

THE COST OF GROWING SWEET CORN IN WESTERN COLORADO

By

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Introduction

Acres planted to Sweet Corn for Fresh Market has been increasing in Colorado. Colorado farmers planted approximately 3,000 acres in 1990. This acreage has increased to nearly 8,000 harvested acres in 2003. Sweet corn ranked third in production (1,292,000 cwt.) and fourth in value (\$11.8 million) compared to other vegetable crops grown in Colorado. Production increased 23 percent from 2002 to 1.3 million hundredweight, with a 100-acre increase in acreage harvested. The value of production (\$11.8 million) was up 28 percent from a year earlier due to increased acreage, higher yields.

Western Colorado sweet corn has a superior market acceptance because of good flavor, color and time of harvest. However, sweet corn production in Colorado, like many growing areas, is challenging due to the many environmental stresses. Weeds, mites, corn earworms, sap beetles and other insects are just a few of the challenges successful growers must control to maximize productivity and crop quality.

This report contains the typical costs and returns that you can compare to your own operation. The yields, market prices and annual operating costs (direct and indirect) are estimated for a "representative" farm in western Colorado. Due to the variability of circumstances faced by individual farms, some fixed costs such as land, taxes, and insurance are not explicitly included in the cost estimates. Major land preparation such as timber clearing, rock removal, or land leveling is also ignored. These operations, if required, should be factored in to your own analysis. Site selection, sweet corn variety, pest management and other cultural practices will also affect operating costs.

The following budget was developed using practices and materials that have proven both practical and cost effective in Colorado. Enterprising growers might find alternative materials or practices to reduce operating costs without impairing crop productivity or quality.

Basic Findings

The profitability and returns of sweet corn depend on four major factors:

- Sound production practices.
- Consistently good yields.
- Consistently good prices.
- Low operating costs.

First, you must have good production management skills. This requires sound management decisions, which directly affects quality and quantity of the crop. Cultural management decisions, such as variety selection, soil fertility, irrigation, and pest, disease and weed control, all impact production and profits.

Second, yields must be consistently good. Yields typically range from 300-500 boxes per acre. Each box contains 48 ears and weighs between 40 and 50 pounds. There are many factors

(environmental, cultural, pest management, varieties, etc.) that can cause yield variation. Lower yields due to insect damage, disease, or poor management will reduce returns. Higher yields can be achieved with good management and growing conditions. Realistic estimates of yield and market prices are important factors to consider before growing sweet corn.

Third, the price received for sweet corn has a direct impact on profits. In these budgets the market price is assumed to be \$2.50 per box. Prices have typically ranged from as low as \$1.75 per box to as high as \$3.00 per box. These contract prices depend market demand, sweet corn production and year-to-year volatility in markets.

The fourth key factor is operating costs. Typical annual operating costs for sweet corn include: 1) machinery/equipment costs associated with field operations, crop insurance, herbicides, insecticides, fertilizers, and irrigation expenses. Insect control and field operations are the major costs for sweet corn. Most growers have 10-15 insect control applications and 12 to 15 field operations.

Table 1. Equipment Requirements, Sweet Corn-Western Colorado

<u>Machine</u>	<u>Common Size</u>	<u>Times Over</u>	<u>Timing</u>
Tractor	125-150 horsepower		
MB Plow	4-6 bottom	1	March
Tandem Disk	15-25 foot	2	Mar/April
Roller Harrow	20-30 foot	5	April-May
Land Plane	15-30 foot	1	April
Creaser	4-6 row	1	April
Bed Shaper	15-20 foot	1	April
Planter	4-6 row	1	April-May
Row Cultivator	4-6 row	2-3	May-July

Enterprise Budget Overview

The enterprise budget in Table 2 shows annual production expenses and cash inflows from sales. "Gross Receipts from Production" is estimated at \$1,000 per acre (400 boxes @ \$2.50 per box). Total direct costs are divided into two components: operating expenses and property and ownership costs. "Total Direct Costs" are estimated at \$583.04 per acre (\$494.68 operating expenses and \$88.36 property and ownership costs). No harvest costs are included in these budgets. According to the contract, the grower is not responsible for any harvest costs. In affect the grower is paid for the sweet corn standing in the field.

"Net Receipts" are the difference between gross receipts and direct costs. Net receipts are the margin available to compensate the owner for capital invested, management and risk. Net receipts are estimated at \$416.96 per acre. Sweet corn production has potential to generate competitive profits in western Colorado when properly managed.

Table 2. WESTERN COLORADO SWEET CORN ENTERPRISE BUDGET

ENTERPRISE: Sweet Corn

YEAR: 2003

<<OPERATING RECEIPTS>>

SALE ITEM	UNITS	PRICE /UNIT	QNTY. /ACRE	VALUE /ACRE	YOUR FARM
Sweet Corn	boxes	\$2.50	400	\$1,000.00	
Other Sales				\$0.00	
TOTAL OPERATING RECEIPTS				\$1,000.00	

<<DIRECT COSTS>>

CASH OPERATING EXPENSES

	UNITS	COST /UNIT	UNITS PER ACRE	COST /ACRE	YOUR FARM
Crop Insurance	acre	\$12.00	1	\$12.00	
Nitrogen	gal	\$1.13	18	\$20.34	
Phosphorus	lbs	\$0.10	300	\$30.00	
Fertilizer Application	acre	\$5.00	1	\$5.00	
Pre-Plant Herbicide	quarts	\$6.25	3	\$18.75	
Herbicide Application	acre	\$6.00	1	\$6.00	
Seed	lbs	\$4.35	10	\$43.50	
Insecticide	acre	\$120.00	1	\$120.00	
Insecticide Application	acre	\$110.00	1	\$110.00	
Irrigation Water	acre	\$25.00	1	\$25.00	
Irrigation Expense	acre	\$20.00	1	\$20.00	
Herbicide-Lorsban	lbs	\$2.00	8	\$16.00	
Herbicide Application	acre	\$6.00	1	\$6.00	
Hand Labor	hrs	\$6.50	2	\$13.00	
Machinery Fuel & Lube	acre	\$19.36	1	\$24.24	
Machinery Repairs	acre	\$9.27	1	\$11.89	
Interest on Operating	dol.	\$0.08	\$240.86	\$12.96	
TOTAL CASH OPERATING EXPENSES				\$494.68	

PROPERTY AND OWNERSHIP COSTS

	UNITS	COST /UNIT	UNITS /ACRE	COST /ACRE	YOUR FARM
Machinery Ownership		\$59.24	1	\$73.36	
Real Estate Taxes		\$15.00	1	\$15.00	
General Farm Overhead		\$25.00	1	\$25.00	
Other Ownership				\$0.00	
TOTAL PROPERTY & OWNERSHIP COSTS				\$88.36	

TOTAL DIRECT COSTS

	\$583.04
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NET RECEIPTS

	\$416.96
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Sweet Corn Budget Assumptions

Details of Receipts

Yield:

400 boxes per acre is a common yield for western Colorado. Yields typically range from 300-500 boxes with 48 ears per box weighing approximately 45-50 pounds.

Price:

Most of the corn in western Colorado is grown on contract. The contract price has ranged from \$1.75 to over \$3.00 per box. \$2.50 per box was an estimate of average price to the grower in 2003 and the grower has no harvest costs.

Details of Expenses

Crop Insurance:

Cost per acre for crop insurance varies by type of insurance, level of protection, and average yield. Some growers do not have crop insurance so the cost per acre varies from \$0.00 to over \$20.00 per acre. \$12.00 per acre is common cost for crop insurance on Sweet Corn in western Colorado.

Fertilization:

Amounts and types of fertilizers vary substantially depending on yield expectations and soil conditions. Most growers apply nitrogen and phosphorus.

<u>Item</u>	<u>Amt/Acre</u>	<u>Unit</u>	<u>Cost/Unit</u>	<u>Total Cost</u>
34-0-0	18	gallons	\$1.13	\$20.34
11-52-0	300	pounds	\$0.10	30.00
Total				\$50.34

Field Operations:

Growing sweet corn requires several field operations. In this budget, 15 operations are included to represent typical cultural practices.

<u>Operation</u>	<u>Times Over</u>
MB Plow	1
Tandem Disc	2
Roller Harrow	5
Landplane	2
Creaser	1
Bed Shaper	1
Planter	1
Row Cultivator	2

Herbicides:

Herbicides are useful in controlling weeds. It is common to apply two herbicide applications, a pre-plant and a post-plant herbicide.

<u>Item</u>	<u>Amt/Acre</u>	<u>Unit</u>	<u>Cost/Unit</u>	<u>Total Cost</u>
Lasso	3	quarts	\$6.25	\$18.75
Lorsban	8	pounds	\$2.00	16.00
		Total		\$34.75

Insecticides:

Insects are a major pest for sweet corn growers to control. The primary insects that require control on an annual basis are spider mites, earworms, and sap beetles. Most growers aerial spray 10-15 times per acre for insects. In this budget we assumed 13 different sprays.

<u>Item</u>	<u>Amt/Acre</u>	<u>Unit</u>	<u>Cost/Unit</u>	<u>Total Cost</u>
Asana XL	1	acre	\$18.06	\$17.05
Bird Shield	1	acre	\$13.40	\$12.65
Comite II	1	acre	\$16.54	\$15.61
Lannate	1	acre	\$ 4.44	\$ 4.19
MSR	1	acre	\$ 1.97	\$ 1.86
Veg-Oil	1	acre	\$ 0.35	\$ 0.33
Warrior T	1	acre	\$72.37	\$68.31
Aerial Appl.	13	sprays	\$ 8.46	\$110.00
		Total		\$230.00

Sensitivity of Results – Factors That Can Change These Results

The results in Table 2 are based on estimates about what average production looks like in western Colorado. However, there can be a lot of variability year to year. Table 3 illustrates how Net Returns change by changing yields, direct costs, and market prices per box. As illustrated in the table, sweet corn profitability is highly affected by these three variables. Carefully examine where your operation fits and where you can make changes to take full advantage of making your operation more profitable.

Table 3. Sensitivity of Net Returns Per Acre to Yield, Direct Costs and Market Price.

Yield	Cost/ Acre	Price Per Box				
		\$2.00	\$2.25	\$2.50	\$2.75	\$3.00
300	\$524.74	\$224.74	\$299.74	\$374.74	\$449.74	\$574.74
	583.04	\$ 16.96	\$ 91.96	\$166.96	\$241.96	\$316.96
	641.34	-\$ 41.34	\$ 33.66	\$108.66	\$183.66	\$258.66
350	524.74	\$175.26	\$262.76	\$350.26	\$437.76	\$525.26
	583.04	\$116.96	\$204.46	\$291.96	\$379.46	\$466.96
	641.34	\$ 58.66	\$146.16	\$233.66	\$321.16	\$408.66
400	524.74	\$275.26	\$375.26	\$475.26	\$575.26	\$675.26
	583.04	\$216.96	\$316.96	\$416.96	\$516.96	\$616.96
	641.34	\$158.66	\$258.66	\$358.66	\$458.66	\$558.66
450	524.74	\$375.26	\$487.76	\$600.26	\$712.76	\$825.26
	583.04	\$316.96	\$429.46	\$541.96	\$654.46	\$766.96
	641.34	\$258.66	\$371.16	\$483.66	\$596.16	\$708.66
500	524.74	\$475.26	\$600.26	\$725.26	\$850.26	\$975.26
	583.04	\$416.96	\$541.96	\$666.96	\$791.96	\$916.96
	641.34	\$358.66	\$483.66	\$608.66	\$733.66	\$858.66

Conclusions

Sweet corn is expected to return approximately \$400 per acre. This is a return to land, labor, risk and management. Like most agricultural commodities, there can be a lot of variability in yields, costs and market prices from year to year and between growers. The enterprise budget is designed to assist growers in determining costs and revenues to make better management decisions.

References

1. Colorado Agricultural Statistics 2004. National Agricultural Statistics Service and Colorado Department of Agriculture. July 2004.