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# Estimated Costs of Crop Production in Iowa - 2020

The estimated costs of corn, corn silage, soybeans, alfalfa, and pasture maintenance in this report are based on data from several sources. They include the annual Iowa Farm Business Association record summaries, production and costs data from the Departments of Economics, Agricultural and Biosystems Engineering, and Agronomy at Iowa State University, and a survey of selected agricultural cooperatives and other input suppliers around the state.

These cost estimates are representative of average costs for farms in Iowa. Very large or small farms may have lower or higher fixed costs per acre.

Due to differences in soil potentials, quantity of inputs used, and other factors, production costs will vary from farm to farm. Price shifts for inputs can change production costs in both the short and long run. The data reflect average cost of purchased inputs and a return to land and labor resources, but do not provide a margin for profit or a return to management. They reflect production costs only, and do not include costs of storage.

Labor has been treated as a fixed cost because most labor on Iowa farms is supplied by the operator, family, or permanent hired labor. However, when deciding among alternative crops, labor should be considered a variable cost. The wage rate used here is \$14.75 per hour. The hours assumed per crop are presented in the budgets. The hours per crop acre include not only the field work but also time for maintenance, travel, and other activities related to crop production. The land charge is based on cash rent equivalent. Owned land may require a greater or lesser cash outlay.

In the short run, cash income must be sufficient to pay cash costs, including seed, fertilizer, chemicals, insurance, cash rent, and hired labor, as well as machinery fuel and repairs, and interest on operating capital. In the long run, income should be sufficient to pay all costs of production for resources to be used in their most profitable alternative.

Starting in 2019, reference yields for corn and soybean budgets reflect 30-year trend yields and are updated annually. Corn yields reflect rotation effects. Fertilizer rates have been adjusted to reflect current data on removal and application rates. Crop insurance costs reflect revenue crop protection at 80% coverage for a typical farm in Central Iowa. Starting in 2020, the average cost of lime is adjusted to account for regional differences in lime application practices (ag lime quality, quantity, and frequency of application).

Machinery costs reflect both new and used equipment. The machine operations assumed are based on the 2000 Crop Production Practices Survey conducted by the Iowa Agricultural Statistics Service and Iowa State University Extension and Outreach publication PM 696, [Estimating the Field Capacity of Farm Machines](https://store.extension.iastate.edu/product/4032), <https://store.extension.iastate.edu/product/4032>. The Estimated Machinery Costs table can be used to budget other tillage and harvesting systems.

Estimates represent typical costs and are only intended to be guidelines. Actual costs will vary considerably and can be entered in the column for "Your Estimates." Electronic spreadsheets for developing crop production budgets are available on the [Ag Decision Maker](http://www.extension.iastate.edu/agdm) website, [www.extension.iastate.edu/agdm](http://www.extension.iastate.edu/agdm).

Budgets for alfalfa hay establishment with an oat companion crop and by direct seeding are included in this publication. Annual production costs for established alfalfa or alfalfa-grass hay as well as a budget for maintaining grass pastures are included.

Two low-till budgets, one for corn and one for soybean, are included. The major differences between the low-till and conventional budgets are the preharvest machinery, labor, herbicide, and seeding costs. The soybean budgets are for herbicide tolerant varieties. A strip-till budget is also included.

## Corn Following Corn

	164 bushels per acre		182 bushels per acre		200 bushels per acre		Your Estimate
	Fixed	Variable	Fixed	Variable	Fixed	Variable	
<b>Preharvest Machinery</b> <sup>1/</sup>	\$23.20	\$21.20	\$23.20	\$21.20	\$23.20	\$21.20	\$
<b>Seed, Chemical, etc.</b>	<b>Units</b>		<b>Units</b>		<b>Units</b>		
Seed @\$3.22 per 1000 kernel	25,000	\$80.50	30,000	\$96.60	35,000	\$112.70	\$
Nitrogen @\$0.34 per pound	186	63.24	186	63.24	186	63.24	
Phosphate @\$0.34 per pound	62	21.08	68	23.12	75	25.50	
Potash @\$0.31 per pound	49	15.19	55	17.05	60	18.60	
Lime (yearly cost)		12.49		12.49		12.49	
Herbicide		31.85		31.85		31.85	
Insecticide		23.79		23.79		23.79	
Crop insurance		8.70		9.70		10.50	
Miscellaneous		9.00		10.00		11.00	
Interest on preharvest variable costs (8 months @ 5.8%)		11.10		11.95		12.79	
<b>Total</b>		\$276.94		\$299.79		\$322.46	\$
<b>Harvest Machinery</b>							
Combine	\$13.00	\$6.80	\$13.00	\$6.80	\$13.00	\$6.80	\$
Grain cart	6.20	3.00	6.20	3.00	6.20	3.00	
Haul	7.05	6.23	7.83	6.92	8.60	7.60	
Dry (LP gas @\$1.12 per gallon)	8.20	22.04	9.10	24.46	10.00	26.88	
Handle (auger)	2.87	3.21	3.19	3.57	3.50	3.92	
<b>Total</b>	\$37.32	\$41.29	\$39.31	\$44.74	\$41.30	\$48.20	\$
<b>Labor</b>							
2.80 hours @ \$14.75	\$41.30		\$41.30		\$41.30		\$
<b>Land</b>							
Cash rent equivalent	\$183.00		\$219.00		\$255.00		\$
<b>Total fixed, variable</b>							
Per acre	\$284.82	\$339.43	\$322.81	\$365.73	\$360.80	\$391.86	Yield: bushels per acre
Per bushel	\$1.74	\$2.07	\$1.77	\$2.01	\$1.80	\$1.96	
<b>Total cost per acre</b>	\$624.25		\$688.54		\$752.66		\$
<b>Total cost per bushel</b>	\$3.81		\$3.78		\$3.76		\$

<sup>1/</sup> Chisel plow, tandem disk, apply Nitrogen, field cultivate, plant, and spray. See the Estimated Machinery Costs table.

## Corn Following Soybean

	179 bushels per acre		199 bushels per acre		219 bushels per acre		Your Estimate
	Fixed	Variable	Fixed	Variable	Fixed	Variable	
<b>Preharvest Machinery</b> <sup>1/</sup>	\$19.60	\$17.30	\$19.60	\$17.30	\$19.60	\$17.30	\$
<b>Seed, Chemical, etc.</b>	<b>Units</b>		<b>Units</b>		<b>Units</b>		
Seed @\$3.22 per 1000 kernel	25,000	\$80.50	30,000	\$96.60	35,000	\$112.70	\$
Nitrogen @\$0.34 per pound	131	44.54	131	44.54	131	44.54	
Phosphate @\$0.34 per pound	67	22.78	75	25.50	82	27.88	
Potash @\$0.31 per pound	54	16.74	60	18.60	66	20.46	
Lime (yearly cost)		12.49		12.49		12.49	
Herbicide		31.85		31.85		31.85	
Crop insurance		8.70		9.70		10.50	
Miscellaneous		9.00		10.00		11.00	
Interest on preharvest variable costs (8 months @5.8%)		9.43		10.31		11.16	
<b>Total</b>		\$236.03		\$259.59		\$282.58	\$
<b>Harvest Machinery</b>							
Combine	\$13.00	\$6.80	\$13.00	\$6.80	\$13.00	\$6.80	\$
Grain cart	6.20	3.00	6.20	3.00	6.20	3.00	
Haul	7.70	6.80	8.56	7.56	9.42	8.32	
Dry (LP gas @\$1.12 per gallon)	8.95	24.06	9.95	26.75	10.95	29.43	
Handle (auger)	3.13	3.51	3.48	3.90	3.83	4.29	
<b>Total</b>	\$38.98	\$44.17	\$41.19	\$48.01	\$43.40	\$51.85	\$
<b>Labor</b>							
2.55 hours @ \$14.75	\$37.61		\$37.61		\$37.61		\$
<b>Land</b>							
Cash rent equivalent	\$183.00		\$219.00		\$255.00		\$
<b>Total fixed, variable</b>							
Per acre	\$279.19	\$297.50	\$317.40	\$324.90	\$355.61	\$351.73	Yield: bushels per acre
Per bushel	\$1.56	\$1.66	\$1.59	\$1.63	\$1.62	\$1.61	
<b>Total cost per acre</b>	\$576.69		\$642.30		\$707.34		\$
<b>Total cost per bushel</b>	\$3.22		\$3.23		\$3.23		\$

<sup>1/</sup> Apply Nitrogen, tandem disk, field cultivate, plant, and spray. See the Estimated Machinery Costs table.

## Corn Silage Following Corn

	21 tons per acre		24 tons per acre		26 tons per acre		Your Estimate
	Fixed	Variable	Fixed	Variable	Fixed	Variable	
<b>Preharvest Machinery</b> <sup>1/</sup>	\$23.20	\$21.20	\$23.20	\$21.20	\$23.20	\$21.20	\$
<b>Seed, Chemical, etc.</b>	<b>Units</b>		<b>Units</b>		<b>Units</b>		
Seed @\$3.22 per 1000 kernel	28,750	\$92.58	34,500	\$111.09	40,250	\$129.61	\$
Nitrogen @\$0.34 per pound	150	51.00	150	51.00	150	51.00	
Phosphate @\$0.34 per pound	74	25.16	84	28.56	91	30.94	
Potash @\$0.31 per pound	168	52.08	192	59.52	208	64.48	
Lime (yearly cost)		12.49		12.49		12.49	
Herbicide		31.85		31.85		31.85	
Insecticide		23.79		23.79		23.79	
Crop insurance		8.70		9.70		10.50	
Miscellaneous		9.00		10.00		11.00	
Interest on preharvest variable costs (8 months @5.8%)		12.68		13.89		14.96	
<b>Total</b>		\$319.33		\$351.89		\$380.62	\$
<b>Harvest Machinery</b>							
Silage harvester	\$49.20	\$31.20	\$49.20	\$31.20	\$49.20	\$31.20	\$
Haul	27.93	26.88	31.92	30.72	34.58	33.28	
Store silage (unloader)	8.82	2.73	10.08	3.12	10.92	3.38	
<b>Total</b>	\$85.95	\$60.81	\$91.20	\$65.04	\$94.70	\$67.86	\$
<b>Labor</b>							
4.95 hours @ \$14.75	\$73.01		\$73.01		\$73.01		\$
<b>Land</b>							
Cash rent equivalent	\$183.00		\$219.00		\$255.00		\$
<b>Total fixed, variable</b>							
Per acre	\$365.16	\$401.34	\$406.41	\$438.13	\$445.91	\$469.68	Yield: tons per acre
Per ton	\$17.39	\$19.11	\$16.93	\$18.26	\$17.15	\$18.06	
<b>Total cost per acre</b>	\$766.50		\$844.54		\$915.59		\$
<b>Total cost per ton</b>	\$36.50		\$35.19		\$35.22		\$

<sup>1/</sup> Chisel plow, tandem disk, apply Nitrogen, field cultivate, plant, and spray. See the Estimated Machinery Costs table.

## Herbicide Tolerant Soybean Following Corn

	50 bushels per acre		56 bushels per acre		62 bushels per acre		Your Estimate
	Fixed	Variable	Fixed	Variable	Fixed	Variable	
<b>Preharvest Machinery</b> <sup>1/</sup>	\$21.10	\$18.80	\$21.10	\$18.80	\$21.10	\$18.80	\$
<b>Seed, Chemical, etc.</b>	<b>Units</b>		<b>Units</b>		<b>Units</b>		
Seed @\$47.40 per 140,000 kernel	140,000	\$47.40	140,000	\$47.40	140,000	\$47.40	\$
Phosphate @\$0.34 per pound	40	13.60	45	15.30	50	17.00	
Potash @\$0.31 per pound	75	23.25	84	26.04	93	28.83	
Lime (yearly cost)		12.49		12.49		12.49	
Herbicide		41.62		41.62		41.62	
Crop insurance		7.70		8.70		9.60	
Miscellaneous		9.00		10.00		11.00	
Interest on preharvest variable costs (8 months @5.8%)		6.72		6.97		7.22	
<b>Total</b>		\$161.78		\$168.52		\$175.16	\$
<b>Harvest Machinery</b>							
Combine	\$8.30	\$4.10	\$8.30	\$4.10	\$8.30	\$4.10	\$
Grain cart	6.20	3.00	6.20	3.00	6.20	3.00	
Haul	2.15	1.90	2.41	2.13	2.67	2.36	
Handle (auger)	0.88	0.98	0.98	1.10	1.09	1.22	
<b>Total</b>	\$17.53	\$9.98	\$17.89	\$10.33	\$18.25	\$10.67	\$
<b>Labor</b>							
2.20 hours @ \$14.75	\$32.45		\$32.45		\$32.45		\$
<b>Land</b>							
Cash rent equivalent	\$183.00		\$219.00		\$255.00		\$
<b>Total fixed, variable</b>							
Per acre	\$254.08	\$190.56	\$290.44	\$197.65	\$326.80	\$204.63	Yield: bushels per acre
Per bushel	\$5.08	\$3.81	\$5.19	\$3.53	\$5.27	\$3.30	
<b>Total cost per acre</b>	\$444.64		\$488.09		\$531.43		\$
<b>Total cost per bushel</b>	\$8.89		\$8.72		\$8.57		\$

<sup>1/</sup> Chisel plow, tandem disk, field cultivate, plant, and two sprays. See the Estimated Machinery Costs table.

<sup>2/</sup> Estimates do not include any insecticide or fungicide costs.

# Strip Tillage Corn and Soybean

Corn Following Soybean				Herbicide Tolerant Soybean Following Corn			
199 bushels per acre		Your Estimate		56 bushels per acre		Your Estimate	
Fixed	Variable			Fixed	Variable		
<b>Preharvest Machinery</b> <sup>1/</sup>			\$	<b>Preharvest Machinery</b> <sup>1/</sup>			\$
	\$11.00	\$9.90			\$13.40	\$11.70	
<b>Seed, Chemical, etc.</b>	<b>Units</b>			<b>Seed, Chemical, etc.</b>	<b>Units</b>		
Seed @\$3.22 per 1000 kernel	30,000	\$96.60	\$	Seed @ \$47.40 per 140,000 kernel	160,000	\$54.17	\$
Nitrogen @ \$0.34 per pound	131	44.54					
Phosphate @ \$0.34 per pound	75	25.50		Phosphate @ \$0.34 per pound	45	15.30	
Potash @ \$0.31 per pound	60	18.60		Potash @ \$0.31 per pound	84	26.04	
Lime (yearly cost)		12.49		Lime (yearly cost)		12.49	
Herbicide <sup>2/</sup>		35.01		Herbicide <sup>2/</sup>		42.00	
Crop insurance		9.70		Crop insurance		8.70	
Miscellaneous		10.00		Miscellaneous		10.00	
Interest on preharvest variable costs (8 months @ 5.8%)		10.14		Interest on preharvest variable costs (8 months @ 5.8%)		6.98	
<b>Total</b>		\$262.58	\$	<b>Total</b>		\$175.68	\$

## Harvest Machinery

Combine	\$13.00	\$6.80	\$	Combine	\$8.30	\$4.10	\$
Grain cart	6.20	3.00		Grain cart	6.20	3.00	
Haul	8.56	7.56		Haul	2.41	2.13	
Dry (LP gas @\$1.12 per gallon)	9.95	26.75					
Handle (auger)	3.48	3.90		Handle (auger)	0.98	1.10	
<b>Total</b>	\$41.19	\$48.01	\$	<b>Total</b>	\$17.89	\$10.33	\$

## Labor

2.25 hours @\$14.75	\$33.19	\$	1.70 hours @\$14.75	\$25.08	\$
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## Land

Cash rent equivalent	\$219.00	\$	Cash rent equivalent	\$219.00	\$
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## Total fixed, variable

Per acre	\$304.38	\$320.49	Yield: bushels/acre	Per acre	\$275.36	\$197.70	Yield: bushels/acre
Per bushel	\$1.53	\$1.61		Per bushel	\$4.92	\$3.53	
<b>Total cost per acre</b>	\$624.87	\$		<b>Total cost per acre</b>	\$473.07	\$	
<b>Total cost per bushel</b>	\$3.14	\$		<b>Total cost per bushel</b>	\$8.45	\$	

<sup>1/</sup> Strip till, plant, and spray for corn. No-till drill, two sprays for soybean. See the Estimated Machinery Costs table.

<sup>2/</sup> Estimates do not include any insecticide or fungicide costs.

## Non-Herbicide Tolerant Soybean Following Corn

	Soybean Following Corn			Drilled Soybean Following Corn		
	56 bushels per acre		Your Estimate	56 bushels per acre		Your Estimate
	Fixed	Variable		Fixed	Variable	
<b>Preharvest Machinery <sup>1/</sup></b>	\$21.50	\$19.10	\$	\$18.50	\$15.80	\$
<b>Seed, Chemical, etc.</b>	<b>Units</b>			<b>Units</b>		
Seed @\$33.00 per 140,000 kernel	130,000	\$30.60	\$	150,000	\$35.40	\$
Phosphate @ \$0.34 per pound	45	15.30		45	15.30	
Potash @ \$0.31 per pound	84	26.04		84	26.04	
Lime (yearly cost)		12.49			12.49	
Herbicide <sup>2/</sup>		55.00			42.00	
Crop insurance		8.70			8.70	
Miscellaneous		10.00			10.00	
Interest on preharvest variable costs (8 months @ 5.8%)		6.85			6.41	
<b>Total</b>		\$164.98	\$		\$156.34	\$
<b>Harvest Machinery</b>						
Combine	\$8.30	\$4.10	\$	\$8.30	\$4.10	\$
Grain cart	6.20	3.00		6.20	3.00	
Haul	2.41	2.13		2.41	2.13	
Handle (auger)	0.98	1.10		0.98	1.10	
<b>Total</b>	\$17.89	\$10.33	\$	\$17.89	\$10.33	\$
<b>Labor</b>						
2.40 hours @\$14.75	\$35.40		\$			
1.72 hours @\$14.75				\$25.37		\$
<b>Land</b>						
Cash rent equivalent	\$219.00		\$	\$219.00		\$
<b>Total fixed, variable</b>						
Per acre	\$293.79	\$194.41		\$280.76	\$182.46	
Per bushel	\$5.25	\$3.47	Yield: bushels/acre	\$5.01	\$3.26	Yield: bushels/acre
<b>Total cost per acre</b>	\$488.20		\$	\$463.22		\$
<b>Total cost per bushel</b>	\$8.72		\$	\$8.27		\$

<sup>1/</sup>Chisel plow, tandem disk, field cultivate, plant, cultivate, and spray. Tandem disk, field cultivate, drill, and spray for drilled soybeans. See the Estimated Machinery Costs table.

<sup>2/</sup>Estimates do not include any insecticide or fungicide costs

# Low-till Corn and Soybean

Corn Following Soybean				Herbicide Tolerant Soybean Following Corn			
		199 bushels per acre		Your			Your
		Fixed	Variable	Estimate	56 bushels per acre		Estimate
					Fixed	Variable	
<b>Preharvest Machinery</b> <sup>1/</sup>		\$15.00	\$13.90	\$	\$13.50	\$11.50	\$
<b>Seed, Chemical, etc.</b>	<b>Units</b>				<b>Units</b>		
Seed @ \$3.22 per 1000 kernel	30,000	\$96.60	\$		Seed @ \$47.40 per 140,000 kernel	160,000	\$54.20
Nitrogen @ \$0.34 per pound	131	44.54			Phosphate @ \$0.34 per pound	45	15.30
Phosphate @ \$0.34 per pound	75	25.50			Potash @ \$0.31 per pound	84	26.04
Potash @ \$0.31 per pound	60	18.60			Lime (yearly cost)		12.49
Lime (yearly cost)		12.49			Herbicide <sup>2/</sup>		42.00
Herbicide <sup>2/</sup>		35.01			Crop insurance		8.70
Crop insurance		9.70			Miscellaneous		10.00
Miscellaneous		10.00			Interest on preharvest variable costs (8 months @ 5.8%)		6.97
Interest on preharvest variable costs (8 months @ 5.8%)		10.30			<b>Total</b>		\$175.70
<b>Total</b>		\$262.74	\$		<b>Total</b>		\$
<b>Harvest Machinery</b>							
Combine	\$13.00	\$6.80	\$		Combine	\$8.30	\$4.10
Grain cart	6.20	3.00			Grain cart	6.20	3.00
Haul	8.56	7.56			Haul	2.41	2.13
Dry (LP gas @ \$1.12 per gallon)	9.95	26.75			Handle (auger)	0.98	1.10
Handle (auger)	3.48	3.90			<b>Total</b>	\$17.89	\$10.33
<b>Total</b>	\$41.19	\$48.01	\$		<b>Total</b>	\$	\$
<b>Labor</b>							
2.25 hours @\$14.75	\$33.19		\$		1.70 hours @\$14.75	\$25.08	\$
<b>Land</b>							
Cash rent equivalent	\$219.00		\$		Cash rent equivalent	\$219.00	\$
<b>Total fixed, variable</b>							
Per acre	\$308.38	\$324.65	Yield: bushels/acre		Per acre	\$275.46	\$197.52
Per bushel	\$1.55	\$1.63			Per bushel	\$4.92	\$3.53
<b>Total cost per acre</b>	\$633.02		\$		<b>Total cost per acre</b>	\$472.99	\$
<b>Total cost per bushel</b>	\$3.18		\$		<b>Total cost per bushel</b>	\$8.45	\$

<sup>1/</sup> Apply Nitrogen, cultivate, plant, and spray for corn. Disk, drill, and spray for soybeans. See the Estimated Machinery Costs table.

<sup>2/</sup> Estimates do not include any insecticide or fungicide costs.



## Oat and Hay Production - Seedling Year Costs

Establishment Costs	Alfalfa-Grass Seeded with Oat Companion Crop <sup>1/</sup>		Alfalfa Seeded with Herbicide <sup>2/</sup>		Your Estimate
	Fixed	Variable	Fixed	Variable	
<b>Preharvest Machinery</b>					
Spray herbicide			\$2.20	\$2.00	\$
Tandem disk (2 times)	\$9.20	\$6.80	9.20	6.80	
Spread fertilizer	1.90	1.60	1.90	1.60	
Harrow	2.10	1.50	2.10	1.50	
Seed (drill)	4.50	4.10	4.50	4.10	
Total preharvest machinery	\$17.70	\$14.00	\$19.90	\$16.00	\$
<b>Seed <sup>3/</sup></b>					
Oat	2 bushels	\$17.72			\$
Alfalfa	8 pounds	34.24	15 pounds	\$64.20	
Bromegrass	6 pounds	14.88			
Orchardgrass	3 pounds	10.02			
Total seed cost		\$76.86		\$64.20	\$
Herbicide				\$13.10	\$
Lime (total cost for hay lifetime)		\$21.00		21.00	
Labor: 1 hour @ \$14.75	\$14.75		\$14.75		\$
<b>Total establishment costs</b>	<b>\$32.45</b>	<b>\$111.86</b>	<b>\$34.65</b>	<b>\$114.30</b>	<b>\$</b>
Annual Costs	Fixed	Variable	Fixed	Variable	Your Estimate
<b>One-third of Establishment Costs (for establishment year)</b>	\$10.82	\$37.29	\$11.55	\$38.10	\$
<b>Fertilizer</b>					
Nitrogen	60 pounds	\$20.40			\$
Phosphorus	45 pounds	15.30	35 pounds	\$11.90	
Potash	130 pounds	40.30	125 pounds	38.75	
Total fertilizer		\$76.00		\$50.65	\$
<b>Insurance, oats</b>		\$2.50			\$
<b>Labor @ \$14.75</b>	4 hours	\$59.00	3 hours	\$44.25	\$
<b>Land (cash rent equivalent)</b>	\$119.00		\$119.00		\$
<b>Harvest Machinery</b>					
Oat: combine and haul grain	\$10.94	\$6.14			\$
Oat: rake, bale, and haul straw	12.10	9.35			
Alfalfa: mower-conditioner, rake, bale, and haul hay	18.47	14.43	\$37.87	\$30.33	
<b>Total harvest cost</b>	<b>\$41.51</b>	<b>\$29.93</b>	<b>\$37.87</b>	<b>\$30.33</b>	<b>\$</b>
<b>Total fixed and variable costs</b>	<b>\$230.32</b>	<b>\$145.71</b>	<b>\$212.67</b>	<b>\$119.08</b>	<b>\$</b>
<b>Total cost per acre</b>		<b>\$376.04</b>		<b>\$331.75</b>	<b>\$</b>

<sup>1/</sup> Assumes 80 bushels oat yield, one ton straw yield, and one ton per acre alfalfa yield from one cutting.

<sup>2/</sup> Assumes two and a half tons per acre from two alfalfa cuttings with herbicide-assisted seeding.

<sup>3/</sup> Omit oats from August seedings. Higher priced seed varieties or different seed mixtures could vary these costs by 1.2 to 2.0 times.

## Annual Production Costs for Established Alfalfa or Alfalfa-Grass Hay

	Hay Production Level				Your Estimate
	4 tons per acre <sup>1/</sup>		6 tons per acre		
	Fixed	Variable	Fixed	Variable	
<b>One-third of establishment costs</b> Machinery, seed, lime, labor, and herbicide <sup>2/</sup>	\$10.82	\$37.29	\$11.55	\$38.10	\$
<b>Annual fertilizer</b> <sup>3/</sup> 0-13-50 pounds per ton removed plus spreading and insurance	\$1.90	\$83.18	\$3.80	\$125.57	\$
<b>Harvesting Costs: Large Round Bales</b> <sup>4/</sup>					
<b>Mower-conditioner, rake, baling, and hauling</b>	\$57.27	\$46.23	\$77.60	\$63.60	\$
<b>Labor costs:</b> 1.33 hours per cutting @ \$14.75 per hour	\$59.00		\$78.67		\$
<b>Land:</b> Cash rent equivalent	\$119.00		\$160.00		\$
<b>Total fixed and variable cost using large round bales per acre</b>	\$247.98	\$166.70	\$331.62	\$227.27	\$
<b>Fixed, variable cost per ton</b>	\$62.00	\$41.68	\$55.27	\$37.88	\$
<b>Total cost per acre</b>	\$414.68		\$558.89		\$
<b>Total cost per ton</b>	\$103.67		\$93.15		\$
<b>Harvesting Costs: Small Square Bales</b> <sup>4/</sup>					
<b>Mower-conditioner, rake, baling, hauling, and stack</b>	\$54.50	\$44.12	\$74.00	\$60.92	\$
<b>Labor costs:</b> 2 hours per cutting @ \$14.75 per hour	\$88.50		\$118.00		\$
<b>Land:</b> Cash rent equivalent	\$119.00		\$160.00		\$
<b>Total fixed and variable cost using small square bales per acre</b>	\$274.72	\$164.58	\$367.35	\$224.59	\$
<b>Fixed, variable cost per ton</b>	\$68.68	\$41.15	\$61.23	\$37.43	\$
<b>Total cost per acre</b>	\$439.30		\$591.94		\$
<b>Total cost per ton</b>	\$109.82		\$98.66		\$

<sup>1/</sup> For harvest as silage, use machine cost estimates from the Estimated Machinery Costs table.

<sup>2/</sup> Assumes alfalfa-grass seeded with oat companion crop. If alfalfa seeded with preplant herbicide, then use other costs (see previous page).

<sup>3/</sup> For 6-ton yield goal, a split application of fertilizer is assumed.

<sup>4/</sup> Harvest cost estimates assume 3 cuttings for 4 tons and 4 cuttings for 6 tons.

## Maintaining Grass Pastures - Annual Cost per Acre

	Improved Grass <sup>2/</sup>		Improved Grass-Legume <sup>3/</sup>		Your Estimate
	Fixed	Variable	Fixed	Variable	
<b>Machinery Costs</b>					
Spreading fertilizer	\$1.90	\$1.60	\$1.90	\$1.60	\$
Spraying herbicide	2.20	2.00			
Clipping weeds	6.50	4.20	6.50	4.20	
Total machinery cost	\$10.60	\$7.80	\$8.40	\$5.80	\$
<b>Fertilizer and Herbicide <sup>1/</sup></b>					
Nitrogen @ \$0.34 per pound	80 pounds	\$27.20			\$
Phosphate @ \$0.34 per pound	30 pounds	10.20	30 pounds	\$10.20	
Potash @ \$0.31 per pound			40 pounds	12.40	
Herbicide		2.62			
Total fertilizer and herbicide		\$40.02		\$22.60	\$
<b>Labor</b>					
Growing practices .5 hours @ \$14.75	\$7.38		\$7.38		\$
Fence maintenance 1 hours @ \$14.75	14.75		14.75		
Total labor	\$22.13		\$22.13		\$
<b>Land</b>					
Cash rent equivalent	\$51.00		\$75.00		\$
<b>Total annual cost</b>	\$83.73	\$47.82	\$105.53	\$28.40	\$
<b>Total annual cost per acre</b>	\$131.55		\$133.93		\$

<sup>1/</sup> These are average rates and may vary with soil test and the level of management on a particular field. Different herbicide alternatives could vary this cost.

<sup>2/</sup> Improved grass pastures assume a dominance of cool season grasses such as smooth bromegrass, orchardgrass, tall fescue, or reed canarygrass.

<sup>3/</sup> Improved grass-legume pasture assumed one-third of the forage is made up of red clover, birdsfoot trefoil, or alfalfa.

## Estimated Machinery Costs

The following cost estimates are for on-farm use, excluding labor. Depreciation is based on current replacement cost; interest is based on average market rates. Fixed costs will be greater for newer machinery. If annual machine use is greater than that assumed, fixed costs per acre will be lower, and vice versa. Hauling costs are based on a round trip of one mile. Remember these are estimates and they should not take the place of accurate recordkeeping. **Diesel fuel is estimated to cost \$2.53 per gallon, delivered to the farm in bulk.**

Operation	Hours of Use Assumed per Year	Fixed Cost per Acre (depreciation, interest, insurance, housing)	Variable Cost per Acre (fuel, oil, repairs)
Subsoiling (V-ripper)	120	\$6.30	\$7.60
Moldboard plow	120	9.00	9.60
Chisel plow	120	3.60	3.90
Chop stalks	120	4.90	4.90
Tandem disk	120	4.60	3.40
Offset disk	120	3.80	3.30
Peg tooth harrow	60	2.10	1.50
Sprayer/disk	120	3.70	2.90
Field cultivator	120	2.70	2.70
Disk/Field cultivator	120	2.60	2.70
Strip tiller	120	3.00	3.10
Bulk fertilizer spreader	60	1.90	1.60
NH3 applicator	120	4.30	4.40
Chisel plow, NH3 applicator	120	6.00	6.80
Grain drill	100	4.50	4.10
Broadcast seeder	100	2.90	1.70
Planter	100	5.80	4.80
No-till planter	100	7.40	6.30
No-till drill	100	9.00	7.70
Rotary hoe	60	1.80	1.10
Cultivator	120	2.60	2.30
Sprayer	150	2.20	2.00
Combine corn	180	13.00	6.80
Combine soybeans	120	8.30	4.10
Combine small grain	120	7.50	3.10
Haul grain (on farm)	600	0.043/bushel	0.038/bushel
Grain cart	200	6.20	3.00
Store grain (auger)		0.0175/bushel	0.0196/bushel
Silage harvester	200	49.20	31.20
Haul silage	140	1.33/ton	1.28/ton
Store silage (unloader)		0.42/ton	0.13/ton
Rotary mower	120	6.50	4.20
Mower-conditioner	120	5.40	4.30
Rake	120	3.10	2.00
Small square baler	120	7.00/cutting	4.20/cutting
Round baler	120	8.10	5.20
Large square baler	120	8.60	6.20
Windrower	200	3.00	2.10
Forage chopper	200	17.80	13.60
Haul small square bales	120	2.00/ton	3.15/ton
Haul large round bales	120	1.87/ton	2.93/ton

## Estimated Crop Production Costs in Iowa, 2011-2020

	2011	2012	2013	2014	2015	2016	2017	2018	2019 <sup>1/</sup>	2020
<b>Corn Following Corn</b>										
Machinery	\$152.73	\$147.37	\$147.37	\$155.29	\$144.99	\$129.92	\$119.83	\$132.80	\$134.38	\$128.46
Seed, chemicals, etc.	341.92	376.81	372.43	340.27	357.80	330.55	287.19	279.81	313.70	299.79
Labor	33.06	33.35	34.91	37.05	37.05	37.05	36.40	39.20	39.90	41.30
Land	215.00	258.00	276.00	287.00	273.00	266.00	230.00	219.00	223.00	219.00
Total cost per acre	742.70	815.53	830.70	819.61	812.83	763.52	673.41	670.80	710.98	688.54
Assumed yield	165 bu.	165 bu.	165 bu.	165 bu.	165 bu.	165 bu.	165 bu.	165 bu.	182 bu.	182 bu.
Total cost per bushel	\$4.50	\$4.94	\$5.03	\$4.97	\$4.93	\$4.63	\$4.08	\$4.07	\$3.91	\$3.78
<b>Corn Following Soybean</b>										
Machinery	\$151.54	\$144.22	\$144.22	\$152.28	\$142.18	\$126.74	\$116.56	\$130.47	\$132.22	\$126.10
Seed, chemicals, etc.	300.13	329.14	324.61	298.80	311.84	292.47	251.48	241.86	279.96	259.59
Labor	30.16	30.42	31.85	33.80	33.80	33.80	33.15	35.70	36.34	37.61
Land	215.00	258.00	276.00	287.00	273.00	266.00	230.00	219.00	223.00	219.00
Total cost per acre	696.83	761.78	776.68	771.88	760.81	719.01	631.18	627.03	671.51	642.30
Assumed yield	180 bu.	180 bu.	180 bu.	180 bu.	180 bu.	180 bu.	180 bu.	180 bu.	198 bu.	199 bu.
Total cost per bushel	\$3.87	\$4.23	\$4.31	\$4.29	\$4.23	\$3.99	\$3.51	\$3.48	\$3.39	\$3.23
<b>Soybean Following Corn <sup>2/</sup></b>										
Machinery	\$72.70	\$80.70	\$80.70	\$84.70	\$79.17	\$75.43	\$67.40	\$68.67	\$68.43	\$68.11
Seed, chemicals, etc.	156.52	180.89	163.44	155.65	166.38	162.63	157.11	154.41	183.61	168.52
Labor	28.42	26.33	27.56	29.25	29.25	29.25	28.60	30.80	31.35	32.45
Land	215.00	258.00	276.00	287.00	273.00	266.00	230.00	219.00	223.00	219.00
Total cost per acre	472.64	545.91	547.71	556.60	547.80	533.30	483.11	472.89	506.38	488.09
Assumed yield	50 bu.	50 bu.	50 bu.	50 bu.	50 bu.	50 bu.	50 bu.	50 bu.	56 bu.	56 bu.
Total cost per bushel	\$9.45	\$10.92	\$10.95	\$11.13	\$10.96	\$10.67	\$9.66	\$9.46	\$9.04	\$8.72
<b>Alfalfa Hay, annual production, 6 ton per acre, large round bales</b>										
One-third of est. costs	\$52.75	\$52.48	\$54.25	\$58.17	\$60.62	\$57.93	\$60.03	\$51.43	\$48.50	\$49.65
Annual fertilizer	199.82	227.92	200.94	164.14	166.88	148.21	109.05	121.48	135.37	129.37
Harvest machinery	159.60	174.50	174.50	179.60	167.60	159.20	140.80	144.40	141.60	141.20
Labor	61.87	62.40	65.33	69.33	69.33	69.33	69.33	74.67	76.00	78.67
Land	124.00	150.00	161.00	167.00	167.00	170.00	165.00	157.00	157.00	160.00
Total cost per acre	598.04	667.30	656.02	638.24	631.43	604.67	544.22	548.97	558.47	558.89
Assumed yield	6 ton	6 ton	6 ton	6 ton	6 ton	6 ton	6 ton	6 ton	6 ton	6 ton
Total cost per ton	\$99.67	\$111.22	\$109.34	\$106.37	\$105.24	\$100.78	\$90.70	\$91.49	\$93.08	\$93.15

<sup>1/</sup> Starting in 2019, reference yields for corn and soybean budgets reflect 30-year trend yields.

<sup>2/</sup> Soybean estimates are for herbicide tolerant varieties.

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