

Important Points to Consider in Buying a Tractor

The Increasing Demand for More Farm Power and How the Tractor is Meeting this Need.

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TEN years ago the majority of us did not think much about the sort of power that was being used upon the farm or about the amount of it required to do a certain piece of work. We knew, in a general way, that it took four good work horses to pull a 12-inch gang plow. We knew that these same horses had comparatively little to do throughout the remainder of the season and that they were "eating their heads off" in the winter time. We also knew that about half of the number of horses required for spring's work could do the necessary farm work throughout the rest of the season.

Until the last few years the horse has furnished all the power available for farm purposes. The introduction of the gasoline engine and its application to small farm jobs brought out first the idea of advocating mechanical power. Then the rapid development of the great western and northwestern farming districts demanded more power and the steam engine was first pressed into service on these farms. The thresherman owning his own engine soon found that there were uses for it aside from threshing. So the steam engine was the first tractor to be used on the farm. The manufacturer was quick to realize that the steam engine as ordinarily constructed for threshing was not adapted to the pulling of plows, discing, sowing and harvesting. These first tractors were of a common type of threshing engine with extra heavy gears and axles, and were but little improvement over the steam engine as used for belt power. The rapid introduction of the gasoline engine has given us a power that is competing with the horse as a farm motor.

Before considering the power to use let us get clearly in mind the present situation and see the various farm operations that require any considerable amount of power and something concerning the actual conditions which exist on the farm at the present time.

Plowing, perhaps, requires the most power and at the same time is easily adapted to any type of motor. Sowing and harvesting of small grains requires considerable power, and it is also comparatively easy to apply any type of motor. Plowing corn, drilling, corn planting, running the smoothing harrow, hauling manure and making hay, are hardly tractor jobs. There are

other operations on the average farm to which the horse motor will not be applicable, such as sawing wood, filling the silo, baling hay, shelling corn or running the threshing machine.

Two questions naturally present themselves in the consideration of equipping our farms with the necessary amount of power, or a more economical power: (1) Is the horse the best form of motive power and is he too expensive a proposition to maintain during the idle season? (2) Can a mechanical power really be developed that will take the place of the horse? Or, is it necessary for a mechanical power to replace the horse in order to be economic power? Before considering the first question let us get a clear idea of what a horse is and of what a horse can do.

A horse viewed from the standpoint of a machine is a wonderful mechanism. He is self-feeding, self-controlling, self-reproducing. He is far more economical in developing energy from a given amount of fuel material than any other existing form of motor.

In other words, a much smaller proportion of the fuel value put into a horse is lost in the form of heat when work is being done than in other forms of motor.

The horse as a motor consists: (1) a system of rigid levers; (2) a system of muscles; (3) a fuel-supply and waste-removing system; (4) a regulating mechanism consisting of a nervous system; (5) a protecting and insulating system which keeps all the working parts free from dust and reduces the waste of heat. In order to build a mechanical power these five elements which con-

stitute a horse are just as essential.

Now, as to what the horse can do: He is a motor capable of developing a certain amount of power for a reasonable length of time. He can, under certain conditions develop a much greater amount of power for a short time. For example, in doing heavy work in the field, like plowing, he can maintain a speed of $1\frac{3}{4}$ miles to three miles per hour for an eight-hour day. The same horse can be put on a heavy load on a road and travel at a rate of three to five miles per hour. Will it be possible to develop a power equally as flexible so far as speed is concerned? If we are trying to design a machine which will take the place of a horse we ought to give very careful consideration to the actual work that a horse can do and to his flexibility.

All farm machines of to-day are designed to be drawn by the horse. Is it possible to apply mechanical power to machines already designed to be drawn by horse power? Or will it be necessary to develop new machines especially adapted for mechanical power?

Now, as to the adaptability of the tractor as a motive power for the farmer: First, we will have to admit that it is successful for pulling plows under good plowing conditions. But there are plowing conditions in the various states which would not warrant the purchase of a tractor in any case, or possibly only a certain type of tractor. These are the three conditions which I wish to mention: Stony ground, hilly farms and marsh lands.

Some tractor salesmen make the statement to prospective buyers that stony ground need not be considered a serious drawback to the purchase of a tractor on account of the fact that a brake-pin type of plow-bottom prevents any serious injury to the plow on striking a stone. However, I have seen attempts made to operate a tractor on stony ground when more time was spent in putting in brake pins than could possibly be saved by the use of the tractor.

I have seen cases of hilly ground in which the tractor could not pull a single plow set to run only four inches deep up a hill. While running the tractor parallel to the hill the engine was constantly slipping down into the furrow, causing so much trouble and doing so poor a job of the plowing that the tractor was entirely out of the question. A light weight tractor, such as many concerns are building at the present time, would give better satisfaction under these conditions.

In regard to plowing, I have known a tractor to go where a horse could not go in marsh lands, but it was found that it cost too much to get the tractor out of a hole even if it only went down once a day. In other words, the tractor under these three conditions, stony ground, hilly and marsh lands, has not been able to compete with the horse. It is true, of course, that these three conditions are in limited areas only, but they should be considered when the problem of selecting a tractor arises.

The average cost of keeping a horse per year in the grain-growing sections, as published in a bulletin issued by the U.S. Department of Agriculture, is \$65.23 on a farm of 1,000 acres. On a farm averaging 375 acres the cost is \$75.07, while for a smaller farmer it would be around \$80.

In considering the cost of the tractor on a farm it is necessary to consider the items of operation efficiency, upkeep cost, and possible length of service. Under the cost of operation we should make no charges against the tractor for labor in the field, as we have not considered the cost of the labor required to handle the horse while working. Technically speaking, the cost of operation should be compared on the basis of the cost of developing a certain amount of power per horse power hour. The power requirements of our farm operations are not

IMPORTANT

McBean Bros. Advice on Low Grade Wheat

As there is a large quantity of No. 6 and feed wheat grown this year, we feel it our duty to warn the farmers before selling this low grade grain to seed samples and have it graded, as very often wheat that you might think is feed will grade as high as No. 5 and No. 4, and you also want to get the exact value before selling on street or track. It is very important that you follow out these instructions this year. The demand is enormous for all our grain and will continue until another crop is harvested, and we wish to reiterate to you strongly, get into the habit of shipping your own grain, especially this year. It will mean big money to you. Do not sell on any break in prices, as these breaks are engineered. It is not going to be a question of price this year, but where the wheat is going to come from the supply the demand. The trade has not yet realized the great shortage all over the world.

We figure our oats are entirely too low and should be 15c. to 20c. per bushel higher, compared with other grains, and we strongly advise farmers not to be in any hurry in selling their oats. We also figure that flax will advance to \$3.00 per bushel before another crop is harvested.

We are Commission Merchants and would like a share of your grain this year. Give us a trial, ship your grain to Fort William or Port Arthur; advise McBean Bros., Winnipeg, Man., so that we can look after the grading. We make big advances on each ear of grain. Write us any time for market information.

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Grain Exchange

Winnipeg, Man.