



Managerial Accounting Case Studies

CASE STUDY NO. 1

CASE DESCRIPTION:

Name of Farm: John & Mary Farmer

Commodities Produced: Corn & Soybeans

Unique characteristics of this case: John and Mary have an arrangement to share equipment with their son who operates a similar farming operation independently.

FARM BACKGROUND:

Operational & Production Information

John and Mary Farmer produce corn and soybeans on their 1060 acre crop farm located in the corn belt of the mid-west. 480 acres of corn and 480 acres of soybeans are raised annually in a rotation. Additionally an 80 acre farm owned by John and Mary is crop share rented to their son who has been farming for 12 years. For the sake of this case study, only John & Mary's farm is being considered during the process of designing a managerial accounting system.

John and Mary own 340 acres of the 1060. 800 acres is rented of which a 50/50 crop-share arrangement is used on 480 acres and the remaining 320 acres is cash rented. The 800 acres is rented from a total of 5 different owners.

John and Mary's farm is operated independently of their son's farm. However, the unique feature of these farms is that one common line of machinery is owned between the two operations. John and Mary own one major tractor, the combine, a major piece of spray application equipment, a smaller tractor, and a few pieces of minor equipment. Their son owns one major tractor, the tillage equipment, and a planter. Each party independently owns their own pieces of equipment. The estimated value of the equipment owned by each of the two entities is proportional to the amount of crop land that each entity operates. Custom fees for machinery operation do not change hands between these operations because of the proportional ownership of the equipment. John and Mary's son operates a total of 700 acres which is also rotated between corn and soybeans.

John and Mary raise corn and soybeans for the cash market. It has not been their intent to produce either seed crops or other specialty crops in the past, but it could be an option in the future. They have on-farm grain drying and storage facilities in which they routinely condition their crops for market.



Ownership, Management, & Employee Structure

John and Mary own and operate their farming business as a sole-proprietor. Production agriculture has been a part of the Farmer family legacy for generations. John is the primary decision-maker for all operating decisions. The major capital decisions usually become joint decisions between both John and Mary. Mary has a successful off-farm career, which places high demands on her time. Therefore, Mary is not involved in the day to day operations of the farm business.

This farm has no outside full-time employees. Occasionally a part-time high school student is hired to assist during busy seasons. John performs all of the bookkeeping tasks for this farming operation. Mary would say that bookkeeping is John's hobby and passion. The use of on-farm computer accounting software has offered new and additional opportunities for gathering information about the farm's performance. Simultaneously, challenges of implementing the accounting system as they are moving toward managerial accounting have occurred.

Management Intent

John is nearing retirement age and will likely retire in the next 5-7 years. As stated earlier, production agriculture has been a major part of the Farmer family legacy for several generations and John and Mary would like to see it continue for generations to come. Family values and community service has been an important part of John and Mary's focus in the past and will continue to be a focus in the future.

It is unlikely that a change away from a corn and soybean rotation will occur in the near future based on cultural practices. It is John's desire to be able to better assess the differences in cost of producing corn and soybeans on each farm. Analyzing the value of the different lease arrangements between farms is also on John's radar screen. Like commodities from all farms gets mixed with other like commodities after harvest since they are conditioned for market with on-farm facilities. Keeping the crops separated by farm or field once they are harvested is not important at this point. John would also like to know the differences in profitability on an annual basis between each of the two commodities even though major changes in the type of crop planted is unlikely.

John doubts that he will be making major changes in his production system between now and retirement but still wants to fine tune his operation. As he looks at his son's farming operation from a distance, John can see a resemblance of his own management mind set a few years back. That is to say that he sees the younger Farmer focussed more heavily on production management than on financial management and accounting. John's hope is to get in place a sound managerial accounting system that will be fine tuned by the time he retires. In so doing, when his son takes over the entire operation, a system will be in place that can easily be modified to help the next generation address the managerial decisions that will be key in the future.



SUGGESTED SOLUTION:

Cost and Profit Centers

It is assumed from the discussion with John and Mary that their primary interest is in knowing the differences in cost of production between farms and their differences in overall profitability between commodities produced in different years. It can be further assumed that John is very interested in setting up a managerial accounting system that will be the basis for gathering information for management purposes for the next generation as well.

With those assumptions, John's managerial accounting system will have a support cost center for his equipment, shop and maintenance, and general farm. He will have production cost centers for each land owner and one each for the stages of production. A profit center will be established for each commodity for each year. Additionally a cost center will be established for general, sales and administration as well as for financing.

Schematic of Relationship Between Centers

The following schematic details the relationship between each of the cost centers and profit centers. Be sure to note that this schematic is the likely schematic for John and Mary Farmer based on their situation and desires. Other variations of this plan may certainly be possible and workable.

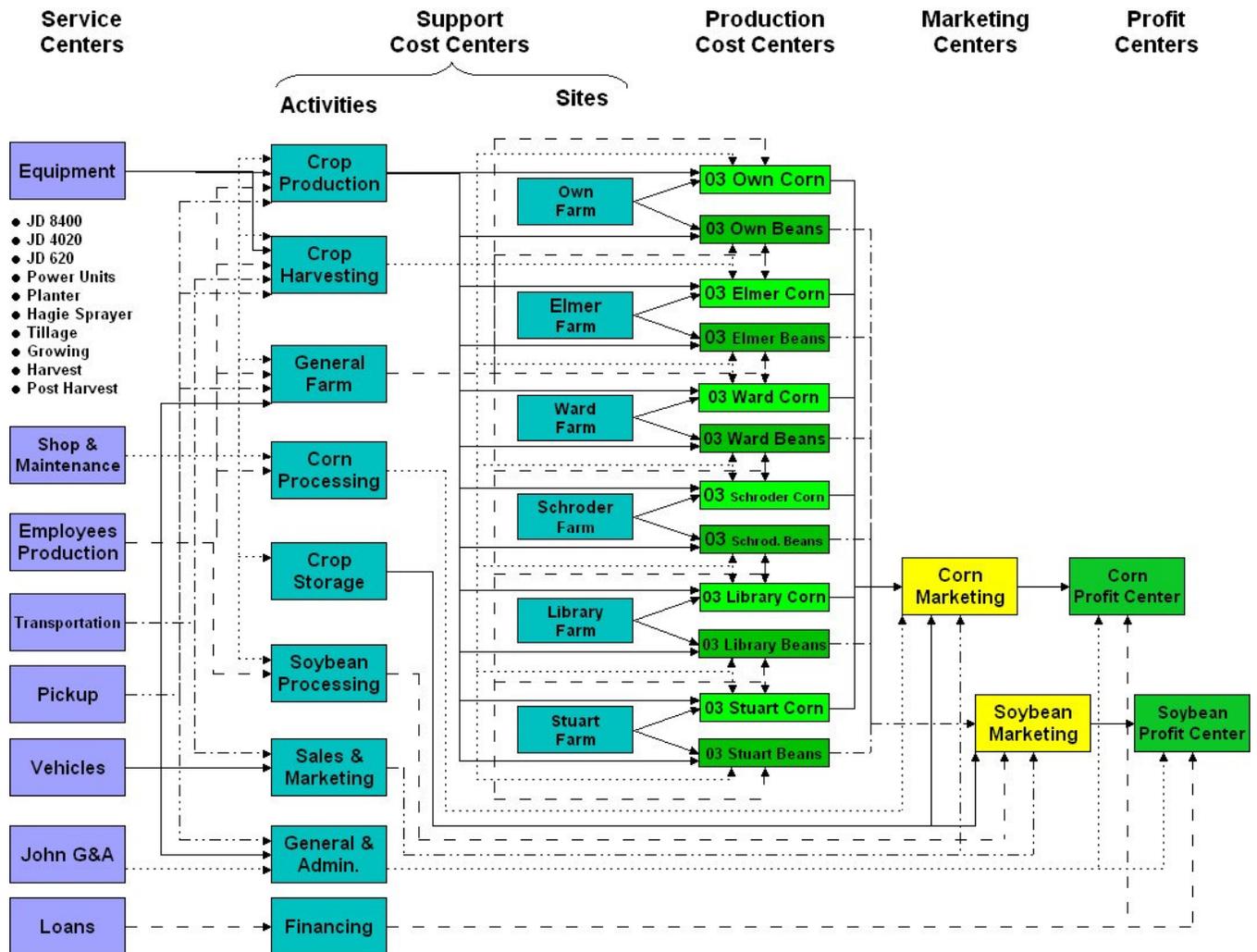


Figure 1. Center Schematic.



Allocations and Allocation Criteria

The method selected to allocate costs out of either a support cost center or a production cost center is critical. Selection of that method should be based on the unique characteristics of each specific business. The following methods of allocation may be logical for the John and Mary Farmer operation.

Service Centers:

Allocation Methods

	Center Allocated to:	1st Choice	2nd Choice
Equipment	Crop Production	Hours	Mngt Discretion
	Crop Harvesting	Hours	Mngt Discretion
Shop & Maintenance	Crop Production	Hours	Mngt Discretion
	Crop Harvesting	Hours	Mngt Discretion
	General Farm	Hours	Mngt Discretion
	Corn Processing	Hours	Mngt Discretion
	Soybean Processing	Hours	Mngt Discretion
Employees, Production	Crop Storage	Hours	Mngt Discretion
	Crop Production	Hours	Mngt Discretion
	Crop Harvesting	Hours	Mngt Discretion
	Corn Processing	Hours	Mngt Discretion
	Soybean Processing	Hours	Mngt Discretion
Transportation	Crop Storage	Hours	Mngt Discretion
	Crop Harvesting	Miles	Bushels
	Sales & Marketing	Miles	Bushels
Chevy Pickup	Crop Production	Miles	Hours
	Crop Harvesting	Miles	Hours
	General Farm	Miles	Hours
	G & A	Miles	Hours
Vehicles	Sales & Marketing	Miles	Hours
	General Farm	Miles	Hours
	G & A	Miles	Hours
John G & A	G & A	Hours	Mngt Discretion
	Loans	Financing	Assets
			Mngt Discretion



**Support Cost Centers:
(Activities)**

Crop Production
 Crop Harvesting
 General Farm
 Corn Processing
 Soybean Processing
 Crop Storage

Allocation Methods

Center Allocated to:	1st Choice	2nd Choice
Corn-Bean Production	Trip Acres	Hours
Corn-Bean Production	Planted Acres	Harvest Bushels
Corn-Bean Production	Center Acres	Trip Acres
Corn Marketing	Moisture Points	Purch. Bushels
Soybean Marketing	Bushels	Trip Acres
Corn-Bean Marketing	Avg. Inventory	Purch. Bushels

**Support Cost Centers:
(Sites)**

Own Farm
 Elmer Farm
 Ward Farm
 Schroeder Farm
 Library Farm
 Stuart Farm

(cont.)

Allocation Methods

Center Allocated to:	1st Choice	2nd Choice
2003 Own Corn	March 31 Acres	Mngt Discretion
2003 Own Soybeans	March 31 Acres	Mngt Discretion
2003 Elmer Corn	March 31 Acres	Mngt Discretion
2003 Elmer Soybeans	March 31 Acres	Mngt Discretion
2003 Ward Corn	March 31 Acres	Mngt Discretion
2003 Ward Soybeans	March 31 Acres	Mngt Discretion
2003 Schroeder Corn	March 31 Acres	Mngt Discretion
2003 Schroeder Beans	March 31 Acres	Mngt Discretion
2003 Library Corn	March 31 Acres	Mngt Discretion
2003 Library Soybeans	March 31 Acres	Mngt Discretion
2003 Stuart Corn	March 31 Acres	Mngt Discretion
2003 Stuart Soybeans	March 31 Acres	Mngt Discretion



Sales & Marketing
General & Administrative
Financing

Center Allocated to:	1st Choice	2nd Choice
Corn-Bean P.C.s	Bushels	Sales \$
Corn-Bean P.C.s	Bushels	Sales \$
Corn-Bean P.C.s	\$ of Assets	Sales \$

Sample Financial Reports

The following sample financial reports are generated for the case study of the John and Mary Farmer operation. Software from FBS has been used to generate the reports that will incorporate the cost and profit center design outlined above.

Center	No.	Description	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
CROP PRODUCTION	64005	C H NonLinked	0.00	0.00	0.00	3,929.00	3,929.00
	66600	DEP Prod Mach/Eqmt	1,865.01	1,865.01	1,865.01	1,865.01	7,460.04
	73600	F.D.G.L Diesel Prod	3,330.00	0.00	0.00	0.00	3,330.00
	74600	INSURANCE Prod	0.00	0.00	5,363.00	0.00	5,363.00
	77350	MI Other	143.18	0.00	0.00	299.93	443.11
	78100	RM Production	0.00	38.54	0.00	0.00	38.54
	78650	Supplies Prod	0.00	0.00	4.64	0.00	4.64
	CG00	CROP PRODUCTION	5,338.19	1,903.55	7,232.65	6,093.94	20,568.33
		Dollars Allocated From	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
	CG00	CROP PRODUCTION	5,338.19	1,903.55	7,232.65	6,093.94	20,568.33
	3SP00	SHOP & MAINTENANCE	679.84	123.08	134.41	123.08	1,060.41
	P0000	Employee Prod	2,550.00	2,550.00	2,550.00	2,550.00	10,200.00
	Q1001	JD 8400	7.31	1,197.52	0.00	801.04	2,005.87
	Q1002	JD 4020	0.00	27.43	0.00	0.00	27.43
	Q1003	JD 620	0.00	0.00	162.83	0.00	162.83
	Q1004	Hagie 280	670.94	1,170.54	19.52	0.00	1,861.00
	Q2000	Plant	0.00	121.15	0.00	0.00	121.15
	Q4000	Growing	0.00	257.60	0.00	0.00	257.60
	Q9001	Chev Pickup	71.36	0.00	61.35	24.92	157.63
		Totals	9,317.64	7,350.87	10,160.76	9,592.98	36,422.25
		Standard Costs \$	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
	00103	Corn Own Farm 03	560.00	2,800.00	560.00	560.00	4,480.00
	00203	Corn Elmer Farm 03	664.50	3,810.50	664.50	664.50	5,804.00
	00303	Corn Ward Farm 03	382.50	1,912.50	382.50	382.50	3,060.00
	00403	Corn Schroder Frm 03	407.50	2,445.00	407.50	407.50	3,667.50
	00503	Corn Library Farm 03	388.50	2,719.50	388.50	388.50	3,885.00
	00603	Corn Stuart Farm 03	400.00	2,000.00	400.00	400.00	3,200.00
	'00103	SoyB Own Farm 03	0.00	2,512.50	856.25	0.00	3,368.75
	'00203	SoyB Elmer Farm 03	0.00	3,014.50	501.00	0.00	3,515.50
	'00303	SoyB Ward Farm 03	0.00	1,147.50	710.50	0.00	1,858.00
	'00403	SoyB Schdr Farm 03	0.00	1,258.00	389.50	0.00	1,647.50
	'00503	SoyB Library Farm 03	0.00	1,942.50	777.00	0.00	2,719.50
		Total Standard Costs	2,803.00	25,562.50	6,037.25	2,803.00	37,205.75
		Variance	-6,514.64	18,211.63	-4,123.51	-6,789.98	783.50
		Center/Doper Acres	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
		Cost Driver Units	560.60	5,112.50	1,207.45	560.60	7,441.15
		Standard	5.00	5.00	5.00	5.00	5.00
		Actual	16.62	1.44	8.42	17.11	4.89
		Variance	-11.62	3.56	-3.42	-12.11	0.11

Figure 2. Service center allocations to Crop Production Center using Trip-Acre cost driver.



(RMS03) Crop Cost Analysis					
	SHARE	ACTUAL VALUE	% of TOTAL	ACTUAL PER BU	ACTUAL PER ACRE
REVENUE					
Internal Sales	100.00	22,322.47	100.00	1.14	199.31
Total REVENUE		22,322.47	100.00	1.14	199.31
DIRECT MATERIAL					
Chemicals	100.00	2,474.84	22.12	0.13	22.10
Chemical WIP Adj.	100.00	0.00	0.00	0.00	0.00
Seed	100.00	4,242.51	37.92	0.22	37.88
Seed WIP Adj.	100.00	0.00	0.00	0.00	0.00
Fertilizer	100.00	4,470.46	39.96	0.23	39.91
Fertilizer WIP Adj.	100.00	0.00	0.00	0.00	0.00
Custom Work	100.00	0.00	0.00	0.00	0.00
Total DIRECT MATERIAL		11,187.81	100.00	0.57	99.89
COST CENTERS					
Site Costs	100.00	2,576.00	23.13	0.13	23.00
Farm General	100.00	2,146.70	19.28	0.11	19.17
Crop Production	100.00	4,480.00	40.23	0.23	40.00
Crop Harvest	100.00	1,932.00	17.35	0.10	17.25
Total COST CENTERS		11,134.70	100.00	0.57	99.42
COST OF PRODUCTION					
		22,322.51		1.14	199.31

Figure 3. Corn Own Farm 03 Cost Center. Note that Internal Sales move crop at cost to Corn Marketing Center.

(RMS03) Current Totals Entry 10 of 11
 Center: CS1000 Corn Market
 Project: CornMkt03 Corn Marketing 2003
 CS1000 - CornMkt03 -CS1000 Corn

	Harvested	Remaining	Sold
Quantity	91,169.54	81,463.08	9,706.46
Cost/Unit	1.29	1.29	1.29

	Production	Total	Remaining	Sold
Quantity	91,169.54	91,169.54	81,463.08	9,706.46
Acres	560.60	560.60	0.00	560.60
Seed	0.18	0.00	0.18	0.18
Chemicals	0.10	0.00	0.10	0.10
Fertilizer	0.16	0.00	0.16	0.16
Fuel	0.00	0.00	0.00	0.00
Custom Hire	0.00	0.00	0.00	0.00
Custom Hire	0.00	0.00	0.00	0.00
Crop Production	0.26	0.00	0.26	0.26
Crop Harvesting	0.09	0.00	0.09	0.09
Crop Processing	0.00	0.07	0.07	0.07
Farm General	0.12	0.00	0.12	0.12
Farm Site	0.31	0.00	0.31	0.31
Cash Rent	0.00	0.00	0.00	0.00
Commercial Drying	0.00	0.00	0.00	0.00
Storage	0.00	0.00	0.00	0.00
Insurance	0.00	0.00	0.00	0.00
Crop Purchases	0.00	0.00	0.00	0.00
Sales Reducer	0.00	0.00	0.00	0.00
Total Dollars	111,276.15	6,381.87	105,133.26	12,524.76
Dollars/Unit	1.22	0.07	1.29	1.29
Dollars/Acre	198.49	11.38	105,133.26	22.34

Figure 4. Corn Marketing 2003 project displaying production and processing expenses on a per-bushel basis.

(RMS03) Current Totals Entry 10 of 11
 Center: CS1000 Corn Market
 Project: CornMkt03 Corn Marketing 2003
 CS1000 - CornMkt03 -CS1000 Corn

	Harvested	Remaining	Sold
Quantity	91,169.54	81,463.08	9,706.46
Cost/Unit	1.29	1.29	1.29

	Production	Total	Remaining	Sold
Quantity	91,169.54	91,169.54	81,463.08	9,706.46
Acres	560.60	560.60	0.00	560.60
Seed	16,554.03	0.00	14,791.79	1,762.23
Chemicals	9,339.16	0.00	8,345.00	994.15
Fertilizer	14,434.67	0.00	12,897.99	1,536.67
Fuel	0.00	0.00	0.00	0.00
Custom Hire	0.00	0.00	0.00	0.00
Custom Hire	0.00	0.00	0.00	0.00
Crop Production	23,689.00	0.00	21,167.35	2,521.65
Crop Harvesting	8,350.73	0.00	7,461.84	888.89
Crop Processing	0.00	6,381.87	5,702.42	679.45
Farm General	10,588.63	0.00	9,461.51	1,127.13
Farm Site	28,319.95	0.00	25,305.35	3,014.60
Cash Rent	0.00	0.00	0.00	0.00
Commercial Drying	0.00	0.00	0.00	0.00
Storage	0.00	0.00	0.00	0.00
Insurance	0.00	0.00	0.00	0.00
Crop Purchases	0.00	0.00	0.00	0.00
Sales Reducer	0.00	0.00	0.00	0.00
Total Dollars	111,276.15	6,381.87	105,133.26	12,524.76
Dollars/Unit	1.22	0.07	1.29	1.29
Dollars/Acre	198.49	11.38	105,133.26	22.34

Figure 5. Corn Marketing 2003 project displaying production and processing expenses on a total \$ basis.



(RMS03) Crop Cost Analysis				
	SHARE	ACTUAL VALUE	% of TOTAL	ACTUAL PER BU
REVENUE				
Crop Sales	100.00	19,254.20	100.00	1.98
Discount	100.00	0.00	0.00	0.00
Premium	100.00	0.00	0.00	0.00
Government Payment	100.00	0.00	0.00	0.00
Total REVENUE		19,254.20	100.00	1.98
PRODUCTION COSTS				
Production Stage	100.00	111,276.19	939.38	1.22
Inventory Adjustment	100.00	-99,430.43	-839.38	
Total PRODUCTION COSTS		11,845.76	100.00	1.22
COST CENTERS				
Corn Processing	100.00	679.45	84.48	0.07
SoyB Processing	100.00	0.00	0.00	0.00
Storage	100.00	124.86	15.52	0.01
Total COST CENTERS		804.31	100.00	0.08
COST OF SALES		12,650.07		1.30
PRODUCTION PROFIT		6,604.13		0.68
SG&A				
Sales & Marketing	100.00	2,590.62	21.09	0.27
G&A	100.00	9,693.55	78.91	1.00
Total SG&A		12,284.17	100.00	1.27
OPERATING PROFIT		-5,680.04		-0.59
FINANCING				
Financing	100.00	8,630.19	100.00	0.89
Total FINANCING		8,630.19	100.00	0.89
NET INCOME		-14,310.23		-1.47

Figure 6. Corn Profit Center Income Statement. Note that S,G&A and Financing are overstated on a per-bushel basis because only 9,706 bushels out of 91,970 2003 production were sold and 2002 production crop sales were not considered in this case study.

			03/31/03	03/31/03	03/31/03	06/30/03	06/30/03	06/30/03	09/30/03	9/30/2003	09/30/03	12/31/03	12/31/03	12/31/03
CA Marketing											Total			Total
	Inventories	Unit							# Units	\$/Unit	Valuation	# Units	\$/Unit	Valuation
CS1000	Corn Market	BU							12952	\$1.75	\$22,628.00	81463	\$1.29	\$105,133.00
CS2000	Soybean Market	BU							5354	\$4.31	\$23,059.00	14700	\$4.38	\$64,332.00
	Finished Goods										\$45,688.00			\$169,465.00
CA Investment In					Total			Total						
	Growing Crops	Unit	# Units	\$/Unit	Valuation	# Units	\$/Unit	Valuation						
100103	Corn Own Farm 03	BU			\$8,250.00			\$20,032.00			\$21,548.00	0	\$0.00	\$0.00
100104	Corn Own Farm 04	BU										0	\$0.00	\$2,026.00
100203	Corn Elmer Farm 03	BU			\$3,725.00			\$14,773.00			\$16,407.00	6028	\$0.00	\$0.00
100204	Corn Elmer Farm 04	BU										0	\$0.00	\$2,067.00
100303	Corn Ward Farm 03	BU			\$1,763.00			\$7,902.00			\$8,802.00	3336	\$0.00	\$0.00
100304	Corn Ward Farm 04	BU										0	\$0.00	\$1,224.00
100403	Corn Schroder Frm 03	BU			\$13,174.00			\$20,623.00			\$0.00	0	\$0.00	\$0.00
100404	Corn Schroder Frm 04	BU										0	\$0.00	\$2,183.00
100503	Corn Library Farm 03	BU			\$14,145.00			\$25,318.00			\$26,349.00	0	\$0.00	\$0.00
100504	Corn Library Farm 04	BU										0	\$0.00	\$4,896.00
100603	Corn Stuart Farm 03	BU			\$5,723.00			\$12,151.00			\$13,134.00	3891	\$0.00	\$0.00
200103	SoyB Own Farm 03	BU			\$3,881.00			\$14,135.00			\$12,263.00	0	\$0.00	\$0.00
200203	SoyB Elmer Farm 03	BU			\$1,086.00			\$9,510.00			\$6,956.00	1182	\$0.00	\$0.00
200303	SoyB Ward Farm 03	BU			\$440.00			\$3,384.00			\$4,933.00	791	\$0.00	\$0.00
200403	SoyB Schrdr Farm 03	BU			\$8,224.00			\$13,295.00			\$0.00	0	\$0.00	\$0.00
200503	SoyB Library Farm 03	BU			\$11,791.00			\$18,536.00			\$20,569.00	0	\$0.00	\$0.00
	Work In Process				\$72,203.00			\$159,660.00			\$130,962.00			\$12,397.00
CA Chemical														
	Inventory													
4	Clarity 4L	gal	23	\$84.00	\$1,955.00	0	\$0.00	\$0.00						
5	Frontier	gal	139	\$62.00	\$8,635.00	0	\$0.00	\$0.00						
6	Flexstar	gal	12	\$90.00	\$1,084.00	0	\$0.00	\$0.00						
7	Fusion	gal	0.00	0.00	0.00	0	\$0.00	\$0.00						
8	Glystar	gal	132	\$20.00	\$2,607.00	37	\$20.00	\$731.00						
10	Trifluralin	gal	91	\$16.00	\$1,450.00	0	\$0.00	\$0.00						
11	Weedar 64	gal	23	\$11.00	\$249.00	0	\$0.00	\$0.00						
12	Weedar LV6	gal	73	\$17.00	\$1,263.00	73	\$17.00	\$1,263.00						
13	Harmony	oz	3	\$11.00	\$35.00	0	\$0.00	\$0.00						
14	AMS	lbs	826	\$0.00	\$264.00	269	\$0.00	\$86.00						
15	NIS	gal	16	\$16.00	\$256.00	2	\$16.00	\$40.00						
16	Outlook	gal	0	\$0.00	\$0.00	0	\$0.00	\$0.00						
	Chemical Inventory				\$17,798.00			\$2,120.00						
CA Seed														
	Inventory													
211	Kruger 211	Units	100	\$20.00	\$2,006.00	0	\$0.00	\$0.00						
233	Kruger 233	Units	100	\$20.00	\$2,006.00	0	\$0.00	\$0.00						
537	Dekalb 537	Units	18	\$84.00	\$1,511.00	0	\$0.00	\$0.00						
19V2	Northrup King 19V2	Units	100	\$23.00	\$2,275.00	0	\$0.00	\$0.00						
2105	Asgrow 2105	Units	150	\$23.00	\$3,378.00	0	\$0.00	\$0.00						
2201	Asgrow 2201	Units	50	\$23.00	\$1,127.00	0	\$0.00	\$0.00						
45A6	Northrup King 45A6	Units	32	\$88.00	\$2,812.00	0	\$0.00	\$0.00						
4884	Dekalb 4884	Units	32	\$91.00	\$2,913.00	0	\$0.00	\$0.00						
5018	Dekalb 5018	Units	18	\$113.00	\$2,026.00	0	\$0.00	\$0.00						
35Y55	Pioneer 35Y55	Units	16	\$99.00	\$1,581.00	0	\$0.00	\$0.00						
35Y65	Pioneer 35Y65	Units	45	\$94.00	\$4,219.00	0	\$0.00	\$0.00						
36B08	Pioneer 36B08	Units	66	\$118.00	\$7,759.00	0	\$0.00	\$0.00						
36R11	Pioneer 36R11	Units	100	\$15.00	\$1,546.00	0	\$0.00	\$0.00						
92B12	Pioneer 92B12	Units	0	\$0.00	\$0.00	0	\$0.00	\$0.00						
	Seed Inventory				\$35,158.00			\$0.00						
	Grand Total				\$125,159.00			\$161,780.00			\$176,650.00			\$181,862.00

Figure 7. Inventory change by quarter.

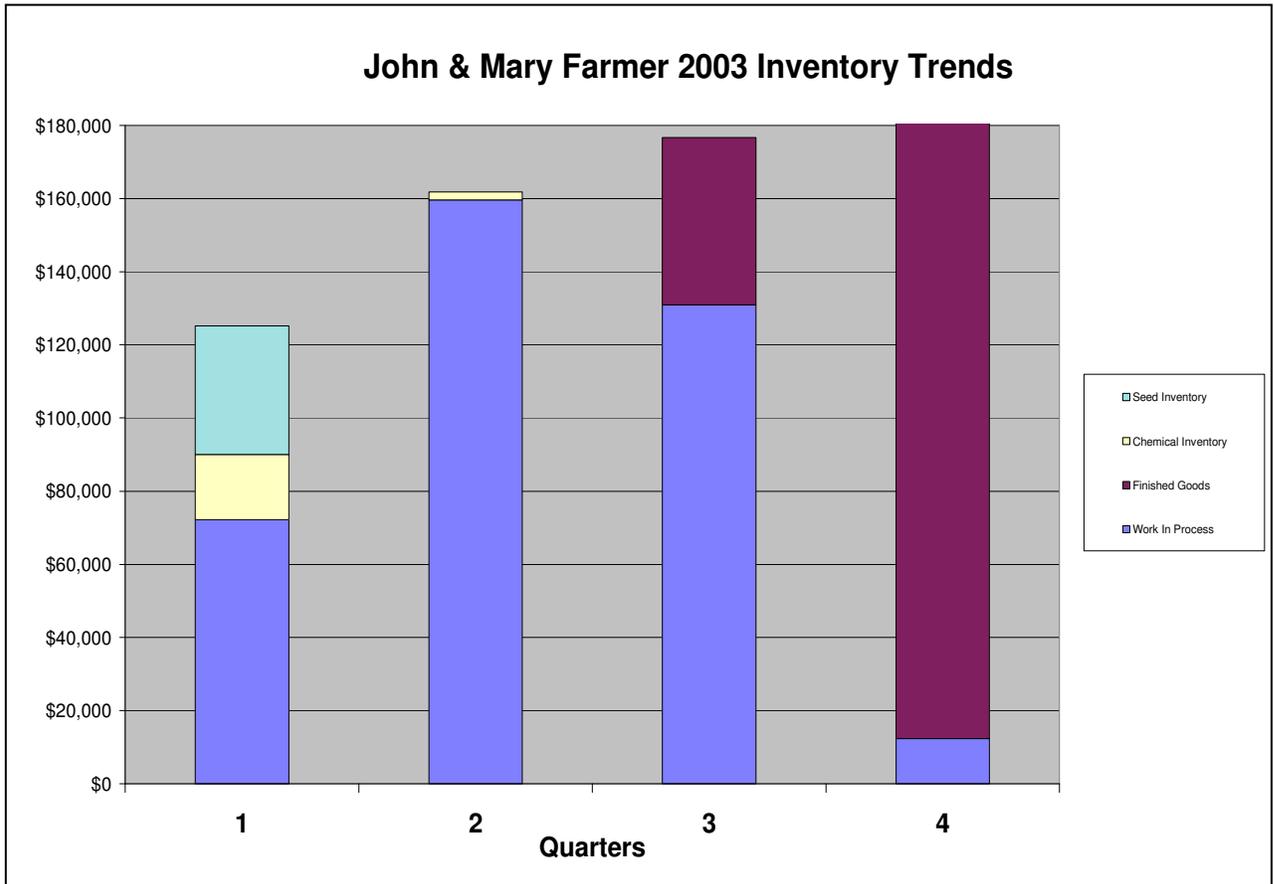


Figure 8. Inventory change graph.

ALTERNATIVE SOLUTION:

While the suggested solution detailed above might be the one utilized based on John and Mary Farmers needs, the following schematic outlines the relationship between the centers for an alternative managerial accounting design that is more basic than the one selected by the Farmers:

