The widespread adoption of herbicide-tolerant varieties and low-till production practices helped keep soybean production costs low. This part presents the costs of producing soybeans in South Dakota and examines how these costs varied from 1980 to 2012, a 32-year-period. The budgets reported in Table 56.3 and Figure 56.4 were from crop planning budgets used by SDSU Extension Economists in the respective years. The planning budgets were usually developed in January using projected yields, prices, and production costs for the upcoming crop year.

Table 56.3. Summary of January soybean budgets for South Dakota from 1980 to 2012. (Source: SDSU Extension)

	1980	1983	1985	1989	1993	1997	2000	2002	2005	2010	2012
Yield (bu/a)	18.5	30.0	28.0	28.0	29.0	31.0	36.0	36.0	40.0	40.0	40.0
State-wide Yield (bu/a)	26.0	26.5	32.0	26.0	22.0	35.0	35.0	31.0	35.0	38.0	30.0
Selling Price ($/bu)	6.50	5.10	5.50	6.50	6.03	6.35	4.95	5.15	5.00	8.28	12.60
Total Revenue ($/a)	120.25	153.00	154.00	182.00	174.04	199.43	178.20	185.40	200.00	331.20	504.00
Production Costs ($/a)	81.85	122.60	117.50	104.87	116.31	108.22	95.80	103.40	108.56	196.26	265.06
Land Charges ($/a)	28.50	37.40	32.25	33.75	41.25	56.22	56.00	57.00	65.00	102.00	150.00
Total Cost ($/a)	110.35	160.00	149.75	138.62	157.56	164.44	151.80	160.40	173.59	298.26	415.06
Breakeven Price (bu/a)	5.96	5.33	5.35	4.95	5.46	5.24	4.22	4.56	3.96	7.46	10.38
Breakeven Yield (bu/a)	17.0	31.4	27.2	21.3	26.1	25.9	30.7	31.2	31.7	36.0	32.9
Net Income ($/a)	9.90	3.00	4.25	43.38	16.48	34.99	0.59	31.49	26.41	32.94	88.94

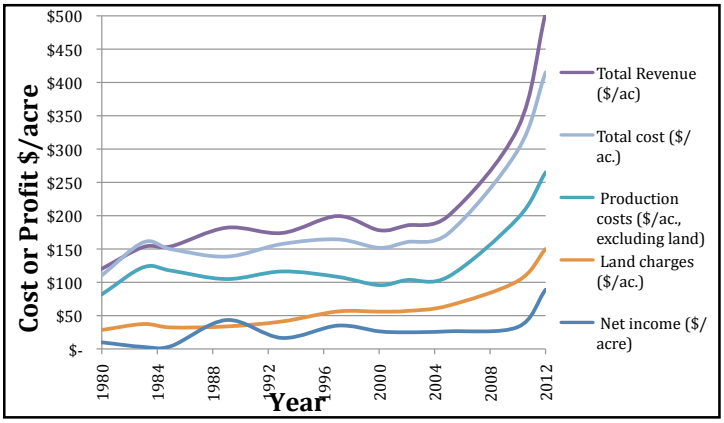

Figure 56.4. Changes over time in net income and costs of producing soybeans from 1980 to 2012. (Source: Data is from Table 56.3, SDSU Extension)

Over the last 32 years, several changes were noticeable. First, over time, gross income (total revenue) and total cost per acre have generally increased. Between years, however, this is not necessarily the case. For example, between 1980 and 1989 gross income increased, whereas from 1989 to 2005 gross income remained relatively stable. During the same period, total costs per acre peaked in 1983 and were relatively stable until 2005. Yields were trending upward so total costs per bushel were generally declining. From 2005 to 2012, total costs and gross income have increased rapidly. The two major reasons for temporal budget changes were the release of Roundup Ready® soybean cultivars, and the increasing demand for agricultural products.

The 1980 to 2012 time period (32 years)

From 1980 to 2012, soybean yields doubled from 18.5 bushels to 40 bushels (Table 56.4). Prices have followed the same trend and also nearly doubled from $6.50/bu in 1980 to $12.60/bu in 2012. Based on these changes, gross income increased by 319% in 32 years, while total costs increased by 276%, and net income over all costs increased nearly eight-fold. Much of the increase in total costs is attributed to land costs that increased from $28.50/acre in 1980 to $150/acre in 2012.

During this time period, production costs increased at a slower rate than land costs. The percentage change in the rate of inflation is included in the table below to compare the soybean costs figures to general price inflation that occurred in the economy. Between 1980 and 2012, inflation has increased by a total of 148%.

Table 56.4. Analysis of soybean production budget variation between 1980 and 2012.
(Data source from Table 56.3, SDSU Extension)

	Difference	% Increase
Yield	Bu 21.5	116%
Selling Price	$ 6.10	94%
Gross Income	$383.75	319%
Production costs ($/ac, excluding land)	$183.21	224%
Land charges ($/ac)	$121.50	426%
Total Cost ($/ac)	$304.71	276%
Breakeven Price ($/bu)	$4.41	74%
Breakeven Yield (bu/ac)	Bu 16.0	94%
Net Income over all costs ($/acre)	$79.04	798%
Infation (from 1980 to 2012)		*148%*

The 1989 to 2012 time period (23 years)

From 1989 to 2012, land costs increased 344%, non-land production costs increased by 153%, while yields increased by 43%. Over this time period, gross income increased from $182/acre in 1989 to $504/acre in 2012. Net income over all costs increased from $43 to $89 per acre. During this time period, inflation has increased by a total of 67%.

Table 56.5. Analysis of soybean production budget variation between 1989 and 2012.
(Data source from Table 56.3, SDSU Extension)

	Difference	% Increase
Yield	Bu 12	43%
Selling Price	$6.10	94%
Gross Income	$322.00	177%
Production costs ($/ac, excluding land)	$160.19	153%
Land charges ($/ac)	$116.25	344%
Total Cost ($/ac)	$276.44	199%
Breakeven Price ($/bu)	$5.43	110%
Breakeven Yield (bu/ac)	Bu 11.6	54%
Net Income over all costs ($/acre)	$45.56	105%
Infation (from 1989 to 2012)		*67%*

The 2002 to 2012 time period (10 years)

Over the last 10 years production costs, gross income, and profits (net income) increased in most years (Table 56.6). Over this time period, soybean selling prices increased by 145% and projected yields increased 11%, which resulted in gross income increasing by 172%. During these last ten years, land charges and non-land production costs increased at similar rates (163% vs. 156%). Total costs per acre increased by 159%, while inflation only increased by 25%.

Soybean gross income and costs relative to inflation

During all three time periods examined, soybean gross income greatly exceeded the rate of inflation, primarily due to yield increases from the early 1980s to 2000 and from soybean price increases after 2005. Land charges were well above the inflation rate (except from 1983 to 1989). All other soybean production costs were lower than the inflation rate from 1980 to 2012, similar to the inflation rate from 1989 to 2012, and substantially above the inflation rate from 2002 to 2012.

Table 56.6. Analysis of soybean production budget variation between 2002 and 2012.
(Data source from Table 56.3, SDSU Extension)

	Difference	% Increase
Yield	Bu 4	11.1%
Selling Price	$7.45	144.7%
Gross Income ($/ac.)	$318.60	171.8%
Production costs ($/ac, excluding land)	$161.66	156.3%
Land charges ($/ac)	$93.00	163.2%
Total Cost ($/ac)	$254.66	158.8%
Breakeven Price ($/bu)	$5.92	132.9%
Breakeven Yield (bu/ac)	Bu 1.8	5.8%
Net Income over all costs ($/acre)	$63.94	255.8%
Infation (from 2002 to 2012)		*25%*

Corn yields and returns from 1980 to 2010

Corn yields and selling prices have increased rapidly over these last 30 years. Corn yields went from 53 bu/acre in 1980 to 135 bu/acre in 2010. Selling prices also increased from $2.84/bu in 1980 to $5.09/bu in 2010 (Fig. 56.5). Recent increases in the corn selling price are linked to ethanol production.

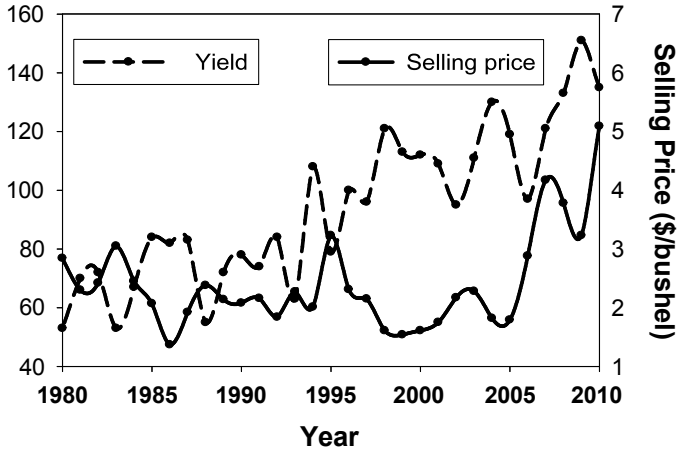

Figure 56.5. Changes from 1980 to 2010 in corn grain yields and selling price. (Source: NASS)

Historical data of cost and return estimates for corn, soybeans, wheat, cotton, grain sorghum, rice, peanuts, oats, barley, milk, hogs, and cow-calf are available at http://www.ers.usda.gov/data-products/commodity-costs-and-returns.aspx. These cost and return estimates are reported for major production regions and for the United States, but not for individual states. South Dakota is included in the Great Plains production region. Costs of production forecasts are also available.

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Acknowledgements

Funding for developing this chapter was provided by USDA-NRCS, South Dakota Soybean Research and Promotion Council, USDA-AFRI, and South Dakota 2010 research program.

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