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Go Green with Thermal Energy

The purpose of this project was to find an alternative heating source for greenhouses, in an attempt to reduce fossil-fuel consumption. The goal was to transfer thermal energy from the earth to a greenhouse. A 4 inch diameter hole was drilled eight, six, and four feet, to heat a 36 "w x 36"l x 42"h greenhouse in the winter. A PVC pipe was placed in the hole and cut off at 1ft. above ground. FlowerHouse greenhouses were used, constructed of GRO-TEC material. It is UV resistant (FlowerHouse 2006). The researcher believed he could grow produce by thermal energy from the ground; the eight foot hole would provide the most thermal energy, and then followed by the 6ft., 4ft., and the control of zero feet. Temperatures were noted at approximately 7:00 am, before radiant energy from the sun had time to take effect. In conclusion, the recorded temperatures within the greenhouses did not show a significant difference from outside temperature. The average daily temperature at 7:00 am for 22 days ranging between Jan. 18 to Feb. 12, 2009 was: Outside) -4.36 C, 8ft.) -3.86 C, 6ft.) -4.09 C, 4ft.) -4.09 C, and 0ft.) - 4.41 degrees Celsius. The hole dug 8ft. deep did show an average of 0.5 C warmer temperature and the holes dug 6 and 4ft. deep showed 0.27 C warmer temperatures that the outdoors. The data did not support the hypothesis, suggesting that the researcher could grow produce using thermal energy from the ground in a greenhouse.