CAN ALFALFA BE GROWN TO ADVANTAGE IN THE EAST?
BY H. B. FULLERTON

GENERATIONS of the inhabitants of the old world, so called, have set great store by this big yielding, hardy, easily grown blue-blossomed clover, called Lucerne by botanists, but known to practically all the rest of mankind as Alfalfa, its Arabic name. Scientists tell us that this plant’s original habitat was Arabia, and from thence it was distributed throughout Europe. And so great has been its value as a food for animals and even birds that man the world over has sought the secret of its cultivation. Practically all agricultural races have long possessed fields of this forage, for it is apparently influenced but slightly by altitude, climatic conditions or soil variations.

Cortez, who knew it in Spain, found it growing most thriftily in the valley of Mexico at an altitude of a mile and a half, and where the water level is seldom much below a foot from the soil’s surface. It is common in many sections of South America. It thrives in the high and dry sections of Arizona and New Mexico, as well as in the interior of the United States.

It grows luxuriantly on the salt-water girt peninsula of Delaware, Maryland, Virginia. It thrives in the sea-washed sand of southern New Jersey, and in New Jersey’s heavier, higher portions to the north.

On the rocky heights, in the heavy clays and in the rich lower lands of Pennsylvania it is a thoroughly satisfactory crop. Upon Long Island, whose surrounding bodies of salt water furnish nightly, even in the driest summers, abundant moisture, alfalfa has proven in the past four years particularly successful, whether it is planted on the lighter soils of the south or ocean side, in the “pine barrens” or central section or on the higher, stronger soil along the Sound shore in the north.

Within a decade attempts have been made in various sections of the Eastern States to start alfalfa fields. The proportion of failures was so great, however, that slight headway was made, the reason really being that alfalfa, at that time, had not received sufficient scientific study to bring to light the prime requisites necessary to assure a vigorous catch and a paying crop.

In 1905 it was decided to make it one of...
the crops to which the Long Island Road's Experimental Station would give special care and study. At this time the very comprehensive book on alfalfa by Neighbor Coburn had not been published, and available detail was not at hand, yet the practical experience of Western growers and Western agricultural institutions furnished sufficient data upon which to formulate a plan of campaign.

Boiled down, there were just three absolute necessities, a "sweet" or alkaline soil, plenty of humus or decayed and decaying vegetable matter, and the rather mysterious and comparatively newly discovered bacteria.

It was asserted that even though the soil was alkaline and filled with humus, alfalfa would fail in many sections of the United States, because that particular family of bacteria recognized as an absolute necessity for a permanent field of alfalfa was lacking.

To those in charge of Long Island's Experimental Stations this point seemed astonishing, to put it mildly, for knowing that practically all clovers,—the low-growing, dainty, white-flowered plant, the tall, coarse, red-headed fellow, the superb plant of medium stature, with its oval-shaped crimson glory, the near-shrub, with long delicate spikes and sweet-scented white flowers, the tall juicy-stalked blue, violet, and occasionally purple-flowered plants, with leaves and stalks and honey-filled flowers, and roots weirdly decorated or distorted by curious knobs, knots and pellets (in which scientists say reside the bacteria, that either force this plant to draw nitrogen from the air, or are coaxed by the plant to perform this wonderful operation for its benefit), knowing, as we have said, that all varieties, white, red, crimson and sweet clover, grew with vigor in all sections of Long Island, we never doubted for one moment that the blue-flowered member of this family would do likewise.

Experience has forcefully demonstrated to us that a mighty important item to be considered was the seed, so having always pinned our faith on the United States Government we appealed to its Department of Agriculture. The seed sent us showed ideal germinating qualities, and was planted in accordance with the plan originally laid out. The soil selected had but the fall before been cleared of oak and chestnut stumps and sweet fern and huckleberry bushes. It had been plowed and roughly harrowed far too late in the season to attempt fall planting; as fall had gone, and in spite of the oft-repeated statement that fall was the only time for the planting of alfalfa we decided to plant it as early in the spring as possible.

On testing a handful of the soil by means of limus paper, it was found to be acid. This we felt sure would be the case, for the sun's rays had been withheld from it by the wild growth covering it. We had spread upon the field, as evenly as could be done by means of the fork, for at that time we owned no manure spreader, ten tons of manure, and this, of course, had been turned under.

When spring opened we found by experiment that six hundred pounds of hardwood ashes was sufficient to counteract the acid and give us an alkaline soil, therefore we had the humus and the alkalinity, and part of the field was planted without any attempt to introduce the particular strain of bacteria said to be necessary for alfalfa growth, yet lacking in the Eastern States.

One plot was seeded without any attempt at bacterial inoculation; next to it we spread soil from an old alfalfa field we found Upstate. Another section we attempted to inoculate with bacteria from laboratory cultures, and still another had laboratory culture— inoculation of both soil and seed. In three days after the seed was sown alfalfa was up above the ground on both the plot inoculated by alfalfa field soil, and upon the plot which had received no inoculation whatever, being simply newly cleared Long Island soil. The growth and color of the plants in both these plots appeared identically the same. There was a difference, however, in the stand secured, it being irregular or splotchy on the virgin soil, and very even and heavy where alfalfa field soil had been sown.

On the plot which had received the laboratory culture inoculation, and upon the plot where both soil and seed had been inoculated artificially, there appeared no growth whatever, hence, the very beginning of our work had presented most interesting problems, and a solution was, of course, a necessity.

As time passed common sense demonstrated to us the fact that while alfalfa could be grown upon Long Island soil without inoculation of any description, the yield would be about one-fourth that obtained from the same seed where natural soil in-
oculation had been practiced. As a matter of fact it required four years to bring the uninoculated plot up to that which received natural soil inoculation at planting time, while our barren plots demonstrated the fact that, for some reason, where inoculation by laboratory culture was tried we had failed utterly.

Our many experiences since that time have invariably resulted in the selfsame failure, there being but one exception, this exception occurring when the laboratory cultures were forwarded in a carrier of swamp muck or humus.

Cultures received by us in water, gelatin, and other artificial carrying mediums have, up to the present time, shown absolutely no effect on the various plants upon which they have been tried.

Investigation by scientists of our barren plots proved that instead of developing a benign bacteria these laboratory cultures had developed another low form of life which was absolutely harmful to plant growth.

We had two alfalfa fields, and some of the alfalfa on both of them, at the first cutting, had reached the height of thirty-nine inches, the average, taking the field as a whole, being thirty-six inches. This first year three cuttings were secured, and we found the yield to be four and three-fourths tons to the acre, and this magnificent forage was selling, at that time, in New York City at $22.00 a ton. It has sold since as high as $30.00, and its use is growing as Americans are realizing its value.

In the past two years we have sent from the Long Island Railroad’s Experimental Stations enough alfalfa field soil filled with bacteria to establish on Long Island something over one hundred and thirty alfalfa fields, and again established dairying upon Long Island, which once supplied from the neighborhood of Westbury the milk and butter used in New York and Brooklyn.

As a milk and butter producer, a ton of alfalfa is equal to three tons and more of hay. Horses will touch nothing else as long as a sprig of alfalfa remains in the rack. Swine devour it greedily, and pork built up on an alfalfa diet brings as high as two cents a pound above the corn or swill fed article.

Fowl are very fond of it and its use invariably increases the egg yield, hence, no acreage possessor can afford to be without an alfalfa field, even if no stock is kept except chickens.

In spite of the drought of 1910 three crops of alfalfa were secured without irrigation of any description, but where a portion of the field was irrigated by the overhead system continuous cuttings were secured, and from one-half an acre all the green food to keep two cows and a yearling heifer in good condition was obtained, and best of all, a foundationless theory that alfalfa could not be grown successfully on Long Island or elsewhere in the East, was most thoroughly and practically exploded.