

From the Farmer's Cabinet.

APPLICATION OF LIME TO SOILS.

Read before the Philadelphia Society for Promoting Agriculture.

Lime has long been regarded by farmers in certain sections of our country, and cultivating districts, as a most valuable agent. Still and tenacious soils are greatly benefited by its application, as is admitted by all who cultivate them. Whether the various chemical influences which have been assigned to its presence, are really those which constitute its virtue, I sh. not inquire in this essay; I suppose merely to submit some views that have occurred to me, which the plain practical farmer can fully appreciate without the aid of chemistry or science, or their technicalities.

Clays and red shell soils are compact and tenacious and are therefore greatly benefited by an admixture of lime, as they are rendered more mellow or friable by application; the color of the soil is also changed to a dark brown, and has a rich oily appearance.—These combined influences give it a greater capacity for imbibing heat from the action of the sun, and this additional heat communicates an increased vegetative power; besides, the improved friability or mellowness of the soil gives greater facilities to the fibrous roots of plants to shoot further into it, and hence they obtain a larger supply of nourishment or food. Its capacity for absorbing moisture is also greatly increased, because, for the reasons above stated, the plastic properties of a stiff soil are removed, and moisture, either from rain or dew, is more freely admitted and absorbed; and having penetrated deeper into the soil, is retained, as if by a sponge, for a longer period. Farmers who are familiar with stiff soils, know full well that they will not admit heat nor absorb moisture so readily as those which are lighter, and the latter do not bake and become so hard and dry as the former—besides, a purely clay soil is always cold at a short distance below the surface.

Such soils, so improved, have increased capacity for imbibing heat from the action of the sun by day; and this heat is maintained for a longer period at night; and hence a protracted evaporation or emission of heat is secured, which, acting upon the atmosphere of night, produces a greater amount of dew. The soil is therefore rendered capable of creating a larger supply of moisture—of imbibing more heat, and of receiving and retaining these agents of vegetation alternately, for a more protracted period. Dews are occasioned by a cool atmosphere coming in contact with the exhalations from the heated earth, or vice versa, and hence a condensation of the aqueous particles: the dew-drop of evening is first seen upon a blade of grass at its highest point.

Heat and moisture are necessary to vegetation, and the more you can obtain of these agents for your plants the more vigorously will vegetation be sustained. Lime when applied to a stiff soil renders it more friable, porous or mellow; and it becomes more easy to cultivate: the plough does not meet with the same resistance; the roots of the grass and weeds are more easily separated from the soil, and may therefore be readily destroyed, and a thorough tillage or pulverization of the land is thereby greatly facilitated. Besides, we find that vegetation is most vigorous where the soil is adapted to secure the largest amount of these supplies; and consequently that soil which by nature or cultivation is capable of imbibing and retaining the largest amount of these indispensable elements, has the greatest capacity for producing vegetation. A sandy soil appears too porous to retain heat at night to promote to any important extent a condensation of the atmosphere, and thus supply

itself with sufficient moisture from dew—besides, it is too readily drained; while a clay or compact soil becomes indurated upon its surface, and heat from the sun cannot sufficiently penetrate it to be available for a like purpose; but when these are properly mixed and combined with other earths, such as lime, marl, or with manure, the soil opens its pores to receive the invigorating influence of the sun during the day, and at night the heated exhalations escaping from it, producing a greater amount of dew, supply the plants, nestled in its bosom, with necessary moisture from the pure and bounteous fountains of the atmosphere.

Some farmers think that lime is injurious to wheat land—that it makes the soil cold, and that their lands, when dressed with it, are more apt to produce mildewed grain than there was before it was applied. That thus, in many instances, has appeared to be so, I do not doubt, because the soil by its application, is rendered more productive, and therefore we have more grass, which under our present system of sowing grass-seed with wheat, is injurious to that crop, as I have contended in a former paper. Toll, in his excellent *Treatise on Blight*, says, "wheat being doubtless originally a native of a hot country, it requires by its constitution a considerable degree of heat to bring it to perfection; and if much of that degree of heat is wanting, it will be the weaker, and when the solar rays cannot reach the lower parts of the stalks, the lowest leaves and knots cannot do their office;" and hence the maturity of the plant is protracted, because "the lower parts of the stalks must receive the greater share of heat, being nearer the point of incidence of the sunbeams reflected by the ground." Being deprived of this genial and necessary heat, since it is shaded near the roots by grass, and being imbedded in too moist and cold a soil, it has not the power of elaborating its sap or evaporating its fluids, and is therefore slow in ripening; and hence the crop, becoming diseased, is frequently destroyed by mildew.

In the application of lime to land, much care and close observation is required, to produce the best results. The farmer should not be too generous; he should not forget that lime and earth constitute mortar, and therefore his care should be only to apply so much to his soil, if light, as will render it sufficiently compact to retain moisture and heat; for a sandy soil is composed of spherical particles, and is too readily ventilated and drained of its moisture, and being mixed with lime, the interstices being closed, the soil is greatly improved. After several years of experience and careful observation, I am convinced that lime, when applied to a sandy soil, renders it more compact and much more productive; and that manure, when applied to it after a dressing of lime, will have a much more lasting influence than it would have had before its application. Upon heavy soils, lime should only be applied in such proportions as will render it most mellow or friable: any thing beyond this, will be found to be injurious. It is not material, as I apprehend, whether it be put on in a hot or cold state, because it is soon cooled under the atmospheric influence after being slaked, and cannot be ploughed in after being spread before it becomes chilled. I usually apply it in the spring, when preparing for corn, the working of which, and the preparation of the land for subsequent crops, thoroughly mix it with the soil. I obtain the lime when ready to apply it, have it placed in a situation convenient for water, where it is immediately slaked: and as it falls, it is carted out and spread upon the land previously ploughed, which, after being harrowed is struck out and planted. I have applied it in other ways, but the result was never so satisfactory.

I have been told by some farmers, that the greater benefits from the use of lime on

their land are exhibited in about seven years after its application; some say in four years; some contend that they have seen its effects the second year, and others say that they never saw any effect whatever from its application, although they put it on in generous quantities. Now, I verily believe all these statements to be true, and I account for this singular anomaly in the following manner. In the latter instance the lime was ploughed in so deep that it was never mixed with the soil, and therefore produced no effect; and in the former the admixture took place probably in one, four or five years after it was applied. In some cases, it is said, land has been injured by it. I am inclined to believe those cases the farmer has been too generous, and would recommend as a corrective, that he plough deeper, and thereby mix more earth with his lime. He will thence have the advantage of a deeper soil.

As the quantity best adapted to improve most soils, I would recommend from forty to fifty bushels unslaked to the acre. I have found excellent results on sandy, clayey, and loamy soils, from the application of that quantity. As I have never farmed limestone or red shell soils, I cannot advise respecting them.

I therefore repeat, mix your soil well with the lime which you may put upon it—pulverize it thoroughly—destroy all natural vegetation, if you wish to raise naturalized crops—exercise a sound judgment as to time and method, and you will seldom have reason to complain, in this part of the Pennsylvania, at least, either of an ungrateful soil, or an unfavorable climate.

KENDERTON SMITH

MILK.

Milk is a fluid secreted by the female of all those animals denominated Mammalia—and intended evidently for the nourishment of their offspring. The milk of every animal has certain peculiarities which distinguishes it from every other milk. The milk of the cow is most used by man as an article of food, and consequently more particularly claiming their attention. Chymists, therefore, have made choice of it for their experiments.

Milk is an opaque fluid, of a whitish color, a slight peculiar smell, and a pleasant, sweetish taste. When newly drawn from the cow, it has a taste very different from that which it acquires after it has been kept for some hours.

CREAM.

When milk is allowed to remain for some time at rest, there collects on its surface a thick, unctuous, yellowish colored substance, known by the name of cream. After the cream is separated the remaining milk is of a bluish white color and is much thinner than it was before. If it be heated to the temperature of 100°, and a little rennet, which is water digested with the inner coat of a calf's stomach, preserved with salt, be added to it, coagulation ensues; and if the coagulum be broken, the milk very soon separates into two substances; a solid white part known by the name of curd, and a fluid part called whey. Thus we see that milk may be easily separated into three parts, namely,—Cream, Curd and Whey.

FIELD ENGINE.—A machine by which a field may be harrowed, sowed, harrowed again, and smoothed with a roller, all at one observation, yet requires no more power to propel it than a common harrow. The sowing part may be regulated to any required quantity of grain per acre—has a convenient seat on which the driver may ride, and will in fact save two thirds of the ordinary labor required in this branch of agriculture.

IMPROVED COFFEE-MILL.—The mill is enclosed in a neat, regular, square upright box, grinds with ordinary facility, and costs but 25 cents.