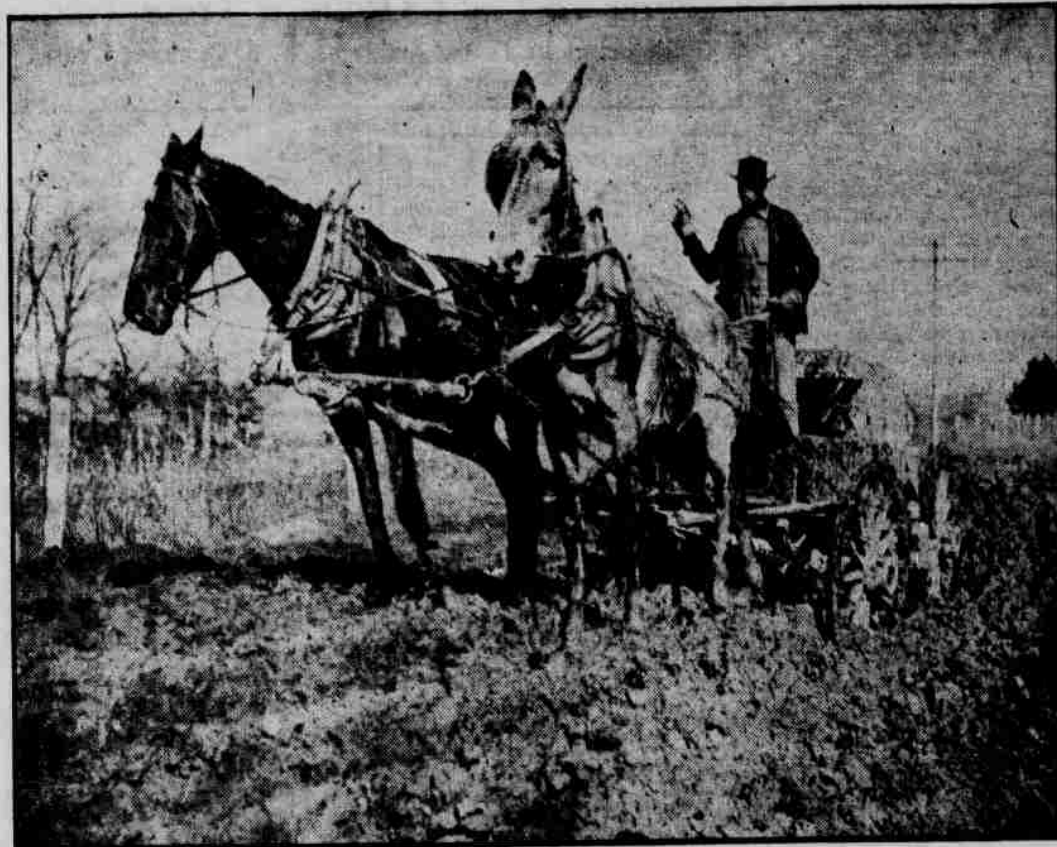


Automobiles and Good Roads

A Department Designed to Help Farmers With Progressive Road Ideas.



A Typical Bad Road and One That Happily Is Steadily Growing Less Common

AS SOILS differ for agricultural purposes, so they differ for roads, says the roads expert of the Department of Agriculture. Clay or soils of fine texture usually make poor roads, especially if they contain much vegetable matter. The coarser soils, however, which contain some sand or gravel, will often make very satisfactory roads for light traffic, provided they are kept in proper repair.

If the road is composed of fine clay or soil, it will sometimes pay to resurface it with top soil from an adjacent field which has sand or gravel mixed with it. This method, called the top-soil method, is now in successful use in Virginia, North Carolina and Georgia, and probably other states.

The earth road can best be crowned and ditched with a road machine, and not with picks and shovels, scoops and plows. One road machine, with a suitable power and operator, will do the work of many men with picks and shovels, and do it better.

Don't Put off Working.

The road machine should be used when the soil is damp, so as to make the soil bake when it dries out. If it is worked dry, it takes more power to draw the machine, and, besides, dry earth and dust retain moisture and quickly rut after rains. The use of clods, sods, weeds or vegetable matter in building earth roads should be avoided because they also retain moisture.

It is a great mistake to put the working of the earth off until August or September. The surface is then baked dry and hard. It is not only difficult to work, but is unsatisfactory work when done. Earth which is loose and dry will remain dusty as long as the dry weather lasts and then turn to mud as soon as the rains begin. By using the road machine in the spring of the year while the soil is soft and damp, the surface is more easily shaped and soon packs down into a dry, hard crust, which is less liable to become dusty in summer or muddy in winter.

Storm water should be disposed of quickly before it has time to penetrate deeply into the surface. This can be done by giving the road a crown or slope from the center to the sides. For an earth road which is 24 feet wide the center should be not less than six inches nor more than 12 inches higher than the outer edges of the shoulders. A narrow road which is too high in the middle will become rutted almost as quickly as one which is too flat for the reason that on the narrow road all the traffic is forced to use only a narrow strip.

Don't Loosen or Plow.

Shoulders are often formed on both sides of the road which prevent storm water from flowing into side ditches,

retaining it in the ruts and softening the roadway. These ruts and shoulders can be entirely eliminated with the road machine or split-log drag.

Ordinarily, the only ditches needed are those made with the road machine, which are wide and shallow. Deep, narrow ditches wash rapidly, especially on steep slopes, which is another good reason for decreasing the steepness of the grades. It is difficult to maintain an earth road, or any kind of road for that matter, on a steep grade.

The width of the earth road will depend on the traffic. As a rule, 25 or 30 feet from ditch to ditch is sufficient, if the road is properly crowned. A road that is narrower than 25 feet is difficult to maintain for the above stated reason that on narrow roads the teams are more apt to track than on a wider road, causing it to rut if subjected to heavy hauling.

The road should not be loosened, dug, or plowed up any more than is absolutely necessary. The road should be gradually raised, not lowered; hardened, not softened.

Prevent Washing Out.

On flat lands, where water moves slowly, grading material should be taken from the lower ditch and culverts supplied where waterways occur. A shallow ditch on the upper side makes it possible to give culverts a good fall. Two or more small pipes, instead of one large one of equal capacity, may be used for culverts, especially if the large pipe necessitates much grading or raising of the roadway. At least six inches should be left between each pipe and earth should be tamped around them thoroughly so as to prevent a washout.

To prevent washing on steep roads, the water should be carried under the surface at frequent intervals from the upper to the lower side, and from the lower side away from the road. Five 12-inch pipes in a mile of roadway is about as cheap and far better than one 24-inch pipe. The water must be disposed of before it gains force or headway, or has time to damage the road.

The maximum velocity for a 24-inch vitrified tile flowing full without head on a grade of 2 inches per hundred feet is 13.6 feet per second, or about 2½ miles per hour. When the grade is increased to 36 inches in 100 feet, the velocity becomes 20 feet per second, or about 13½ miles per hour. The discharge for the 24-inch pipe in the first instance will be 5,086 gallons per minute and for the steeper grade 28,260 gallons per minute. It will therefore be seen that a 24-inch pipe laid on a grade of 86 inches to the 100 feet will have over five times the capacity of the same size pipe laid on a grade of 1 inch to the 100 feet.

Flat Culverts Fill Up.

Under the same conditions the maxi-

mum velocity for a 12-inch tile on a grade of 1 inch per 100 feet equals 1½ feet per second or about ¼ miles per hour, and for the same tile on a grade of 36 inches to the 100 feet the velocity would be 7½ feet per second or about 5 1/6 miles per hour. The discharge for the 12-inch tile in the first instance would be 442 gallons per minute, and for the steeper grade 2,650 gallons per minute or about five times as much.

By increasing the fall, we increase the capacity of the pipe, decrease the size of the pipe necessary, and therefore decrease the cost of the culverts. Furthermore, culverts laid flat will soon fill up, but if given a good fall they will keep themselves clear.

If much fall is obtained in a culvert pipe, the spillway should be paved. Earth should be tamped under and around the pipe in layers, and should be of sufficient depth to prevent the pipe from being broken by traffic; but under no circumstances should a ridge over the culvert be allowed, for it not only is a menace to traffic.

Repair Only When Needed.

An attempt to drain mud holes with culvert pipe will fail in most cases. The water should be drained off by means of open ditches; the soft mud thrown out and replaced with just enough good, firm earth to make it level (after consolidation) with the surrounding surface. If mud holes in earth roads are filled with brush or stone, it will usually result in two mud holes, one at each end.

Repairs to roads should be made when needed, and not once a year after crops are "laid by." One day's labor, judiciously distributed throughout the year, will accomplish more and better work in the maintenance of an earth road than the same amount of labor expended in six days, especially if the six days are in August, September or October, when the ground is hard and dry.

Because of its simplicity, its efficiency and cheapness, the split-log drag or some similar device is destined to come into more and more general use. With the drag properly built and its use well understood, the maintenance of earth and gravel roads becomes a simple and inexpensive matter. Care should be taken to make the log so light that one man can lift it with ease, as a light drag can be drawn by two medium-sized horses and responds more readily to various methods of hitching and shifting positions of the operator than a heavier one.

Forest fires in the United States have caused an average annual loss of 70 human lives and the destruction of \$25,000,000 worth of timber.

State Takes Over Yakima Fair

THE FIRST definite plans for the Washington State Fair next fall were made at a conference of Governor Lister with members of the state advisory board, the advisory committee of North Yakima men and Dr. H. T. Graves, acting commissioner of agriculture.

Following a resolution unanimously passed Governor Lister offered the position of state fair secretary to J. H. Shannon, of North Yakima.

Special days are to be arranged, the premium list is to be pruned of excess items, including third prizes, but the premiums in agriculture, horticulture and stock departments will not be reduced. Governor Lister stated to the meeting that the department of agriculture would assume all responsibility for the fair, which will cost about \$30,000.

PRESIDENT WILSON ON GOOD ROADS.

"I tell you very frankly that my interest in good roads is not merely an interest in the pleasure of riding in automobiles; it is not merely an interest in the very much more important matter of affording the farmers of this country and the residents in villages the means of ready access to such neighboring markets as they need for economic benefit, but it is also the interest in weaving as complicated and elaborate a net of neighborhood and state and national opinions together as it is possible to weave.

"I believe that the development of great systems of roads is, psychologically speaking as well as physically speaking, a task of statesmanship. I believe that it is the proper study of the statesman to bind communities together and open their intercourse so that it will flow with absolute freedom and facility.

"I cannot rationally increase the prosperity of this country without increasing the road facilities of the country."

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