

Lecture XIb: Georgia Farm – Cost Accounting

Charles B. Moss¹

¹Food and Resource Economics Department
University of Florida

February 6, 2018

- 1 Developing Cost of Goods Sold
- 2 Recognizing Income
- 3 Generate the Balance Sheet

Developing Cost of Goods Sold

- Most firms are somewhat more complex than the simple firms that we have been developing. Specifically, most grow a combination of crops or have more than one product line.
- Multiple outputs imply that we have to allocate the cost to individual outputs to properly account for cost of goods sold and inventories.
- As a starting point, recall the balance sheet for the Georgia farm.

Balance Sheet Beginning of 2017

Assets			Ownership	
Real Estate			Mortgage	1,487,088
Farmland	2,873,600		Equipment Debt	404,489
Buildings	431,040	3,304,640	Operating Credit	575,000
Equipment				
Equipment	1,426,748		Equity	1,918,532
Depreciation	471,279	955,469		
Cash		125,000		
Total Assets		4,385,109	Total Ownership	4,385,109

Cost of Production for Each Crop

Item	Cotton	Soybeans
Acres	480	800
	<i>Per Acre</i>	
Seed	52.10	26.05
Fertilizer	94.03	
Fuel	42.15	25.29
Pesticides	42.85	25.71
	<i>Total Cost</i>	
Total	110,941	61,639

Accounting for Cash Expenses

Growing Crops	172,580
Cash	172,580
<i>Cotton 110,941 and Soybeans 61,639</i>	

Allocating Depreciation

- Each crop uses a different amount of equipment time – the cotton stripper is not used for soybeans.

Equipment	Depreciation Expense	Percent Use	
		Cotton	Soybeans
Tractor	45,770	0.40	0.60
Combine	51,580	0.00	1.00
Stripper	113,000	1.00	0.00
Misc Equip	75,000	0.40	0.60
Total		161,308	124,042

Accounting for Depreciation

Growing Crops	285,350
Accumulated Dep.	285,350
<i>Cotton 161,308 and Soybeans 124,042</i>	

Accounting for Operating Interest

- We have \$ 575,000 in operating debt - allocating this between crops based on cash expenditures yields.

Growing Crops	71,875	
Int Payable		71,875
<i>Cotton 46,204 and Soybeans 25,671</i>		
Int Payable	71,875	
Cash		71,875

T-Account Growing Crops

Item	Debit	Credit
Operating Exp	172,580	
Dep on Equip	285,350	
Op Interest	71,875	
Total	529,805	

Item	Cotton	Soybeans
Operating Exp	110,941	61,639
Dep on Equip	161,308	124,042
Int Paid	46,204	25,671
Total	318,453	211,352

Harvest

- Next, the farmer harvests his crop yielding 985 lb/acre of cotton (472,800 lbs of cotton) and 35 bu/acre of soybeans (28,000 bu of soybeans).
- We assume that he sells 400,000 lbs of cotton for \$ 0.697 per pound and 28,000 bu. of soybeans for \$ 10.10 per bu. What is the Cost of Goods Sold?
- The cost of production per pound of cotton is

$$\frac{\$318,453}{472,800 \text{ lbs}} = \$0.6735/\text{lb.} \quad (1)$$

- For the soybeans

$$\frac{\$211,352}{28,000 \text{ bu.}} = \$7.5483/\text{bu.} \quad (2)$$

Cost of Goods Sold

- The Cost of Goods Sold is then

$$COGS = 0.6735 \times 400,000 + 7.5483 \times 28,000 = 480,771 \quad (3)$$

Cost of Goods Sold	480,771
Growing Crops	480,771

Growing Crops T-Account

Item	Debit	Credit
Operating Exp	172,580	
Dep on Equip	285,350	
Op Interest	71,875	
Cost of Goods Sold		480,771
Total	49,034	

Recognizing Income

- The final piece of the income statement puzzle is the interest on the mortgage.
- Using the $PVAF(0.065, 17) = 10.1106$, the payment is \$ 147,082 of which 96,661 is interest and 50,422 is principal

Mortgage Payable	50,422	
Int. Expense	96,661	
Cash		147, 082

Machinery Payments

- Do not forget the payment on equipment:

Int. Paid	35,422	
Equipment Debt	139,618	
Cash		175,039

Income Summary

Income Summary	480,771	
Cost of Goods Sold		480,771
Cash	561,600	
Income Summary		561,600
Recognize Crop Sales		

Income Summary T-Account

Item	Debt	Credit
Cost of Goods Sold	480,771	
Interest Expense	132,082	
Crop Sales		561,600
Total	51,253	

- We have to recognize (book) the loss.

Equity	51,253
Income Summary	51,253

Cash T-Account

Item	Debit	Credit
Initial Balance	125,000	
Cash Crop Exp.		172,580
Operating Int.		71,875
Mortgage Pay.		147,082
Equip Pay.		175,039
Crop Sales	561,600	
Balance	120,024	

Other Accounting Entries

Crop Inventory	49,034	
Growing Crops		49,034

Accumulated Depreciation T-Account

Item	Debit	Credit
Initial Balance		471,279
Cost of Production		285,350
Ending Balance		756,629

Other Accounting Entries – Continued

Mortgage Payable T-Account

Item	Debit	Credit
Initial Balance		1,487,088
Payment	50,422	
Ending Balance		1,436,666

Equipment Debt T-Account

Item	Debit	Credit
Initial Balance		404,489
Payment	139,618	
Ending Balance		264,871

Balance Sheet Ending of 2017

Assets			Ownership	
Real Estate			Mortgage	1,436,666
Farmland	2,873,600		Equipment Debt	264,871
Buildings	431,040	3,304,640	Operating Credit	575,000
Equipment				
Equipment	1,426,748		Equity	1,867,279
Depreciation	756,629	670,119		
Crop Inventory		49,034		
Cash		120,024		
Total Assets		4,143,817	Total Ownership	4,143,817