Alternative Energy High Tunnel

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High tunnel temperature control and ventilation are key to successful year-round growing, especially during the winter months. We developed an effective low-cost, self-sustaining temperature moderation system for large high tunnels utilizing a geothermal network and powered by a configuration of solar panels, wind turbine, and batteries to energize fans that circulate moderating air into the high tunnel from geothermal piping. This system supports year-round plant growth including during extreme hot and cold, while reducing the need for fossil fuel inputs.

Solar panel to operate side wall ventilation

BENEFITS:

- decreases crop failure due to disease and temperature fluctuations
- improves winter crop growth
- self-sustaining system

DRAWBACKS:

- time, materials, equipment, and specialized knowledge to install

YEARS IN SERVICE: 3

YEAR DEVELOPED: 2019

SUPPLY LIST:

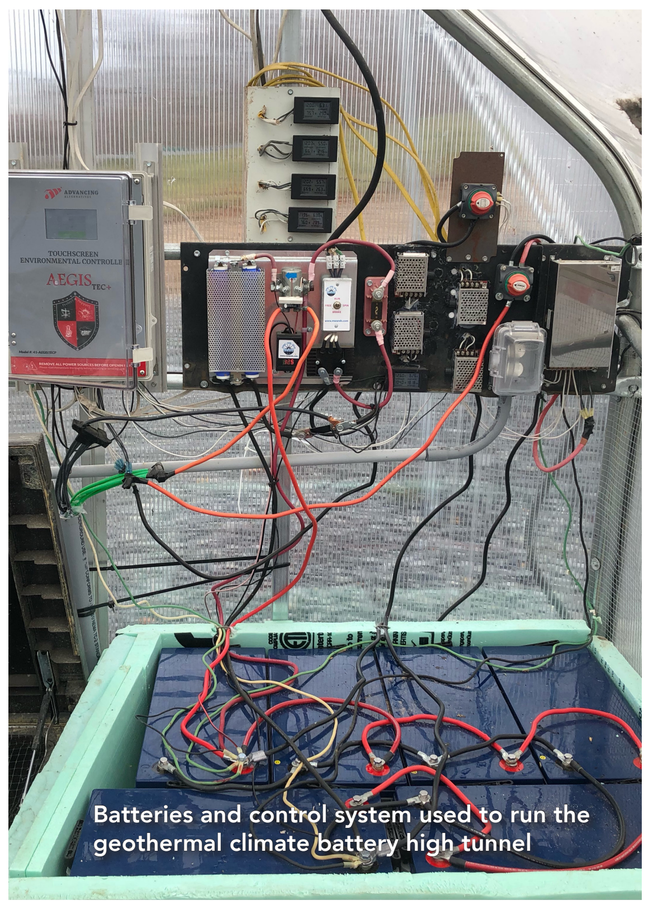
sleeve pipes, fans, manifolds, wiring, pipe connectors, installation boards, solar panels, controller, wiring, metal stand, concrete, batteries, wind turbine, and touchscreen controller from Advancing Alternatives

ESTIMATED COST:

$10,000

Fans used in geothermal climate battery high tunnel

Advancing Alternatives control system



Batteries and control system used to run the geothermal climate battery high tunnel

FINE TUNING:

We are still studying which substrate material is best to use around underground pipes for controlling temperature in a geothermal climate battery system.

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