A DISTRIBUTION AND COST SCENARIO FOR BULK WATERMELONS

Corrugated bulk bins provide bottom-line value.

Executive summary: Using data provided by one of the largest growers and shippers of watermelons in Arizona, the Full Disclosure℠ modeling tool analyzed total annual costs involved in shipping bulk watermelons using corrugated bulk bins versus returnable plastic container (RPC) bulk bins. The findings clearly demonstrate that the corrugated solution offers more cost-effective packing, storing, handling and shipping than RPC bulk bins.

- Using corrugated bulk bins decreases overall supply chain costs by 19.8 percent. The corrugated solution realizes an overall supply chain cost advantage of $1.74 million over RPC bulk bins, or $2.64 million annually if RPC bulk bin purchase costs were amortized over their useful life.

- The retailer's system costs decrease by 10.2 percent with corrugated by avoiding higher RPC bulk bin transportation costs.

- The grower/shipper enjoys system cost savings of 44.7 percent with corrugated due primarily to the per-container cost difference between purchased corrugated bulk bins ($6.30 each and $2 of amortized pallet costs) and rented RPC bulk bins ($14 per trip).

CORRUGATED
IT MAKES THE MOST SENSE

Conducting the Arizona bulk watermelons scenario.

In 2002, 4 billion pounds of watermelons were grown in the United States, making the U.S. the fourth largest producer worldwide. Watermelons are grown in 44 states with Florida, Texas, California, Georgia and Arizona consistently leading the country in production.

The 1,800-mile trip from the packing facility to the distribution center – the approximate distance from Red Bluff, Arizona, to Cincinnati, Ohio – takes about four days (approximately 38 hours). Industry standard pallet specifications were assumed.[1] (Figure 1)

Figure 1

Container	Stacking Pattern (containers/layer x number of layers)	Container Gross Weight (lbs)	Containers per Pallet	Full Pallet Weight (lbs)	Stacked Pallet Height (inches)	Pallets per Trailer
Watermelon Corrugated	1 per layer, 3 high	851.5*	1	851.5*	84**	51***
Watermelon RPC	1 per layer, 2 high	912	1	912	66	48***

* Corrugated bin weighs 11.5 lbs., pallet weighs 40 lbs., 800-lb. capacity = 851.5 lbs. total pallet weight

** Includes 4" wooden pallet

*** Trailers carrying both bulk bin corrugated containers and bulk bin RPCs are weight-constrained at 51 and 48 pallets/trailer (or 43,427 lbs. and 43,776 lbs., respectively).

The subject of this real-world scenario is one of the nation's largest grower/shippers of watermelons, shipping the equivalent of 110,250 bulk bins of watermelons annually. Its packaging and distribution system is typical of that of a large melon grower/shipper and translates well to any produce grower/shipper using bulk bins.

Corrugated bulk bins have a multi-purpose future.

Retailers frequently reuse empty corrugated bulk bins for another commodity (sometimes for many months or seasons), or "re-purpose" them for another use within the warehouse. If a corrugated bulk bin has served its useful purpose, it is broken down and recycled for its old corrugated container (OCC) value ($0.37 per container). At this point, the corrugated bulk bin's distribution function is complete.

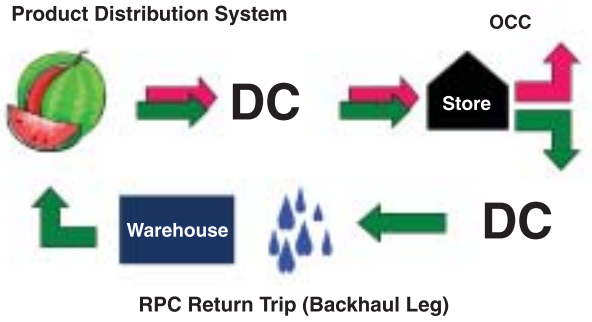
RPC bulk bins, on the other hand, must now enter the return trip process, which requires sorting, washing, sanitizing, warehousing and redistribution to the grower. On average, it takes 60 days for an RPC bulk bin to make this round-trip. Therefore, each RPC bulk bin makes six complete cycles (or "turns") per year with an expensive and often time-consuming return leg. And each lost or stolen RPC bulk bin can cost the supply chain up to $145 per container. (Figure 2)

Total cost picture is straightforward.

The Full Disclosure analysis demonstrates that distributing watermelons in corrugated bulk bins is economically preferable to purchased RPC bulk bins.

Corrugated bulk bins show an annual cost advantage of more than $1.74 million, which increases to $2.64 million by factoring in the amortization cost of the RPC bulk bins over their useful life. In fact, if purchased, RPC bulk bins would increase the overall required cash outlay in the supply chain by 24.7 percent per year, or by 37.6 percent when the cost of RPC amortization is included.

Figure 2



1. Pallets with RPCs are height-constrained (in this case limited to 2 layers) due to trailer door height limitations.

The Full Disclosure analysis shows that these higher costs are incurred in the trucking (additional $1,463,625) and handling (additional $276,317) legs. A fully-loaded truck of watermelons packed in corrugated bulk bins carries 2,400 pounds more product than a fully-loaded truck of watermelons packed in RPC bulk bins. RPC bulk bin backhaul trip requirements, such as washing and warehousing, contribute additional costs to the total picture. (Figure 3)

Who pays for what?

The Full Disclosure analysis further demonstrates that rented RPCs result in significant hidden costs. (Figure 4)

- The retailer spends an additional $699,000 each year to ship in rented RPC bulk bins, or an additional $6.34 per container.
- The grower/shipper pays a $14 per-container fee to rent RPC bulk bins (in comparison to the per-container price of $6.30 for corrugated bulk bins and $2 of amortized pallet costs), and sees its net costs increase by $742,692 (or an additional $6.74 per container).

(CONTINUED ON BACK)

Figure 3

Corrugated Containers		Reusable Plastic Containers		Variance
Annual Container Cost:	694,575 $	Annual Replenishment Cost:	799,313 $	104,738 $
Annual Pallet Cost:	220,500 $	Annual Label Cost:	88,200 $	-132,300 $
CC Trucking Costs:	6,007,643 $	RPC Trucking Costs:	7,471,268 $	1,463,625 $
Total trucking costs include trucking and any standing costs at unloading and loading.		*Total trucking costs include trucking and any standing costs at unloading and loading.*		
CC Handling Costs:	153,213 $	RPC Handling Costs:	429,529 $	276,317 $
Total handling costs include unloading, handling, and loading.		*Total handling costs include unloading, handling, and loading.*		
CC Operating Impacts:	0 $	RPC Operating Impacts:	0 $	0 $
Operating impacts are detailed at various distribution points.		*Operating impacts are detailed at various distribution points.*		
Disposal Cost (or Recycling Value):	-41,206 $	Disposal Cost (or Recycling Value):	-12,863 $	28,343 $
CC Inventory Value:	9,647 $			
CC Inventory Interest Cost:	579 $			-579 $
		RPC Initial Cost:	2,664,375 $	
		RPC Annual Amortization:	905,576 $	905,576 $
Annual CC Cost:	**7,035,303 $**	**Annual RPC Cost:**	**9,681,023 $**	**2,645,720 $**
		Variance without RPC Amortization:		1,740,144 $

Figure 4

Overall Summary of RPC Rental Costs vs. Corrugated

Arizona Watermelons

Cost Owner	Full Disclosure Model: Corrugated (1)	RPC (2)	Variance (3)=(2)-(1)	Rental Costs: Fees (4)	Other (5)	Total RPC Rental Cost (6)=(2)+(4)+(5)	RPC Rental vs. Corrugated (7)=(6)-(1)
Pool Operator	0	2,855,164	2,855,164	(1,645,634)	8,820	1,218,349	1,218,349
Major Retailer	6,110,987	6,720,098	609,111	86,592	3,308	6,809,998	699,011
Unassigned	0	0	0	0	0	0	0
Watermelon Grower	924,316	105,762	(818,555)	1,559,042	2,205	1,667,009	742,692
Grand Total	**7,035,303**	**9,681,023**	**2,645,720**	**0**	**14,333**	**9,695,356**	**2,660,053**

- The RPC pool provider appears to sustain a loss of more than $1.2 million annually to operate this float of containers. Even if the pool operator rented the container for $8.30 per trip (the same total cost as a corrugated bulk bin), the grower/shipper would still see a corrugated bulk bin cost advantage of $114,267 per year.

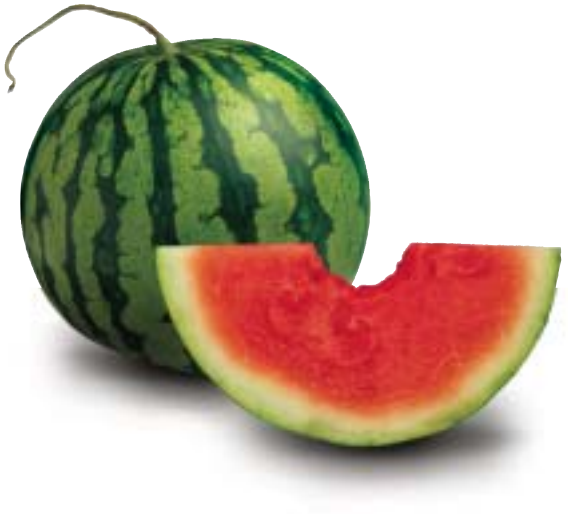
Conclusion.

By studying the impact of multiple cost drivers on different shipping container options throughout the value chain, retailers and grower/shippers can see the clear advantage of shipping watermelons in corrugated bulk bins versus either purchased or rented RPC bulk bins.

Furthermore, corrugated bulk bins offer graphic benefits and display-quality printing in the retail environment. If this billboard effect could be measured in dollars, the case for corrugated bulk bins becomes even stronger.

Lastly, close scrutiny reveals that pool operators bear the burden of significant extra dollars in "hidden" costs of rented RPC bulk bins. These high, yet seemingly "subsidized" rental rates may increase over time and as pool operators feel more comfortable with their market influence.

The bottom line remains the same: corrugated bulk bin containers make the most sense.



Full Disclosure was developed by the American Forest & Paper Association (AF&PA) and the Fibre Box Association (FBA). Full Disclosure is an activity-based costing software package designed to allow package buyers and users to objectively and systematically analyze shipping container alternatives by presenting the supply chain costs for each approach. The Corrugated Common Footprint Standard was developed by the Fibre Box Association and its member companies.

The Corrugated Packaging Alliance (www.corrugated.org) is a corrugated industry initiative jointly sponsored by the American Forest & Paper Association (AF&PA) (www.afandpa.org) and the Fibre Box Association (FBA) (www.fibrebox.org). Its mission is to foster the growth and profitability of corrugated in applications where it can be demonstrated, based on credible and persuasive evidence, that corrugated should be the packaging material of choice; and to provide a coordinated industry focus that effectively acts on industry matters that cannot be accomplished by individual members.

Corrugated Packaging Alliance
Fibre Box Association

Corrugated Recycles

CORRUGATED
IT MAKES THE MOST SENSE

800.886.5255 www.corrugated.org

10% recycled fiber

Union bug here