

WHITEPAPER



Protecting the poultry

How reusable plastic containers
solve an ongoing poultry problem



Supply chain challenges facing the poultry industry

Corrugated boxes and moisture don't mix.

That's the message coming from suppliers and retailers trying to protect their already thin margins.

Leaders at different nodes along the supply chain are paying increased attention to waste caused by collapsed, soggy, corrugated boxes. Retailers want solutions that decrease shrink and increase the overall quality of fresh poultry that ultimately is sold to consumers. Suppliers want fewer rejections caused by the same culprit. Everyone wants bottom line savings and sustainability goal impact.

Yet when it comes to transporting poultry along the supply chain from farm to retailer, corrugated boxes often are the default choice.

Fresh chicken is more than 70 percent water and most often shipped with an ice crust. Packaging frequently leaks in transport. When it does, the fibers in the corrugated boxes break down, leaving them vulnerable to collapse.

There is an increased need for tracking data and visibility across the supply chain, and particularly throughout the transportation journey. Without the ability to trace products as they move, companies are not able to face a problem until it is already too late.

This leads to higher food waste rates - farms and producers lose \$15 B to it annually, and manufacturers another \$2 B.



Poultry's packaging problem

The toll taken by food waste is felt strongly by poultry suppliers. The increased cost of farm to retailer journey is creating pressure for leaders to find greater efficiencies.

Consumers have felt the pinch as retailers have passed along their increased costs. According to the latest 2024 data, in 1997, the **average price for fresh, whole chicken was \$1 per pound**. The current average price is \$1.99. Today's average price is **33% higher than the average price just four years ago**.

That makes the cost of unsellable poultry a bigger threat to a company's profitability than ever before.

This truth is made even stronger as consumer tastes have changed over the past 30 years. Chicken passed pork as the second most-consumed meat in 1996 and then, pushed beyond beef for the top spot in 2010.

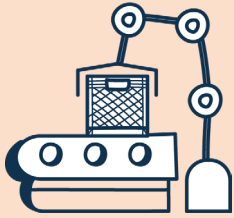
According to a USDA study, **Americans now eat roughly twice as much chicken as beef or pork.**

In 2023, consumers ate 100 pounds of broiler chicken per person, compared to 57.4 pounds of beef and 50 pounds of pork.

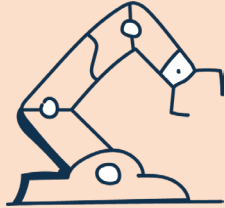
The container in which the majority of chicken is shipped — the corrugated box — was patented in 1871. Other than a few minor modifications, it is much the same as it was when it first took over as the container in which America's fresh food is shipped. This 19th century technology isn't standing up to the 21st century demands of American consumers.



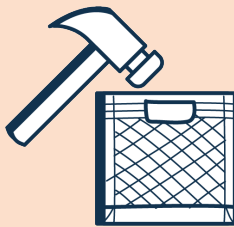
There are six main problems created by this reliance on corrugated boxes for poultry shipping.



Corrugated cardboard can't handle moisture or water. Leaks destroy the structural integrity of corrugated boxes, creating box failures at many points in the supply chain. Box failures result in unsellable poultry and increased labor costs because workers have to spend time cleaning up these messes.



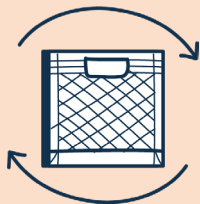
Money-saving automation technology doesn't work with corrugated cardboard. Automation relies on standardized sizing and durability, and corrugated boxes come in too many shapes and sizes to play well with automation without downtime for continuous machine changes.



Poultry is heavy and corrugated cardboard can't stand up to the weight. When a pallet of poultry packed in corrugated boxes is stacked for shipping, the product inside bears the weight of the entire stack as well as moisture from purge. This creates unstable pallets for shipping and greatly impacts product quality. It also results in sticky film on packaging that is a turn-off for consumers. Both lead to rejections for suppliers.



Box failures mean reduced cube. Corrugated boxes often fail under the weight, leading to unstable stacks. This in turn requires additional labor for clean up and disposal. To reduce the extra work, currently the corrugated boxes aren't stacked to their full capacity. They are partially loaded and sent to retailers which means increase in truck trips and high emissions.



Corrugated cardboard boxes are a single-use container. They can't be reused, which means they are the source of tremendous packaging waste. This waste has to be disposed of at the baler — the water cooler of the warehouse — which results in more wasted labor time at stores.



Corrugated boxes have limited traceability. Corrugated boxes are typically plain cardboard with no built-in RFID tags, sensors, or tracking barcodes that can withstand the rigors of transport, particularly in cold or humid environments. This makes it challenging to monitor each box's location, temperature, or condition throughout the supply chain, resulting in less visibility.

The RPC solution

The benefits of Reusable Plastic Containers (RPCs) can be touted across all product lines in the fresh-food supply chain, but perhaps nowhere are they as strong as they are for poultry. The increased consumer demand for poultry coupled with the increased cost of the product makes getting more poultry from farm to table of paramount importance.

That is why more suppliers and retailers are turning to RPCs. At every step along the supply chain, RPCs solve the problems corrugated boxes create.

Supplier

- ✗ **PROBLEM: Jams box-former**
Corrugated boxes frequently jam the box-former.
- ✗ **PROBLEM: Shrink**
Corrugated boxes can leak, and their products can get damaged or squished when stacked.
- ✗ **PROBLEM: Rejection**
Corrugated boxes lead to higher rejection rates at the next step, the distribution center, because of damaged products.
- ✗ **PROBLEM: Less Cube**
Corrugated boxes can not be safely stacked to its highest capacity. Box failures leads to reduced cube.
- ✗ **PROBLEM Traceability:**
Corrugated boxes have limited traceability options.



- ✓ **SOLVED: No box-former**
With RPCs, there is no box to form.
- ✓ **SOLVED: More fresh product**
RPCs are stronger and sturdier, allowing for higher stacks, meaning more product can be delivered to the customer.
- ✓ **SOLVED: Sturdier**
RPCs are sturdier and protect the product better, leading to a more attractive presentation and better sales.
- ✓ **SOLVED: More cube**
RPCs are designed to be safely stacked and in fact, switching to RPCs leads to 25% more cube
- ✓ **SOLVED: Built-in traceability**
RPCs have built-in RFID tags, sensors, or tracking barcodes that can withstand the rigors of transport, particularly in cold or humid environments.



Distribution Center

- ✗ **PROBLEM: Can't handle weight**
Corrugated boxes can't stand up to the weight of meat, leading the product itself to bear the weight of the pallet.
- ✗ **PROBLEM: Not automation friendly**
Corrugated boxes don't work well with automation systems because of the huge disparity in size and shape.
- ✗ **PROBLEM: Leak** Flimsy corrugated boxes lead to failed pallets, which cause messes and injuries.
- ✗ **PROBLEM: Labor time** Workers waste time unstacking and re-stacking unstable pallets.



- ✓ **SOLVED: 400% stronger**
RPCs are sturdier and easily able to handle the product's weight.
- ✓ **SOLVED: Designed for automation**
RPCs come in standard sizes that are designed for automation technology.
- ✓ **SOLVED: No spillage**
RPCs, again, are sturdier and stackable, reducing pallet issues and decreasing spillage and lost-time incidents.
- ✓ **SOLVED: Less labor time spent:** RPCs are designed to be stacked and stable on pallets.



Retailer

- ✗ **PROBLEM: Labor time**
Corrugated boxes create low-value activities like time at the baler, which is the water cooler of the retailer.
- ✗ **PROBLEM: Messy backroom**
Corrugated boxes lead to messier, less organized backrooms.
- ✗ **PROBLEM: Product cleanup**
Leaks from corrugated boxes lead to more time wasted on product cleanup.
- ✗ **PROBLEM: Low quality product**
Corrugated boxes lead to fewer sales because of lower-quality product on the shelves.



- ✓ **SOLVED: Less labor time spent** With RPCs, there is no need for a baler, resulting in more time spent by employees on valuable activities.
- ✓ **SOLVED: Organized backroom** RPCs are standardized and stackable, leading to a more organized backroom.
- ✓ **SOLVED: No clean-ups**
RPCs sturdy construction requires less time spent on low-value activities like cleanup.
- ✓ **SOLVED: Fresher Product**
RPCs better protect the product, leading to more attractive displays and better sales.



RPCs offer a sturdier, safer alternative that better protects fresh chicken. Companies that switch to RPCs for poultry are likely to see a dramatic decrease in shrink and labor costs. They also will be contributing to global sustainability efforts that leave the planet a better place for future generations.

Corrugated boxes are often transported on wood pallets. Wear and tear on the wood can limit the pallet's usage to just a few trips.

The desire to protect the product and to increase sustainability efforts is what led Fieldale Farms Corporation to turn to Tosca, a global leader in RPC pooling.

Fieldale is a family-owned poultry company based in Baldwin, Ga. Founded in 1972, it has grown to become one of the world's largest independent poultry producers. It sells chicken under its premium Springer Mountain Farms brand.

The company wanted a solution to get more product into the hands of consumers by decreasing the percentage damaged during transportation in corrugated boxes.

Fieldale replaced single-use corrugated boxes with Tosca's RPCs in 2021. Company leaders immediately noticed the benefits, including a significant reduction in labor costs and positive environmental impact in their day-to-day operations.

RPCs can be used hundreds of times and are 100% recyclable, helping businesses reach their sustainability goals





Fieldale also noticed benefits that directly impacted their customers, giving the company a competitive edge over other poultry processors. For example, the use of a stronger box reduced the number of boxes that needed to be handled. Since Tosca RPCs are strong enough to carry more product without breaking, Fieldale can send the same amount of chicken in fewer boxes.

The sustainability impact is significant as well. Every use of a RPC eliminates more than 1.5 pounds of corrugated boxes, translating to millions of tons of corrugated diverted from entering the supply chain every year. RPC adoption also translated directly to a reduction of greenhouse gas emissions. A lifecycle analysis revealed that in the supply chain between Fieldale and one of its retail partners, **there will be more than an 80% reduction in greenhouse gas emissions and an estimated 143 million gallons of water saved over the course of 10 years.**

Company officials estimated that this upgrade reduced **500 packages per truck** from the process, translating to **24% fewer boxes** that need to be handled in the customer's distribution centers.



Transforming with Tosca

Tosca developed RPCs specifically for the poultry industry. The Tosca Poultry RPC features:

400%

stronger than corrugated boxes, with food grade polypropylene to withstand weight and water. engineered specifically for durability.

A fluid retention channel to drain away liquid from the packaged product to

protect
against
leaks.

1-to-1

conversion from corrugated boxes because of the optimized container dimensions

SCALLOPED WALLS

Tosca RPCs can be stacked higher and tighter than corrugated boxes without sacrificing quality or safety.



On top of that, Tosca's RPCs were 5 to 8% less expensive than upgraded corrugated boxes. In fact, a corrugated box as strong as an RPC would cost 25% more than the Tosca product.

Tosca RPCs can be stacked higher and tighter than corrugated boxes, allowing for optimized storage space without sacrificing quality or safety.

In addition, Tosca's RPCs work with Tosca's AssetIQ solution that provides real time insights, can spot inefficiencies, and provides full control of your supply chain tracking.

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When we created our poultry RPCs, we knew we were setting out to do something different in a supply chain that hasn't been changed in decades. The fast turning, high volume nature of the poultry supply chain, added to the corrugated box failures and messes that come with them, have been a problem for years. We've created a better alternative

- **Eric Frank**, CEO of Tosca

That alternative is, indeed, proving to be better for those who make the switch to RPCs. Companies that have made the switch, such as Fieldale Farms, are able to answer a variation of the age-old question: Why didn't the chicken cross the road? Because of corrugated box inefficiencies when compared to RPCs.

For more information on Tosca's poultry RPC options and its full line of RPC products, visit toscaltd.com

