THE CANADIAN THRESHERMAN AND FARMER IG PAGE 33 DESCRIPTION

At the Motor Contest IDEAL GAS TRACTORS

Were watched with interest and appreciation by hundreds of farmers who were enthused at the work done, especially on the plowing field. Our 20 h.p. pulling six 12 inch plows, received 9 points out of a possible 10 for quality of plowing.

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GOOLD. SHAPLEY & MUIR 30 H.P. GAS TRACTOR ON THE PLOWING FIELD AT THE MOTOB CONTEST. Our 20 h.p. gas tractor, through misrepresentation on the part of the Judges, was thrown out of its class, consequently we have filed a protest regarding the awards as given.

Factory: Brantford Ontario GOOLD, SHAPLEY & MUIR CO., LTD. Winnipeg Canada

of these three on the basis of the horses used to pull them, allowing 150 lbs. as the effective pull of each horse:

	Disc Harrow	Dr g Hartow	Cru-her
Vidth feet	. 8	20	8
Veight total	. 560	320	1100
Veight per ft	. 70	16	138
lorses required .	. 4	4	4
approx. draft	. 600	600	600 -
braft per ft	. 75	30	60

The above comparison can not be regarded as more than a rough approximation. Four horses are often needed to pull a seven foot disc harrow with 16" discs, while the 8 ft. harrow with 16-16" discs was also equipped with four horses. The more mellow the soil, the greater the amount of dirt moved. The sharpness of the discs and the decrease in angle to the line of draft also increases the work done. Consequently, an eight foot harrow with discs at right angle to the tongue can be easily pulled over a hard road by one horse, while at the Iowa State College they have a photograph showing eight of their horses—eight tons of horse flesh —having plenty of exercise in moving two disc harrows in a mellow corn field. The condition and texture of the soil play as great a part in the draft as in the case of plows. In stiff clay land the writer has

In stiff clay land the writer has used two horses weighing 2200 lbs together on a stell spike tooth lever harrow, cutting 15 ft. However, the teeth slanted well backward, the driver walked and it took a great many trips over the field to get it into condition. To accomplish much in the way of pulverization, the teeth should be set nearly straight and at least one horse provided for each 5 ft. section.

Crushers and pulverizers vary considerably in weight per foot of width. One authority says that rollers should not weigh more than 100 lbs. to the foot and should be at least 24" in diameter. Of course, the greater the diame-ter, the lighter the draft, unless the weight is increased to correspond, but at the same time the pressure per square inch on the ground is decreased. Ordinarily these implements average about 18" in diameter and weigh from 130 to 150 lbs per foot. An in-ternal combustion tractor, which had been pulling six 14" breaker bottoms in North Dakota was able to handle three 12 ft. disc drills and three 12" sod crushers, weighing 1800 lbs each. Allowing 60 lbs. to a foot in width, for each, the total draft would be 4,320 lbs. At Winnipeg last sum-mer the breaking plows averaged over 700 lbs. to the plow; hence the draft for six bottoms would check up very well with the amount just assumed for the drill sand crushers.

drill sand crushers. The disc drill, and particularly the single disc drill, is now practically standard. As a rule the furrow openers are spaced 8" apart. Three horses will usually handle a 12 ft. disc drill, seeding a strip 8 ft. wide. Allowing 150 lbs. pull to each horse, the draft per foot of width would be 57.5 lbs. Prof. Davidson of Iowa obtained a higher draft than this; a single disc drill with 10 furrow openers, 8" apart, having a draft of 68.6 lbs. per foot of width. Drills usually place the seed about 2" below the surface, consequently the work of drilling and covering seed takes approximately the same power per acre inch, as the disc or drag harrows doing work as shown in the table.

.Mowing machines are usually operated with two horses for a 5 or 6 ft. cut, indicating a draft of about 300 lbs. A leading manufacturer places the draft from 190 to 325 lbs, for a 5 ft, mower. Two other authorities place the draft at from 285 to 340 lbs. for the same width. The draft may easi-ly be doubled by dull knives, tight boxes or too low speed. The knives are not serrated as in the case of the binder; hence about three times the speed of cutter bar must be maintained in order to cut cleanly through the tough stems of forage grasses. The 6 ft. mower will of course require more power than the 5 ft. but not in proportion to the extra cut. In one test five mowers, run in gear but not cutting, showed an average draft of 154 lbs. While cutting the average was 268 lbs. showing that 571/2 per cent. of showing that $57/_2$ per cent. of the draft was due to the running of the machine. The actual work of cutting apparently consumed about 23 lbs. per foot. In an actual test of a $41/_4$ and a 6 ft. mower of the same make, the drafts were 203 lbs. and 263 lbs. respectively This shows about respectively. This shows about

34 lbs. of draft for each added foot cut. However, the extra weight of frame and the added size of bearings increased the draft somewhat. It is evident that the wide cut mowers are economical in the same way that the engine is economical when running at high percentage of its rating, less being wasted in internal friction.

The kind of grass cut and the thickness of stand have an important bearing on draft but owing to different speeds of cutter bar, different mowers show lighter draft in different grasses. In an experiment in which five mowers made 12 trial runs, all showed the heaviest draft on a 3½ ton a 3½ ton crop of timothy. Two showed a lighter draft on a 2½ ton crop of alfalfa than on a field of wild hay, which was very thick at the bottom. The other three running at higher speed, handled the dense stand of fine grass better than alfalfa.

Six ft. binders range in draft from 300 to 500 lbs., requiring three or more horses to pull them at a speed high enough to do good work. Prof. Davidson quotes tests showing 314 lbs. as the average of two 6 ft. machines, or 52½ lbs. to the foot. To some extent the same statements as to economy in cutting a wide swath might be made as with mowers. However, the binder must elevate and bind the extra grain at some additional expenditure of power. Twelve ft. headers require from 600 to 800 lbs. or from 50 to 70 per foot cut. A header