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UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Upper Mississippi Region
Milwaukee, Wisconsin

January 28, 1944

To: All Ranking Field Officers
From: R. H. Musser, Regional Conservator
Subject: Chief's Statement Re Moldboard Plow

There has been quite a little said recently about the use of the moldboard plow, and at times there has been discussion as to what the Chief of the Service may have said about the use of the moldboard plow.

In order that you may be informed as to the Chief's statements, we are attaching a copy of an article from the NEW REPUBLIC of October 4, 1943, for your information.


Attachment

RH Musser

III-718

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Washington 25, D. C.

THE ABOLITION OF THE FLOW

By
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Soil Conservation Service

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October 4, 1943, by permission of The Editors

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THE ABOLITION OF THE PLOW

Like fine wine, fast automobiles and cussin' words, the old moldboard or turning plow is something that serves us best when used with moderation. But it takes a strong man to resist the temptation to excess, and an experienced man to see the wisdom of discriminate use.

For the past two hundred years, more or less, we in the United States have been on something that might be called a moldboard-plow jag. Young and healthy, with plenty of land, we were able to take it year in and year out for a long time, returning to our farm labors each spring with little more than a mild hangover. Ultimately, however, excesses reach a climax. There comes a time when the hangover begins to resemble an unhappy delirium. Some twenty years ago we went out with turning plows on a particularly lavish spree, and awoke to find ourselves in a delirium of monstrous dust storms and yawning gullies. That was when we really began to learn from experience and see the handwriting on the wall of time.

Now I don't mean to condemn the turning plow out of hand. It is a handy and serviceable instrument. It ought to continue as an honorable servant of mankind for generations to come, but there's a time and place for everything. Turning soil upside down—which has been one of the main functions of this plow—is not generally one of the wisest steps in agriculture, although we've been indulging in it for well over a century. It puts the vegetative material, including grain stubble, corn stalks, grass and legumes, as well as weeds, anywhere from six to twelve inches underground, and turns fresh loose earth to the top.

When the grass and other vegetative litter is lodged a foot underground, it can't protect the surface. And fresh, loose soil exposed to the sun, wind and rain on top of a field is a rank invitation to trouble. The sun bakes the life out of the unprotected soil, at least temporarily. When it is good and dry, the wind can blow it away. And when any kind of rain-fall heavier than a drizzle hits it, you get soil washing—sheet erosion and gullies—and an aftermath of muddy rivers and silt in reservoirs and harbors. Also, if the land happens to be sloping—and about 90 percent of the cropland of the United States slopes enough to erode readily—you may get such a rush of water and soil downhill that crops go along with it. It is only adding insult to injury, of course, to realize that the downhill wash of water and topsoil also carries away with it the fertilizers and natural plant food in the soil that crops must have in order to thrive.

In his recent book, "Plowman's Folly," ¹/ E. H. Faulkner produces an assortment of evidence on the evils of the turning plow. As counsel for the prosecution, he has plenty of ammunition to work with, to be sure. The indictment could run to many pages.

But I wouldn't want to argue for complete and instantaneous prohibition in this case. A small island of usefulness remains for the moldboard plow. Throughout the country, technicians of the Soil Conservation Service and other agricultural experts are striving to develop as rapidly as possible the new methods and machinery precisely adaptable to the erosion control

¹/ Plowman's Folly, by E. H. Faulkner, University of Oklahoma Press.
161 pages, \$2.

and production needs of each varying agricultural locality. This work is steadily taking the form of a new agriculture in our country, an agriculture based on soil-conservation farming methods. And to date our progress with it is pacing the rest of the world. Under this soil-conservation agriculture, it seems probable that the old turning plow will be outmoded for general use in ordinary farm-tillage operations. If three-fourths of the cropland of the country never again felt the bite of the turning plow for ordinary farm tillage, it would be a gain to rural America.

But there will still be a place for the historic implement. We shall still need it, and employ it gainfully, in building field terraces--those earthen ridges which need to be plowed across slopes, on the level, to intercept the run-off of rainfall. We shall need it in plowing certain necessary contour furrows and for ditching, too. We may still want to use it on some of our truly level land--although there is far less of this kind of land than most people believe--as a help in the intensive production of truck crops. And there may be other uses.

Across the vast expanse of America's cropland, however, we are in need of a new type of plow. This is not heresy. Is it so fantastic to expect that the agricultural operation of plowing should progress by refinement, just as refrigeration, the automobile, lighting and the airplane have progressed? Already many new-type plows are in the field to replace the old turning plow. More than twenty were introduced in a recent single year. Some are proving more satisfactory than others, but all have a common aim: to break up compacted soil, kill weeds, and at the same time leave protective crop residues on the surface of the land.

Some of the new plows run along a few inches beneath the surface of the ground. Others have the effect of slicing through. And there are all manner of variations in between. Farmers already are beginning to adopt the new system. In some localities, where only a few years ago 95 percent of the farmers burned off their wheat stubble every year so as to make it easier to plow for the following year's crop, nearly all the growers are now using plows that leave a considerable part of the stubble on the surface. They have stopped burning and are finding that the wheat-stubble litter, or straw scattered over the field, has a powerful effect, not only in increasing yields but in preventing soil from washing and blowing. This new system is sometimes referred to as "subsurface tillage." Some call it "trashy fallow," and many of us are hoping that it will eventually be referred to as the "stubble-mulch" method. The new method will not be a cure-all, of course, but it is proving to be a most efficient tool in an ever increasing number of farming areas.

The soil-and-water-conservation experiment stations of the Soil Conservation Service at Statesville, North Carolina, and Lincoln, Nebraska, have proved by precise measurements that when vegetative litter is maintained on the surface there is much less loss of soil and water than when the ground is left bare. Forty years ago I learned, along with many another soil surveyor, that in sampling soil in dry periods it was much easier to bore a hole in the ground with the soil auger in those places having an accumulation of leaves, straw or other vegetative litter on the surface, than

where there was no such covering. The explanation was simple: there was more moisture under the litter, either because evaporation had been reduced or because plants were not pumping the soil dry in their struggle for the moisture necessary for survival.

By personal observation, by the results of scientific study and by the practical experience of farmers, I believe it is becoming increasingly evident that the passing of the turning plow from general use in field cultivation would be a boon. Some day it may be regarded as a notable event in history.

H. H. BENNETT

