

Plows: Different Kinds and Their Use

Article No. 18 on "Farm Facts Every Boy Should Know"

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Subscribers' Corner

One Big Day

LET'S make Saturday, April 29, the big day of the entire Jubilee Campaign.

It's the last day, as the Jubilee offers wind up with April.

It's the last chance to give your friends the advantage of a six-months Jubilee trial subscription at half price—only 25 cents for a full half year.

It's also your last chance to finish up that club and earn the rewards you are counting on.

Just think of the great things that have been accomplished in one day. You can work wonders in a day if you go out at it right.

You Can

YOU can get ten 25-cent Jubilee subscriptions Saturday the 29th—the Big Day and the Last Day of the Jubilee Campaign. Why not? It means a splendid reward for one day's effort.

For Boys

TO MAKE the last day the "sure 'nuff" big day, can't we count on each and everyone of our boy friends to get us at least one trial 25-cent subscription.

To every boy that responds to this call we will remember and give you advantage of some special propositions later. We are counting on you.

For Girls

IN NEXT week's issue we will announce a Home Canning Outfit as a reward for clubs.

The special 25-cent trial Jubilee subscriptions that you secure Saturday the 29th will count on your credits for the Canning Outfit. You will never be able to get them so easily as right now today. Tell the folks it's the last chance to get in on the Jubilee Half-price offer and get them.

We are counting on our girl friends to make a big showing on the 29th, the Last and Big Day.

Dear Progressive Farmer:—

I am anxious to earn a complete Home Canning Outfit. Please send me full description and any helpful suggestions, as I intend to work in earnest and earn one.

Name.....

Address.....

I want to express to you my appreciation of The Progressive Farmer. We are using it for class reference work and find it the most instructive and helpful paper.—Ellen D. Schultze, San Antonio, Texas.

I have long wished for a school course in agriculture, and when The Progressive Farmer began to come to my mail box the beginning of a realization of my hope was at hand. It is really an education in scientific farming.—A. Nicodemus, Jonesboro, Ark.

When I commenced reading The Progressive Farmer I was making 20 bushels of corn to the acre, and with its assistance on the same land last year I made an average of 53 bushels to the acre, and other crops in proportion.—J. E. Peters, Pollock, La.

THE DRAFT OF PLOWS

Numerous tests show the following table a good basis for figuring the draft of plows:

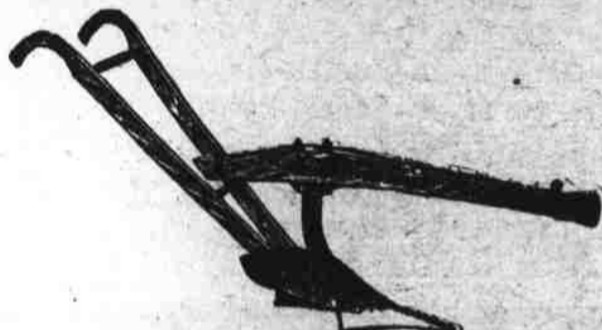
DRAFT PER SQUARE INCH OF CROSS SECTION OF PLOW

In sandy soil	2 to 3 pounds
In corn stubble	3 pounds
In wheat stubble	4 pounds
In blue grass sod	6 pounds
In June grass sod	6 pounds
In clover sod	7 pounds
In clay soil	8 pounds
In prairie sod	15 pounds
In virgin sod	15 pounds
In gumbo	20 pounds

Example—Suppose a plow rig has two 14-inch bottoms, and the depth to be plowed is 6 inches. A cross section of each plow is therefore 14x6 inches, or 84 square inches. Twice this for two bottoms is 168 square inches. Since, in sandy soil, the pressure per square inch is three pounds,—then
168x3 lbs.=504 lbs.—draft in sandy soil.
—Tractor Farming.

THE first tillage implements of which we have any knowledge were made to get seed into the ground. They were hand tools with the general features of a hoe. Later on these implements were pulled instead of being pushed. No doubt this idea developed into the plow, an implement that was first drawn or pushed by man.

The plow was one of the first devices invented by man. The ancient Egyptians had a plow, and pictures of farmers plowing are to be found among the oldest records. The Egyptians developed the plow until it had



BLACK-LAND PLOW THAT DOES GOOD WORK IN STICKY, TENACIOUS CLAYS

a beam, a shank and a handle. The next step in the development was to shoe the point and wearing parts with iron, and this was done very early, for it is recorded in history written eleven hundred years B. C.

Jethro Tull was born in 1674 and died in 1740. With him began the evolution of modern farm machinery.

Tull gave much attention to plows. "Tis strange," he says, "that no author should have written fully of the Fabric of Plows. Some waste their whole lives studying how to arm death with new engines of horror and inventing an infinite variety of slaughter, but they think it beneath men of learning to employ their learned labor in the invention of new instruments for increasing bread."

Development of the Modern Plow

THOMAS Jefferson was among the first to give thought to the improvement of the plow. Daniel Webster designed and helped to build a plow in 1836 to be used on his own farm. Charles Newbold, of New Jersey, received the first patent on a plow in 1797. Next a patent was granted to Jethro Wood, his plow being made almost entirely of iron. John Lane was among the first to make use of steel in plow making.

Much credit is due John Lane who conceived of and patented soft-centered steel in 1809. This consisted of a layer of high carbon steel on each side of a soft center, and proved to be very much easier to temper without warping than a homogenous steel, or a steel with a soft backing.

It is an enormous interval of history that stretches between the old two-animal Egyptian wooden plow of more than four thousand years ago and the present turning and pulverizing hardened steel plow and the en-

gine driven set of plows frequently found on our farms. The plows first used were very simple and inefficient, but they have been developed until they now seem almost perfect.

With the invention of numberless machines for all kinds of purposes, there is danger that we may overlook the great importance of the simpler tillage tools. The old Philadelphia Society for Promoting Agriculture adopted a plow as its emblem and gave a medal that had an image of a plow on one side. It is gratifying that the United States Department of Agriculture holds to the plow as its emblem. Let us not forget that "Civilization begins and ends with the plow."

Two Types of Plows

THERE are two types of plows—the moldboard and the revolving disk plow. The principle underlying the pulverizing action of the moldboard may be represented by running it under a pile of say eight flexible sheets or layers. The action of the moldboard plow on the furrow slice tends to force the soil particles to slide over one another. The revolving disk plow, with its concave disks moving obliquely through the soil, tends to shear the soil layer much more than the moldboard plow.

The sulky or wheel plow has been developed comparatively recently. The first successful sulky plow was invented by F. S. Davenport in 1864.

The disk plow was produced through the efforts of inventors to reduce the draft due to the sliding friction on the moldboard. However, the draft of the disk plow is more often heavier for the amount of work done than the draft of the moldboard plow. In sticky soils where the moldboard plow will not scour, the disk plow will usually do good work. In very hard ground where it is impossible to plow with a moldboard plow, the disk will often do good work and, apparently, with much less draft.

Hillside or reversible moldboard and disk plows are required in localities where it is too steep to throw the furrow uphill. Reversible plows are also used in irrigation districts



TYPE OF SANDY-LAND PLOW

where dead furrows interfere with the carrying of water on the land.

Subsoil plows are used in loosening the ground to a greater depth than can be readily done with the surface plow. The subsoil plow is usually used at the same time as the regular plow, following in the furrows made by it.

The modern moldboard plow has the shear cutting edge, landslide, frog, brace, beam, clevis and handles. The entire plow detached from the beam is often spoken of as the plow bottom. The varying types and conditions of soil have led to the designing of several general types of plow bottoms, each with its form of moldboard and shear. Some manufacturers build plows with interchangeable moldboards and shears, and thus the same plow may be used in a variety of soils. Sulky plows are now usually made with interchangeable bottoms.

Draft of Plows

THE draft of plows varies greatly with conditions—the nature of the soil and the amount of moisture present. Professor King draws the following conclusions from a long

Uncle John Says—



I believe in this 'ere culture fer girls, but I'm strongest for the kind that's got common sense enough in it to make biscuits or do somethin' fer a baby with the colic.

series of tests in England and America:

1. Plows of the same width of furrows have more draft per square inch of cross section of furrow as the depth increases.

2. Plows of the same depth of furrow have more draft per square inch as they increase in width.

It is generally asserted that the draft of sulky plows is less than that of walking plows, because the friction of the sole and landslide is transferred to the well oiled bearings of the carriage. Draft tests seem to indicate that there is little difference between the sulky and walking plows per square inch of furrow.

In plowing it must be remembered that much depends on the shape of the moldboard, the wetness of the soil, and the depth of the furrow slice. With a given plow, the deeper the furrow slice the greater will be the pulverizing effect and the greater the danger of puddling the soil if it is too wet.

The following quotation from F. H. King will assist in the selection of the proper plow to use: "It is clear, from the mechanical action of the plow, that its form should be adapted to the type of soil. If the soil has a tendency to be too open and porous, and is naturally coarse grained like the sandy soils, it should be plowed with a steep moldboard when a little over-wet and as deep as conditions will permit, so as to break down the granulation and secure a finer, closer texture. If the soil is generally too close in texture, is heavy and soggy, it needs to be plowed with a less steep moldboard, so as to shear into thicker layers and form granules of larger size. If the plowing must be done when the soil is a little too wet, a less steep moldboard should be used, and the depth made as shallow as the conditions will permit. If the soil has become too dry and is not pulverizing enough, the steeper plow, run at a greater depth, will do the work better."

Plowing should: (1) bury vegetation; (2) bring plant food from below; (3) increase the water-holding capacity; (4) prepare the seed bed.

Time of plowing should be determined by: (1) the type of soil; (2) the condition of the soil; (3) the crop to be planted.