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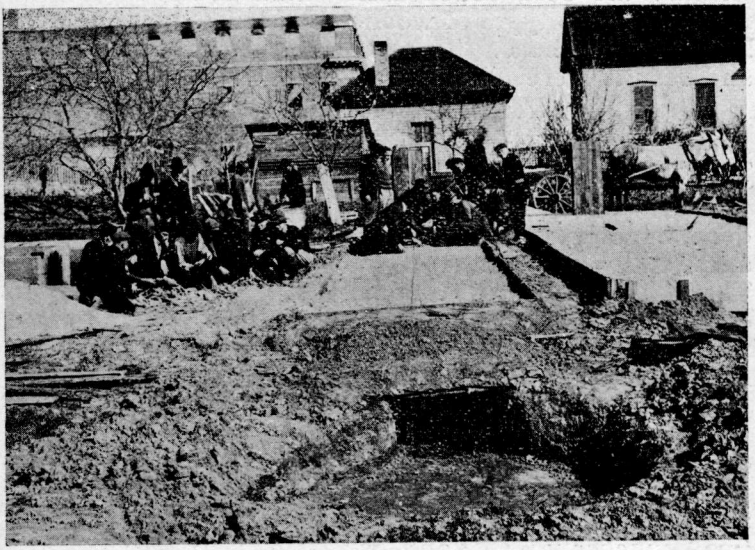

Surface View of Fire Heated Beds

Use of Wooden Constructed Fire Heated Hot Beds For Production of Sweet Potato Plants

By

C. L. ISBELL AND W. D. KIMBROUGH

"USE OF WOODEN CONSTRUCTED FIRE HEATED HOT BEDS FOR PRODUCTION OF SWEET POTATO PLANTS"

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C. L. Isbell and W. D. Kimbrough.

A test has been run over a period of one year to determine the cost, practicability and comparative efficiency of two types of wooden constructed fire heated sweet potato beds. The experiment was conducted and results were obtained as follows:

CONSTRUCTION OF BEDS

Trench Type:

Three parallel trenches were dug 1 foot wide, 1 foot deep, 1 foot apart and 40 5/6 feet long, extending North and South on a Southern slope of 2 feet per 100 feet. These trenches came together at both ends, forming a common trench which was widened to 3 feet and continued at the South end 10 feet, forming a fire box. At the North end the common trench became the bottom of the chimney.

Common slabs 7 feet long, were placed crosswise over these trenches, forming a closed floor. Sheet iron was placed over the fire box. A chimney was constructed by nailing together, in a box form, four boards, two 22 inches x 6 feet and two 12 inches x 6 feet. This chimney was set over the common trench at the North end of the bed. Slabs, 8 inches wide, were placed edgewise around the edges of the slab floor to form a wagon bed like construction 40 5/6 feet x 7 feet. In this structure 2 two-horse wagon loads of clay were placed, making a clay covering on the floor 3 inches deep near the fire box and 1 inch deep at the chimney end. On this clay was placed sand. The total amount of sand being used at time of bedding was 142 11/12 cubic feet. (A little more sand was placed on the potatoes later after watering the beds had removed some of the sand from over the potatoes.) The fire box was covered

with 6 inches of clay. A soil thermometer was placed in the bed, near the fire box. The bed was thoroughly watered and a fire placed in the fire box.

It required 17 bushels of potatoes for this bed, and 95½ hours (man hours) to construct the bed, grade, and dip the potatoes in corrosive sublimate, and in water, place potatoes in bed, cover with sand and have everything ready for the fire to be started. The sand was hauled a mile and a half and the slabs four miles.

A fire was started March 7th. The first plants, 5,140, were removed April 23rd. Up to July 1st, 28,833 plants were produced. It required 1¼ cords of wet, sap pine wood to keep it warm.

BROAD BED:

This bed was constructed alongside the trench bed, having the same slope and exposure. Slabs, about 2 inches thick and 8 inches wide were nailed together to form a frame 11½ feet wide and 41⅛ feet long and a 2 x 4 placed on either side and in the center, lengthwise, as a support. The center brace divided the space underneath the floor in equal parts. On this frame was placed a cover, or floor, made of slabs. Slabs were placed around the ends and the sides, forming a wagon bed like structure as in trench bed, except this bed was 11¼ feet by 41½ feet. This frame was filled with clay and sand, and a flue erected at the North end and a fire box on the South end as in the trench bed.

It required 27½ bushels of potatoes to fill this bed, and 106 hours (man hours) to construct it, and bed the potatoes, ready for the fire to be started. (This being the second bed constructed, the men were able to work a little faster than when constructing the trench bed.)

Fire was started March 7th. First plants, 4,950, were taken from the bed April 23rd. Total number of plants produced up to July 7th, was 54,679.

EXPLANATIONS

In the trench bed 9 bushels of Triumph potatoes were used on half the bed and from this half 12,975 plants were produced, or a little over 90 plants per square foot, or 1,441 plants from each bushel of potatoes bedded.

Eight bushels of Porto Ricos were used on the other half of this bed, and 15,856 plants were produced, or 110 plants received per square foot, or 1,982 plants per bushel.

In the broad bed, 14½ bushels of Triumphs were used to cover half the bed and produced 24,785 plants, or 103 plants per square foot, or 1,709 plants per bushel.

Thirteen bushels of Porto Ricos were used on the other half of this bed and produced 29,894 plants, or 135 plants per square foot, or 2,299 plants per bushel.

The Porto Ricos were a little smaller potatoes, and covered a little more area in the bed per bushel than an equal quantity of Triumphs. It will be seen that a relatively small quantity of plants were produced. The fire was not kept under the bed all the time for fear the plants would be ready to move before ready to use, which may account for the small quantity of plants. A cold late spring made this necessary.

RECOMMENDATIONS

One year's experience would indicate the following:

1. Fire should not be extended into the fire box far enough to catch the bottom of the bed on fire.

2. Sufficient water should be applied to the bed at all times.

3. The soil thermometer should be read often and fire adjusted if necessary to prevent the potatoes becoming too hot or too cold. The temperature should be kept between 60 and 100 degrees, depending on how quickly the plants are wanted. The bottom of the thermometer should come to the bottom of the potatoes. It is better to have two thermometers—one near the fire box, the other near the chimney.

4. Pine straw, or some other form of cover, should be ready to throw over the bed in case of unexpected frost or cold weather.

5. Dipping potatoes in corrosive sublimate may destroy disease spores on the surface but it will not control "black rot" where the disease has gone into the potato.

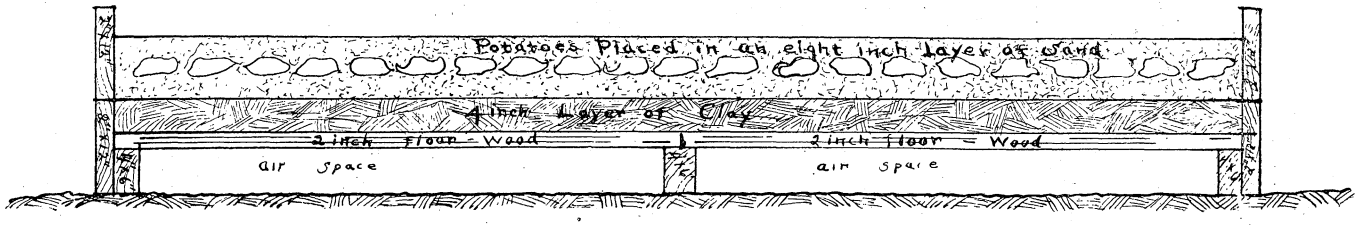
6. Clay should be placed in the bed 5 inches deep

near the fire box and 3 inches at the chimney. More clay is recommended than was used on the above beds because it will tend to hold heat in case of cold weather and to prevent roasting or cooking of potatoes in case of excess firing. It holds more moisture.

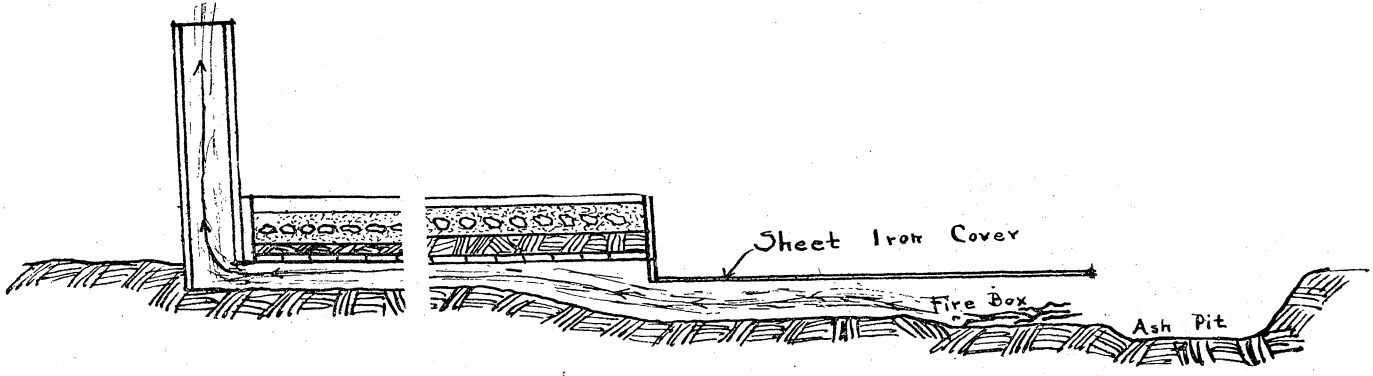
7. Side boards should be made tall enough to receive 5 inches of clay, 8 inches of sand and still extend a little above the sand.

8. Potatoes should be placed on 4 inches of sand and another 4 inches applied on them to go down and thoroughly cover each potato.

9. These experiments indicate that the broad bed is a conserver of time and fuel and a producer of more plants per bushel of potatoes or per area in bed.



Cross section of bed showing its construction



Longitudinal section (greatly reduced) showing fire box and other parts of bed