

Value and Uses of Ashes.

We have frequently drawn the attention of our readers to the value of ashes, both nutritively and agriculturally, but some practical farmers inform us that our estimate is too high. None of these farmers have been able to give us any reason for their belief, except that they have tried ashes and found them wanting, more or less. This objection cannot be regarded as conclusive unless it can be shown (1) that farmers in general also find them wanting, and (2) that they have been applied at the right time and in the right place. Any fertilizing application will not prove agriculturally profitable unless these conditions are fulfilled. For our part, we have always found them exceedingly profitable, but we have never used them without being able to give adequate reasons for every step we have taken.

Ashes of all qualities have been repeatedly analyzed, and the farmer can have no excuse for being ignorant of their composition. The various fertilizing constituents of which they are composed can be purchased separately. Now let the farmer purchase these constituents in the market and mix them until he has a mixture of the same composition as ashes, and he will then find out their value to his cost. He cannot take exception to this method of ascertaining their value, for these constituents are bought in large quantities in our markets, and are found to be profitable as fertilizers; indeed, the fact that such constituents have been used so extensively for so long a period of time is proof enough that they possess agricultural value.

All plants, including trees, have practically the same chemical composition, although the proportions in which their various constituents are found may vary considerably; and plants contain no fertilizing elements which are not taken from the soil. It is therefore plain to be seen that an application of ashes restores to the soil the identical plant food which has been taken from it. But in the process of combustion it is plainly seen that a part of the wood becomes dissipated in the air—so much in fact that only ten pounds of ashes remain from the combustion of a cord of hard wood, or five pounds from a cord of soft wood, and yet nothing is wasted or destroyed. If all the fertilizing material remained in the ashes, they would be a complete fertilizer, and the ashes would lack in no constituent of plant food. It now becomes important to know, before ashes can be intelligently applied, what constituents of plant food are lost during combustion, so that they may be supplied from other sources.

Nearly one-half of the wood is composed of carbon, and during the process of combustion, it unites with the oxygen of the air, forming carbonic acid. This is not regarded as a fertilizing constituent, properly speaking, because it comes back to the plant from the atmosphere through the leaves, so that carbonic acid applied to the soil has no direct fertilizing value, although it aids in preparing other fertilizing constituents in the soil for the use of the plant. Another part of the wood which is dissipated during the process of combustion is its nitrogen, there being an average of between two and three percent. This element, however, is largely found in the soot in the form of ammonium salts, which are very soluble, and are therefore a very quickly acting

fertilizer. Nitrogen is one of our most valuable fertilizers; it is found in large quantities in stable manures and in decaying vegetable matter, and small quantities find their way into the soil from the atmosphere through rains and dew. All the other constituents of plants are found in the ashes, and are called ash constituents or mineral or inorganic matter, the carbon and nitrogen being the organic matter. The inorganic matter or ashes constitute only about five percent of the plant.

The ashes have many constituent parts, but their potash and phosphoric acid are the only ones which usually have any marketable value, although there is a very large percentage of lime, which has some agricultural value on some soils.

Dr. R. C. Kedzie, Prof. of Chemistry at the Michigan Agricultural College, has recently made an interesting analysis of different classes of ashes, being tabulated as follows:—

	Hard-wood Ashes.	Soft-wood Ashes.	Hard-coal Ashes.	Soft-coal Ashes.	Tannery Ashes.	Corn-cob Ashes.	Softwood Ashes.	Leached Ashes.	Hardwood Ashes.
Soluble in hydrochloric acid.	93.00	88.00	45.00	38.00	46.00	70.00	50.00	89.00	93.00
Insoluble in hydrochloric acid.	7.00	11.00	55.00	62.00	54.00	30.00	50.00	11.00	7.00
Potash (K ₂ O)	12.25	1.90	2.50	2.50	2.50	4.50	4.50	6.80	12.25
Phosphoric acid (P ₂ O ₅)	6.00	6.80	1.20	1.14	1.20	4.10	4.10	74.00	6.00
Salts of lime and magnesia	70.00	74.00	28.10	20.00	41.00	20.00	28.10	16.90	70.00
Value per ton (2,000 lbs.)	\$30.00	\$10.40	\$50.00	\$4.50	\$4.50	\$50.00	\$4.50	\$10.40	\$30.00

In commenting upon the above table, the analyst informs us that the ashes were selected in their market condition, and therefore contained more or less foreign matter. In estimating the value per ton, he calculates potash at 5 cents per pound, insoluble phosphoric acid at the same market price, and the mixed carbonates of lime and magnesia at one-eighth of a cent per pound, these being the prices of those materials if purchased separately on the market at wholesale rates.

From the explanations which we have given, and from their comparison with the above table, it will be seen that unleached ashes are essentially a potash fertilizer, and should therefore be applied to soils which are deficient in potash. Such are usually known as "light soils." When the soil is not particularly deficient in potash, an application of ashes to potato crops, roots and fruit trees, will be found specially beneficial, these products being great consumers of potash. If the soil contains appreciable quantities of vegetable matter, it will be rich enough in nitrogenous fertilizers, so that if ashes are applied, bone dust or superphosphate should be used in order to make up for the deficiency of phosphoric acid. Leached barnyard manure being deficient in potash, an addition of ashes will make up for this waste.

Soils deficient in lime—such soils are not plentiful in this country—will also be benefited by an application of ashes, leached or unleached. Apart from their fertilizing properties, ashes—especially coal ashes—often prove beneficial by virtue of their effects on the physical condition

A Novel Method of Speculating in Seed Wheat.

A bond, of which the following is a copy, signed by a responsible farmer, has recently fallen into our hands:—

(COPY.)

No. 109. This Bond is used for Capital stock, Wheat only. \$35,000.00.
Incorporated June 10, 1886. BOND of Home Office, London, Ont.
The Ontario Grain and Seed Company.

It is agreed and understood by and between the party named in this Bond and said Company, that the transaction covered by this obligation is of a speculative character, and is not based upon the real value of the grain.

Mr. Thos. Chambers, Township of Blandford, County of Oxford, and Province of Ontario, witnesseth that on or before the 1st day of September, A. D. 1887, we hereby agree to sell to responsible parties twenty-five bushels of Mr. Thomas Chambers' wheat at \$15 per bushel, and for which he agrees to take his pay in notes.

And the said Thos. Chambers hereby acknowledges that he has bought of the said Company ten bushels of Red Lyon wheat at \$15 per bushel as a speculation, and for which he has given his note for the same, and that said price is not based upon its real value.

And the said Mr. Thos. Chambers hereby agrees to allow the said Company 34 percent of all notes taken for all his wheat sold at \$15 per bushel, as their commission.

Signed and sealed this 20th day of July, 1886.

(Sgd.) A. SHERWOOD, Presdt.

(Sgd.) GEO. S. WARD, Secy.

(Sgd.) THOS. CHAMBERS, Purchaser.

In perusing the above bond, the following points suggest themselves:—

1. The wheat not being warranted, the purchaser could not recover damages should the wheat turn out to be worthless, unless he could prove that the company was cognizant of the fact. If the wheat does not yield 20 bushels, how can the purchaser compel the company to fulfil its contract? What can be done if the company becomes bankrupt?

2. Does the purchaser bind himself to give the company 20 bushels of wheat to sell? Must he pay "commission" on wheat sold by himself, especially if he takes cash instead of notes, and sells the wheat for less than \$15 per bushel?

3. Under any circumstances, the purchaser must pay his note for \$150. On the other hand, what is he sure of getting in return? If the company fails to fulfil its obligations, his remedy lies in an action for specific performance or for damages, and what would be the use of entering such an action if the company had no assets? How many of the purchasers would run the risk of a law suit against the company?

Any farmer who can be so undeliberate as to sign such a loosely-worded contract, exposes himself to the liability of being duped on every hand.

Professor W. A. Henry, of the Wisconsin Station, last summer kept six cows, three by pasturing and three by soiling, having the quality of the two herds as nearly equal as possible. The result was a product of 1779 pounds of milk from one acre of pasture, producing 82 pounds of butter, while one acre in soiling crops gave him 4782 pounds of milk, which made 196 pounds of butter. The pasture was one of the best blue grass pastures, capable of carrying a cow per acre through the season under favorable weather conditions.