less field compaction, less crop damage, and provides better visibility for the driver.

Up to now, the wide tractor has been used primarily to apply chemicals and fertilizer. Spray tanks or fertilizer hoppers are mounted at the middle of the metal frame. Applicators are hung beneath.

Company officials plan to develop specialized equipment for the tractor "to make it as versatile as any modern lugging tractor."

For more information, contact: FARM SHOW Followup, B & W Mechanical Handling, Lisle Lane, Ely, Cambridgeshire, England.