DeLand Frost Guard

DeLand's Frost Guard ---The "Frost Guard Tower" developed by John DeLand in the 1940s used magnetism to replace obnoxious smudge pots. He obtained high yields from orange trees formerly considered to be too old to be productive. The DeLand system can protect one acre of trees from frost, but it is ineffective for small plants.

George van Tassel gave this description of the device:

"The DeLand Frost Guard Tower is about 32 feet high. It is composed of three 12-ft lengths of standard galvanized steel pipe. The lowest section is 2-inch pipe, set 3 ft deep in concrete. On top of this a 12-ft section of 1.5 inch pipe is screwed on by means of a reducer. Above this the top section of 12-foot pipe, 1-inch in diameter, is screwed on by means of a reducer. Resting horizontally atop each reducer and at the mast head is a 1-ft diameter disk of waterproof, 3/4-inch plywood. Near the outer diameter of each plywood disk or collar is drilled 7 holes. These holes are parallel to the center mast and are equally spaced around the diameter, 51-1/2 degrees apart.

"Beginning at the top of the mast, with an extension of 6 or 7 inches parallel to the ground, #10 gauge bare copper wires are run down through the concrete foundation's outer edge. From there they branch out, in 18-inch deep trenches, to a distance of not more than 144 ft from the mast's center. At this point, each wire is wrapped several times around an Alnico-V permanent magnet. The end of each wire is brought above ground and pointed back toward its other end on top of the tower. The magnet is given a coat of plastic to protect it from rust and to hold the windings in place.

"The trenches and magnets are covered with earth. The 18-inch depth is to protect the wires from cultivation, they must remain uncut if the system is to function. One wire on the tower, and hence in the earth, must point toward magnetic North. The placing of this first magnet must be done very accurately, and the others should be accurately placed.
"The magnet sets are inclined toward the mast at 34 degrees to the surface of the ground. Pointing the buried bar magnets toward the North magnetic pole, but also setting them so they point or tilt toward the central mast gives a skew to the flux or flow of energy.

"This system has protected groves when temperatures have fallen to as low as 20o F. The system does not alter the air temperature in the grove. Rather, it seems to effect a condition in the plants themselves, so that lower temperatures will not induce freezing. Fruit laying on the ground will freeze."