

# THE NORTH CAROLINA STAR.

THOMAS J. LEMAY, Editor.

NORTH CAROLINA—"Powerful in intellectual, moral and physical resources, the land of our sires and home of our forefathers."

LEONIDAS B. LEMAY, Associate Editor.

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evidence of intentional fraud.

AGRICULTURAL.

REPORT OF THE MARYLAND  
STATE AGRICULTURAL CHEMIST—  
JAMES HOOVER, M. D.

Mode of Application.—This is a subject  
upon which there is much difference of opinion  
among practical men.

The greatest good is obtained from lime  
when thoroughly mixed and incorporated with  
the soil. This is proven by the fact, that when  
lime exists naturally in a soil, other things  
being equal, a larger crop is produced than  
when the same quantity is applied artificially.

This superior produce is obviously  
due to the more intimate mixture in the former  
than in the latter case. In the application of  
lime then, the first consideration, should be to  
use it so as to mix it intimately with the soil.

This is sought to be done in three ways. 1st.  
By applying it to the surface, and suffering it  
to remain undisturbed for a year or two. 2nd.  
By applying it to the surface, plowing it in,  
and immediately sowing the land in some crop.

3d. By mixing it in compost  
beds, and applying it in the same manner.—  
Each of these methods has its peculiar advantages,  
and is also liable to objections.

The texture of the soil is to be taken into consideration.  
By the first method, the lime becomes  
thoroughly mixed with the soil, particularly  
if it be a loose sandy soil, the rain water washing  
down its particles, and fixing them between  
the grains of sand; an immediate return  
is desired, which cannot be had if this plan  
be followed. Many of our farmers, too, being  
without capital in ready money, cannot afford  
to spend it without getting a speedy remuneration  
for its use.

By the 2d method,  
the lime is thrown to the bottom of the furrow,  
and cannot be afterwards well incorporated  
with the soil; this is a great objection,  
as then it is not so readily obtained. The 3d  
method has the advantage of diffusing the lime  
equally over the surface, and insuring its mixture  
afterwards; but it involves a great labor in  
hauling and applying it, and but a small quantity  
can be applied at a time in this manner.

The best mode of combining the advantages  
of these several methods is first to follow up  
the ground, which leaves it uneven, with  
numerous furrows produced by the ploughing—  
apply the lime—follow it with a heavy iron  
toppy harrow, and cultivate it in some crop  
that requires frequent watering—corn for example.

In this manner we mix the lime well  
with the soil, receive its benefits immediately  
in a crop which can be more fully realized, as  
the corn can be followed by the wheat, and with  
it clover may be sown. The chief objection  
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with stable and barn yard manure. This cannot  
be too strongly reprobated. If those  
who use it in this way, were to try to injure  
their manure as much as possible, they could  
not adopt a better plan.

One of the most valuable constituents of stable  
and barn yard manure, viz: ammonia, is  
expelled by this process from the heap, and  
except into the air. It is no proof in its  
favor, that the manure, after being treated in  
this manner, still does good, a part of its valuable  
constituents fire will not destroy; but  
one of the things which give it its peculiar  
distinctive value is entirely dissipated when  
mixed with either caustic lime (oxide of calcium)  
or water slaked lime, hydrate of lime.)

It is indeed one of the means by  
which chemists determine the quantity of ammonia  
in a compound, so thoroughly & entirely  
does it drive it all away.

Upon grass lands when they fail to produce  
well, and that failure is owing to deficiency of  
lime in them, it may with great advantage be  
spread on the surface, and have a light harrow  
run over it.

This will not only insure to the crop the  
full benefit of the lime, but will materially  
improve the texture of the soil by loosening the  
surface, which is the long and frequently covered  
and unworked, and frequently covered  
and unworked to produce a full crop of hay.

The full benefit of the lime can be obtained  
without the trouble and expense of breaking  
the land; for its "setting" in grass no inter-  
mission need be had in that crop. When it  
is intended to supply the deficiency of lime in  
a soil by the medium of marl, it should al-  
ways be applied as long a time as possible  
before the culture of the soil. Atmospheric  
influences, the alterations of heat and cold,  
of dryness and moisture, are all powerful agents  
to disintegrate the marl, reduce the shells to  
powder, and bring it into a condition most fa-  
vorable to the crop, whose production it is  
intended to assist. Situated as the great mass  
of our farmers are, precise and exact rules  
cannot be followed, many are obliged to yield  
to circumstances, but they should keep the  
above principles steadily in view and conform  
to them as nearly as possible.

They are the result of much and careful ob-  
servation, are substantiated by the highest au-  
thorities, and are derived from a knowledge of  
the qualities of the cause by whose applica-  
tion the desired effect is sought to be produced;  
in other words, from a knowledge of the  
action of the agency, and that upon which it  
acts.

From a knowledge of the properties of  
lime as carbonate, and of those agents to which  
it is subject, the reasons for the above rules  
will appear manifest. I need not here review  
what was said in relation to the different  
modes of applying lime, except in relation to  
its use as a top dressing for grass, keeping in  
view the principle of incorporating it thor-  
oughly with the soil. We see how this is done  
by top dressing of grass lands.—Though lime  
be not sparingly used in pure water, yet we  
have seen that it is quite freely so in a water  
charged with carbonic acid. When lying  
with the decayed leaves and stalks of grass on  
the surface of the meadow, it is an atmosphere  
of this gas which charges rain water,  
as soon as it falls, dissolves the lime, and  
carries it in a state of solution in the soil. This  
is not the only way, however. A large  
quantity of lime, though not dissolved, is  
carried down the interstices of the soil  
mechanically by the water which falls on it.  
In this way, a large quantity of it will dis-  
appear from the surface, having become diffused  
through the soil.

The rationale of the application of marl to  
the surface is equally sustained when we con-  
sider its physical condition in connection with  
its chemical qualities.

The lime which exists in marl is always in  
a state of carbonate, and hence subject to  
the same influences as common lime that has  
been burnt from shells or limestone and be-  
come slaked. There is, however, this differ-  
ence, that the lime in marl is either in masses  
of uncombined shells, or in large fragments  
that have been disintegrated. By atmospheric  
exposure on the surface they are subject to the  
action of water charged with carbonic acid.—  
The shells by alternate freezing and thawing  
crumble into finer particles, becoming more  
easily acted on by water impregnated with  
carbonic acid, as this change progresses, until  
in a longer or shorter space of time they be-  
come entirely blended with the soil, fulfilling  
perfectly all the indications which first direct  
their direct flow to the plant again by the  
decomposition of organic matter, and very fre-  
quently by its power or setting free from  
valuable elements which may exist in soils,  
but not in a form capable of serving as food for  
plants.

Many theories have been published on the  
manner in which lime acts in producing ferti-  
lity, and much spoken and written as to the  
peculiar manner in which it manifests its utility.  
A report like the present, designed to be merely  
practical in its nature, affords no opportunity  
to discuss these questions.

Let it be sufficient to say, that it should al-  
ways be applied to a soil when it is not al-  
ready present in sufficient quantities, and  
never applied when it is. This short remark  
comprises all of the rules for the necessity of  
its administration. More would be useless—  
further remarks unnecessary.

Stable and Barn Yard Manure.—This  
being a great number of agriculturists the  
only form in which manures are applied to  
lands, any suggestions to increase its value  
cannot be overrated.

All manures should be in finest possible state  
of division and mixed either directly or indi-  
rectly with the soil. Every  
particle of manure should be placed, if  
possible, in immediate contact with a grain of  
seed.

Stable and barn yard manure is composed  
of the excrements of cattle, mixed with that  
part of the produce of land which is uncon-  
sumed by them. It is, therefore, nothing  
more than the former produce of land, modified  
by its passage through the bodies of animals,  
or modified by the presence of those things  
which have at one time served the purposes  
of food. It, therefore, contains all of the  
substances necessary to plants, as well those  
furnished by the air as those which are ob-  
tained from the soil. I shall not go into any  
elaborate description of its several constituents  
nor their properties, but only give directions  
for preserving it in its greatest possible state  
of fullness.

When manure, a substance in formed called  
manure, which is very soluble, that it will  
easily enter into the soil at all times, but  
especially when the weather is warm.

There would seem, to an unexercised mind,  
no possible way of preventing the loss of this  
substance but by making the receptacles of  
stable manure air-tight, but chemistry shows,  
by teaching the nature and properties of  
bodies, that this substance, one of especial value  
in stable manure, by the addition of another  
substance, one of especial value, substance of  
little cost, of easy application, may be so changed  
as not to escape at any degree of heat to  
which stable manure is ever subject. This  
change not in the least effecting the value of  
the manure. To effect this, nothing more is  
necessary than a small quantity of gypsum,  
(plaster of Paris) say from a half gallon to a  
peck, scattered over the yards or stables twice  
a week.

When manure is to be applied to sandy  
soils, in which the sand is white, sulphate of  
iron, copperas) should be preferred. A few  
pounds beat very finely is enough for each  
week.

In this way the value of the manure will  
be increased one half, or at least one third, and  
all of the disagreeable stench, is produced by  
innumerable fine particles of ammonia escap-  
ing into the air, and affords sometimes, seri-  
ously the health of animals subject to it. In  
the application thus recommended above, not  
only is the health of a farmer's stock, but  
all of the soil manure greatly increased, either  
considered being sufficient to pay one hun-  
dred times over, the cost of the application of  
gypsum or copperas. Either of those sub-  
stances, when applied to privies or any place  
where animal and vegetable matter is under-  
going decomposition will at once arrest all of-  
fensive odors arising from them. So much  
for saying that part of the manure which es-  
capes through the air.

As commonly taken care of, this kind of  
manure is subject to another great loss, which  
should likewise be zealously guarded against.

When any body becomes saturated with  
water, all of the soluble substances in it are at  
once dissolved, if, when in this condition, any  
additional quantity of water be added, it takes  
the place of that which previously existed,  
and forces out, not only the water, but likewise  
all of the soluble substances which the water held  
in solution. That part of the stable manure  
which the water dissolves is most valuable,  
and when exposed as it usually is, by farm-  
ers, nearly all of its valuable matter will be  
carried away by water falling on the heaps  
and then running off. So effectually does this  
deprive all substances of their soluble matter,  
that druggists use a process identical in principle  
with that to obtain the active matter of many  
drugs and medicines. A quantity of turpentine,  
ginger, &c., being first saturated with water, is  
allowed to remain for a short time—an addi-  
tional quantity of water being added—the wa-  
ter first present passes through, taking with it  
all the strength of the substance acted on,  
leaving behind nothing but a worthless inert  
mass.

A little reflection will show that this same  
state of things constantly occurs with stable  
and barn yard manure.

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