

Citrus tree bears plentifully.



Finch conducts a tour of his newest greenhouse.



The earth effectively insulates this greenhouse.

# CITRUS IN THE SNOW



By Jim Freeburn

The earth can be a source of insulation and heat for greenhouses. A greenhouse system north of Alliance, Nebraska, called "Citrus in the Snow" designed by 82-year-old farmer and entrepreneur Russ Finch, demonstrates this concept.

He raises citrus inside his energy-efficient greenhouses. The design features a subterranean growing area coupled with heat from the earth and circulated with an air-driven system. A small, thermostatically controlled motor circulates air through more than 1,100 feet of 6-inch drain tubes buried approximately 8 feet underground. The tubes are black poly drain tubes, and the circulated air keeps the temperature inside the greenhouse at a pleasant 45 degrees and above – even when outside ambient air temperatures reach 30 to 40 below zero. The key is that the greenhouse has 7 feet of its total 12-foot height underground, and the airtight insulation keeps external air outside during cold temperatures.

The greenhouse has 12 dwarf citrus trees, including oranges, lemons, and Mandarins, and each tree averages about 120 pounds of fruit per year. The data indicates the temperatures inside the greenhouse are similar to Fresno, California, near the largest citrus growing area in the western U.S. Other produce grown in the greenhouse are kiwis, figs, avocados, and vegetables and ornamentals. Pest problems are minimal. Finch has handled any insect problems by a monthly application of highly refined horticultural oil. For irrigation, Finch only waters by hand once per week for 20 minutes in the winter months and twice per week for 20 minutes in the summer.

Want more information? Google "Citrus in the Snow."

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