

Hotbed Growing: for bigger and better vegetables

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As keen vegetable growers, many of us will have heard of the historic concept of the 'hotbed,' but are they still relevant and useful today?

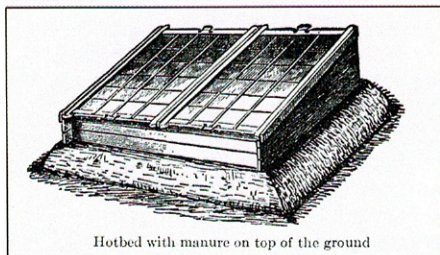
For my course, I could choose a subject of my choice and I reasoned that it would be good to look into something that could potentially help NVS members.

Everything I'd read on the concept suggested that hotbeds could offer benefits including a stable growing environment and an extended growing season with early seed germination from a natural heat source, which seemed to be useful attributes for growers of competition vegetables. Protection from adverse weather, pest, disease and disorders of vegetables was also indicated. The hotbed concept certainly seemed like a suitable subject to investigate.

For the study, I decided to look into the historical development of hotbeds, followed by research (by way of a survey) into the growing habits of selected NVS vegetable producers. This then led to visits and case studies of the hotbeds of the Lost Gardens of Heligan and Charles ('No Dig') Dowding at Homeacres in Somerset, before the final stage of the study, building and testing a hotbed of my own, which was designed specifically for 'small-scale' individual growers, such as NVS members. The hotbed was to be tested next to an open-ground control bed to see how it performed. The whole study eventually ran to around 18,000 words and took some six months to complete, ending with the submission of my dissertation and a PowerPoint presentation of my findings to the RHS examination panel.

The Historical Development of Hotbeds

The historical concept of the 'hotbed' is a protected structure described by Symes (2006) as "A bed that is hollowed out, like a trough, and filled with materials such as



Historical hotbed incorporating manure as a heat source, circa 1930. Source: *Small Farmers Journal* (2017)

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manure and tanner's bark which heat up and nourish the plants grown in the bed. It can be covered with a glass frame."

The capability to grow edible produce on an individual, sustainable level with the use of heat has been a technique used by growers for many centuries. Evidence of the use of fermenting manure as a heat source for the germination of seeds can be traced back to

1085 AD, where instructions for the use of hotbeds appeared in a Moorish manual of agriculture, while hotbeds in England were first championed by Thomas Hill in 1577, when straw, canvas or cabbage leaves were initially used to protect the hotbeds, with glass covers ('lights') eventually becoming commonplace. Victorian

times saw widespread use of the concept, with the large supplies of manure needed to heat the units often being readily available due to the horses housed on the country estates of the time, while later hotbeds were heated by alternative methods to manure including hot water pipes and hot air flues, while the concept was often used for vegetable production on a large scale.

The use of hotbeds declined during the 20th century as technological advances and transport ensured that fruit and vegetables could be distributed on a mass scale.

Some research into the growing habits of NVS members

I was interested to learn what NVS members were doing vegetable-growing wise, if they knew about hotbeds and if the concept would potentially make a difference to them. I undertook a survey of selected members (many thanks if you took part!)

The survey results showed that while many members had heard of the concept, few (21%) had actually used a hotbed in practice. Additionally, 65% of respondents preferred to grow 'traditional' vegetables in the open ground, with over half that number experiencing issues such as pest, disease and adverse weather conditions. The vast majority of NVS respondents grew carrots, potatoes, tomatoes, beetroot, leeks, parsnips, beans and onions, but endured a range of problems including carrot root fly, slugs/snails, blights, pigeons, frost, waterlogging etc. Just over half of respondents grew vegetables to both eat and exhibit, while only around 20% were interested in growing vegetables to a large size for exhibition. A high number (63%)

considered sowing vegetable seeds early in the season to be important, although only 36% actually did so. Many respondents had the resources to potentially use a hotbed successfully, i.e. access to fresh manure and a south facing vegetable plot (67% and 57% respectively,) with the median time available for growing vegetables being 14 hours per week.

The results were interesting and gave me a better picture of whether the hotbed concept would be of relevance to NVS members.

Case studies of existing hotbeds

Candy Smit of Heligan and Charles Dowding of 'no-dig' fame both kindly agreed for me to visit them and assess their hotbeds, to see what ideas could be gained for the use of hotbeds for small-scale growers. Heligan's historic units were huge at 13 metres in length, needing some 30 metric tonnes of manure to heat while being used solely for growing pineapples. Despite the size of the Heligan units the principles of how the concept worked was clearly universal, no matter how large or small the dimensions of the hotbed.

Charles Dowding's hotbed was much smaller, being made from 4 plywood sheets which were each around 1 metre square. Charles had established his hotbed inside his glasshouse, and used it solely for growing in trays on top of the unit, without sowing directly into any growing medium on top. Again, it was really interesting to see the concept in practice and my visit added to my thoughts of the design of my own hotbed.

The small-scale growers Hotbed

I designed the hotbed to be relatively simple and quick to build, use and maintain, with growers' time constraints in mind. The unit was built in late February 2018 to favour the imminently longer growing days and earliest sowing times possible for the selected vegetables.

Four wooden pallets were secured together with nails to form a box that was lower on the front elevation. A 'light' or cover was added to help retain warmth and combat weather and pest and disease, with an inexpensive 'Perspex' material chosen as an alternative to the historical use of glass. A black fabric lining for the inside of the unit potentially provided extra insulation for the unit.

Around half a metric ton of locally sourced fresh manure was forked into the unit and tamped down to a height of 40cm. The manure was mixed with urine soaked