in the vicinity of roads that will carry a full load of farm products in the spring and fall as well as during the summer and winter, are considerably higher than in districts not blessed with passable roads in the spring. Of course farmers are able to arrange their work or system of farming so that it is not necessary for them to have teaming or driving to do during the wet seasons of the year. However, a man looking for a place to locate considers transportation problems, and is usually ready to pay more for a farm located on or near a good road than for an equally good farm located miles from a passable thoroughfare.

It is not so much that a road is bad at the opening of spring, but a road rutted and punched full of holes then, is seldom in good condition until well on in the summer or when statute labor is done, and even then the rocks and boulders which some use to fill the holes really make travelling dangerous for the man in wagon, buggy or auto.

While the bulk of Ontario's roads are kept in repair under the system known as "statute labor," why cannot some of the work be done in April as well as in June? A couple of men working a day or two on a beat could often do as much good to the road in the spring by draining water from the centre of it, filling holes, and removing obstacles in ditches, as a dozen men can do in the summer. Why is gravel placed on flat roads where it disappears before the next spring, when if put on a properly graded road it would keep it in shape probably for years? Why do township and county councillors allow men operating graders to cover what little gravel there is, with sods and soil from the shoulder of the road, or to fill the ditches with sods? Why are not more tile used for draining roads when it is known that the first requirement of most roads is thorough drainage? In too many cases the cart has been put before the horse. Road builders have put on the finishing coat before the foundation was laid. Roads are essential to the prosperity and progress of any country. At the present time labor is scarce, which necessitates making every move count, and it may not be prudent to undertake the reconstruction of a road this spring, but most roads may be made passable for the entire season by a little timely repairing. "A stitch in time" is an old saying containing a lot of truth which might aptly be applied to our roads.

Millions of dollars have been spent on roads but the value is partly lost because no systematic method of maintenance has been followed. For his own convenience as well as that of the travelling public, every ratepayer should take a pride in the roads of his community. Indirectly, if not directly it will pay in hard cash.

Open ditches, sufficient underdrainage and the use of the split-log drag to keep a crown on the road, so that water cannot remain on it, will keep many of Ontario's highways passable even during the hardest season on roads. Apply the fundamental principles of road construction and the metal for the surface will be more serviceable and last longer when applied. Don't wait until the road in front of your place becomes impassable before attempting to repair it; prevent it from getting bad.

Rates of Seeding for the Different Crops.

No definite amount of seed to sow per acre can be given as the amount depends on a number of factors. The rate of seeding which Jones finds satisfactory for his particular farm, might not do on Smith's farm. The fertility of the soil, condition of the seed bed, stooling quality of the variety, size of seed, method of seeding, and vitality of the seed, are factors which influence the amount of seed which will give the best results. The farmer who prepares a good seed bed on fertile soil can safely sow less per acre than can his neighbor, located on a run-down farm. Observation and a little experimenting from year to year will give an idea of the amount of seed to sow in the different fields on the farm. Stooling qualities and germination are not given as much consideration by the average man as they should be. When all expenses entailed in growing any cereal crop are accounted for, there is little profit with an average crop, much less a poor one. Too thin a seeding, or sowing on land which is not in good tilth, is not conducive to a heavy yield. Take oats for instance; if they are too thin on the ground the tendency is for big, coarse straw to be produced, which, as a rule, matures late and is subject to rust. If sown too thickly for the variety, spindly straw and small heads are the result. No hard and fast rule can be made which would be applicable to all kinds of soil in all parts of the country.

From one and one-half to two bushels of spring wheat per acre is about the extent of the variation in seeding of this crop. Oats vary a good deal both in size of kernel and tillering properties. One and three-quarter bushels of a small kernel variety which stools, will possibly give as good a stand as three bushels of a large kernel but poor stooling variety. From two to two and one-half bushels per acre is a fair average seeding, although we know of farmers who never think of sowing less than three bushels to the acre. A bushel and one-half to two bushels of barley will give a good stand. On strong land and with extra good seed a bushel and a half may be enough, but it is just as well to be on the safe side and sow plenty as it is impossible to tell what the weather conditions following seeding will be. Peas run from two bushels of the small variety to three or three bushels and one peck of the larger varieties. From one-half to one bushel of buckwheat to the acre is considered sufficient seed when growing the crop for seed. With the thicker seeding it tends to smother out weeds more than with the lighter seeding. The amount of beans to plant per acre depends on the size; the variation is from three pecks of the small pea-bean to five pecks of the large beans. The size of sets and distance apart in the rows influence the amount of potatoes required to plant an acre. From twelve to fifteen bushels is an average amount, although some use less and some more. In order to make hoeing easy it is not well to sow turnip seed too thickly. If the ground is well prepared and one is sure that the seed will all grow, a pound and one-half of seed would be sufficient to sow an acre. However, many aim at sowing at least two pounds. From four to six pounds of mangel seed should be sufficient. Two pounds of rape sown in drills, or six pounds sown broadcast, is generally considered ample seed for an acre. It requires from twenty to thirty pounds of millet per acre, depending on the variety and whether it is grown for seed or fodder. There is a wide variation in the amount of corn which different growers advise to plant. It varies from ten to fifteen pounds in hills, to fifty pounds in drills. Corn grown for seed is never planted so thickly as when grown for silage purposes.

Several mixtures of seeds are recommended for hay and pasture. During the last few years there has been considerable complaint about the failure to secure a good stand of clover. This may have been due to poor seasons, either during the first summer or the following winter. We are inclined to believe that the general practice is to sow too little red clover seed. On some farms a good stand may be secured from about six pounds of seed, but it is not good practice to sow such a small amount. Many do not consider twelve to fifteen pounds of red clover too heavy a seeding. Three to five pounds of timothy mixed with from eight to twelve pounds of red clover, and possibly a pound or two of alsike added is the rate of seeding followed by many progressive farmers. Alsike is a very small seed, and it is not advisable to have too much of it in the hay, especially if it is to be fed to horses, although a little appears to improve the quality. When sowing alsike alone, five or six pounds per acre gives a good stand on suitable soil. Alfalfa and sweet clover seeds are about the same and it is generally considered advisable to sow from eighteen to twenty pounds per acre. Many sow less seed than the amounts mentioned, but no one can tell at seeding time what the weather conditions will be during the growing season and it is always advisable to sow sufficient seed, especially of clover.

On some farms there are certain parts which are not adapted to working into a regular rotation of crops, and it may pay to seed these parts to permanent pasture. A mixture composed of the following clovers and grasses proves very satisfactory for furnishing continual pasture through the entire season and which will remain in the ground over a number of years. Alsike clover, two pounds; white clover, two pounds; meadow fescue, four pounds; orchard grass, four pounds; meadow foxtail, two pounds; tall oat grass, three pounds; timothy, two pounds, and two pounds of red top is sometimes included. While alfalfa does not stand pasturing very well and red clover is shortlived, it is generally advisable to include a few pounds of each in a mixture to be sown on high land. They come on and furnish feed a little earlier than some of the grasses mentioned. A mixture of fifty-one pounds of oats, thirty pounds of sugar cane, and six pounds of red clover is an annual pasture, recommended by Dr. Zavitz, Guelph. On some soils the sugar cane is practically a failure. An annual pasture recommended by A. Leitch, of the Ontario Agricultural College, of sowing three bushels to the acre of a mixture consists of one bushel each of wheat, oats and barley, and six pounds of red clover.

Unless the man driving the drill knows exactly what to set the machine at in order to get the correct amount of seed on the land, he is very likely to have the first two or three acres of the field sown either too thinly, or else put on far too much seed to the acre, which will then rob the latter half of the field, as the custom on many farms is to bag up so much grain or seeds for a certain field and that amount must do. If the drill sows too fast at first it must be adjusted to make the grain hang out. Care should be taken to regulate the drill at the start. Put just enough grain into the drill to sow an acre and when that is sown step off the distance to see that an acre has been sown. This is the best way to gain an idea of what the drill is doing, and proper adjustment can be made after one acre is sown, rather than delaying until probably half of the grain has been put in the ground. Every agriculturist should study his farm and plan to grow the crops that will do best on his particular land. Sowing a certain crop or seeding at a certain rate per acre just because someone else does so is folly. Why produce a half yield of one crop when the soil is capable of giving a maximum yield of the crop for which it is adapted?

Insuring the Crop Against Loss by Smut.

Smuts are no respecters of persons. They infest the poor man's field as well as the rich man's, and they are as likely to attack the crop in a year when increased production is essential as when there is a surplus in the world's granary. Practically all cereals are subject to attacks and the crop sown on the carefully prepared seed bed is as subject as one sown on poorly prepared land, unless precaution was taken previous to seeding to apply some treatment that would destroy the tiny smut spores which might be lurking in the creases of the seed or hiding in the corners of bags and drill. It is estimated that millions of dollars have been lost to this country by the ravages of smuts, but there is no excuse for this loss occurring again. It has been proven beyond a doubt that treating seed to control the loose smut of oats and bunt of wheat is effective and practicable. It can hardly be understood why every farmer does not treat his seed before sowing and so ensure the crop against loss by smut. In 1915 the loss to the oat crop where the seed was not treated was enormous and should have been sufficient warning, but thousands of bushels of untreated seed were again sown in 1916. However, owing to weather conditions, the percentage of smutted heads in the crop was but a fraction of that of the previous year. Because smut is bad this year it does not hold that the crop will be seriously affected next year. This fact is largely responsible for neglect to treat the seed. Several crops may be harvested with only a trace of smut, but without warning, at the most inopportune time, the smut balls and as much as fifty per cent. of the crop may be rendered useless. This has happened. Thousands were caught napping in 1915. The smuts took a heavy toll, but many did not profit by the experience. If the grain is free from spores at seeding time it is reasonable to expect that there will be no smutted heads in the crop. However, it does not necessarily hold that untreated grain will produce a crop that is infested with smut. The season has a lot to do with the development of the fungus, but as no one can tell at seeding time what weather conditions will prevail before harvest, it is advisable to ensure the crop against loss. The premium on insurance against smut is around fifty cents yearly per twenty acres.

Possibly the greatest loss is caused by the loose smut of oats. The fungus becomes visible in the field as soon as the oat heads commence to show, and the kernel, the hull and chaff are changed to a dark brown color, which is the work of smut spores. These spores lodge on the kernels of the uninfected heads and remain there until the grain is sown, when, if they are not destroyed, they will germinate and produce fungous threads which penetrate the young seedling when it commences to grow. Scientists claim this is the only time infection can take place. The disease feeds on the oat plant and devours the oat kernels, leaving in their place a mass of worthless sooty-like material. Treating with formalin before the oats are sown will destroy the spores lodged on the grain and so prevent infection of the plant. Bunt or stinking smut of wheat is the most prevalent disease of the wheat crop. It attacks the kernels, causing them to be filled with a black, oily-like powder instead of the nutritious material found in a sound wheat grain. These smut balls, recognized by all who grow wheat, are broken at the time of handling the grain or threshing, and the tiny spores escape. It is only necessary to have a few smut balls in the crop in order that sufficient spores may be produced to infect the seed for a whole field. The smut not only decreases the yield of the crop, but it lessens the value of the grain for milling purposes. The spores are carried over the winter on the kernels of wheat and if not destroyed before the grain is planted the young wheat plant is infested in a similar manner to that of the oat plant. This form of smut is also controlled by the formalin treatment.

The Formalin Treatment.

The success of treating grain to destroy the smut spores depends on having the formalin solution of sufficient strength and having every part of every kernel covered with the material. Numerous experiments have been carried on with both the sprinkling and the immersion methods. It is generally believed that the latter is the more effective method of treating grain, but it has the disadvantage of requiring considerable time to immerse the seed and then dry it sufficiently for sowing. For this reason the sprinkling system, which requires but a small amount of the liquid, is more generally practiced. There is considerable controversy over the proper strength to have the solution for sprinkling the seed. Some have found that a much stronger solution than that generally recommended can be used with safety. However, there is a possibility of having the formalin too strong. Instances are on record where the germination of the seed has been seriously affected by the use of too strong material. Loss has also resulted through not thoroughly drying the seed before bagging it up. A solution of one pint of formalin to forty gallons of water will destroy the spores of oat smut and stinking smut of wheat if brought in contact with them. The immersion method consists in placing the seed grain for twenty minutes in a solution of the strength mentioned. The grain may be put in a coarse sack, which will admit water readily, and then lowered into a barrel or receptacle containing the formalin. It will be necessary to raise and lower the sack several times in order that the liquid may find its way to every part of every kernel. The wet grain must be spread out thinly on a clean floor or canvas and stirred occasionally in order to facilitate drying. As only one sack of grain can be treated at a time, it takes several hours to treat the season's seed supply. This is one of the chief objections against the immersion method. It is also heavy work raising a sack of wet grain out of the liquid. It is possible to lighten the labor