

## Winter greenhouse experiment... from the perspective of Nancy Bright, Greenhouse Steward

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| September | 15 <sup>th</sup> – 30 <sup>th</sup> Start seeds for winter greenhouse gardening  | <p>Seeds were started on September 26<sup>th</sup> in paper pots set in plastic salad bins with wire screen over the top. They all were planted in plots by the end of October. Later plantings did not thrive until February.</p> <p><b>Significant Findings:</b></p> <ul style="list-style-type: none"> <li>Arctic blend lettuces thrived. Warm season lettuces died.</li> <li>Warm season spinaches struggled; cusp season thrived. More experimentation needed with spinach varieties. Greenhouse seemed too warm for some spinach varieties.</li> <li>Cabbage, kale, bok choy, Swiss chard, arugula, beet greens, mustard greens, broccoli thrived</li> <li>Radish, beet roots, green onions, cilantro very slow</li> </ul> |
| October   | <p><b>15<sup>th</sup>- Winter greenhouse use begins</b></p> <p>Summer users vacate at freeze-out<br/>remove all dead plant material and abandoned plants</p> |  |
| November  |  | <p><b>November 5<sup>th</sup> – Last day of year with 10 hours daylight</b></p> <p>November 5<sup>th</sup>—planted 2<sup>nd</sup> plot<br/>November 22<sup>th</sup>—first good harvest from Sep. 26 planting – salad for 8</p>   |
| December  | <div> <p>Less than 10 hours daylight</p> <p>Plots with manure stay at 42-48°</p> </div>  | <p>Harvests:</p> <p>December 1<br/>December 9<br/>December 15 –large harvest<br/>December 25</p>   |
| January   |  | <p>January 2nd—good harvest—</p> <p><b>Rest of January = Plants in stasis—not enough light—NO HARVEST</b></p> <p><b>Plants need 10 hours of daylight to thrive.</b></p>  |
| February  |  | <p>February 2<sup>nd</sup>—first good harvest in a month</p> <p><b>February 5<sup>th</sup> – First day of 2019 with 10 hours daylight</b></p> <p>February 15 – Started potatoes in pots—no manure—no potatoes<br/>-- Bok choy bolted, removed, replanted</p> <p>February 19 – first harvest of Nov. 5<sup>th</sup> planting<br/>February 28—aphids spread from abandoned plants to plots</p>   |
| March     | <p>Mid-month the greenhouse begins to be too hot for winter crop</p>   | <p>March 4-- 8° overnight low<br/>March 8 – minus 2° overnight low; 102° in greenhouse at 4:00 pm</p> <p><i>*each day the aphid population increases, the plants are growing faster and faster, the daytime temperature in the greenhouse on sunny days is in the 90's and 100's. Neem oil, and organic spays have little effect. No one is spraying every day. The most affected plants are pulled. Aphids move on to other plants. Only onions not infested.</i></p> <p>March 24 – removed boards opening south door gap<br/>-- began removing protective, insulated surrounds from plots</p> <p>March 29 – began emptying water barrels; finished April 17</p>  |

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| April | <p><b>April 14—Winter</b> use of greenhouse ends</p> <p><b>April 15—Summer</b> use of Greenhouse should have begun.</p> | <p>April 4 &amp; 14 – Roof vent actuators installed</p> <p>April 16 – doors open 24 hours with bunny screens</p> <p>April 24 – Completion of soil remove and replace in greenhouse plots that provided aphid habitat</p> |
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#### General findings:

- Greenhouse insulated, material used as protective surrounds for plots
  - a) kept the plots warmer and,
  - b) prevented mice access. Bubble wrap surround used on one plot was equally effective.
- Greenhouse plots must be prepped for winter: bottom half of plot packed with fresh horse manure. The horse manure composting heats the soil and greenhouse.
- Plant spacing is best kept at optimal (as per seed package instructions). Crowding in the greenhouse environment seems to cause more stunting than in the summer. Crowding also appears to create good environment for aphids when the greenhouse warms in March.
- Winter hardy lettuce and spinach are a must. Other lettuces freeze. Spinaches are variable—need to test for the best.
- Use only plots 1, 8 through 11, 15-19. The other plots don't get direct sun due to the low angle of the sun most of the winter.

#### Notes for 2019/20 Winter Gardening...

- September 15<sup>th</sup> through 30<sup>th</sup>: Start plants to transplant into greenhouse plots to give them a good growth while there is more than 10 hours of daylight.
  - Start in paper pots set in plastic salad bins. If you start seeds in the greenhouse put ½ inch wire cloth over to keep mice from nibbling.
  - Paper pots allow minimal root disturbance when transplanting in greenhouse plots after killing frost freezes tomatoes
- No nitrogen amendment should be added to greenhouse plot soil. The 2019 March/April build-up of aphids was exacerbated by the alfalfa pellet amendment decomposing and releasing nitrogen
- All dead plant material and abandoned plants must be removed from the greenhouse by November 1st.
- No aphids should be tolerated. Plants with aphids must be removed from greenhouse.
- Install water barrels and boards to cover gap around south door by November 15.
- Start removing water barrels March 15<sup>th</sup> and open gap around south door.
- Install roof vent actuators by March 15<sup>th</sup>

Nancy Bright  
Greenhouse Steward