

grown exclusively, tomatoes and cucumbers are forced in midwinter, but to follow the same course here would be to court failure. Head lettuce cannot be grown so cheaply as varieties that do not form heads, but there is no better demand in western cities for the former than for the latter. Tomatoes and cucumbers are difficult to force in midwinter, and the prices that may be obtained for them here at that season of the year, are not sufficient to pay the cost of production.

In spite of these drawbacks recent developments show that the business may be carried on profitably in the Western States.

The introduction of the Grand Rapids lettuce may be said to mark the commencement of new era in lettuce growing. It is less subject to disease and can be grown more cheaply than any of the heading sorts, which are looked upon as standards in the East. The difference between it and the varieties is so marked that by its cultivation the profits may be nearly or quite doubled. This alone is a great advance, but after three years experimenting with sub-irrigation the Ohio station has found that the lettuce crop may by this means be nearly doubled.

This places the lettuce grower in a much better position than before; in fact, lettuce forcing in greenhouses is now a profitable business, whereas it was in danger of being abandoned in many parts of the country.

This is a matter about which tariff reformers will not have much to say, as tariff has nothing to do with the matter. Over production in one section nearly destroyed a growing industry in another, but the discovery of a variety and the application of an old device in a new manner, has saved a business which is likely to become one of great importance.

There is no reason why vegetable culture under glass should not now become of equal importance with floriculture, and this means many thousands of dollars annually added to our productive resources.

Sub-irrigation was first used with lettuce in order to avoid watering the foliage, thus preventing the much dreaded lettuce rot. It was found that the lettuce grew much better by this method of watering than when water was applied to the surface of the soil. Operations were then enlarged, until entire houses are now supplied with water in this manner. In order to operate the plan successfully water tight benches are erected. These may be made in various ways, but matched flooring laid in white lead answers very well. Drain tile are laid on these benches 2½ feet apart and covered with soil. Watering is accomplished by pouring into the ends of the tile, where a T joint is laid, for convenience.

Some later experiments show that the same principle may be extended successfully, beginning as soon as the seed is sown. The seed is sown in shallow boxes with slatted bottoms. A convenience size is 16x24 inches and two inches deep. Lath is used for the bottoms, and is laid close together, which allows the water to pass through, but prevents the soil falling out. These boxes, or flats are filled with soil and the seed sown in very shallow marks made on the surface of the soil. Covering may be done with the fingers or a board, and the whole surface pressed down firmly with a block. No water is applied to the surface of the soil, but the boxes are placed in a shallow vat in which is a small quantity of water. These seed boxes are allowed to remain in the vat until the soil is quite well soaked, then taken out and placed in a warm part of the house. The seed germinates very quickly and certainly by this method, hence should not be sown so thickly as when surface watering is practiced. When large enough the young plants are transplanted into flats of the same size as above named, and watering is done in the same manner. Labor is saved by following this method, although the contrary may seem to be true. That is because watering need be done less frequently than by the old method, but even if such were not the case the results justify the adoption of the new method.

Both radishes and cucumbers flourish under the same treatment, although they are not benefitted to such an extent as lettuce. Tomatoes respond less than any other crop, but they show sufficient gain to pay for fitting up the house for sub-irrigation.

Experience has shown that a sub-irrigation plant pays for itself in one season, or one hundred per cent. on the investment. The estimate is for green-house crop in general, but for lettuce alone the profit is greater.