

periment station last year. In this state; more than 16,000 acres of the plant are grown for the canneries, and about 2,000 acres for supply of the general public. The experiments were made for the purpose of testing the effects of the use of nitrate of soda alone, and in combination with liberal amounts of phosphoric acid. Twelve plots were employed, each  $\frac{1}{16}$  of an acre in superficies. Nitrate was applied:

First, alone, at the rate of 80 lbs. an acre—May 7th;

Second, at the same rate, but divided—half May 7th, half June 12th;

Third, at the rate of 160 lbs. an acre—May 7th;

Fourth, 80 lbs. May 7th, 80 lbs. June 12th;

Fifth, 80 lbs. nitrate, May 7th 160 lbs. muriate of potash and 320 lbs. bone-black superphosphate per acre, and the same dose of nitrate repeated on the same land on June 12th.

The conclusion derived from these experiments were:

1st. The use of the small dose of nitrate of soda in one application, and of the large dose in two applications increased the yield without delaying maturity.

2nd. The large dose at one time increased the yield but delayed maturity. This is in perfect accordance with the general effect of nitrate of soda as applied to both grain- and root-crops in England, as I can testify by experience.

Of course, the best and soundest crops of tomatoes were harvested from the plots on which all three manures were used.

*Dr. Hoskins* observes, in the Vermont Watchman, that:

The teaching of non-exercise and close confinement of milch cows we are convinced is all wrong, as it must lead to a gradual but sure undermining of the constitution of both the cow and her offspring.

The point is a difficult one to settle, seeing that in many cases the close confinement of milch-cows is almost a necessity. Can we not make a compromise, and give the cow plenty of exercise from May 1st till the hard weather begins in January, and then keep her warm for the remaining four months of the year?

*Tomatoes again.*—Mr. L. H. Bailey, of the New-York Experiment station, sums up the results of his experiments in tomato-growing as follows:

(1) Frequent transplanting of the young plant, and good tillage, are necessary to best results in tomato culture.

(2) Plants started under glass about ten weeks before transplanting into field gave fruits from a week to ten days earlier than those started two or three weeks later, while there was a much greater difference when the plants were started six weeks later. Productiveness was greatly increased by the early planting.

(3) Liberal and even heavy manuring, during the present season, gave great increase in yield over no fertilizing, although the common notion is quite to the contrary. Heavy manuring does not appear, therefore, to produce vine at the expense of fruit.

(4) The tests indicate that poor soil may tend to render fruits more angular.

(5) Varieties of tomatoes run out, and ten years may perhaps be considered the average life of a variety.

(6) The particular points at present in demand in tomatoes are these: regularity in shape, solidity, large size, productiveness of plant.

(7) The ideal tomato would probably conform closely to the following scale of points: vigor of plant, 5; earliness, 10; color of fruit, 5; solidity of fruit, 20; shape of fruit, 20; size, 10; flavor, 5; cooking qualities, 5; productiveness, 20.

(8) Solidity of fruit can not be accurately measured either by weight or keeping qualities.

(9) Cooking qualities appear to be largely individual rather than varietal characteristics."

I should say, referring to No. 7, that earliness ought to have 20 points instead of 10.

*Loss suffered by manure.*—Investigations were made at the New-York station on this important question in the summer of 1889, and, allowing for certain drawbacks, due to the difference between practical and theoretical values, useful information may be derived from the inquiry. Whether, in any case, fresh horse-dung would sell for \$2.45 a ton—making the cost of a dressing of 15 tons to the acre—\$36.75—is for farmers to decide: in my opinion it would never pay to give more than a dollar a ton, and even then it must be pretty close at hand. One great point comes out: When manure simply dries, no appreciable loss of valuable constituents takes place; but of this we had long possessed practical security, seeing that the top-dressing of meadows in summer never fails to exert most beneficial influence on the produce. Still it is always satisfactory to know that theory confirms our practice.

(1) The manure of one day (excrement, solid and liquid, 491 pounds, bedding 38.5 pounds, total 529.5 pounds) from nine horses was exposed for six months out of doors in an open wooden box, which was not water-tight, and was placed in a pile of manure, the object being to subject its contents to the same conditions that prevail when horse manure is thrown out in a loose pile from a stable door. At the end of this time the composition of the exposed manure, as compared with that of fresh manure, was as follows:

Description.	Water.	Nitrogen	Phosphoric acid.	Potash.	Total weight of manure
	Per cent.	Per cent.	Per cent.	Per cent.	Pounds.
Fresh horse manure.	70.79	.51	.21	.53	529.5
Horse manure after having been exposed six months.....	81.74	.46	.15	.31	372

The losses, therefore, were threefold; first, a considerable loss in the total weight; second, a gain in the percentage of water; and third, a loss in the percentage of valuable fertilising elements.

The commercial value of the nitrogen, phosphoric acid, and potash in a ton of the fresh manure is estimated to be \$2.45; while the same ingredients in the manure which had been exposed six months would be worth \$1.42, showing a loss of \$1.03 per ton, or 42 per cent.

*Grain-feeding of cows on pasture.*—At the New-York station, to test the value of this proceeding, six cows were used in two lots, as equal as possible in all points. Lot 1 got nothing but the grass of the pasture; Lot 2 got in addition 2 lbs. bran and 2 lbs. cotton-seed meal per head per day. The result was not satisfactory; there was a steady and constant diminishing of the flow of milk of both lots, but the lot that received extra food fell away in milk-yield much more rapidly than the lot receiving only what the pasture yielded, though there was a constant and considerable increase in the butter-fat of the former. "Still, no return in butter and milk was received from the extra food given." This seems contrary to experience, and would lead one to suppose that the management of the investigation must have been faulty, or that the weather had been such as to have vitiated the experiment.

One observation is worthy of attention: "The manurial value of the grain, at present price of fertilisers and fodder,