

Corn Silage: Estimated annual revenue, operating cost, fixed cost and net returns per acre (No-till).

Budget 88-1
6/1/2013

Description	Unit	Price	Quantity	Value	Comments
Operating inputs Pre-Harvest					
-Lime, applied, pro rated share	Ton	\$50.00	0.50	\$25.00	
-10-10-10, dry bulk	Cwt.	\$20.70	5.00	103.50	
-30% N Solution	Cwt.	\$20.50	3.20	65.60	
-Fert. Spread, custom	Acre	\$7.00	2.00	14.00	
-Corn Seed	'000s	\$2.45	30.00	73.50	
-Herbicide, Burndown	Acre	\$5.00	1.00	5.00	
-Herbicide	Acre	\$12.00	2.00	24.00	
-Other	Acre			0.00	
-Machinery Labor (From Table 2)				14.88	
-Other Labor	Hours	\$12.00	0.00	0.00	
-Machinery Fuel, Maint, Repairs (Table 2)				14.46	
-Miscellaneous, e.g., soil test	Acre	\$2.00	1.00	2.00	
-Operating Capital Interest ^b	\$	5.0%	113.98	5.70	
Total Pre-Harvest Operating Costs				\$347.64	
Operating Inputs for Harvesting^a					
-Harvesting Machinery Labor (From Table 2)	Acre			8.12	
-Other Labor	Hours	\$12.00	0.00	0.00	
-Harvesting Machinery Fuel, Maint, Repairs (Table 2)	Acre			16.55	
Subtotal Harvest Operating Costs				\$24.66	
-Transporting Labor (From Table 2)	Acre			21.76	
-Transporting Machinery Fuel, Maint, Repairs (Table 2)	Acre			25.51	
Subtotal Transporting Operating Costs				\$47.26	
-Filling/Packing Machinery Labor (From Table 2)	Acre			11.04	
-Other Labor	Hours	\$12.00	0.50	6.00	
-Filling/Packing Machinery Fuel, Maint, Repairs (Table 2)	Acre			9.26	
-Cover, pro rated share	Sq. foot	0.060	80	4.80	
Subtotal Filling/Packing & Covering Op. Cost				\$31.10	
Total Harvest Operating Costs				\$103.03	
Silo & machinery housing maintenance (from Table 2)				6.00	
Total Operating Costs				\$456.67	
			Amount	Value	
Fixed Costs From Table 1					
= Machinery Depreciation, Interest, Taxes, & Ins.					
-Pre-Harvest				19.42	
-Harvesting				46.13	
-Transporting				32.57	
-Filling/packing & covering				4.11	
-Silo & machinery housing				49.20	
Total Fixed Costs				\$151.42	
Land Rent^c	Acre			0.00	
Total Cost				\$608.09	
	Unit	Price	Quantity^d	Value	
REVENUE^e					
Corn Silage	Ton	\$50.00	16.0	800.00	
Total Revenue				\$800.00	
COST PER TON AS MADE OR AS SOLD				\$38.01	
COST PER TON OF DRY MATTER (DM)	Dry matter %		35%	\$108.59	
COST OR RETURNS ABOVE TOTAL OPERATING COST, PER ACRE				\$452.36	
RETURNS ABOVE ALL SPECIFIED COSTS, PER ACRE				\$191.91	

^a Harvesting expense includes transporting silage to the silo, filling or packing and sealing the silo.

^b Interest on operating expenses for an average of 4 months.

^c Land rent is not normally included in an enterprise budget but rent cost is appropriate for a contract grower using rented land.

^d If the silage is for your own use or is for sale as pickled silage, use the estimated quantity of pickled silage produced per acre. Allow for fermentation and spoilage losses. Loss estimates vary from 5% to 50% with 10% to 20% most common.

^e Only include revenue if the silage is sold. If so, use the price and quantity as sold (field chop or pickled silage).

Spreadsheet developed by G.A. Benson, Extension Economist, NCSU (Retired).

Budget data developed by J.T. Green, Jr., Crop Science Extension Specialist, NCSU (Retired), and

G.A. Benson, Extension Economist, NCSU (Retired).

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Table 1. Initial investment in specialized equipment and annual ownership expenses

Operation and Item	Horse Power	Life Years	Initial Cost \$	Salvage Value \$	Depreciation ^a \$	Interest ^b \$	Tax & Ins. ^c \$	Annual D.I.T.I. \$	Annual Use Hours	D.I.T.I. per Hour \$	Acres per Hour	Expense per Acre ^d \$	Times Over ^e No.	Total Expense \$/Acre
Rate Charged, percent =====>						5.00%	1.40%							
Land preparation														
Tractor, HP=	55	10	23,150	7,177	1,597	758	212	2,568	500	5.14	3.50	1.47	0	0.00
+ Chisel plow		10	3,675	1,213	246	122	34	403	100	4.03	3.50	1.15	0	0.00
Tractor, HP=	55	10	23,150	7,177	1,597	758	212	2,568	500	5.14	5.40	0.95	0	0.00
+ Disc		10	6,150	1,845	431	200	56	686	100	6.86	5.40	1.27	0	0.00
Tractor, HP=	35	10	19,075	5,913	1,316	625	175	2,116	500	4.23	5.40	0.78	0	0.00
+ Harrow		10	1,500	450	105	49	14	167	100	1.67	5.40	0.31	0	0.00
Tractor, HP=	35	10	19,075	5,913	1,316	625	175	2,116	500	4.23	11.10	0.38	1	0.38
+ Sprayer		10	2,350	940	141	82	23	246	100	2.46	11.10	0.22	1	0.22
Planting														
Tractor, HP=	80	10	42,350	13,129	2,922	1,387	388	4,697	500	9.39	4.90	1.92	2	3.83
+ Planter/drill		10	25,700	10,280	1,542	900	252	2,693	100	26.93	4.90	5.50	2	10.99
Weed control														
Tractor, HP=	35	10	19,075	5,913	1,316	625	175	2,116	500	4.23	11.10	0.38	2	0.76
+ Sprayer		10	2,350	940	141	82	23	246	100	2.46	11.10	0.22	2	0.44
Other Pre-harvest														
Tractor, HP=	55	10	23,150	7,177	1,597	758	212	2,568	500	5.14	1.00	5.14	0	0.00
+ Implement		10	0	0	0	0	0	0	100	0.00	1.00	0.00	0	0.00
Pickup Truck, 3/4 Ton		10	30,225	7,859	2,237	952	267	3,455	500	6.91	10.00	0.69	4	2.76
Harvesting														
Self-propelled, HP=	450	5	348,800	87,200	52,320	10,900	3,052	66,272	150	441.81	14.00	31.56	0	0.00
Tractor, HP=	100	10	60,475	22,376	3,810	2,071	580	6,461	500	12.92	1.70	7.60	1	7.60
+ Pull Harvester		10	56,950	14,238	4,271	1,780	498	6,549	100	65.49	1.70	38.53	1	38.53
Transportation														
Truck, used		5	20,000	5,000	3,000	625	175	3,800	150	25.33	1.70	14.90	1	14.90
Truck, used		5	20,000	5,000	3,000	625	175	3,800	150	25.33	1.70	14.90	1	14.90
Tractor, HP =	55	10	23,150	7,177	1,597	758	212	2,568	500	5.14	1.70	3.02	0	0.00
+ Wagon		10	10,450	3,658	679	353	99	1,131	100	11.31	1.70	6.65	0	0.00
Tractor, HP =	55	10	23,150	7,177	1,597	758	212	2,568	500	5.14	1.70	3.02	0	0.00
+ Wagon		10	10,450	3,658	679	353	99	1,131	100	11.31	1.70	6.65	0	0.00
Pickup Truck, 3/4 Ton		10	30,225	7,859	2,237	952	267	3,455	500	6.91	10.00	0.69	4	2.76
Filling/Packing														
Tractor, HP=	55	10	23,150	7,177	1,597	758	212	2,568	500	5.14	1.25	4.11	1	4.11
+ Blower		10	0	0	0	0	0	0	100	0.00	1.25	0.00	0	0.00
Crop Acres										Expense per Acre				
Silo		20	40,000	0	2,000	1,000	280	3,280	100					32.80
Machinery housing ^f		20	20,000	0	1,000	500	140	1,640	100					16.40
TOTAL														\$151.40

^a Depreciation = (Initial cost - Salvage value) / years of life

^b Interest on investment = ((Initial cost + Salvage value) / 2) X interest rate

^c Combined rate of property taxes and insurance premiums as a percentage of the average investment

^d Per acre costs for self-propelled vehicles include an additional 10% allowance for travel time from farm to field

^e Total number of trips across the field per year for this operation

^f Show only the share of machinery housing and maintenance buildings attributed to corn silage machinery and equipment based on use.

Table 2. Operating expense for forage machinery and equipment per hour and per acre

Operation and Item	Repairs & Maint. ^a %	Repairs & Maint. ^a \$/Year	Repairs & Maint. ^b \$/Hour	Fuel Use Gals/hr	Cost per Gal \$	Fuel & Lube ^c \$/Hour	Equip. Op. Cost \$/Hour	Acres per Hour	Times Over	Oper. Cost ^d \$/Acre	Labor Cost \$/Hour	Labor Cost ^e \$/Acre	Total Expense \$/Acre
Fuel cost per gallon & Labor cost per hour =====>											12.00		
Tractor, HP=	55	2%	463	0.93	2.42	3.45	9.60	10.53	3.5	0	0.00	12.00	0.00
+ Chisel plow		3%	110	1.10	0		1.10	3.5	0	0.00			0.00
Tractor, HP=	55	2%	463	0.93	2.42	3.45	9.60	10.53	5.4	0	0.00	12.00	0.00
+ Disc		2%	123	1.23	0		1.23	5.4	0	0.00			0.00
Tractor, HP=	35	2%	382	0.76	1.54	3.45	6.11	6.87	5.4	0	0.00	12.00	0.00
+ Harrow		3%	45	0.45	0		0.45	5.4	0	0.00			0.00
Tractor, HP=	35	2%	382	0.76	1.54	3.45	6.11	6.87	11.1	1	0.68	12.00	1.24
+ Sprayer		3%	71	0.71	0		0.71	11.1	1	0.07			0.07
Tractor, HP=	80	2%	847	1.69	3.52	3.45	13.97	15.66	4.9	2	7.03	12.00	5.63
+ Planter/drill		1%	257	2.57	0		2.57	4.9	2	1.15			1.15
Tractor, HP=	35	2%	382	0.76	1.54	3.45	6.11	6.87	11.1	2	1.36	12.00	2.49
+ Sprayer		3%	71	0.71	0		0.71	11.1	2	0.14			0.14
Tractor, HP=	55	2%	463	0.93	2.42	3.45	9.60	10.53	1.0	0	0.00	12.00	0.00
+ Implement		2%	0	0.00	0		0.00	1.0	0	0.00			0.00
Pickup Truck, 3/4 Ton		2%	605	1.21	2.00	3.45	7.94	9.14	10.0	4	4.02	12.00	5.52
Self-propelled, HP=	450	1%	3,488	23.25	19.8	3.45	78.56	101.81	14.0	0	0.00	12.00	0.00
Tractor, HP=	100	2%	1,210	2.42	4.4	3.45	17.46	19.88	1.7	1	12.86	12.00	8.12
+ Pull Harvester		1%	570	5.70	0		5.70	1.7	1	3.69			3.69
Truck, used		4%	800	5.33	2.50	3.45	9.92	15.25	1.7	1	9.87	12.00	8.12
Truck, used		4%	800	5.33	2.50	3.45	9.92	15.25	1.7	1	9.87	12.00	8.12
Tractor, HP =	55	2%	463	0.93	2.42	3.45	9.60	10.53	1.7	0	0.00	12.00	0.00
+ Wagon		2%	209	2.09	0		2.09	1.7	0	0.00			0.00
Tractor, HP =	55	2%	463	0.93	2.42	3.45	9.60	10.53	1.7	0	0.00	12.00	0.00
+ Wagon		2%	209	2.09	0		2.09	1.7	0	0.00			0.00
Pickup Truck, 3/4 Ton		2%	605	1.21	3.00	3.45	11.90	13.11	10.0	4	5.77	12.00	5.52
Tractor, HP=	55	2%	463	0.93	2.42	3.45	9.60	10.53	1.3	1	9.26	12.00	11.04
+ Blower		3%	0	0.00	0.00		0.00	1.3	0	0.00	12.00	0.00	0.00
Silo		1%	400								4.00		4.00
Machinery housing ^f		1%	200								2.00		2.00
TOTALS										\$71.78		\$55.80	\$127.57

^a Repairs and maintenance costs are calculated as a % of the initial cost in Table 1. Percentages are higher for equipment bought used.

^b Repairs and maintenance costs per hour based on annual use shown in Table 1.

^c Total fuel cost plus lube costs estimated as 15% of the fuel cost.

^d Per acre costs for tractors and other self-propelled equipment includes an additional 10% allowance for travel time from farm to field.

^e Labor cost per acre includes an additional 15% allowance for travel time, setting up and finishing up.

^f Based on the machinery housing and maintenance buildings investment attributed to corn silage machinery and equipment in Table 1.

Table 3. Sensitivity Analysis

These tables show A) the total cost per ton of silage as made or sold, and B) per ton of dry matter produced, under various assumptions about costs and yields. Specifically, the cost and yields shown in the enterprise budget on the first page are believed to be fairly representative of conditions in North Carolina. However, there is a wide variation in conditions from one farm to another and costs and yields can vary from year to year. The table shows the effects of yields and costs that are 10 percent higher or lower than the basic budget, singly and in combination. The cost adjustments are "across the board" and, for example, do not reduce harvest costs for a lower yield

A. TOTAL COST PER TON OF SILAGE AS MADE OR SOLD, AT THE MOISTURE CONTENT LISTED IN THE BUDGET

		YIELD AS MADE		
		-10%	Base Budget	+10%
COST	-10%	\$38.00	\$34.20	\$31.09
	Base	\$42.23	\$38.00	\$34.55
	+10%	\$46.45	\$41.81	\$38.00

B. TOTAL COST PER TON OF DRY MATTER PRODUCED, DISCOUNTED AT THE MOISTURE CONTENT LISTED IN THE BUDGET

		DRY MATTER YIELD		
		-10%	Base Budget	+10%
COST	-10%	\$108.59	\$97.73	\$88.84
	Base	\$120.65	\$108.59	\$98.71
	+10%	\$132.72	\$119.44	\$108.59

NOTES, RESOURCES AND REFERENCES

Other NCSU enterprise budgets are available on the internet at http://www.ag-econ.ncsu.edu/extension/Ag_budgets.html or from your county extension office. A searchable national enterprise budget library is available on-line at <http://www.agrisk.umn.edu/Budgets/> "Estimating Farm Machinery Costs" Ag Decision Maker A3-29, Iowa State University, University Extension, November 2009