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# Loams for Top-Dressing

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THE use of so-called "loam" for top-dressing in the establishment or in the improvement and rejuvenation of lawns and gardens is necessary wherever the original soil is too poor or where the grade needs to be raised. Most people have to buy the loam for this purpose, and since it frequently means the expenditure of a considerable sum of money, it is well for the purchaser to know what he is getting. It is the purpose of this circular to describe some of the kinds of loam available and to suggest that loam be sold by grade.

## THE CHARACTERISTICS OF GOOD LOAM

When one buys loam or topsoil, he is buying a medium for the growth of plants, whether they be grass, flowers, shrubs or trees. It should have, therefore, the following qualities: (1) Suitable texture; (2) ample organic matter content; (3) low weed seed content; (4) good fertility, and (5) proper reaction (acidity).

*Texture* (size of grains)<sup>1</sup> is most important, as it cannot be changed without great expense. True loams and silt loams are generally best for top-dressing, for they are better able to retain moisture and fertilizer than are sandy soils, and yet they are not heavy and hard to work, like clay-loams and clays. Loam is sometimes purchased for the purpose of improving the physical condition of the soil already in place. For a clay or clay-loam soil, one should use sandy loam or fine sandy loam, and for a sandy soil one should obtain a silt loam, clay loam, or possibly a clay topsoil.

*Organic matter.* The fertility of soil is generally in proportion to its organic matter content; hence the importance of obtaining a loam that is well supplied with this material. Generally, but not always, the darker the color of the soil, the higher the organic content, and one who is familiar with soils can usually tell by observation whether or not a sample is satisfactory in this respect. The inexperienced should not depend upon color alone, for dealers have

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<sup>1</sup>Texturally, soils grade from coarse sand and gravel on the one hand to very fine clay on the other, the basis being size of the predominating soil particles. The following brief descriptions will serve to explain some of the most common terms:

**Sand**—Loose, incoherent coarse material.

**Sandy loam**—Predominantly sandy but with some fine material present. Not sticky when wet soil is rubbed between the fingers.

**Fine sandy loam**—The same as sandy loam except that sand particles are smaller in size.

**Loam**—About midway between sand and clay. Very slightly sticky when wet.

**Silt loam**—Mostly fine material, somewhat sticky when wet.

**Clay loam and clay**—Fine material, very sticky when wet; hard and cloddy when dry.

been known to mix lamp-black or charcoal with the soil to make it dark. It is possible to increase the organic matter content of a loam by adding manure, peat moss, ground tobacco stems and other organics and this may be necessary if the right kind of loam cannot be obtained.

*Weed seeds.* The presence of many obnoxious weed seeds in a loam is a highly undesirable feature that cannot be overcome without the expenditure of much time and labor. Unfortunately it is difficult to know before purchasing whether or not the loam is relatively free of weeds. It is a good plan to see the field from which the loam is to be taken, although this is not usually possible. So-called "virgin" loams, from forest or brushland, are generally quite free of weed seeds. The next best source in this respect is a field that has been in good pasture or which has been well cultivated.

If time and facilities are available, one can run a germination test to determine the number of weeds present. This may be done by spreading a sample of the loam in shallow flats and keeping it at optimum growing conditions in a greenhouse, hot bed or cold frame.

*Fertility.* Other conditions being equal, fertile soil is preferred. But if the buyer must choose between good physical condition (proper texture and organic matter content) and high fertility as indicated by soil tests, it would be better to select soil for superior physical qualities. The available plant food content can easily be increased by the use of manures and fertilizers, and, in this climate, with our relatively light soils, fertilizers are necessary in any event.

*Reaction or acidity.* In most cases one need not hesitate to accept a soil that is too acid if it is otherwise suitable, because change in reaction is the cheapest and easiest to make. However, it is important to know the degree of acidity in order to add the proper amount of lime.

#### SOURCES AND VARIABILITY OF LOAM

Loam is usually obtained by skimming off the topsoil in a field or from pockets of loam in forested or brush areas. The depth of soil taken depends upon the natural depth of the good surface soil and upon the integrity of the dealer. The quality varies from place to place, even within one field. If the dealer hauls direct from field to customer, as is usually the case, it is possible for each load to differ in quality. This may be true even if the load has been piled first and delivered later, assuming no effort was made to mix it in the pile.

The ideal way is to pile the loam as it is dug, carefully spreading each load over the whole pile. In making up loads for delivery, each should consist of a cross section from top to bottom of the pile. Although this practice would add somewhat to the cost of handling, it would undoubtedly pay in the long run because of the more uniform product obtained.

During the past two years a random selection of 41 samples of loam submitted to the Experiment Station was subjected to physical tests in order to determine suitability for top-dressing. The textural classification of these soils was found to be as follows:

TEXTURE	NO. OF SOILS	TEXTURE	NO. OF SOILS
Sand .....	1	Loam .....	6
Sandy loam .....	3	Silt loam .....	2
Fine Sandy loam .....	23	Clay loam .....	2
		Muck .....	4

Out of the 41 soils submitted as *loams*, only six were true loams.

In Table 1 are shown the average and the variation in specific physical properties.

TABLE 1. PHYSICAL PROPERTIES OF LOAM SAMPLES TESTED

		A. Exclusive of mucks	
		Average	Variation
Moisture equivalent <sup>1</sup> .....	%	17.3	8.1 - 41.4
Organic matter <sup>2</sup> .....	%	6.8	3.6 - 15.8
Total sands .....	%	48.3	19.4 - 75.0
Silt .....	%	29.8	12.0 - 61.2
Clay .....	%	14.9	8.8 - 25.6
Total colloids .....	%	23.9	13.0 - 36.6
		B. Mucks only	
Moisture equivalent .....	%	45.3	29.6 - 57.6
Organic matter .....	%	30.1	10.5 - 49.6
Inorganic matter (sand, silt and clay) .....	%	69.9	50.4 - 89.5

<sup>1</sup>Amount of moisture retained when subjected to a centrifugal force equal to 1000 times the force of gravity.

<sup>2</sup>Loss-on-ignition.

It is evident from these figures that when one buys "loam" he may be getting anything from a sand, low in organic matter and clay, to a muck, high in organic matter and low in sand, silt and clay.

#### GRADING OF LOAM

Inasmuch as the value of loam is dependent upon its quality, it would seem advantageous to the customer — and to the honest dealer as well — that loam be graded and priced according to grade. Although first grade material is always preferable, the buyer cannot always afford it and should be able to purchase a second or third grade loam. The principal thing is for him to know what he is getting and to get what he pays for.

It would not be hard to work out a grading scheme based upon moisture-holding capacity, organic matter content and clay or total colloids content. However, the variability of loam and the economic limitations in connection with the labor necessary to obtain a uniform product, make it inadvisable to recommend any system that might prove difficult or impossible to follow in practice.

For the benefit of the purchaser, we offer a simple, generalized system which can serve as a guide with respect to quality and, consequently, price of loam. Three main grades are suggested and are described as follows:

**First Grade Material**

*Forest or peaty loams*, sometimes called "virgin" loams, and *muck*<sup>1</sup>, very dark brown to black when wet, high in organic matter (15 to 50%). These materials are frequently too low in mineral matter (less than 80%) to make a suitable topsoil when used alone, but are excellent for mixing with ordinary soil. They may need lime and probably fertilizer, particularly potash. It is generally advisable to use a complete fertilizer, such as 7-7-7, prior to seeding.

*Garden loam* or any *cultivated loam* which is high in organic matter, loam, silt loam or very fine sandy loam in texture, and relatively free of weed seeds. Such material may or may not require fertilizer.

**Second or Medium Grade Material**

*Loams* and *silt loams* with medium organic matter content, and *fine sandy loams* relatively high in organic matter, with little to moderate amount of weed seeds. With this group one may include also *sandy loams* unusually high in organic matter.

**Third or Poor Grade Material**

*Fine sandy loams poor in organic matter*; all *sandy loams* unless unusually high in organic matter; *loams* which are excessively weedy.

Material poorer in quality than third grade should be classed as *fill*.

Material classified under the foregoing grades, if tested in the laboratory, would come approximately within the limits given in the following table:

TABLE 2. CHIEF CHARACTERISTICS OF THE SEVERAL GRADES OF LOAM

Grade	Texture	Organic Matter <sup>1</sup> %	Moisture Equivalent %	Volume Weight (water = 1.0)	Sand %	Silt %	Clay %
	Peat .....	>50	>60	>0.5	—	—	—
I	Peaty loams and mucks .....	15-50	30-60	0.5-0.9	0-30	20-50	0-20
	Loams and silt loams .....	8-15	20-40	0.7-1.0	15-50	30-70	10-30
	Very fine sandy loams .....	10-15	18-30	0.8-1.0	40-60	20-40	10-20
II	Loams and silt loams .....	4-8	15-25	0.9-1.2	20-50	30-70	10-20
	Fine sandy loams .....	5-10	15-25	"	40-60	15-50	8-20
	Sandy loams .....	10-20	15-30	"	50-75	10-30	4-15
III	Fine sandy loams .....	4-5	8-14	1.1-1.2	50-70	15-50	8-15
	Sandy loams .....	4-8	8-20	1.1-1.3	50-75	10-30	4-15

<sup>1</sup>Loss-on-ignition.

<sup>1</sup>Not to be confused with *peat* which ranges from 50 to 90 percent organic matter (dry weight basis), and which is only partially decomposed, in contrast to mucks in which the organic matter is well decomposed. The dividing line between the two is not always sharp, however. Peats cannot take the place of loam as topsoil but are valuable for mixing with soil to improve its structure and moisture-holding capacity. (See Conn. Sta. Cir. No. 142).

It should be emphasized that the foregoing specifications are not official, and there are no existing regulations which would legally bind a dealer to meet them. They are given to serve as a yardstick for both dealer and customer. Dealers interested in building up a reputation for dependability in their product will make an effort to obtain uniformity by mixing and will sell by grade. The discriminating purchaser can ask his dealer to grade his product. When in doubt, the purchaser can himself submit a sample to the Experiment Station for testing. On the basis of quality, aside from differential due to differences in haulage distance, if Grade I loam were worth, for example, \$4.00 per cubic yard, Grade II would be worth \$2.25 to \$3.00, and Grade III, \$1.25 to \$1.75.

**SUMMARY AND CONCLUSIONS**

It has been pointed out that material commonly sold for loam, i.e., soil to be used as top-dressing for the growth of grass or other plants, may vary greatly in quality, and at the present time the customer has no protection against the unscrupulous dealer. Frequently the dealer himself is unaware of the quality of the loam he is offering for sale.

The first step in overcoming this undesirable situation would be for customers to acquaint themselves with the several grades herein described, and to purchase by grade wherever possible. It is believed that if dealers would voluntarily grade their product according to some such scheme as here suggested, it would result in mutual benefit to all concerned.