

# Managing the Shelf Life of Microorganisms through the Supply Chain

By: Rob Radabaugh

Coach: Gary Butler

Date: 6/8/12

Team: J. Iovino, C. Wills, N. Rager, D. Miller,  
S. Murnen, J. Steed, L. Conley, P. Norby

---

# Background

- Launched 2010:
  - 9 Formulas
  - 19 skus
- 2 Year Shelf Life
- Rework ~ \$300k

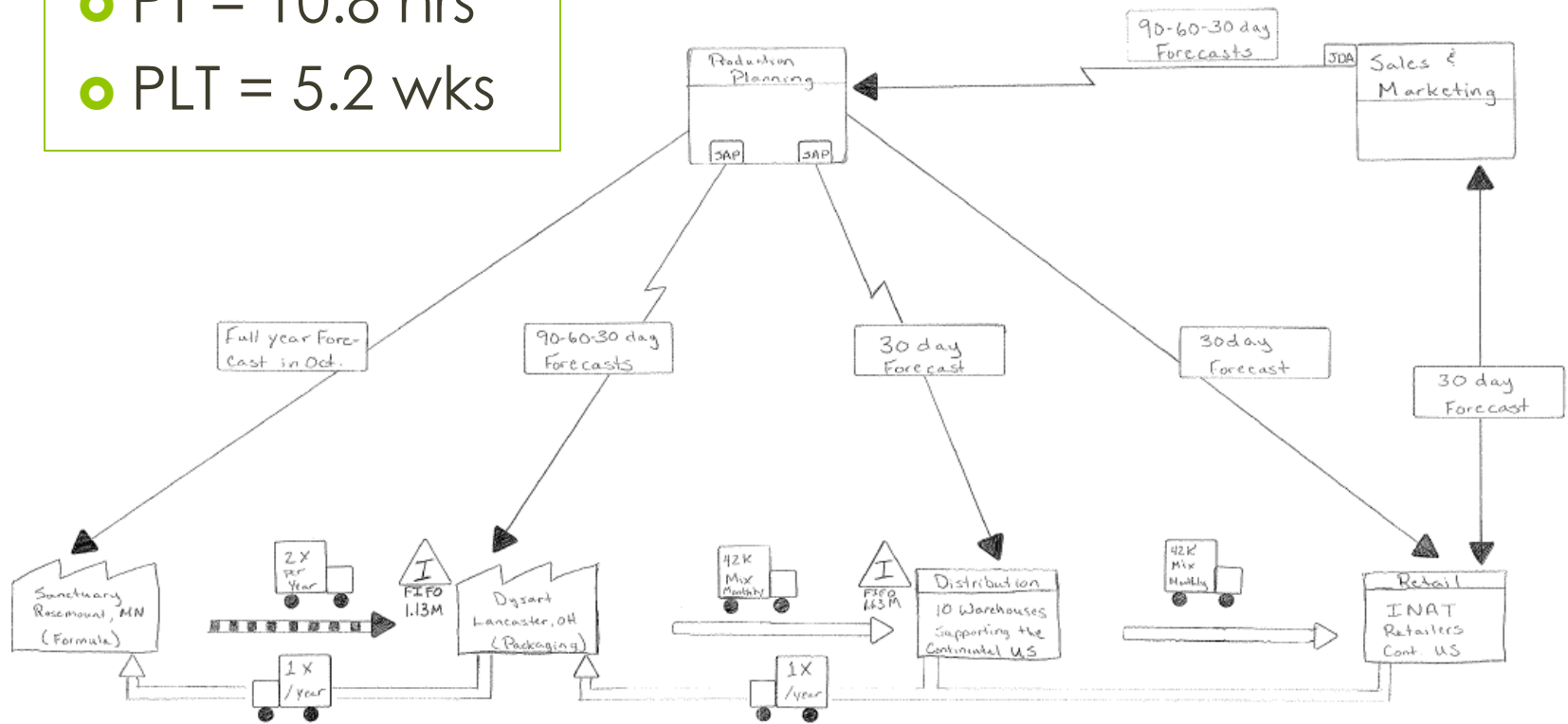
Confidential Information

## **Problem Statement:**

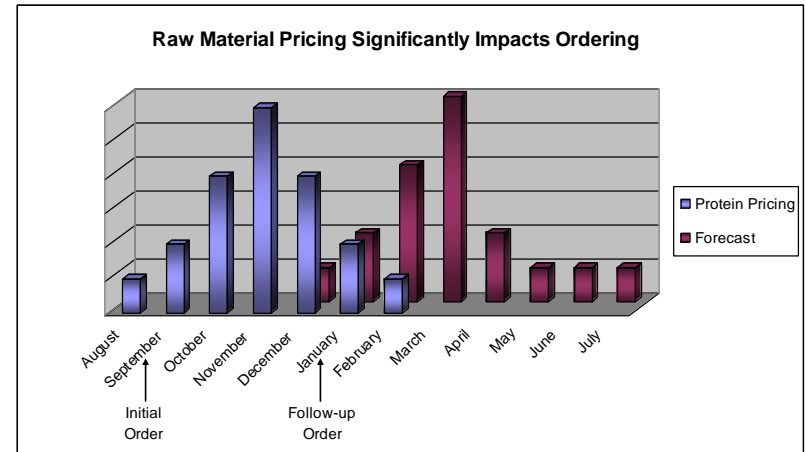
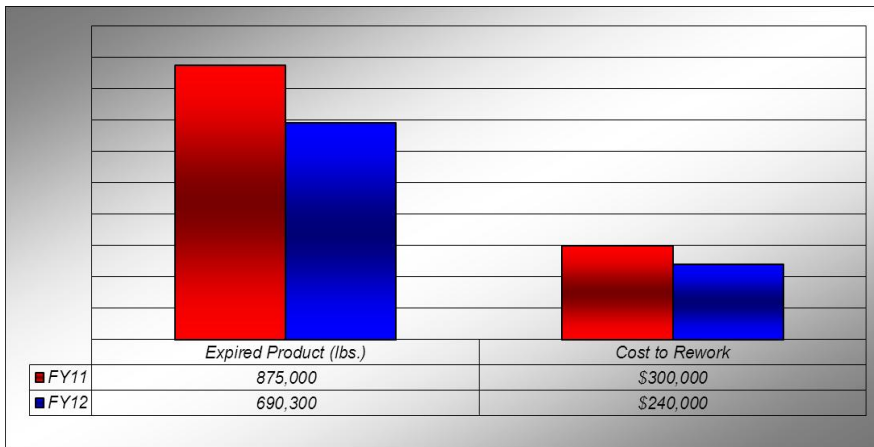
Product with a 2-year shelf life needs to be returned to the manufacturing facility to be reworked / reenergized at a substantial cost to the company. Currently managing product with an expiration date is not one of company's core competencies. As part of company's long-term strategy the company is looking at multiple technologies that will produce commercial products that will have expiration dates. If this problem is not addressed it will be detrimental to these future growth platforms.

# Current Value Stream Map

- PT = 10.8 hrs
- PLT = 5.2 wks



# Current Conditions

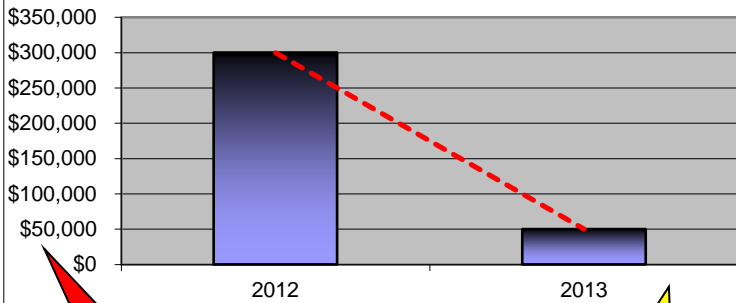


STANDARD WORK COMBINATION TABLE

STANDARD WORK COMBINATION TABLE					OBSERVATION RANGE: June to March					
FORECAST TIME:		8 hrs	PROCESSING TIME		4.1 days	OBSERVATION TIME: June 2012				
FORECAST LEAD TIME:		4 months	PRODUCTION LEAD TIME		2.5 months	MANUAL		WAITING		
NO.	STEP DESCRIPTION	NOTES	Average Time	Wait Time	June	July	Aug	Sept	Oct	
1	Demand Planning gathers previous year data and actual shipments to June	Use forecast for balance of year. No input from Sales.	4 hrs	2 wks	Yellow					
2	Planning review with Demand Fulfillment	Usually back and forth process.	2 hrs	2 wks		Yellow				
3	Planning adds % growth assumptions from finance and Executive Team	Expect in July but can be later.	1 hr	1 month			Yellow			
4	Planning reconfirms with Fulfillment and initial forecast is set.	Waiting for final approval from Executive team	1 hr	2 months				Yellow	Yellow	

# Goals / Targets

## Reduce Rework



Improve forecasting to reduce inventory to 10% of next seasons forecast.

Reduce Lead Time

Improve Communications Sales & Planning

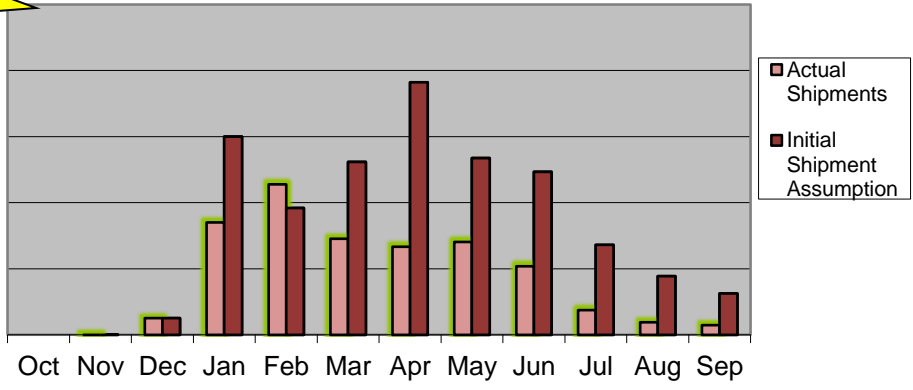
Eliminate Inventory

Reduce Run Size

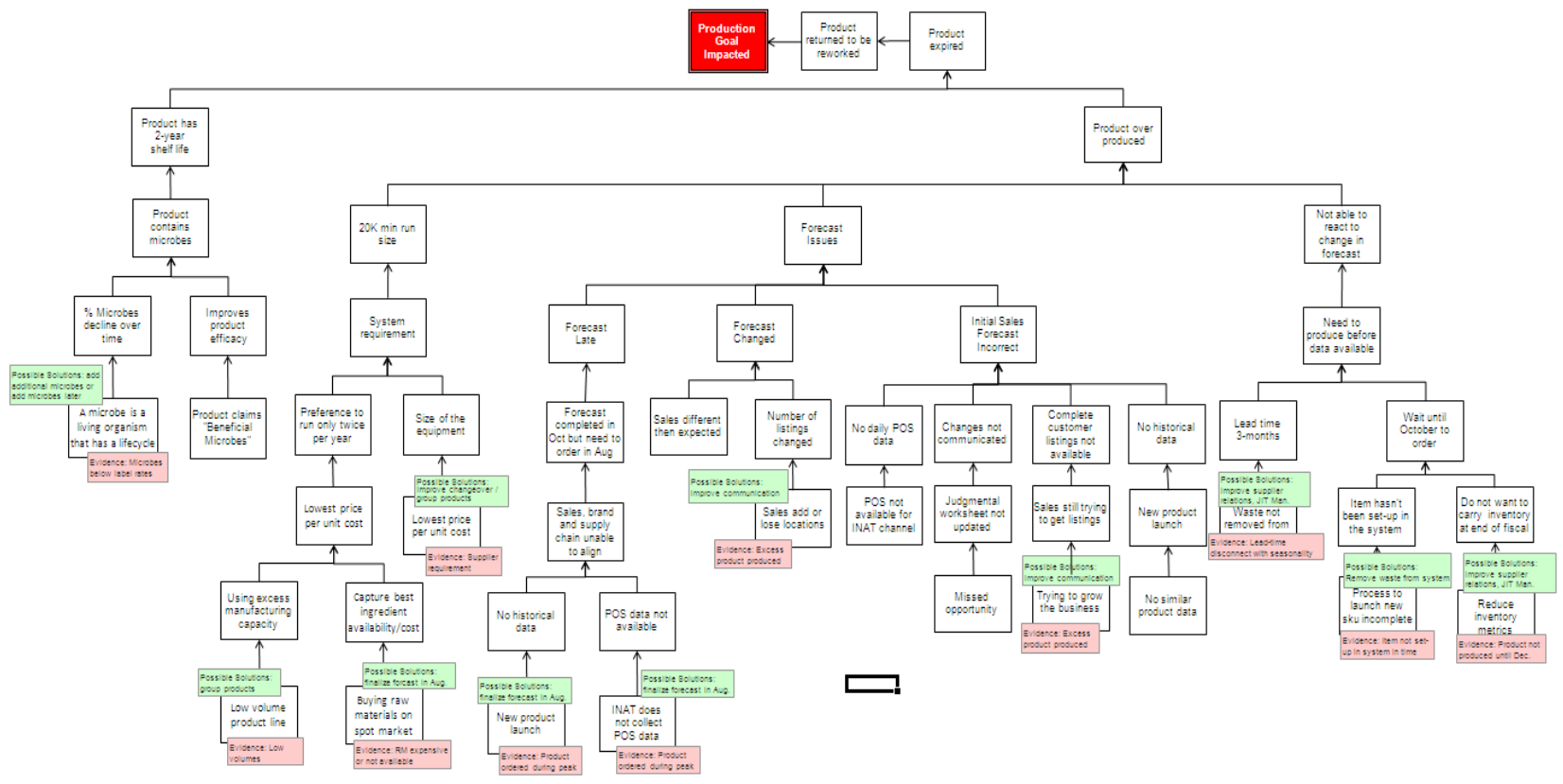
Increase Shelf Life

1 Yr → 2 Yr → 3 Yr

## Shipment Actual vs Initial Assumption



# Analysis

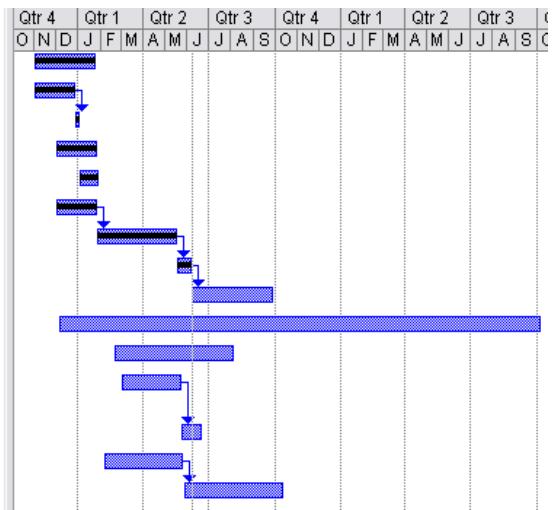


# Countermeasures

Countermeasure	Effect.	Cost	Feas.	Impact	Risk	Total
1. Analyze and re-label product at Dysart or distribution.	4	1	2	2	4	13
2. Improve shelf life of the product.	4	3	3	4	4	18
3. Add microbes during packaging.	4	2	4	4	4	18
4. Implement Std. Work during forecasting process	3	4	2	3	4	16
5. Reduce run size by Manufacturer	3	2	1	3	4	13
6. Remove microbes from formula.	4	4	4	2	2	16
7. Implement Just-In-Time Manufacturing	4	2	2	4	2	14

# Timeline

Task Name	Duration	Resource Names	Start	Finish
✓ Evaluate Forecasting Metrics	3 mons	S. Murnen	Tue 11/1/11	Mon 1/23/12
✓ Evaluate Rework Cost	2 mons	C. Rausch	Tue 11/1/11	Mon 12/26/11
✓ Compare Inventory vs. Forecast	1 wk	R. Radabaugh	Tue 12/27/11	Mon 1/2/12
✓ Execute CDA with Sanctuary	2 mons	R. Radabaugh	Thu 12/1/11	Wed 1/25/12
✓ Complete CSVm w/ team	1 mon	R. Radabaugh, Team	Mon 1/2/12	Fri 1/27/12
✓ Execute CDA with Dysart	2 mons	R. Radabaugh	Thu 12/1/11	Wed 1/25/12
✓ Evaluate Options with Sanctuary	4 mons	L. Conley	Thu 1/26/12	Wed 5/16/12
✓ Develop Std Work for Forecasting	3 wks	R. Radabaugh	Thu 5/17/12	Wed 6/6/12
☒ Evaluate Options with Dysart	4 mons	C. Wills	Thu 6/7/12	Wed 9/26/12
☒ Evaluate Stability of Microbes	24 mons	R. Radabaugh	Mon 12/5/11	Fri 10/4/13
☒ Temperature monitoring in facilities	6 mons	P. Norby	Mon 2/20/12	Fri 8/3/12
☒ Evaluate perfect storage conditions: Time/Temp/Moisture	3 mons	R. Radabaugh	Thu 3/1/12	Wed 5/23/12
Plot stability along supply chain	1 mon	R. Radabaugh	Thu 5/24/12	Wed 6/20/12
☒ Evaluate Testing Options - ATL	4 mons	S. Lorke	Mon 2/6/12	Fri 5/25/12
☒ Evaluate Re-Labeling Options	5 mons	C. Wills	Mon 5/28/12	Fri 10/12/12





# Visual Management

Labels were missing information, not easy to read, not visible. Worked with Sanctuary to develop consistent labeling that would work for Dysart.



# Visual Management

- Attempt to implement 5S with vendor (Dysart)
  - Product previously located in multiple warehouses, unable to ensure FIFO was occurring.
  - Had material relocated in one area and separated by formulation with older product in front.



# Implementation / Next Steps

- Standard Work

STANDARD WORK COMBINATION TABLE					OBSERVATION RANGE: June to March						
FORECAST TIME:		9 hrs	PROCESSING TIME		4.1 days		OBSERVATION TIME: June 2012				
FORECAST LEAD TIME:		4 wks	PRODUCTION LEAD TIME		2 months		MANUAL		WAITING		
NO.	STEP DESCRIPTION	NOTES	Average Time	Wait Time	June	July	Aug	Sept	Oct		
1	Demand Planning gathers previous year data on actual shipments with input from Sales	Use forecast for balance of year. <b>With input from Sales.</b>	4 hrs	1 wk	█	█	█	█	█	█	█
2	Demand Planning and Demand Fulfillment conduct consensus meeting		2 hrs	1 wk	█	█	█	█	█	█	█
3	Planning adds % growth assumptions with input from finance, sales and marketing	All stakeholders must attend.	1 hr	1 wk	█	█	█	█	█	█	█
4	Consensus meeting held with planning, sales, marketing and finance to finalize forecast.		2 hrs	1 wk	█	█	█	█	█	█	█

- Design

- Reduce part count, grouping strategy
  - 6 Formulas (+3 new products)
- Reduce run size on 2 smaller skus
- Addition of microbes at Dysart