

ROSEANUM FARM FOUNDATION

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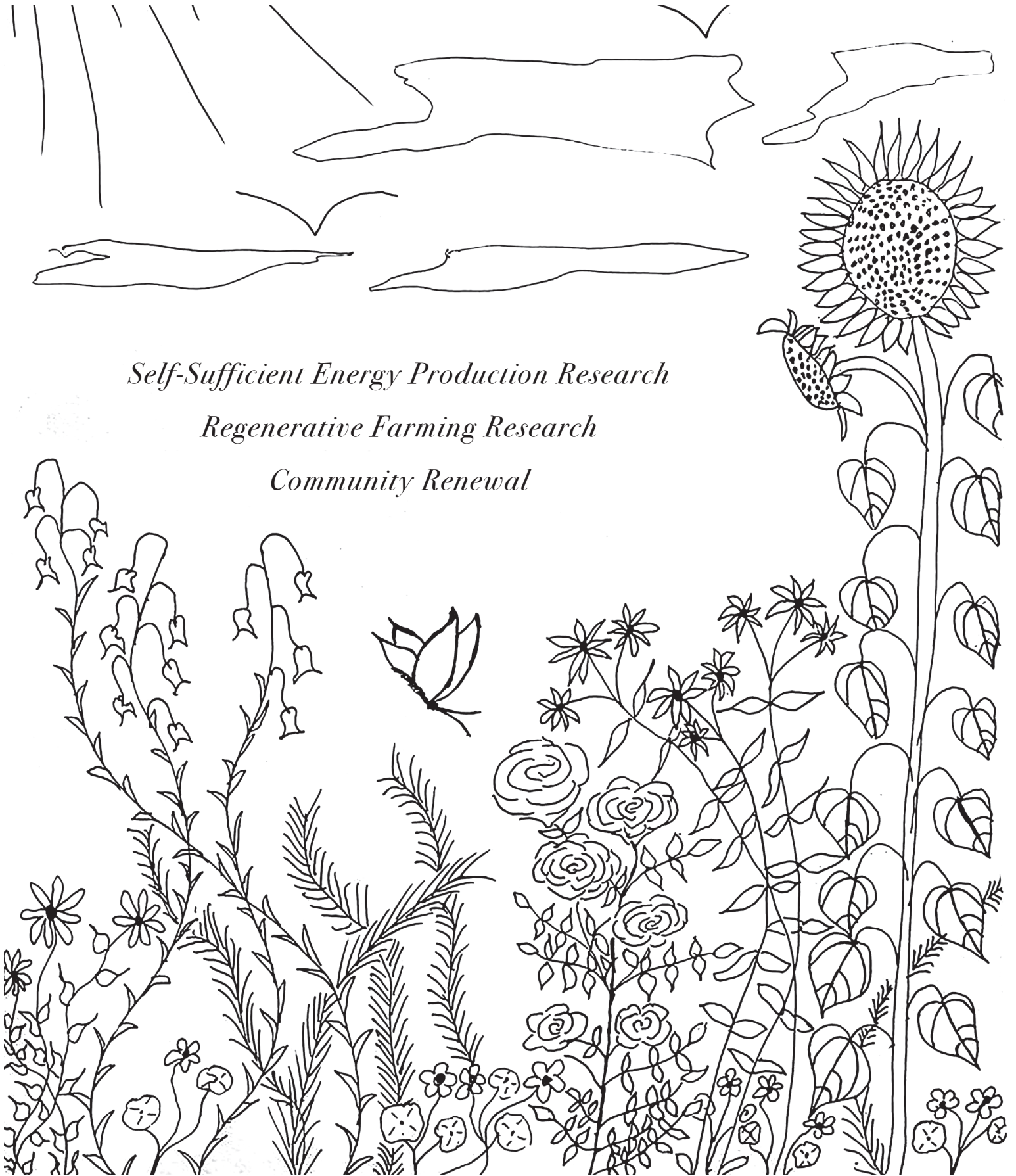
FALL 2023

PALERMO, MAINE

Self-Sufficient Energy Production Research

Regenerative Farming Research

Community Renewal



Roseanum Farm Foundation

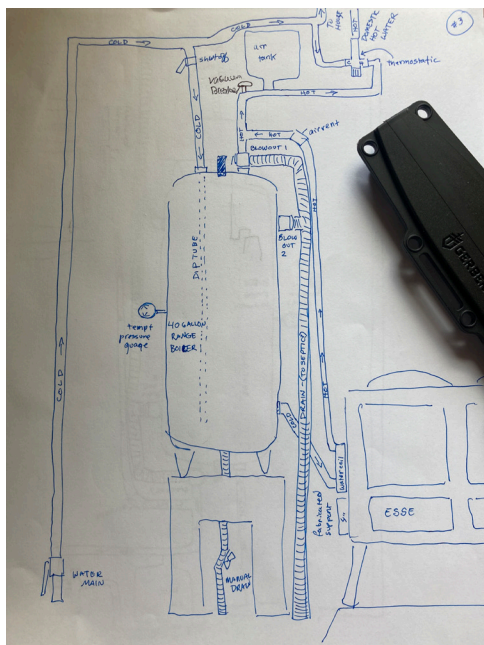
Our Mission: to research and practice sustainable and regenerative farming, including self-sufficient energy production, education, and community renewal.

SEPTEMBER 2023 Self Sufficient Energy Production Research

Thermosiphon Installation:



A thermosiphon is a device used to capture energy from a wood stove to heat domestic hot water. We installed a thermosiphon in the School House. A thermosiphon has no moving parts and is powered through heat from the



wood stove, water pressure from the well and convection in the water tank. The system is comprised of two main parts,

1: 40 gallon Range Boiler, which is a concrete lined steel hot water tank and

2: Heat Exchanger. The heat exchanger is installed outside the firebox and is plumbed to the tank, as the water in the heat exchanger warms it convects up into the range boiler. The hot water is pressurized by well pump via the cold water supply.

This system is installed and fully operational.

Air Powered Well Pump:

The School House is served by a 240' drilled well for fresh water. We installed an air powered well pump to supply water to the School House from the well.

The air powered water pump is a very simple machine with few moving parts, unlike electric well pumps found in most homes.

The well pump is in essence a cylinder, suspended below the water line. It has a foot valve allowing the cylinder to fill with water. When water is called by the plumbing compressed air is forced down into the cylinder, closing a check valve and displacing the water up where it is connected as the cold water supply to the School House.

This system is installed and fully operational.



Compressed Air System:

Compressed air is required to run our well pump. Our compressed air system has undergone a number of refinements. We currently use a gasoline powered air compressor as well as 12 Volt electric air compressor which is

powered via one, 100 Watt solar panel, charge controller and AGM Battery. This is a redundant, dual fuel system. This system is installed and fully operational, however we will continue to develop other non-electrical methods of creating compressed air.

Experiments in Thermoacoustics:

The field of thermoacoustics is recognized by the scientific community, though little exposed or commercialized, in short, it is the process by which sound is converted into heat or vice versa.



We have conducted a number of experiments in the field and have successfully demonstrated our own Hoefler Tubes in public settings. A Hoefler tube is a well known thermoacoustic device that converts heat into sound using a tube, a regenerator and a heat source, in our case a propane torch.

We will continue to make experiments in the field of thermoacoustics.

Water Hammers & Trompes:

We have built and demonstrated in a public setting our own water hammers, trompes and hammer trompes. A water hammer is a simple mechanical device with few moving parts which uses a series of "flapper" or check valves in a stream of water to create pressure and ultimately, pump water.

A trompe is a well understood mechanical device with no moving parts. It creates an upstream air and water mixture, which at a downstream location is separated into water and compressed air.

A hammer tromp combines these two devices, mechanically increasing resulting air pressure. We will continue to make experiments with devices like these.



Wind Powered Scroll Air Compressor:

We conducted a series of experiments, the intention was to provide direct mechanical power to a scroll air compressor via a vertical axis wind turbine. While conceptually viable, we were unable to source off the shelf components that met the power requirements to build a functional model.

Further work will be done to explore other methods of converting wind or mechanical energy into compressed air.

Cryophorus:



Preliminary work has begun to build a cryophorus. A cryophorus is a mechanical device with no moving parts which we will use to create mechanical work. While well understood in the scientific community the device has not been developed for practical applications.

Regenerative Farming Research



Our intention is for the water pumping and movement systems to serve the regenerative farming aspect. This year has been about building basic farm infrastructure.

In late 2020, a 12 x 40 foot hoop house had been built, and it housed a flock of a dozen chickens during the winter. In October of 2020, 15 pounds of garlic were planted.

The summer of 2021 was the first year to experience a complete growing season on Roseanum Farm. In the spring of 2021, the hoop house was filled with about 90 tomato plants and 20 pepper plants.

Two garden spaces, sized approximately 40x40 feet and 40x65 feet, were fully planted with a variety of mixed vegetables during the summer of 2021. The gardens were fertilized with locally purchased organic compost and managed in a no-till fashion.

A beginning permaculture orchard was planted in the spring of 2021 with a dozen young fruit trees. More young fruit trees were planted in the spring of 2022 as well as numerous hazelnut and berry bushes.

Several biodynamic preparations were stirred and sprayed onto all garden spaces three times during the summer of 2021.

The you-pick blueberry field had a good season in 2021. Picking began in mid-July and ended the last week of August.

In mid-March of 2022, a full-time farm helper was hired for the growing season. In April, independent contractors were hired to erect two 14 x 50 foot hoop houses and to install further fencing in the sheep field to create paddocks.

During the month of May, a new garden space, approximately 25x60 feet, was added to the two existing spaces. All spaces were planted with a variety of mixed vegetables.

The 12x40 hoop house was filled with melons, eggplants and basil.

The two 14x50 foot hoop houses were filled with tomatoes and peppers.



All garden spaces were fertilized with copious amounts of aged sheep manure from the barn on the farm and managed in a no-till fashion. During the season, occasional feedings of seaweed/ fish liquid were given.

In early August, biodynamic preparations were stirred and sprayed over all garden spaces. Plans for 2023 include expanding vegetable garden space by adding approximately 1/4 acre.

We will be working with a living soil practitioner to enhance soil conditions.

A fourth hoop house, 16x28 feet, is also being readied for season extension in 2023. Animals are an important aspect of a biodynamic and regenerative farming operation. We are exploring adding more in 2023.



Currently there are six sheep. We had four lambs born without issue in March of 2022.

The current sheep are Finn sheep, best known for their fleece. We have constructed the three sheep paddocks, each about one acre, which

allows for rotational grazing. In addition, we have two towable chicken coops. These can be surrounded by portable electric fencing, allowing the birds ample room to explore safely. The coop was based on the designs of a well known regenerative farmer in Sweden: Richard Perkins.

Community Renewal

Donations:

Excess produce was donated to the local food pantry. In addition, we are exploring sites or building locations in order to host more community educational events.



The Rosy Market:

For two years, we have sold vegetables and fruit through the Rosy Market, located at 470 Branch Mills. This canvas wall tent is a destination, a farmers market, and a source for local news and storytelling. Visit June – October!

Protect Maine Farmland

In summer of 2023, we became aware of a proposed high voltage transmission line that would cut through hundred of acres of heritage and organic farmland and forests in our town. We reached out to local farmers and began assisting with the effort to confront this project, including making signs, doing research, and working on a town study committee to inform residents, propose alternate solutions, and address the impacts.

