Edited: 01/2016

Innovations at the Farm

The Eggmobile

The Eggmobile is a mobile, modular henhouse built for 150 pastured hens, and includes automatic doors, gravity-fed waterers, a trapdoor for easy cleaning, and removable nest boxes and roosts. It can double as a brooder by installing exterior tarps and hanging brooding lamps from the ceiling.

Prep Time: 1 month
Cost Estimate: ~\$6,000





Tarp Pulley System

Covering the metal screen on the outside of the coop with tarps allowed us to use the eggmobile as a brooder, and protects the hens from inclement weather. Rather than removing the tarps when not in use, we created a permanent pulley system to easily open or close the tarps from the ground, depending on weather and temperature.

Prep Time: 4 hours

Materials + Cost Estimate:

Material	Units	Cost Per Unit (\$)	Total
1" x 2" x 8' Furring strip board	4	\$0.95	\$3.80
1/16" x 3 1/2" Mending Plate	2	\$0.75	\$1.50
Heavy duty staple gun	1	\$12.42	\$12.42
1/2" Heavy duty staples (5000 ct)	1	\$10.67	\$10.67
12' x 16' Heavy duty tarp	1	\$12.89	\$12.89
1/8" x 1000' Roll Polyester Cord	1	\$29.80	\$29.80
2 1/2" Rope Cleats	4	\$0.90	\$3.60
2" 420lb. Pulley	4	\$8.70	\$34.80
1/4" Screw Eye (25 pack)	1	\$7.77	\$7.77
	TO	OTAL:	\$117.25

NOTES:

Other materials include a knife to cut tarp, and a lighter to burn ends of rope (prevents fraying).

Pulling Up the Tarps



Portable Shade Structures

Pastured hens are highly susceptible to avian predators if they are not provided with ample ground cover (i.e., bushes, trees). As a replacement for bushes, we built moveable shade structures out of PVC, zip ties, and shade cloth to serve both as a respite from the Davis heat and to protect hens when hawks do a threatening fly-by.

Prep Time: 2-3 hours

Materials + Cost Estimate:

Material	Units	Cost Per Unit (\$)	Total
10' length PVC pipe	7	\$5.94	\$41.58
3-way PVC Fitting	8	\$1.71	\$13.68
Tee Fitting	6	\$0.84	\$5.04
Shade Cloth (10' x 5')	1	\$19.97	\$19.97
Grommet Kit	1	\$7.50	\$7.50
75LB TS Zip Ties (100 pack)	1	\$9.99	\$9.99
	тот	AL	\$97.76

NOTES:

Shade Structures



^{*}All PVC is 1" schedule 40 unless noted, and prices do not account for shipping. All materials were purchased from local Ace Hardware.

Sick Pen

When pastured hens get sick, it is important to quarantine them from the rest of the flock while still giving them access to pasture. We built a fully enclosed 'chicken tractor' with 4 nest boxes, 2 roosts, removable wheels, and a screened in foraging area to keep up to 10 sick hens separate from the flock while on pasture.

Prep Time: 1-2 days

Materials + Cost Estimate:

Material	Units	Cost Per Unit (\$)	Total
2' x 4' x 8' Pressure treated board	2	\$3.53	\$7.06
2' x 4' x 10' Fir board	6	\$3.84	\$23.04
15/32" x 4' x 8' Sheathing plywood	3	\$16.75	\$50.25
1/8" x 4' x 8' Utility panel	2	\$9.97	\$19.94
1" x 2" x 8' Furring strip board	1	\$0.95	\$0.95
3" Wood Deck screws (5lb pack)	1	\$29.98	\$29.98
1/2" x 3' x 25' Hardware Cloth	1	\$49.80	\$49.80
5/8" Axel No Flat Tire	2	\$14.99	\$29.98
3 1/2" door hinge	2	\$2.78	\$5.56
3 1/2" Safety latch	1	\$3.97	\$3.97
1/2" x 6" Hex Lag screw (+ washers and nuts)	2	\$4.00	\$8.00
	TO	ΓAL:	\$228.53

NOTES:

We also painted the exterior with 1 gallon of KILZ 2 Latex Primer (\$8.48), and used a nail gun with 1 1/2" brad nails for the nest boxes. Wire was attached using staple gun and $\frac{1}{2}$ " staples (see Tarp Pulley System). Shade cloth was leftover from another project (see Portable Shade Structures).

Sick Pen with Roosts + Nest Boxes





Automatic Watering System

By attaching a rain barrel to a shelf on the back of the eggmobile, we created a gravity-fed watering system that automatically fills 5' PVC trough waterers, installed on the underside of the coop. The waterers can be raised or lowered by a pulley system, depending on the age of the birds and how often the eggmobile is moved.

Prep Time: 1 day
Materials + Cost Estimate:

Material	Units	Cost Per Unit (\$)	Total
50 Gal Rain Barrel	1	\$114.99	\$114.99
Poly drip irrigation tubing 100 ft (1/2")	1	\$11.97	\$11.97
Kerick float valve (1/2")	2	\$8.37	\$16.74
Dual connector hose fitting	1	\$6.99	\$6.99
Shut off valve (optional)	1	\$4.19	\$4.19
10' length of 3" ABS Pipe	1	\$21.61	\$21.61
3" ABS DWV Cap	4	\$7.21	\$28.84
Rope Cleats (2/pk)	2	\$1.78	\$3.56
50' Paracord	1	\$4.18	\$4.18
Eye Bolt	4	\$3.29	\$13.16
		TOTAL:	\$226.23

Rain Barrel + Automatic Waterers





Portable Water Pumps

A significant problem we faced was the lack of running water in the field to refill the rain barrel. We developed a simple power inverter + water pump system fed from a 100-gallon tank in the back of a pickup truck, making the water source imminently portable.

Prep Time: 1 hour

Materials + Cost Estimate:

Material	Units	Cost Per Unit (\$)	Total
Water Tank Sump Pump	1	\$84.99	\$84.99
100 Gal Water Tank	1	\$249.99	\$249.99
Power Inverter	1	\$35.00	\$35.00
Hoses	1	\$6.99	\$6.99
Hose Washers (10 pk)	1	\$1.85	\$1.85
	TOTA	L:	\$378.82

NOTES:

The water pump company actually sells a DC pump, it was not available at the time we purchased the AC pump. The DC pump would not require an inverter, resulting in a grand total around \$300.

https://www.waynepumps.com/solution-center/utility-pumps-transfer/pc1

Portable Water Pumping



Roll-Out Nest Boxes

Removing the nest boxes from the outside of the coop enabled us to use the coop as a brooder. These nest boxes are accessed externally and are 'roll-out', meaning the egg rolls into the trough and can be collected from the ground outside the coop (no ladder required).

Prep Time: 1 week
Materials + Cost Estimate:

Material	Units	Cost Per Unit (\$)	Total
1/8" x 4' x 8' Utility panel	6	\$9.97	\$59.82
19/32" x 4' x 8' T1-11 Plywood Siding	4	\$29.95	\$119.80
1 1/2" 18 Gauge brad nails (2500 ct)	2	\$8.37	\$16.74
1" x 2" x 8' Furring strip board	15	\$0.95	\$14.25
Titebond wood glue	1	\$36.92	\$36.92
3" Wood Deck screws (5lb pack)	1	\$29.98	\$29.98
Behr exterior paint - Barn red (1 gal)	2	\$36.98	\$73.96
KILZ 2 Latex Interior/Exterior Primer (2 gal)	1	\$26.98	\$26.98
		TOTAL:	\$378.45

NOTES:

Tools required for nest boxes included circular saw, brad nail gun, small wood clamps, and tie downs.

Roll-Out Nest Boxes





Automatic Doors

Many pastured poultry farmers leave the doors on their mobile coops open all day and all night. Even if the coop is surrounded by electric fencing, leaving it open puts hens at risk to nighttime predators. We installed 2 automatic chicken doors that run on a timer, opening early in the morning and closing at sunset. The hens figured out how they worked after one day, and are safely in the coop every night.

Prep Time: 1.5 hours Materials + Cost Estimate:

Material	Units	Cost Per Unit (\$)	Total
ChickenGuard ASTi Premium automatic door	2	\$138.14	\$276.28
2" x 2" x 8' Furring strip board	1	\$1.87	\$1.87
7/32" x 4' x 8' underlayment plywood	1	\$11.97	\$11.97
2 1/2" Deck screws (1 lb. pack)	1	\$8.47	\$8.47
50' Paracord	1	\$4.18	\$4.18
Duracell AA batteries (24 pack)	1	\$12.95	\$12.95
		TOTAL:	\$315.72

NOTES:

The ChickenGuard door openers were donated to the project by ChickenGuard (excluding shipping costs).

Automatic Door + Opener





Google Forms Data Collection

Data collection is an often overlooked part of farming. Google Forms is a free and easy way to enter data on flock health, egg counts, or pasture conditions from a smartphone or computer. The data is stored automatically in a spreadsheet on Google Drive, and can be accessed from any device with an internet connection. Changes over time can be mapped with ease, and anyone with the link can collect data for you. (See the 'How To: Google Forms' document for more information.)

Prep Time: 20 minutes Materials + Cost Estimate:

Material	Units	Cost Per Unit (\$)	Total
Google Form	•	1 \$0.0	0 \$0.00
		TOTAL	.: \$0.00

Screen Shot of Google Form

