

Mobile Herb Dryer

Herbal Affirmations • Lehigh County, PA
submitted by San Sankofa • herbal.affirmations22@gmail.com



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This herb dryer is a remodeled trailer that uses airflow, heat, and a dehumidifier to evenly dry herbs.

The trailer is fitted with an exhaust fan for continuous airflow. Along the wall is a drying rack with removable screen trays. Underneath the rack, a portable baseboard heater, controlled by a thermostat, provides bottom heat. The dehumidifier is on continuous drainage to manage ambient moisture.

Since the herb dryer is mobile, it allows easy transportation of herbs between the farm and commercial kitchen.



BENEFITS:

- mobile
- faster, uniform drying
- sanitary

DRAWBACKS:

- not energy efficient
- not big enough for desired scale of operation

YEARS IN SERVICE: 1

YEAR DEVELOPED: 2022

SUPPLY LIST:

- 6x12' trailer
- 5' portable baseboard heater
- 18" exhaust fan
- thermostat
- dehumidifier
- drying racks
- polywall plastic panel
- lumber

ESTIMATED COST:

\$5,000



PLANS FOR IMPROVING ENERGY EFFICIENCY:

In the future I would like to insulate the inside of the trailer to prevent heat lost during the drying process, and paint the trailer white to prevent overheating.

I would also love to convert the herb dryer to be solar powered.



Chicken Tractor Modifications for Happier Birds & Happier Farmers

Easy-Slider Pastured Poultry Range Pen

This range pen design allows for easy one-person movement over rough ground. It will not catch on roots and stumps that can make for miserable moves. The metal flap in the back also keeps from harming poultry if the pen moves quicker than the birds.

The design is light, yet doesn't catch the wind. Accommodates 40-50 chickens.



BENEFITS:

- Lightweight—one person can pull it very easily
- Rear flap will jump over stumps, rocks, slows birds, etc.

DRAWBACKS:

- Not so good for people who cannot easily crouch down
- Rear-mounted bell waterer needs occasional service.

SUPPLY LIST:

- 10' electric metallic tube conduit 1" diameter,
- corrugated metal roofing panels
- treated lumber
- chicken wire or hardware cloth
- fasteners and poultry staples

ESTIMATED COST: \$125

Greene Kitchen Farm
in Columbia County, PA

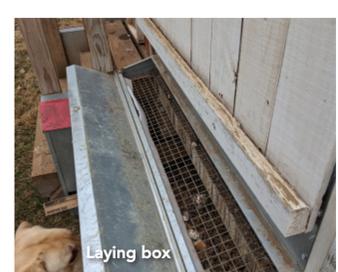
submitted by Joshua Greene
orangegreene@gmail.com
grenekitchenfarm.com



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Free-Range Chicken Palace

The chicken palace makes moving a flock weekly take 30 minutes for one person, with 10 minutes of daily egg collecting and a check in. The total hands-on time can be under 1.5 hours a week to maintain a flock of up to 200 layers.



BENEFITS:

- timesaving
- low-maintenance
- no cleaning!

DRAWBACKS:

- Requires a tractor to move.
- Water input if there isn't rain.

SUPPLY LIST:

- trailer bed
- fence panels
- chicken wire
- lumber
- laying boxes
- solar-powered chicken door
- PVC pipe
- roofing

ESTIMATED COST: \$2,000

Gathering Springs Farm
in Loudoun County, VA

submitted by Sarah Waybright
gatheringspringsfarm@gmail.com
gatheringspringsfarm.com



Follow: @gatheringsprings

Controlling Colorado Potato Beetle with Guinea Fowl

Plowshare Farms • Bucks County, PA • www.plowshare.farm
submitted by Robert Moynihan • plowsharefarms@gmail.com



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Colorado Potato Beetle (CPB) is a major pest of potato crops, requiring pesticide applications or handpicking to control.

Allowing a flock of Guinea Fowl to forage in the potato field controls CPB numbers with less labor input than handpicking, and without the need for pesticides.

An added benefit is that Guinea Fowl are a marketable meatbird.



BENEFITS:

- saves labor input over hand picking CPB larvae
- reduces pesticide application and potential resistance
- provides extra source of income if birds are processed
- minimal weed control provided by foraged and scratching

DRAWBACKS:

- Guinea Fowl are more challenging to keep than chickens.
- If left too long in a small plot, potato yield can be reduced by Guinea Fowl scratching the soil.

YEARS IN SERVICE: 1

YEAR DEVELOPED: 2022

SUPPLY LIST:

- mobile poultry housing
- moveable electric fencing
- Guinea keats

ESTIMATED COST:

\$700

Grant funding for this project provided by Northeast SARE: FNE22-023



Counting CPB adults



Counting CPB eggs & larvae



CPB egg masses

FINE TUNING:

For trial purposes we replicated this experiment over three smaller plots, which lead to crop damage if the hens were left in one area for too long, and thus required additional labor to move the hens regularly. This would likely be improved in a production setting where the birds would have access to a much larger potato field.



Guinea Fowl foraging in potatoes

PRO TIP:

We started using hand-held vacuum cleaners CPB adults and larvae. This is still labor-intensive, but definitely an improvement over handpicking. We'll apply this method to other pests on the farm.



Drangen Self-Propelled One-Person Transplanter

Second Spring Farm • Loudon County, VA • secondspringcsa.com
submitted by David Giusti • david@secondspringcsa.com



Follow on YouTube:
[@secondspringfarmer3852](https://www.youtube.com/@secondspringfarmer3852)



I have long had a daydream of a “personal tractor”, one step in size below a “cultivating tractor” that could do the light work that even a cultivating tractor is overpowered for.

This is such a machine: a self-propelled human-scale tractor, where the operator can lay down in an ergonomic position to do work with their hands, while steering with their feet (skid-steer, like a tank).

Water-wheel transplanting is a standard method, but requires at least two people and often uses a heavy tractor far overpowered for the job. A light, self-propelled machine where one person can both drive and transplant solves this problem. It also reduces reliance on hired crew by enabling one person to work for longer without tiring, and offers flexibility for the small mechanized farm.

With a regular tractor, rain can interrupt or delay transplanting due to ground being too wet to drive on without compaction, but such a light, tracked machine can be used in almost any ground conditions, even right after a big rain. With plastic mulch laid ahead of time, weather pressure is no longer a factor for transplanting timing.



Turns transplanting into a one-person job!



“Before”



Tarp for shade—required!

BENEFITS:

- Turns transplanting into a one-person job.
- Reduces soil compaction, even when wet! Tracks yield less ground pressure per square inch than a footprint.
- Ergonomic, prone position eliminates repetitive movements associated with transplanting.
- Saves time, effort, and labor costs.

DRAWBACKS:

- The Drangen machine is 20 years old, and the tracked version is no longer made. Pendragon Fabrication in Wisconsin still supplies parts.

YEARS IN SERVICE: 2

YEAR DEVELOPED: 2021

SUPPLY LIST:

- Drangen machine, ideally a tracked version.
- Angle, channel, and square tube to build out frame
- 35g horizontal tanks
- Valves, quick-connects, and flexible hose to deliver water to water wheel
- Water wheel and pivot axle from water-wheel transplanter (axle could also be fabricated)
- 7x10' tarp for shade

ESTIMATED COST:

\$4000 (I bought my Drangen by chance from a neighbor for \$3500—new ones are more expensive.)



See this innovation in action!

Scan this code to watch videos of the build and a round of spring transplanting.



Leaf Blower Attachment for Orchard Airblast Sprayer

Three Springs Fruit Farm • Adams County, PA
submitted by Ben Wenk • ben@threespringsfruitfarm.com



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@3springsfruit



If left unmanaged, apple scab and black rot fungus spores will reproduce on leaf litter and infect the next year's crop.

This custom leaf blower attaches to the back of a sprayer fan (powered by a tractor) and is used to blow fallen leaves to disrupt the scab and black rot reproduction cycles. The act of blowing the leaf reduces the overwintering inoculum by around 50%.

Blowing up to three rows from each side into one row can also include mowing/mulching to further reduce spore transmission potential.



PRO TIP:

This isn't worth doing unless fungal pressure is high (5-8% isn't high enough to warrant cost of operation).

BENEFITS:

- Reduces next years fungal load potential
- Fewer passes for mowing leaf litter by blowing 4-6 tree rows together.

DRAWBACKS:

- Cost of operation
- Time and labor to swap sprayers normal nozzle setup to leaf blower attachment.

YEARS IN SERVICE: 11

YEAR DEVELOPED: 2010

SUPPLY LIST:

- custom made metal 90° chute
- electrically operated actuator for angle of air change

ESTIMATED COST:

\$400

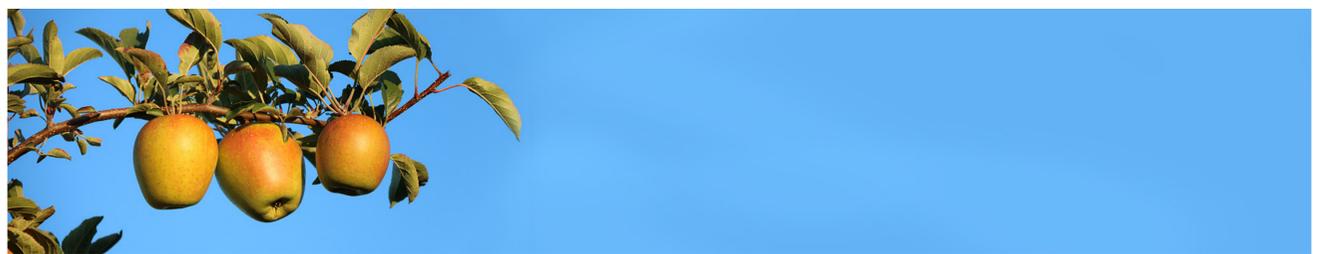
ASSOCIATED EQUIPMENT:

- tractor
- airblast sprayer



TIMING:

The best time for this practice is after all leaf drop (January to February), but before temperatures rise in the spring.



“Lillie” the Human-Powered Rolling Cultivator

Beech Grove Farm • Lycoming County, PA
submitted by Eric Nordell • aenordell@icloud.com



Find articles by Eric & Anne Nordell at:
covercropsincorporated.wordpress.com



“Lillie” is a low-tech alternative to a Tiltler or small rototiller, like “Tillie,” for seedbed prep, incorporating amendments or cover crop seed, and cultivating small weeds. We made it from a salvaged Lilliston rolling cultivator unit and the handles from an old Row Hoe garden cultivator.



BENEFITS:

- quiet and no exhaust fumes for high tunnel use
- more effective and easier to use in firm soil than other hand tools we have used
- can be used when the soil is too moist for other tillage tools
- can be used when there’s not enough room for a team or tractor

DRAWBACKS:

- Viney residue will wrap around the spider wheels and stones can get trapped between the tines.
- The weight of the Lilliston unit is one reason it is effective, but it also makes Lillie heavy to lift.
- The push-pull motion to power Lillie is very manageable for short periods of time, and depending on the situation, may require walking backwards or tilling diagonally across the beds.
- Very firm soil may require lifting with a fork first while very loose soil makes it difficult to push Lillie.

YEARS IN SERVICE: 8

YEAR DEVELOPED: 2014

SUPPLY LIST:

- Two-spider Lilliston rolling cultivator unit.
- Handles from Roe Hoe garden cultivator
- Four 1/2 x 5” bolts
- Four 1/4 x 2” lag bolts
- One 4 x 4 x 11” wood (hemlock) block

ESTIMATED COST:

We built Lillie at no cost other than our time. However, finding new components might be expensive.

New rebuilt Lilliston units from S & D Sales, Cadott, WI 715-289-4866 and new Pioneer Rotovator handles, possibly available from Ackerman’s, Mt. Hope, OH, 330-674-0495.

FINE TUNING:

Attaching the handles to the Lilliston unit with a 4x4” block was a quick fix that has held up well.

A more streamlined solution would make Lillie easier to use in the corners of a high tunnel.

Mobile Shade Wagon for Grazed Sheep

Dickinson College Farm • Cumberland County, PA
submitted by Matt Steiman • steimanm@dickinson.edu



Follow:
@dickinson_farm

This mobile wagon provides shade for rotationally grazed sheep on pasture. In our experience sheep will seek shade where they can find it. Previously we pulled several old wagons and sheep would cram themselves underneath, sometimes causing injury. This wagon also has a salt and mineral box attached.

Overall this system reduces labor expended to move sheep while providing them comfort an increased welfare.



BENEFITS:

- Folding wings allow for narrow transport through gates and over uneven terrain.
- Shade cloth on wings is light and does not catch the wind or rain as much as tarps.
- Attaching mineral box to the same wagon saves time when moving sheep.
- Light wings made from PVC and bamboo are easy for one person to raise and lower .

DRAWBACKS:

- 1" PVC pipe does bend a bit. The pipes of one wing broke in a major wind storm fall of '22
- PVC is not a sustainable or recyclable material. Rebuilding with bamboo was time consuming and not a permanent solution.

YEARS IN SERVICE: 1

YEAR DEVELOPED: 2022

SUPPLY LIST:

- PVC frame: 1.5" x 10' for lateral "arms" and 1" x 12' for length of wings
- shade cloth from local produce supply shop
- baling twine for sewing cloth to size and attaching to wings
- 1" steel pipe fittings (elbows, tees, and nipples) to form corners of wings and hinge components. These were salvaged from old biodiesel plumbing project.
- custom fabricated hinges (We ad-libbed these from scrap steel and 1" pipe parts using stick welder and drill.
- bolts for mounting hinges
- old wagon frame

ESTIMATED COST:

\$200 or less (plus labor)

ASSOCIATED EQUIPMENT:

A gator, four-wheel-drive truck, or tractor is needed to tow this around the pasture. We mostly use a gator.



FINE TUNING:

We may try to develop a light steel frame to replace PVC and bamboo.

A central winch system might simplify the raising and lowering of the wings.

Learn more at :
blogs.dickinson.edu/farm/



Forced Air Cooling for Improved Produce Storage

New Morning Farm • Fulton County, PA
submitted by Adam Mihalik • adam.newmorning@gmail.com



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@newmorningfarm



This type of forced air cooling system uses a ventilation blower to draw cool air from refrigerated space through produce to very quickly remove field heat via conductive and convective cooling.

Without this, cool air does not have sufficient velocity to pass into the center of a pallet or even single packing case. This process is very simple and effective and low cost and may be easily scaled to your farm.



Cool air enters from this end pulled by blower through the plastic wrap 'tube'

BENEFITS:

- Faster cooling improves storage life and preserves produce quality.
- Reduces handling by cooling pallets already stacked in storage or shipping configuration (prior to wrapping)

DRAWBACKS:

- Refrigerated air can easily dehydrate produce if not managed correctly.
- The forced air is not able to effectively flow across wrapped produce, so liners and plastic wrap must be added afterwards if desirable.

YEARS IN SERVICE: 1

YEAR DEVELOPED: 2022

SUPPLY LIST:

- Portable ventilation blower—this style of fan is designed to move air at the volume and static pressure required for forced air cooling. The size fan needed will depend on the volume of produce you intend to cool.
- Framing—wood is easiest to work with, we mounted ours on pallet for ease of transport
- Plenum panel consisting of a plywood sheet with hole cut for ventilation blower inlet. Center the hole for even air pressure.
- Plastic wrap creates a tube through which cool air is drawn across packed produce under suction.

ESTIMATED COST:

\$200–300

ASSOCIATED EQUIPMENT:

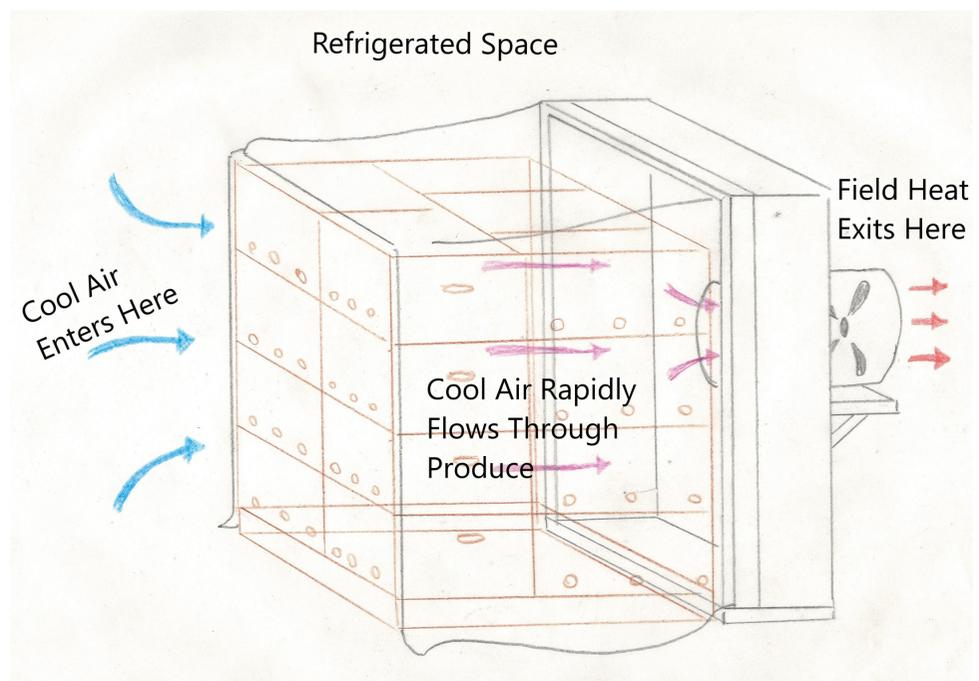
Refrigeration unit scaled to your farm.



Heat 'removed' from produce exits through this end drawn by the blower.



Plastic wrap creates a tube through which cool air is drawn across packed produce under suction. We reused retired greenhouse plastic.



RESOURCES:

Our cooler is a DIY version based on a model promoted by University of Vermont Extension, which has a good publication about this innovation available online.

blog.uvm.edu/cwcallah/2018/10/09/forced-air-cooling-on-the-farm/

North Carolina State Extension is another great resource, with info on more complicated systems.

content.ces.ncsu.edu/cool-and-ship-a-low-cost-portable-forced-air-cooling-unit