PY2020 Ag. BMP TAC
Animal Waste Subcommittee-Meeting Summary
10-2-18 Meeting, Department of Forestry, Charlottesville, VA

- Voting Subcommittee members in attendance at this meeting:
    - Amanda Pennington (DCR), Chair
    - Sam Truban (Lord Fairfax SWCD)
    - Hobey Bauhan (Virginia Poultry Federation)
    - Darrell Marshal (VDACS)
    - Megen Dalton (Shenandoah Valley SWCD)
    - Eric Paulson (VA State Daiymen)
- Voting Subcommittee member not present:
    - Kevin Dunn (Peter Francisco SWCD Board Member)
    - Rick Shiflet (Headwaters SWCD Board Member)
- Non Voting Members Present:
    - Benjamin Chester (DCR)
- Subcommittee had quorum (50% voting members +1) for this meeting
- The subcommittee voted on 3 recommendations, details and results included below

<u>Discussion</u>

- Item 1A-Allow freezers for chicken mortality subcommittee discussion
    - Victor Clark with Greener Solutions is scheduled to come to the meeting to give a presentation, questions raised by the subcommittee:
        - What are the options for the local rendering plans-are they prepared to take the material?
            - Mr. Clark confirmed that they would be able to take the material, he works closely with valley rendering plants
            - Can we fit these into current littersheds? Or do they take up more room that current bin composters?
                - They do take up more room, Littershed would have to be sized to accommodate
            - They need to be under cover, and the tops have to be winched up to load and unload
        - How do we handle this for folks that already have composters?
            - Deduct a prorated amount
        - How would we set up our cost share?
            - Pay least cost, technically feasible, so pay the same amount as we would be bin composters (similar to how we would pay on drum composters), producer pick up the extra cost
        - Does location play into the cost?
            - Just from a mileage standpoint for hauling
        - Maybe mirror the incinerator spec
        - Backup power

            - Most poultry houses already have generators, can't you just connect to the one.
        - Are we going pay for power supply?
            - No, do not currently pay for power on any other practice
        - What is the cost for a typical two house operation?
            - About $5000 per unit, plus mileage
        - Is this for turkeys too?
            - Yes
    - Eligible for NRCS, used on the eastern shore
        - Paid for on a cubic foot treated, similar to composter space, $76 per cubic foot
    - September 2016 VA Poultry Disease Taskforce adopted a protocol for biosecurity research for freezers
        - Historically going to rendering was considered to spread disease
            - This was determined to not be an issue as the rendering process removes any disease and current processing doesn't appear to spread disease
            - Freezers might be a better option than composters-so biosecurity will not be considered as a part of our discussions today
            - Freezers dumped and carcasses hauled off after each flock, so would only be sized for one flock per house, and this reduces the biosecurity risk
- Victor Clark's Presentation:
    - Technology has been around for 3 decades
    - Freezers placed on the farm that can handle all the normal mortality for one flock per house.
    - Farm owns the freezer and are responsible for maintaining them
    - Do not need to maintain the cold temps on the way to the rendering plant-stays frozen
    - Rendering high heat high pressure process that results in 3 products
        - Water
        - Protein Mean
        - Poultry fat
    - Leftover chicken parts also rendered along with DOAs (live chickens that die on the way to the processing plant)
    - Purpose of freezing is to preserve some of the fats and proteins
    - Greener Solutions do get paid by the rendering plant, but only like 0.008 cents per lb, makes about $200 per truckload
    - State of Delaware cost shares at the NRCS rate
    - Because this results in real numbers of N & P, we can submit a real number as to how much we are not land applying for credit
    - Need to clarify what credit we get once input deck done-Amanda
    - N & P removal considered like manure transport, but "moved out of the watershed"
    - Also for turkeys
    - Could make a one time cubic foot based payment
    - MD and Delaware pay based on unit not cubic feet

    - NRCS pays for the shed and concrete as well, at least in VA
    - Shed required by the manufacturer
    - My question-do we pay for a shed that does not meet NRCS standards? Do we allow a shed that does not meet NRCS standards
    - 1-yr warranty on the unit and 5 yr warranty on the compressor
    - $5225 per freezer
    - Collection fee is based on mileage and number of boxes
    - Not currently receiving bay model credit right now until the scientific study is completed maybe 18 months
    - Action Item-Ben to look to see if we get model credit for current composters
- VOTE
    - Recommend to be added, like a drum composter, should be paid as least cost technically feasible. With the recommendation that the service provider work with the VA Poultry Disease Taskforce to satisfy any concerns related to biosecurity. Will provide a revised spec and add freezers to WP-4C B-Policies and Specifications, Number 2 item iii.
    - 100% agreement for all voting members present to pass the vote in favor
- New motion by the SC to allow animal waste and composters for new start ups and new houses as soon as they built-certificate of imminent start up (MD NRCS)
    - Action item-Amanda to work on revising spec for Littershed
- Action item-Amanda-WP4B-Revise Description and purpose to specify it is for dairy
- Need separate spec for beef-Megen and Sam (addresses matrix item 8A)
- VOTE 11A-not recommended for further consideration-outside of the scope of the TAC
    - 100% consensus of all voting members present
- VOTE 13A-Same as 11, DEQ needs to further study this in coordination with the Poultry Federation, not recommended for further consideration by the TAC
    - 100% consensus of all voting members present

Better BMP

Better Biosecurity

Better Bottom Line

Poultry
Mortality
Freezer Units

2018

Often Overlooked

"[A]gricultural production – **including manure applied to cropland** – accounts for more than 90 percent of the nutrients [on] the Eastern Shore," according to the Chesapeake Bay Program.

But that **"manure"** being spread on farm fields is actually a combination of things:

- Manure
- Bedding material
- Dead chickens that were composted

Poultry mortality is often overlooked – but it shouldn't be.

Between 75,000 tons to 100,000 tons are generated each year.*

*More recent data for Delmarva suggest earlier estimates were too low.

Mortality Management

Originally, routine mortality was disposed of in large pits in the ground behind the houses.

But because of the impact on surface and groundwater resources, the industry switched to composting about two decades ago.

- Composting is a time-consuming and labor-intensive process.
- Composting also attracts insects and scavenger animals (e.g., foxes, raccoons, buzzards) – all known carriers of disease.
- When done properly, the process transforms chicken carcasses into a nutrient-rich compost for farm fields.

Composting at a Crossroads

But we already have too much nutrient rich material – a problem that is only going to get worse as more and more regulations limit or even ban land application on some farms.

This is a big issue for composting as a practice, because the entire concept is premised upon land application as a second step – there are no real alternative uses for compost.

And in fact, crop farmers don't like to use compost either:

- Bird parts clog the spreader
- Inconsistent nutrient content
- Compost can have less nitrogen and more phosphorous than litter

A Better Alternative

Store routine mortality inside specially designed on-farm freezer units.

A custom vehicle arrives between flocks to take the material off site for rendering into valuable commodities. For example, poultry fat can be used as a feedstock for bio-fuels.

Moreover, there is no residual material requiring land application as a second step like other BMPs (e.g., composters or bio-digesters)

A Proven Practice

This is an off-the-shelf ready and proven practice.

This technology and concept has been used for decades in some parts of the country.

Freezer units are also one of several approved mortality management practices under NRCS Practice Code 316.

Truly Quantifiable Results

The effectiveness of many BMPs is difficult to quantify with any certainty. For example, the efficacy of cover crops or vegetative buffers is subject to the variability of site conditions.

That's not the case with this BMP. We know how much N and P is in a pound of chicken – so we can calculate the exact amount of N and P that's being diverted from land application.

In fact, the Chesapeake Bay Program recently gave the practice "Interim BMP Status" so states can now use this BMP for their TMDL WIP planning.

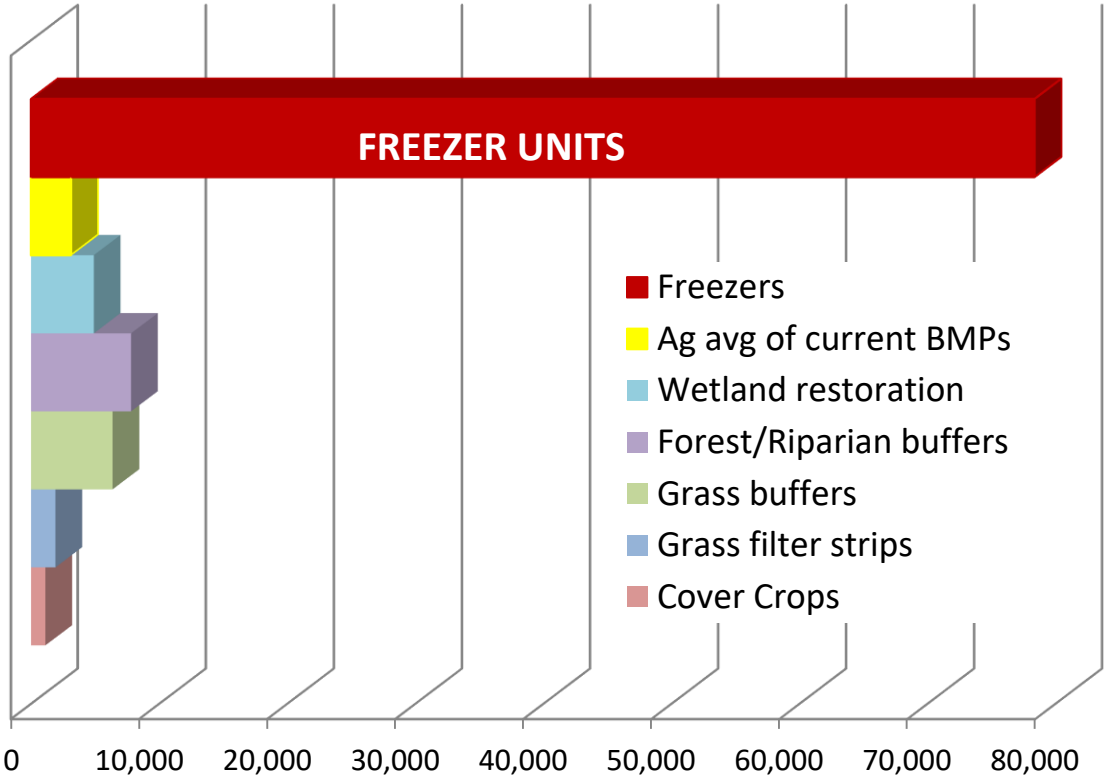
Funding Goes Much Further

This BMP is 85-90% more cost effective than the average of all other agriculture BMPs in reducing phosphorous.

For every dollar spent on the other BMPs, we could get the same impact on phosphorous for only 10 to 15 cents.

Which BMP would you choose to fund with $1 million?

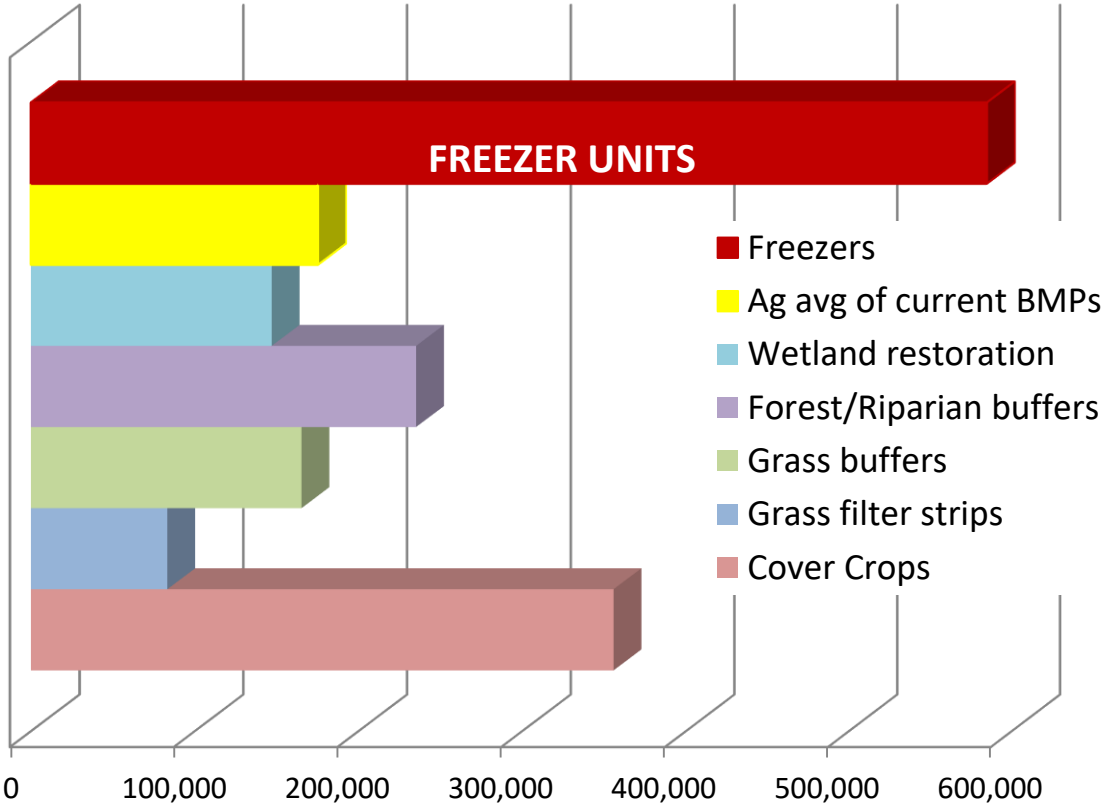
Phosphorous Removed With $1,000,000 Per BMP



Game Changer For BMP Budgets

Poultry mortality freezer units are 45-50% more cost effective than the average of all other agriculture BMPs in reducing nitrogen.

Nitrogen Removed With $1,000,000 Per BMP



These large numbers on cost effectiveness are hard to believe -- until you consider that this BMP actually removes the material from the farm entirely.

Capacity, Cost & Impact

Poultry Mortality Freezer Unit Calculator per Flock

*Weekly Mortality Based on Region

Data Input (No.)	Poultry Data Item
49	Days of Growth*
67	Days Total**
75,000	Birds
72,225	Birds Caught
5.45	Flocks per Year
3.70%	Mortality Rate
6.43	Finish Bird Wt.*
2.24	Avg Bird Wt. by Day

* Days of Growth entered determines Finish Bird Wt.

** Includes 18 day layout time.

Poultry Weight to Volume Conversion	
45	Lbs of meat per Cu Ft
1,800	Avg. Lbs per Unit

2,775	Collected Birds per Flock
6,202	Collected Lbs. per Flock

D400
40 Cu Ft. Unit Capacity
(1,200 to 1,800 Lb. Range)

Conclusion	
3.45	D400's would be needed for this farm.
3.96	Sized With 15.0% Contingency*
4	Units Recommended for this farm

* 15% Suggested

Catch Day	49
Days till Pick up*	7
Collection Day	56

* Estimated additional days of running cost until Pick up.

Pick Your Local $/Kwh	$/Day per Active Unit	$/Day per Full Unit
0.1265	$1.00	$0.75

Estimated Electric Cost	
Active Unit Days Running	49
Full Unit Days Running	55
Total Unit Days Running	104
Cost per Flock	$91.00

Week	Weekly* Mortality (%)	Day (No.)	Bird Wt.	Daily** Mortality (%)	Running (%)	Birds (No.)	Birds (Lbs.)	Total Birds (No.) Running	Running Total (Lbs.)	Running Average Bird Wt.	Freezer Units On (No.)
		1	0.010	0.170%	0.170%	128	1	128	1	0.01	1
		2	0.018	0.170%	0.340%	128	2	255	4	0.01	1
		3	0.032	0.170%	0.510%	128	4	383	8	0.02	1
1	1.19%	4	0.058	0.170%	0.680%	128	7	510	15	0.03	1
		5	0.105	0.170%	0.850%	128	13	638	28	0.04	1
		6	0.189	0.170%	1.020%	128	24	765	53	0.07	1
		7	0.363	0.170%	1.190%	128	46	893	99	0.11	1
		8	0.413	0.069%	1.259%	51	21	944	120	0.13	1
		9	0.470	0.069%	1.327%	51	24	995	144	0.14	1
		10	0.535	0.069%	1.396%	51	28	1047	172	0.16	1
2	0.48%	11	0.608	0.069%	1.464%	51	31	1098	203	0.18	1
		12	0.692	0.069%	1.533%	51	36	1150	239	0.21	1
		13	0.787	0.069%	1.601%	51	40	1201	279	0.23	1
		14	0.895	0.069%	1.670%	51	46	1253	325	0.26	1
		15	0.975	0.050%	1.720%	38	37	1290	362	0.28	1
		16	1.062	0.050%	1.770%	38	40	1328	401	0.30	1
		17	1.157	0.050%	1.820%	38	43	1365	445	0.33	1
3	0.35%	18	1.261	0.050%	1.870%	38	47	1403	492	0.35	1
		19	1.373	0.050%	1.920%	38	51	1440	544	0.38	1
		20	1.496	0.050%	1.970%	38	56	1478	600	0.41	1
		21	1.630	0.050%	2.020%	38	61	1515	661	0.44	1
		22	1.756	0.047%	2.067%	35	62	1550	723	0.47	1
		23	1.891	0.047%	2.114%	35	67	1586	790	0.50	1
		24	2.036	0.047%	2.161%	35	72	1621	862	0.53	1
4	0.33%	25	2.193	0.047%	2.209%	35	78	1656	939	0.57	1
		26	2.362	0.047%	2.256%	35	84	1692	1023	0.60	1
		27	2.544	0.047%	2.303%	35	90	1727	1113	0.64	1
		28	2.740	0.047%	2.350%	35	97	1763	1210	0.69	1
		29	2.896	0.050%	2.400%	38	109	1800	1318	0.73	1
		30	3.061	0.050%	2.450%	38	115	1838	1433	0.78	1
		31	3.236	0.050%	2.500%	38	121	1875	1554	0.83	1
5	0.35%	32	3.421	0.050%	2.550%	38	128	1913	1683	0.88	1
		33	3.616	0.050%	2.600%	38	136	1950	1818	0.93	2
		34	3.822	0.050%	2.650%	38	143	1988	1962	0.99	2
		35	4.040	0.050%	2.700%	38	152	2025	2113	1.04	2
		36	4.203	0.059%	2.759%	44	185	2069	2298	1.11	2
		37	4.373	0.059%	2.817%	44	192	2113	2490	1.18	2
		38	4.549	0.059%	2.876%	44	200	2157	2690	1.25	2
6	0.41%	39	4.733	0.059%	2.934%	44	208	2201	2898	1.32	2
		40	4.924	0.059%	2.993%	44	216	2245	3114	1.39	2
		41	5.123	0.059%	3.051%	44	225	2289	3339	1.46	2
		42	5.330	0.059%	3.110%	44	234	2333	3573	1.53	2
		43	5.475	0.084%	3.194%	63	346	2396	3919	1.64	3
		44	5.624	0.084%	3.279%	63	356	2459	4275	1.74	3
		45	5.776	0.084%	3.363%	63	365	2522	4640	1.84	3
7	0.59%	46	5.933	0.084%	3.447%	63	375	2585	5015	1.94	3
		47	6.094	0.084%	3.531%	63	385	2649	5400	2.04	4
		48	6.260	0.084%	3.616%	63	396	2712	5796	2.14	4
		49	6.430	0.084%	3.700%	63	406	2775	6202	2.24	4
		50	6.540	0.123%	3.823%	92	603	2867	6805	2.37	4
		51	6.717	0.123%	3.946%	92	619	2959	7424	2.51	5
		52	6.894	0.123%	4.069%	92	635	3051	8059	2.64	5
8	0.86%	53	7.071	0.123%	4.191%	92	652	3144	8711	2.77	5
		54	7.248	0.123%	4.314%	92	668	3236	9378	2.90	6

Using flock size and finished bird weight (or grow out days), this matrix calculates the amount of freezer capacity a farm needs (4 units).

It also calculates the amount of power needed ($91 per flock).

It also determines the amount per year of nitrogen (956 lbs.) and phosphorous (128 lbs.) diverted from land application.

Mortality Nutrient Content*		
	N (Lbs)	P (Lbs)
Per Flock	176	24
Per Year	956	128
*Bud Malone:	N @.0283/lb	P @.0038/lb

Better BMP Verification

"[V]erifying that practices are being implemented correctly and are reducing nutrient and sediment pollution as expected will be critical in measuring success."

– 2014 CBP report titled Strengthening Verification of Best Management Practices

The easiest way to ensure these practices are being implemented correctly is to make the practices themselves easier to implement.

Imagine a foolproof BMP that also was less costly to operate:

- Full farmer compliance
- All predicted benefits realized
- Less resources for enforcement leaving more for implementation

Better Bottom Line For Growers

Growers Can Save Thousands in Operational Costs Annually

This management method is much more cost-effective than composting.

- Drastic reduction in the amount of time and labor spent.
- No money spent on fuel and maintenance for a tractor.

The average farm on Delmarva can realize thousands of dollars a year in operational savings. And that savings is after subtracting the cost of powering the units and the flock collection fee -- so that money can be added directly to the bottom line.

Improved Quality of Life

Eliminate the smells, flies and scavengers associated with composting.

- Much better for the grower's family – and the neighbors.
- In fact, freezer units were recently added to the industry's Good Neighbor Relations BMP List.

Less smell and fewer eyesores mean <u>less opposition to new operations</u>.

Composting Compromises Biosecurity

The industry has beefed up biosecurity procedures in recent years, but many efforts – foot baths and log books – focus on human activity. The very real risks posed by animals and insects have been confirmed in several recent research studies.

The composting shed often serves as an open-air food source for local scavengers including raccoons, foxes and buzzards.

Better Biosecurity

transmission pathways

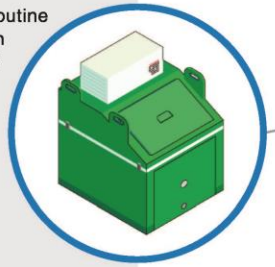
There are several potential transmission pathways for pathogens. Equipment, people and pests (flies or scavengers) that have come into contact with a pathogen (via wild birds, waterfowl or litter/feces) all have the potential to spread disease. For example:

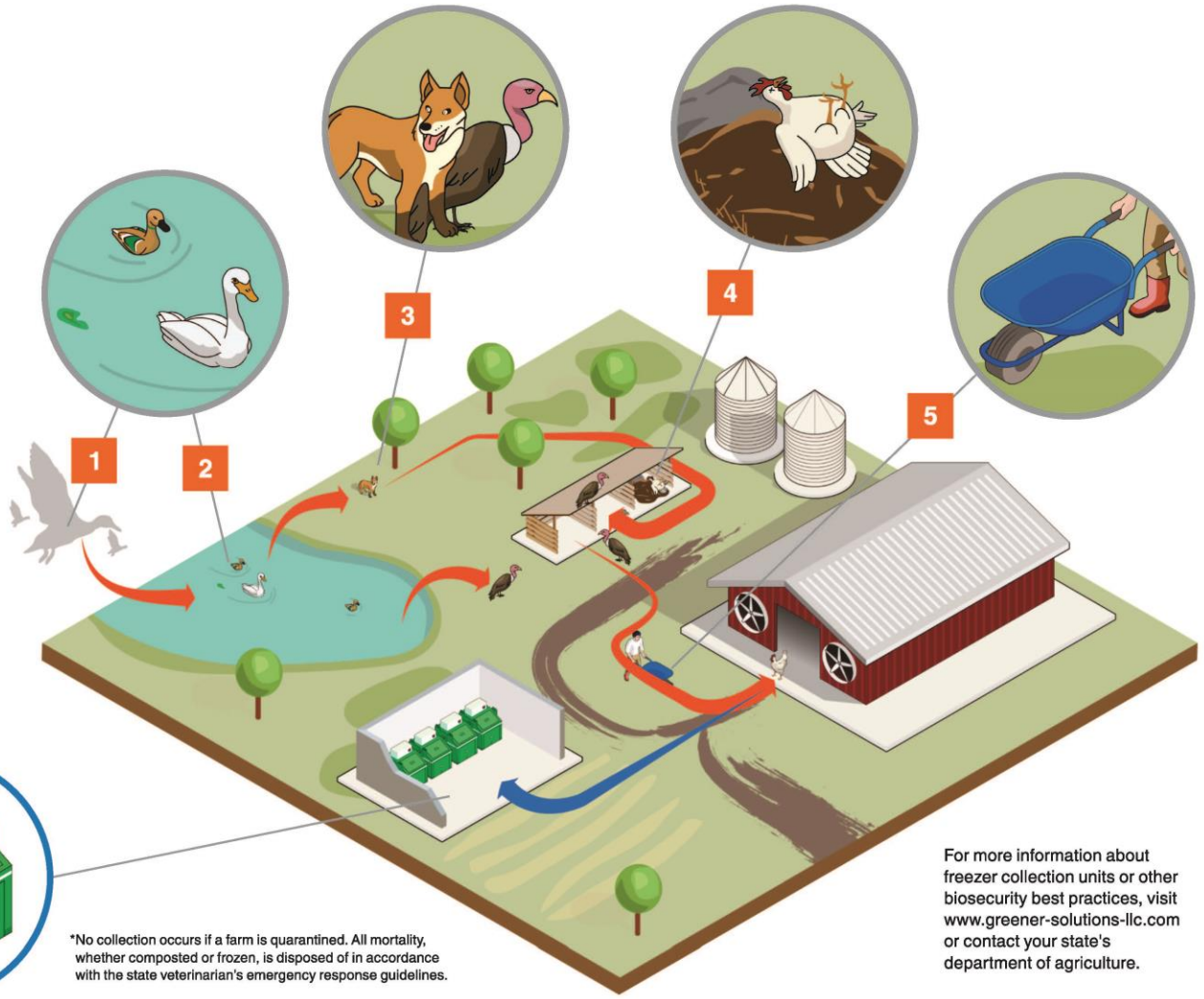
Wildlife to Farm

1. Migratory waterfowl (ducks, geese and swans) can serve as carriers for disease.
2. The birds shed the disease in their feces, contaminating lakes, streams and ponds.
3. Local animals (foxes, raccoons and vultures) come into contact with the disease at nearby waterways.
4. Those same animals then travel to the composting sheds of nearby farms looking for food.
5. Once introduced, the disease spreads to poultry through animal, fly or human activity on the farm.

Prevention

Instead of composting, dispose of routine mortality in sealed freezer collection units. This will reduce the number of animals and flies on the farm, thereby reducing the risk of transmission. A custom collection vehicle arrives between flocks to empty the units.*

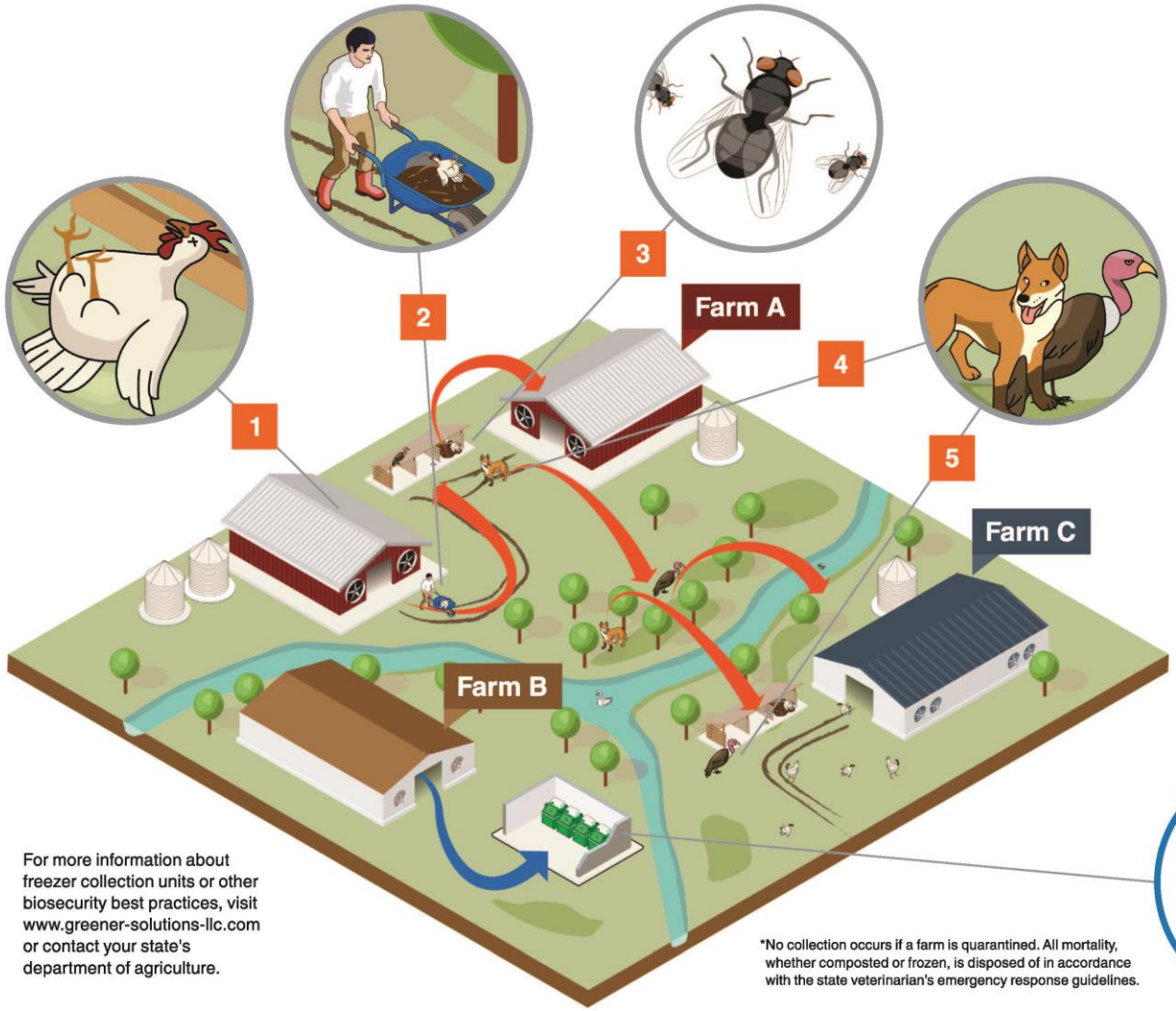




*No collection occurs if a farm is quarantined. All mortality, whether composted or frozen, is disposed of in accordance with the state veterinarian's emergency response guidelines.

For more information about freezer collection units or other biosecurity best practices, visit www.greener-solutions-llc.com or contact your state's department of agriculture.

Better Biosecurity



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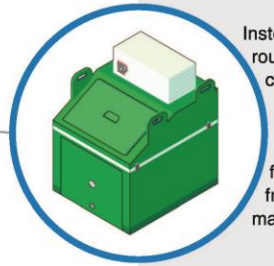
Farm to Farm

1. The first chickens begin dying from an infection, but the infection is not detected immediately.
2. During that time, dozens of diseased birds are taken to the composting shed for routine disposal.
3. Carcass composting attracts flies that can spread infection to other houses and nearby farms.
4. Wild animals (vultures, foxes and raccoons) visit the composting shed nightly for food.
5. Those same animals then carry the virus miles away as they visit nearby waterways or other farms for food.

Containment



Instead of composting, dispose of routine mortality in sealed freezer collection units.* This will reduce the number of animals and flies on the farm, thereby reducing the risk of spreading a disease to nearby farms. Had "Farm A" been using freezer collection units, "Farm C" may have been spared.

Thank You

Please contact us with your suggestions and questions:

Greener Solutions

(844) 754-2742

www.FarmFreezers.com

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Victor Clark -- victor@FarmFreezers.com

Terry Baker -- terry@FarmFreezers.com

FARM FREEZERS

ROUTINE MAINTENANCE

FOR COLLECTION SERVICES:

(302) 448-8699, ext 2

IN THE EVENT OF A MASS MORTALITY EVENT:

(302) 448-8699, ext 702

MORTALITY FREEZER UNIT – ROUTINE MAINTENANCE PROCEDURES

After each flock or collection perform the following routine maintenance to ensure your equipment performs at its peak effectiveness.

1. Prior to any maintenance, unplug or turn off the circuit breaker that powers the freezer unit.
2. Conduct a visual inspection of the winch system. Be sure to check all cables for wear and tear.
3. Conduct a visual inspection of the box, lid, doors, latches, and seals.
4. Unlatch the top half of the storage container and raise it up a couple of feet using the winch/cabling system. Then slide the bottom half of the storage container out of the way allowing you free access to the underside of the freezer component.

5. Inspect the evaporator's housing and fins to ensure that feathers are not restricting air flow.

6. If you find feathers or other material on the housing or fins of the evaporator, you must remove the material so there is no air flow restriction.

7. Feathers can be removed using air (e.g., a leaf blower) or water (e.g., a standard hose – but not a pressure washer). If using a hose, direct the water spray away from the evaporator's fans.

8. If there are feathers on or in the fins of the evaporator, there will probably be feathers in the protective pan, a.k.a. the drain pan under the evaporator, so that should be cleaned also.

9. Remove the two screws located on the front of the storage container through the door opening allowing the drain pan to be removed and rinsed out.

10. With the drain pan removed you can now check the evaporator fans. Using your finger, just lightly spin the fan blades allowing any debris to fall out.

11. Plug in the power supply temporarily to allow you to make sure the evaporator fans are spinning freely. If good, disconnect the power supply again.

12. The reusable air intake filter protects the freezer unit's condenser. It should be inspected weekly during the flock for any problematic buildup of feathers and dust and cleaned if necessary – but it should be cleaned after the flock moves.

13. Lift the filter up and out of the protective sleeve that holds it in place. The filter can be cleaned by spraying water or air to remove the feathers and debris. Then slide the filter back down into the protective sleeve.

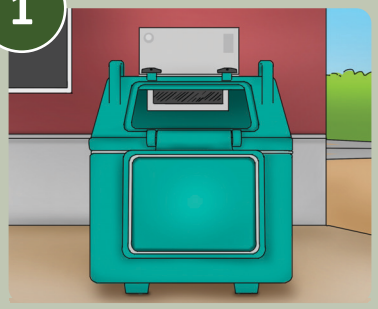
14. Reassemble all components removed during cleaning.

15. Plug in the power supply when done and then check to ensure the unit is cooling.

REMINDER

- **DO NOT use chemical cleansers on the boxes or components.**
- **Doing so could inadvertently contaminate the entire load heading to the rendering plant – not just the material from your unit!**
- **If a cleanser is needed, a small amount of 5% bleach mixture may be used.**

1



The first unit is turned on as the flock arrives. Other units are turned on as needed. (Until needed, they are left off and the door left open to vent.)

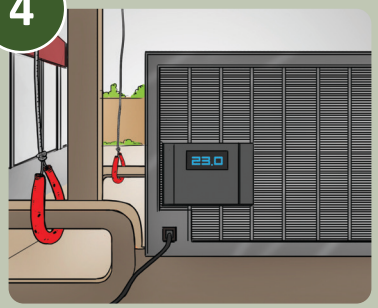
2

Routine mortality is collected daily.

3

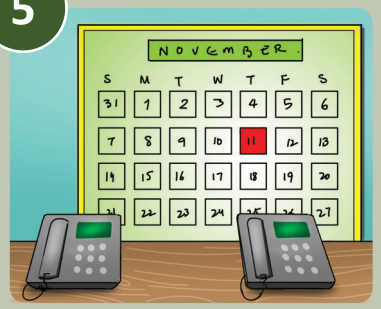
The buckets are dumped in the unit and the door is closed. (Use no more than a third of the capacity per day.)

4



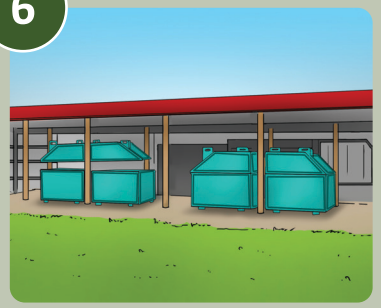
The digital readout is checked to ensure proper temperature is maintained.

5



After the catch date is set, call to schedule collection.

6

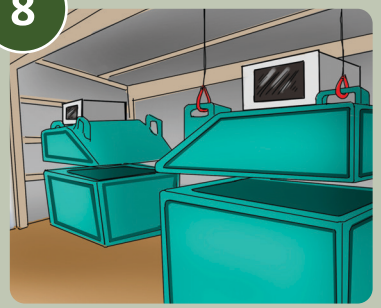


One week prior to catch day, all remaining units should be turned on so that the larger amount of mortality can be spread evenly between units.

7

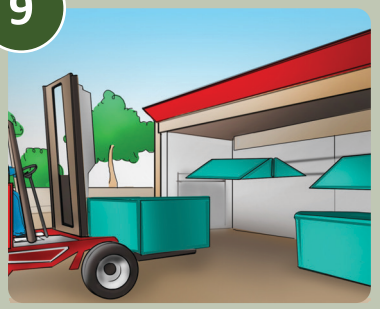
A customized truck and forklift arrive after the flock is gone.

8



The tops of the units are winched up in the air.

9



The bottoms of the units are then removed and taken for emptying.

10

The boxes are dumped in the back of the sealed trailer.

11

The boxes are then put back in place.

12

The units should be rinsed out and the doors left open until the unit is needed for the next flock. (Doors should not be closed when unit is not in use.)

ON-FARM FREEZING: HOW IT WORKS

FOR MORE INFO (844) 754-2742 OR WWW.FARMFREEZERS.COM

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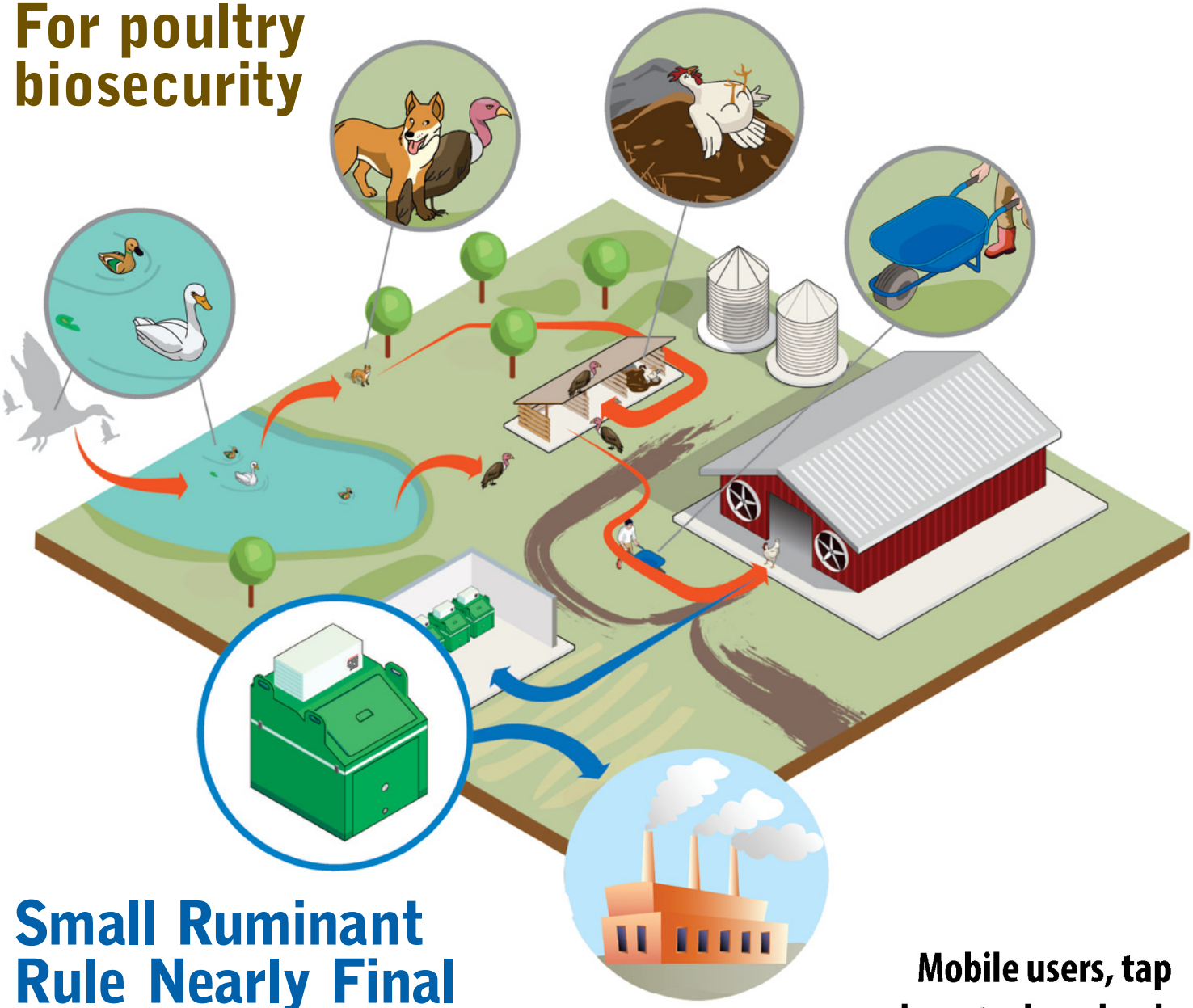
Freezing vs. Composting

For poultry biosecurity



Small Ruminant Rule Nearly Final

Renderers Benefit from Convention and its Sponsors

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Freezing vs. Composting
for poultry biosecurity

By Tina Caparella

Researchers in the United States have known for some time that a wide range of wild mammals – including raccoons and foxes, common visitors to farms and waterways – can be carriers of avian influenza (AI). More recently, however, researchers confirmed that some mammals are not only carriers but can also transmit the virus to birds, raising new questions about how the disease may move in the environment and between farms.

"When wildlife and poultry interact and both can carry and spread a potentially damaging agricultural pathogen, it's cause for concern," said research wildlife biologist Dr. Jeff Root, one of several researchers from the National Wildlife Research Center (NWRC), part of the United States Department of Agriculture's Animal and Plant Health Inspection Service Wildlife Services program studying the role wild mammals may play in the spread of AI viruses.

In May 2016, the agency issued its latest research update on the topic, highlighting experiments in which Root and his team demonstrated that skunks and rabbits can become infected with and shed the AI virus, which subsequently infected mallard ducks. Knowing this, the risks from mammals frequenting areas in and around poultry farms should be taken into consideration when crafting biosecurity plans, according to the full NWRC study published in late 2015.

The orange arrows show how migratory waterfowl, known carriers of disease, infect local animals that then visit compost piles on poultry farms. Once introduced on the farm, the disease can spread to live poultry. The blue arrows show an alternative – storing mortalities inside a freezer unit for later transport to rendering – that eliminates the food source and therefore the disease transmission risk from wild animals.
Illustration provided by Greener Solutions.

Freezing/Rendering Beats Composting for Biosecurity

That's where the rendering industry plays a key role. One of the most effective ways to reduce the number of animal visitors on the farm is to store routine mortalities in freezer collection units for later transport to a rendering facility.

"Proper management of bird mortality is an important [often overlooked] part of biosecurity," said Dr. Jonathan R. Moyle, an associate professor and extension poultry specialist at the University of Maryland. "Freezers can help growers by providing a simple method to dispose of the birds. Not only do freezers prevent predators from accessing the carcasses, but they can also help reduce insects, which can also be vectors of disease."

Randall Smith of American Proteins Inc., which has been collecting poultry mortalities from farmer-owned freezer units for more than 15 years, agrees.

"Freezers are the answer to many biosecurity concerns," said Smith, American Proteins' farm mortality manager. "Material is collected, put in sealed freezers, cooled to preserve marketability, and then hauled off the farm, removing any disease concerns. The material is then processed in the rendering plant, which produces several disease-neutral products that can be sold and used. These useful products are from recycled material that if left in the environment can be hazardous."

The recent NWRC study on mammals also stated that trends in the evolution of the AI virus "reaffirm the need to assess multiple facets of farm-scale biosecurity of poultry operations, wherein all routes of viral intrusion, even those [previously] thought to be unlikely, are addressed." Based on this new research, many in the poultry industry believe the old method of composting for managing mortality should be reassessed.

Retired University of Delaware poultry specialist Bud Malone is among them. A long-time proponent of composting, Malone now favors disposal of routine mortalities in sealed freezer collection units to significantly reduce the number of unwanted animals and flies on the farm and lessen the risk of disease transmission. He also pointed out that the majority of poultry growers do not compost properly, potentially aiding in the spread of disease.

Composting sheds are in essence open-air food sources that attract scavengers such as buzzards, foxes, raccoons, birds, and feral cats. Those same animals also visit local waterways where they can come into contact with migratory waterfowl, known carriers of AI. In 2004, Malone observed evidence of those scavengers visiting compost bins on Delaware farms that were infected with low pathogenic AI.

"Although never documented, it is my opinion that composting helped spread AI during that 2004 outbreak," Malone told *Render*.

Practice Offers Benefits Beyond Better Biosecurity

Freezer collection is simple. Poultry growers collect routine mortalities daily, place them inside a specially-designed freezer unit, and close the lid. Once the flock has left the farm, collection trucks then empty the units into a sealed trailer and deliver the mortalities to a rendering plant. Freezer units are currently only used to store day-to-day mortalities for later transport, not for collection or disposal of catastrophic losses, such as AI-infected birds.

On average, a poultry farm that grows a 67,000-bird flock would need anywhere from four to eight freezer collection units. The units are only turned on as additional storage capacity is needed over the course of the flock so energy is not wasted. An average four-unit farm would spend about $92 over a seven week grow-out cycle.

Poultry growers switching to this practice have been able to greatly reduce the time and money previously spent on composting, saving thousands of dollars a year in operational costs. Freezer collection units are the most labor-efficient method of disposal for poultry mortalities, according to Malone. Nonmonetary benefits for the grower include the elimination of smells, flies, and scavengers associated with composting, improving the quality of life for the farmer – and the farmer's neighbors.

Another benefit for the grower – and the industry as a whole – is the reduced environmental impact compared with other mortality management methods. For example, composting, which is premised on land application as a second step, increases the overall nutrient load that could potentially run off into nearby waterways. The freezing/rendering model removes the material from the farm setting entirely, eliminating any potential environmental impact.

Freezing Poised for Growth

Utilizing freezer units to store routine mortalities has been in use for decades, but the increasing focus on two of its biggest advantages – biosecurity and nutrient management – has led to a resurgence of interest.

Greener Solutions is one company that sees great growth potential in pairing the two technologies of freezing mortalities and then sending them to rendering. The company's founders began researching and developing a new "hybrid" model in 2011 that later included a state-funded pilot project tied to the nutrient management benefits of the practice. In 2014,

Once the flock leaves the farm, the poultry mortalities in the freezer unit are collected and taken to a rendering plant.

A long-time proponent of composting now favors disposal of routine poultry mortalities in sealed freezer collection units that are then taken to rendering.

the company began offering its collection service to poultry growers on the Delmarva Peninsula, an area that includes most of Delaware and portions of Maryland and Virginia.

"We saw this as a win-win for the individual grower, the industry as a whole, and of course the environment," said Greener Solutions co-founder and poultry grower Terry Baker.

"This is a recycling model, not a disposal model like composting," said Baker's business partner Victor Clark, explaining that "every pound of material that is recycled is one less pound of high-phosphorous material that would otherwise have been land-applied on farm fields. We think this will be the model of the future because of the heightened interest in nutrient management and biosecurity."

J.J. Smith, president of Valley Proteins Inc., agrees.

"It's not a big part of our business," he said of the two-to-three truckloads per week Greener Solutions delivers to Valley's rendering plants in Linkwood, Maryland, and Linville, Virginia. "But there is certainly room for it to grow in the Delmarva area, perhaps 10 times the size it is now."

Smith explained there has been a push on Delmarva farming operations to eliminate phosphorous runoff that eventually ends up in the Chesapeake Bay. The freezer bins are a good option over composting to reduce runoff and prevent transmission of possible disease by scavenger animals visiting compost piles. Other advantages of this collection method Smith sees are that mortalities do not deteriorate or degrade to the point they can no longer be rendered and collection trucks visit the farm infrequently, only in between flocks.

Smith pointed out that other areas in the eastern United States, such as North Carolina and South Carolina, have larger poultry operations than Delmarva but are not currently experiencing the same environmental pressures. However, he noted that the freezer units significantly reduce the biosecurity risk that composting brings.

"Moving mortalities after the birds have left the farm will 99 percent prevent the spread of potential diseases," Smith stated.

Like Valley Proteins, the collection of mortalities from freezer units is a small part of American Proteins' business, but Randall Smith believes there is room for growth in this type of collection for many reasons: the low cost and convenience of disposal to the grower, the elimination of environmental concerns, and the biosecurity of preventing the possible spread of disease.

Biosecurity is critical to the Cumming, Georgia-based renderer that collects from grower-owned freezer units in Georgia, Florida, Alabama, and Tennessee. American Proteins services the freezers as requested by the poultry grower. The company's collection trucks are cleaned and sanitized with a special hydrogen peroxide solution by onboard sprayers before entering and upon leaving each farm and when arriving at the rendering plant to remove any potentially diseased material.

Continued on page 12

Freezing *Continued from page 11*

In addition, truck drivers spray their shoes after leaving the farm ground.

Freezers are also placed as far away from poultry houses as possible and, in most cases, collection trucks are parked further away from the freezer shed, limiting physical proximity to poultry houses. American Proteins developed a video focusing on the biosecurity of collecting farm mortality from freezer units that is available on YouTube at www.youtube.com/watch?v=69y2_Rd7arg.

Growers See Great Potential Too

About 12 years ago, Doug Brown decided to invest in a grower operation for a major poultry company in Texas with plans to build six new 40-foot by 500-foot chicken houses. While researching options for mortality disposal to ensure a biosecure farm, Brown narrowed it down to three: composting, incineration, and on-farm storage in freezer units.

After visiting several farms that had each of these choices, he opted to go with the freezer containers because they were simple to operate, economical, and "very biosecure." Brown installed nine freezer boxes on his six-house farm and has never faced a biosecurity issue. A local poultry rendering company collects the grower's mortalities after the flock has left the farm, about every nine weeks.

"The truck does not come while the birds are on the premises," noted Brown, who continues to be a strong proponent of the freezers as the most environmental and biosecure way of handling poultry mortalities. "Today, after having visited other farms over the last 12 years that utilize compost and incineration, my experience says that the freezer boxes are the most environmentally friendly, biosecure method to handle farm mortality," he added. "It also requires the least amount of time, effort, and cost to operate."

It was for many of the same reasons – convenience, cost-effectiveness, and biosecurity – that family-owned State Line Farms in Delaware installed the units on two of its three farms. The grower was one of the first to adopt the practice on its 82,000-bird operation in Delaware as part of a state-sponsored pilot program three years ago. State Line Farms co-owner Brent Willin said the convenience of placing the mortalities in the containers ensures the farm workforce collects the dead birds daily versus less often when composting. The company added the freezers to a second 60,000 bird operation last year and will eventually place the units on a third farm.

The 20 total freezers at the two farms are serviced between flocks by Greener Solutions and the mortalities are taken to a renderer. Willin said the freezers allowed his operation to more easily adapt to heightened biosecurity requirements, such as no sharing of equipment, which were instituted in the wake of the Midwest AI outbreak in 2015. Composting, unlike freezing, requires the use of a front-end loader, which would have been a problem for a three-farm operation that shared one front-end loader.

Willin said the only challenges are the upfront costs of the equipment and back-up power generation for the freezers should the farm lose power. Some upfront costs could be defrayed through various programs that offer cost-share subsidies for nutrient management practices in certain areas of the country.

"Overall, I'm happy with them," Willin commented. "The containers isolate any disease that may be in the flock. The benefits outweigh any challenges." **R**