

acre will support twenty-five hundred plants. After three years, each blade will produce half an ounce, or about half a pound to the plant. The crop may be reaped each succeeding year for from twelve to sixteen years without replanting. The plant becomes dry and worthless as soon as it produces a flower; but it rarely produces the flower before twelve years, and usually not before sixteen or twenty years. The plant grows wild on the island, but it is understood to have originally been brought from Mexico. The fibre is three to four feet long, fine, strong, and, it is said, would doubtless be good for textile purposes.

The *Agave Americana*, or American aloe, grows higher than the *Agave Mexicana*. It varies in height from four to five feet, and the fibre is the same length. It grows abundantly, chiefly near the seashore, and is understood to be a native of the island. The fibre is coarser than the Mexican agave, but about the same quantity can be produced to the acre.

Of the pine-apple (*Ananassa sativa*), only the blade, which is about two feet long, produces fibre. The fibre is strong and fine, and is believed to be well-suited for textile manufactures. It is of finer texture than either the American or Mexican agave.

Agave rigida, or sisal hemp, has lately been introduced into Trinidad. The blades alone, which grow about two and a half to three feet long, are used for fibre. Eight blades, it is said, give an ounce and a half of fibre, and the fibre obtained is about three feet long, strong, coarse, and stiff, suitable, it is believed, for strong ropes and chair-bottoms. An acre will support two thousand plants of about sixteen blades each, and calculated to produce at each reaping three ounces of fibre to the plant. After three years a crop is reaped annually.

Among the fibre-producing plants of Trinidad may be mentioned the *gemove* (*Malachra*); *bois ceip* (*Oreodaphne cernua*); *Gumbo mizse*, the pinquine or wild pine-apple; the Spanish needle (*Yucca*); and the *Sansevieria zeylanica*.

Consul Peirce states, in conclusion, that he has been informed that there is no machine now in use in the colony which obtains the fibre without destroying the substance of the fibre-ribs. The principal machine, if not the only one, now used in Trinidad and Tobago, is arranged for the operator to hold the blade of the plant in his hand, while the machine scrapes out the green and watery substance. The opinion has been expressed that if a machine could be introduced that would act somewhat on the principle of a cane-mill, in which the cane enters one side and comes out at the other thoroughly crushed and squeezed, a great advantage would be gained over the present practice.

BETTER COWS FOR THE DAIRY.¹

THE need of better cows for the dairy is coming to be very generally appreciated. The dairy commissioner of Iowa is reported as saying that the average cow in that State gives but 3,000 pounds of milk annually, while good ones yield from 5,000 to 6,000 pounds. The director of the Vermont Station states that the average yield per cow in that State is only about 130 pounds of butter per annum, while there are thirty dairies in the State that average over 300 pounds per cow.

The director of the New York Station says, "New York has 1,500,000 milch cows, probably producing, on an average, less than 3,000 pounds of milk per year, and the annual average butter-product per cow for the State is undoubtedly less than 130 pounds. This should not be, when there are whole herds averaging 300, and some 400, pounds of butter per year for each cow. Animals producing these by no means phenomenal yields are not confined to any particular breed, and are often grades of our so-called native or no-breed animals. Proper selection, systematic breeding, and judicious feeding have produced these profitable animals and herds."

The difference in the milk-producing qualities of different cows is brought out very clearly by a series of experiments conducted at the Massachusetts State Station, of which Professor C. A.

Goessmann is director. They are especially interesting, because the cows and their feed and care were such as are found on the better farms of Massachusetts; and the results, obtained with the appliances of a well-equipped experiment station, show in accurate and full detail the elements of actual profit and loss as they could not be found in ordinary farm experience.

These experiments have been made with twelve cows, and have continued over five years. Grade Jersey, Ayrshire, Devon, Durham and Dutch, and native cows were used. They were secured for the experiments a few days after calving, and fed until the daily yield fell below 5 or 6 quarts, when they were sold to the butcher. The length of the feeding-period, i.e., duration of the experiment with each cow, varied from 261 to 599 days. Hay, fodder, corn, corn-silage, green crops, roots, and corn-meal, wheat bran, and other grain, were used. The daily ration per head consisted of 18 to 20 pounds of dry fodder, or its equivalent of green fodder, and from 6½ to 9¼ pounds of grain. Careful accounts have been kept of the history of each cow, including breed, age, number of calves, length of feeding-period, amounts and kinds of fodder, yield of milk, chemical composition of feed, milk, and manure, cost of cow and feed, and values of milk and manure.

The following is a recapitulation of the financial record of the cows. The milk was reckoned at the price paid for it at the neighboring creameries. The value of the manure produced is calculated by assuming, that, of the total amount of food, 20 per cent would be sold with the milk, and the remaining 80 per cent saved as manure. As farmers in the region buy commercial fertilizers for the sake of their nitrogen, phosphoric acid, and potash, it was assumed that these same ingredients would be worth about as much, pound for pound, in the manure as in the better class of fertilizers, and accordingly the value of the manure was computed by taking the nitrogen as worth 16½ cents, phosphoric acid 6 cents, and potash 4½ cents, per pound. The return for feed consumed represents what the feeder receives for labor, housing of cattle, interest of capital invested, risk of loss of animal, etc.

The most profitable cow was bought for \$60, fed 584 days, and then sold for \$28, making her actual cost \$32, and the feed cost \$135.05; so that the total cash outlay was \$167.05. The milk brought \$203.37 at the creamery, and the manure was estimated to be worth \$56.93, making the total value received for feed consumed, \$260.30. Subtracting the total cash outlay of \$167.05 from this, there remains \$93.25 as net return for feed consumed. Deducting the estimated value of the manure, the remainder, "return in excess of estimated value of manure," is \$36.32. In the average for the twelve cows, the net return was \$50.43; and the return in excess of the estimated value of the manure, only \$15.13. With the least profitable cow, the cash outlay for cow and feed exceeded the value of the milk and manure by \$3.97: in other words, the net return for feed consumed was \$3.97 less than nothing. Subtracting the value of the manure, the total loss was \$34.25; that is to say, allowing for the value of the manure, the results with the twelve cows varied from a gain of \$93 to a loss of \$3.97, or, if the value of the manure be left out of account, from a gain of \$36.32 to a loss of \$34.25.

It is noticeable that the profit or loss did not depend upon either the breed or the length of the feeding-period. The most profitable cow, and the least profitable but one, were both of the same breed. Of the two most profitable cows, one was fed for 584 days, and the other for only 278 days.

Two things, then, are brought out very clearly by these experiments. One is that in such localities as this, the value of the manure goes far to decide the profit in feeding dairy cattle. Another is that cows which would ordinarily pass for good ones may differ widely in product.

To the practical dairyman these experiments teach clearly the difference between cows which are profitable and those which are not, and the importance of selecting the best cows for his dairy and getting rid of the poor ones. In a larger sense, they illustrate to every farmer the importance of knowing accurately the condition of his business. Upon this its success or failure largely depends.

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