

# Organic Alfalfa Management Guide

Spreadsheet for Dryland Organic Alfalfa Production



Photo by Rob Mikkelsen



Kathleen Painter, PhD  
Analyst, Center for Sustaining Ag and Natural Resources  
Affiliate, School of Economic Sciences  
207A Hulbert Hall  
Pullman WA 99164-6210  
(509) 335-5807  
kpainter@wsu.edu



## Table of Contents

[Table 1. Summary of Returns for Dryland Organic Alfalfa Production \(\\$/acre/yr\)](#)

[Table 2. Input Costs](#)

[Table 3. Schedule of Operations for Establishing Dryland Organic Alfalfa, <15" Annual Rainfall](#)

[Table 4. Production Costs for Establishing Dryland Organic Alfalfa, <15" Annual Rainfall](#)

[Table 5. Schedule of Operations for Establishing Dryland Organic Alfalfa, <15" Annual Rainfall](#)

[Table 6. Production Costs for Establishing Dryland Organic Alfalfa, >15" Annual Rainfall](#)

[Table 7. Schedule of Operations for Producing Organic Dryland Alfalfa, 1 Cutting](#)

[Table 8. Production Costs for Dryland Organic Alfalfa Production, 1 cutting](#)

[Table 9. Schedule of Operations for Producing Dryland Organic Alfalfa, >15" Annual Rainfall \(2 cuttings\)](#)

[Table 10. Production Costs for Dryland Organic Alfalfa Production, > 15" Annual Rainfall \(2 cuttings\)](#)

[Table 11. Per Acre Machinery Costs by Type](#)

[Table 12. Per Acre Machinery Costs for Establishing Dryland Organic Alfalfa, <15" Annual Rainfall \(1 cutting\)](#)

[Table 13. Per Acre Machinery Costs for Establishing Dryland Organic Alfalfa, >15" Annual Rainfall \(1 cutting\)](#)

[Table 14. Per Acre Machinery Costs for Producing Dryland Organic Alfalfa, <15" Annual Rainfall \(1 cutting\)](#)

[Table 15. Per Acre Machinery Costs for Producing Dryland Organic Alfalfa, >15" Annual Rainfall \(2 cuttings\)](#)

[Table 16. Machinery Complement for Dryland Organic Alfalfa Production](#)

**Table 1. Summary of Returns for Dryland Organic Alfalfa Production (\$/acre/yr)**

	Total Cost (TC) of Operation (\$/acre)	Unit	Yield per acre (units/ac)	Price per unit (\$/unit)	Revenue per acre (\$/acre)	Returns over TC (\$/acre)	Total Operating Costs (OC) (\$/acre)	Returns over OC (\$/acre)
<b>Under 15" rainfall:</b>								
<a href="#">Alfalfa Establishment</a>	\$231	ton	1.5	\$200.00	300	\$69	\$131	\$169
<a href="#">Production, 1 cutting</a>	\$88	ton	2.5	\$200.00	500	\$412	\$0	\$500
Length of stand (yrs)	10							
<b>15" or more rainfall:</b>								
<a href="#">Alfalfa Establishment</a>	\$253	ton	2.5	\$200.00	500	\$247	\$134	\$366
<a href="#">Production, 2 cuttings</a>	\$401	ton	3.5	\$200.00	700	\$299	\$287	\$413
Length of stand (yrs)	5							

NOTES: Production costs include an amortized payment each year if losses are incurred during establishment.  
 Areas with less than 15" annual rainfall are assumed to need re-seeding 1 year in 5 and to have 1 cutting per year.  
 Areas with 15" or more annual rainfall are assumed to require re-seeding 1 year in 10 and to have 2 cuttings per year.

**ASSUMPTIONS:**

1. Land values are assumed to be \$1500 per acre for land with < 15" precipitation per year and \$2000 per acre for land 15" or more precipitation per year.  
 Annual land rent is assumed to be 4% of the market value of the land per year, representing an appropriate return on investment.  
 Land value can be changed in the Input Costs tab.
2. The interest rate on machinery and operating costs is assumed to be 7%.
3. All labor costs are estimated at \$20.00/hour. This value can be changed in the Input Costs tab.
4. Machinery replacement schedule as well as other machinery assumptions are listed in the Machinery Complement and Machinery Costs tabs.
5. For the purpose of machinery use calculations, farm size is assumed to be 1500 acres.
6. Click on the links above to view input cost and machinery complement assumptions.

**Table 2. Input Costs**

<b>Fuel:</b>	<b>Unit</b>	<b>Price/unit</b>
Diesel	gal	\$2.50
Gas	gal	\$1.75
<b>Seed:</b>		
Alfalfa Seed	lb	\$3.00
<b>Fertilizer:</b>		
Manure (hauled & spread)	ton	\$25.00
<b>Labor:</b>		
Hourly machine labor*	hour	\$20.00
<b>Other:</b>		
Soil test	acre	\$0.30
Twine	ton	\$2.00
Tarping	ton	\$4.00
Stacking	ton	\$9.00
Gopher control	acre	\$2.00
Crop insurance	ton	\$2.00
Land tax	acre	\$5.50
Land value, <15" precipitation	acre	\$1,500.00
Land value, >=15" precipitation	acre	\$2,000.00

\*Includes all applicable state and federal taxes.

**Table 3. Schedule of Operations for Establishing Dryland Organic Alfalfa, <15" Annual Rainfall**

Month	Operation	Tooling
November	Chisel	300HP-WT, 23' Chisel Plow
April	Soil test	
April	Apply Manure	Custom spreading
April	Disc	300HP-WT, 35' Tandem Disc
April	Harrow	300HP-WT, 53' Rotary Harrow
April	Pack	300HP-WT, 40' Packer
April	Drill	300HP-WT, 30' Disc Drill
June	Mow Weeds	300HP-WT, 20' Flail Shredder
July	Swath Forage	18' Swather
July	Bale Forage	300HP-WT, 1500-lb Round Baler
July	Pick up & stack bales	300HP-WT, Bale Spear
August	Mow Weeds	300HP-WT, 20' Flail Shredder
September	Mow Weeds	300HP-WT, 20' Flail Shredder

**Table 4. Production Costs for Establishing Dryland Organic Alfalfa, <15" Annual Rainfall**

Item	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre
<b>Gross Returns</b>				
Alfalfa	1.5	ton	\$200.00	\$300.00
<b>Operating Inputs</b>				
Seed:				\$43.20
Alfalfa Seed	12	lb	\$3.00	\$36.00
Alfalfa Seed for re-seeding (assume 20% of the time)	2.4	lb	\$3.00	\$7.20
Fertilizer:				\$0.00
Manure or organic fertilizer		ton	\$25.00	\$0.00
				\$0.00
Pesticides:				\$0.00
				\$0.00
Custom & Consultants:				\$0.30
Soil Test	1	acre	\$0.30	\$0.30
Machinery Costs:				
Fuel	9.27	gal	\$2.50	\$23.16
Lubricants	1	acre	\$4.89	\$4.89
Machinery Repairs	1	acre	\$11.12	\$11.12
Machinery Labor	1.48	acre	\$20.00	\$29.51
Other:				\$11.00
Twine	1.5	ton	\$2.00	\$3.00
Crop insurance	1.5	ton	\$2.00	\$3.00
Gopher control	1	acre	\$2.00	\$2.00
Tarping	1.5	ton	\$4.00	\$6.00
Storage Facility & Equip. Repairs				\$0.00
Other Labor				\$0.00
Overhead <sup>1</sup>				\$2.73
Operating Interest <sup>2</sup>				\$1.91
<b>Total Operating Costs</b>				<b>\$130.82</b>
Operating Costs per Unit				\$87.21
<b>Net Returns Above Operating Expenses</b>				<b>\$169.18</b>

**Table 4. Production Costs for Establishing Dryland Organic Alfalfa, <15" Annual Rainfall**

<b>Ownership Costs:</b>				
Machinery depreciation				\$18.92
Machinery interest				\$12.53
Machinery insurance, taxes housing, licenses				\$3.18
Land Cost	0.04	percent	\$1,500.00	\$60.00
Land Taxes	1	acre	\$5.50	\$5.50
<b>Total Ownership Costs</b>				<b>\$100.13</b>
Ownership Costs per Unit				\$66.75
<b>Total Costs per Acre</b>				<b>\$230.94</b>
Total Cost per Unit				\$153.96
<b>Returns to Risk</b>				<b>\$69.06</b>

<sup>1</sup>Covers legal, accounting, and utility fees. Calculated as 5% of operating expenses.

<sup>2</sup>Calculated at 7% interest on operating capital for 6 months.

<b>Breakeven Analysis:</b>	-	Base	+
	10%		10%
	<u>Yield</u>		
<u>Price</u>	1.35	1.5	1.575
Operating Cost Breakeven	\$96.90	\$87.21	\$83.06
Ownership Cost Breakeven	\$74.17	\$66.75	\$63.57
Total Cost Breakeven	\$171.07	\$153.96	\$146.63
	<u>Price</u>		
<u>Yield</u>	\$180.00	\$200.00	\$220.00
Operating Cost Breakeven	0.7	0.7	0.6
Ownership Cost Breakeven	0.6	0.5	0.5
Total Cost Breakeven	1.3	1.2	1.0

**Table 5. Schedule of Operations for Establishing Dryland Organic Alfalfa, >15" Annual Rainfall**

Month	Operation	Tooling
November	Chisel	300HP-WT, 23' Chisel Plow
April	Soil test	
April	Apply Manure	Custom spreading
April	Disc	300HP-WT, 35' Tandem Disc
April	Harrow	300HP-WT, 53' Rotary Harrow
April	Pack	300HP-WT, 40' Packer
April	Drill	300HP-WT, 30' Disc Drill
June	Mow Weeds	300HP-WT, 20' Flail Shredder
July	Swath Forage	18' Swather
July	Bale Forage	300HP-WT, 1500-lb Round Baler
July	Pick up & stack bales	300HP-WT, Bale Spear
August	Swath Forage	18' Swather
August	Bale Forage	300HP-WT, 1500-lb Round Baler
August	Pick up & stack bales	300HP-WT, Bale Spear
September	Mow Weeds	300HP-WT, 20' Flail Shredder



**Table 6. Production Costs for Establishing Dryland Organic Alfalfa, >15" Annual Rainfall**

Item	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre
<b>Gross Returns</b>				
Alfalfa	2.5	ton	\$200.00	\$500.00
<b>Operating Inputs</b>				
Seed:				\$39.60
Alfalfa Seed	12	lb	\$3.00	\$36.00
Alfalfa Seed for re-seeding (assume 10% of the time)	1.2	lb	\$3.00	\$3.60
Fertilizer:				\$0.00
Manure or organic fertilizer		ton	\$25.00	\$0.00
				\$0.00
				\$0.00
Pesticides:				\$0.00
				\$0.00
				\$0.00
Custom & Consultants:				\$0.30
Soil Test	1	acre	\$0.30	\$0.30
Machinery Costs:				
Fuel	9.05	gal	\$2.50	\$22.63
Lubricants	1	acre	\$4.78	\$4.78
Machinery Repairs	1	acre	\$10.82	\$10.82
Machinery Labor	1.45	acre	\$20.00	\$28.99
Other:				\$17.00
Twine	2.5	ton	\$2.00	\$5.00
Crop insurance	2.5	ton	\$2.00	\$5.00
Gopher control	1	acre	\$2.00	\$2.00
Tarping	2.5	acre	\$4.00	\$10.00
Storage Facility & Equip. Repairs				\$0.00
Other Labor				\$0.00
Overhead <sup>1</sup>				\$2.85
Operating Interest <sup>2</sup>				\$1.99
<b>Total Operating Costs</b>				<b>\$133.95</b>
Operating Costs per Unit				\$53.58
<b>Net Returns Above Operating Expenses</b>				<b>\$366.05</b>

**Table 6. Production Costs for Establishing Dryland Organic Alfalfa, >15" Annual Rainfall**

Item	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre
<b>Ownership Costs:</b>				
Machinery depreciation				\$18.42
Machinery interest				\$12.21
Machinery insurance, taxes housing, licenses				\$3.12
Land Cost	0.04	percent	\$2,000.00	\$80.00
Land Taxes	1	acre	\$5.50	\$5.50
<b>Total Ownership Costs</b>				<b>\$119.25</b>
Ownership Costs per Unit				\$47.70
<b>Total Costs per Acre</b>				<b>\$253.20</b>
Total Cost per Unit				\$101.28
<b>Returns to Risk</b>				<b>\$246.80</b>

<sup>1</sup>Covers legal, accounting, and utility fees. Calculated as 5% of operating expenses.

<sup>2</sup>Calculated at 7% interest on operating capital for 6 months.

<b>Breakeven Analysis:</b>	-	Base	+
	10%		10%
	Yield		
Price	2.25	2.5	2.625
Operating Cost Breakeven	\$59.53	\$53.58	\$51.03
Ownership Cost Breakeven	\$53.00	\$47.70	\$45.43
Total Cost Breakeven	\$112.53	\$101.28	\$96.46
	Price		
Yield	\$180.00	\$200.00	\$220.00
Operating Cost Breakeven	0.7	0.7	0.6
Ownership Cost Breakeven	0.7	0.6	0.5
Total Cost Breakeven	1.4	1.3	1.2

**Table 7. Schedule of Operations for Producing Organic Dryland Alfalfa, 1 Cutting**

Month	Operation	Tooling
March	Harrow 2X	300HP-WT, 53' Rotary Harrow, 2 perpendicular passes
July	Swath Forage	18' Swather
July	Rake Forage	300HP-WT, Side Delivery Rake
July	Bale Forage	300HP-WT, 1500 Round Baler
July	Haul & Stack Bales	300HP-WT, Bale Spear
July	Mow Weeds	300HP-WT, 20' Flail Shredder
September	Mow Weeds	300HP-WT, 20' Flail Shredder
September	Soil test	
September	Topdress with manure or organic fertilizer if necessary.	

**Table 8. Production Costs for Dryland Organic Alfalfa Production, <15" Annual Rainfall (1 cutting)**

Item	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre
<b>Gross Returns</b>				
Alfalfa	2.5	ton	\$200.00	\$500.00
<b>Operating Inputs</b>				
Seed:				\$0.00
Alfalfa Seed	0	lb	\$3.00	\$0.00
Fertilizer:				\$78.13
Manure or organic fertilizer	3.125	ton	\$25.00	\$78.13
				\$0.00
				\$0.00
Pesticides:				\$0.00
				\$0.00
				\$0.00
Custom & Consultants:				\$0.30
Soil Test	1	acre	\$0.30	\$0.30
Machinery Costs:				
Fuel	6.04	gal	\$2.50	\$15.10
Lubricants	1	acre	\$3.20	\$3.20
Machinery Repairs	1	acre	\$6.62	\$6.62
Machinery Labor	1.09	acre	\$20.00	\$21.84
Other:				\$17.00
Twine	2.5	ton	\$2.00	\$5.00
Crop insurance	2.5	ton	\$2.00	\$5.00
Gopher control	1	acre	\$2.00	\$2.00
Tarping	2.5	acre	\$4.00	\$10.00
Storage Facility & Equip. Repairs				\$0.00
Other Labor				\$0.00
Overhead <sup>1</sup>				\$4.77
Operating Interest <sup>2</sup>				\$3.34
<b>Total Operating Costs</b>				<b>\$155.29</b>
Operating Costs per Unit				\$62.12
<b>Net Returns Above Operating Expenses</b>				<b>\$344.71</b>

**Table 8. Production Costs for Dryland Organic Alfalfa Production, <15" Annual Rainfall (1 cutting)**

<b>Ownership Costs:</b>				
Machinery depreciation				\$12.07
Machinery interest				\$8.07
Machinery insurance, taxes housing, licenses				\$2.26
Amortized Establishment Cost				\$0.00
Land Cost	0.04	percent	\$1,500.00	\$60.00
Land Taxes	1	acre	\$5.50	\$5.50
<b>Total Ownership Costs</b>				<b>\$87.90</b>
Ownership Costs per Unit				\$35.16
<b>Total Costs per Acre</b>				<b>\$243.19</b>
Total Cost per Unit				\$97.28
<b>Returns to Risk</b>				<b>\$256.81</b>

<sup>1</sup>Covers legal, accounting, and utility fees. Calculated as 5% of operating expenses.

<sup>2</sup>Calculated at 7% interest on operating capital for 6 months.

<b>Breakeven Analysis:</b>			
	-	Base	+
	10%	Yield	10%
<u>Price</u>	2.25	2.5	2.625
Operating Cost Breakeven	\$69.02	\$62.12	\$59.16
Ownership Cost Breakeven	\$39.07	\$35.16	\$33.49
Total Cost Breakeven	\$108.09	\$97.28	\$92.64
	-	Base	+
	10%	Price	10%
<u>Yield</u>	\$180.00	\$200.00	\$220.00
Operating Cost Breakeven	0.9	0.8	0.7
Ownership Cost Breakeven	0.5	0.4	0.4
Total Cost Breakeven	1.4	1.2	1.1

**Table 9. Schedule of Operations for Producing Dryland Organic Alfalfa, 2 cuttings**

Month	Operation	Tooling
March	Harrow 2X	300HP-WT, 53' Rotary Harrow, 2 perpendicular passes
June	Swath Forage	18' Swather
June	Rake Forage	300HP-WT, Side Delivery Rake
June	Bale Forage	300HP-WT, 1500-lb Round Baler
June	Haul & Stack Bales	300HP-WT, Bale Spear
August	Swath Forage	18' Swather
August	Rake Forage	300HP-WT, Side Delivery Rake
August	Bale Forage	300HP-WT, 1500-lb Round Baler
August	Haul & Stack Bales	300HP-WT, Bale Spear
September	Mow Weeds	300HP-WT, 20' Flail Shredder
September	Soil test	
September	Top-dress with manure or organic fertilizer if necessary.	

**Table 10. Production Costs for Dryland Organic Alfalfa Production, > 15" Annual Rainfall (2 cuttings)**

Item	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre
<b>Gross Returns</b>				
Forage	3.5	ton	\$200.00	\$700.00
<b>Operating Inputs</b>				
Seed:				\$0.00
Alfalfa Seed	0	lb	\$3.00	\$0.00
Fertilizer:				\$0.00
Topdress manure or organic fertilizer if necessary	4.375	acre	\$25.00	\$109.38
				\$0.00
				\$0.00
Pesticides:				\$0.00
				\$0.00
				\$0.00
Custom & Consultants:				\$0.30
Soil Test	1	acre	\$0.30	\$0.30
Machinery Costs:				\$70.71
Fuel	9.49	gal	\$2.50	\$23.74
Lubricants	1	acre	\$5.02	\$5.02
Machinery Repairs	1	acre	\$10.28	\$10.28
Machinery Labor	1.58	acre	\$20.00	\$31.68
Other:				\$23.00
Twine	3.5	ton	\$2.00	\$7.00
Crop insurance	3.5	ton	\$2.00	\$7.00
Gopher control	1	acre	\$2.00	\$2.00
Tarping	3.5	acre	\$4.00	\$14.00
Storage Facility & Equip. Repairs				\$0.00
Other Labor				\$0.00
Overhead <sup>1</sup>				\$4.70
Operating Interest <sup>2</sup>				\$0.82
<b>Total Operating Costs</b>				<b>\$286.62</b>
Operating Costs per Unit				\$81.89
<b>Net Returns Above Operating Expenses</b>				<b>\$413.38</b>

**Table 10. Production Costs for Dryland Organic Alfalfa Production, > 15" Annual Rainfall (2 cuttings)**

<b>Ownership Costs</b>				
Machinery depreciation				\$18.63
Machinery interest				\$12.28
Machinery insurance, taxes housing, licence				\$3.39
Amortized Establishment Cost				\$0.00
Land Cost	0.04	percent	\$2,000.00	\$80.00
Land Taxes	1	acre	\$5.50	\$5.50
<b>Total Ownership Costs</b>				<b>\$114.30</b>
Ownership Costs per Unit				\$32.66
<b>Total Costs per Acre</b>				<b>\$400.92</b>
Total Cost per Unit				\$114.55
<b>Returns to Risk</b>				<b>\$299.08</b>

<sup>1</sup>Covers legal, accounting, and utility fees. Calculated as 5% of operating expenses.

<sup>2</sup>Calculated at 7% interest on operating capital for 6 months.

<b>Breakeven Analysis:</b>	-	Base	+
	10%		10%
		Yield	
<u>Price</u>	3.15	3.5	3.675
Operating Cost Breakeven	\$90.99	\$81.89	\$77.99
Ownership Cost Breakeven	\$36.29	\$32.66	\$31.10
Total Cost Breakeven	\$127.27	\$114.55	\$109.09
		Price	
<u>Yield</u>	\$180.00	\$200.00	\$220.00
Operating Cost Breakeven	1.6	1.4	1.3
Ownership Cost Breakeven	0.6	0.6	0.5
Total Cost Breakeven	2.2	2.0	1.8



**Table 11. Per Acre Machinery Costs by Type**

Machine/ Type of Operation	Depreciation (\$/acre)	Interest (\$/acre)	THI&L <sup>1</sup> (\$/acre)	Total					Total		Labor (\$/acre)	Labor (hr/acre)	Total Costs (\$/acre)
				Fixed Costs (\$/acre)	Repairs (\$/acre)	Fuel (\$/acre)	Fuel (gal/acre)	Lube (\$/acre)	Variable Costs (\$/acre)				
23' Chisel, 300HP-CH	1.40	1.03	0.13	2.56	0.82	2.53	0.72	0.38	3.73	1.86	0.09	8.15	
35' Tandem Disk, 300HP-CH	1.77	1.00	0.12	2.89	0.89	1.69	0.48	0.25	2.83	1.38	0.07	7.10	
53' Rotary Harrow, 300HP-CH	0.92	0.65	0.08	1.65	0.35	1.24	0.35	0.19	1.78	1.01	0.05	4.44	
Side Delivery Rake, 300HP-CH	1.11	0.81	0.12	2.04	0.57	2.32	0.66	0.35	3.24	1.89	0.09	7.17	
40' Packer, 300HP-CH	0.51	0.42	0.06	0.99	0.23	1.58	0.45	0.24	2.05	0.97	0.05	4.01	
30' Disk Drill, 300HP-CH	1.76	1.14	0.36	3.26	1.58	2.98	0.85	0.45	5.01	1.83	0.09	10.10	
20' Flail Shredder, 300HP-CH	1.33	0.88	0.21	2.42	0.72	2.25	0.64	0.34	3.31	1.60	0.08	7.33	
18' Swather	2.48	1.27	0.58	4.33	1.15	1.65	0.47	0.25	3.05	2.75	0.14	10.13	
1500-lb Round Baler, 300HP-CH	1.43	0.89	0.22	2.54	1.19	2.21	0.63	0.33	3.73	1.24	0.06	7.51	
Bale Spear, 300HP-WT	1.54	1.24	0.21	2.99	0.75	5.91	1.69	0.89	7.55	3.96	0.20	14.50	
0.75-Ton 4WD Pickup	0.73	0.52	0.50	1.74	0.75	1.50	0.43	0.23	2.48	4.80	0.24	9.02	
4WD-ATV	0.09	0.06	0.01	0.16	0.02	0.14	0.04	0.02	0.19	0.88	0.04	1.23	
50HP-WT with bucket	0.19	0.22	0.04	0.44	0.05	0.43	0.12	0.06	0.54	1.10	0.06	2.09	

<sup>1</sup>Taxes, housing, insurance, and licensing

**Table 12. Per Acre Machinery Costs for Establishing Dryland Organic Alfalfa, <15" Annual Rainfall (1 cutting)**

Type of Machine	Depreciation (\$/acre)	Interest (\$/acre)	THI&L <sup>1</sup> (\$/acre)	Total					Total Variable			Total Costs (\$/acre)
				Fixed Costs (\$/acre)	Repairs (\$/acre)	Fuel (\$/acre)	Fuel (gal/acre)	Lube (\$/acre)	Costs (\$/acre)	Labor (\$/acre)	Labor (hr/acre)	
23' Chisel, 300HP-CH	1.40	1.03	0.13	2.56	0.82	2.53	0.72	0.38	3.73	1.86	0.09	8.15
35' Tandem Disk, 300HP-CH	1.77	1.00	0.12	2.89	0.89	1.69	0.48	0.25	3.31	1.38	0.07	7.58
53' Rotary Harrow, 300HP-CH	0.92	0.65	0.08	1.65	0.35	1.24	0.35	0.19	1.78	1.01	0.05	4.44
30' Disk Drill, 300HP-CH	1.76	1.14	0.36	3.26	1.58	2.98	0.85	0.45	5.86	1.83	0.09	10.95
40' Packer, 300HP-CH	0.51	0.42	0.06	0.99	0.23	1.58	0.45	0.24	2.50	0.97	0.05	4.46
<i>For re-seeding (20% of the time):</i>												
35' Tandem Disk, 300HP-CH	0.35	0.20	0.02	0.58	0.18	0.34	0.10	0.05	0.66	0.28	0.01	1.52
53' Rotary Harrow, 300HP-CH	0.18	0.13	0.02	0.33	0.07	0.25	0.07	0.04	0.36	0.20	0.01	0.89
30' Disk Drill, 300HP-CH	0.35	0.23	0.07	0.65	0.32	0.60	0.17	0.09	1.17	0.37	0.02	2.19
40' Packer, 300HP-CH	0.10	0.08	0.01	0.20	0.05	0.32	0.09	0.05	0.50	0.19	0.01	0.89
20' Flail Shredder, 300HP-CH	1.33	0.88	0.21	2.42	0.72	2.25	0.64	0.34	3.31	1.60	0.08	7.33
18' Swather	2.48	1.27	0.58	4.33	1.15	1.65	0.47	0.25	3.05	2.75	0.14	10.13
Side Delivery Rake, 300HP-CH	1.11	0.81	0.12	2.04	0.57	2.32	0.66	0.35	3.24	1.89	0.09	7.17
1500-lb Round Baler, 300HP-CH	1.43	0.89	0.22	2.54	1.19	2.21	0.63	0.33	3.73	1.24	0.06	7.51
Bale Spear, 300HP-WT	1.54	1.24	0.21	2.99	0.75	5.91	1.69	0.89	7.55	3.96	0.20	14.50
20' Flail Shredder, 300HP-CH	1.33	0.88	0.21	2.42	0.72	2.25	0.64	0.34	3.31	1.60	0.08	7.33
20' Flail Shredder, 300HP-CH	1.33	0.88	0.21	2.42	0.72	2.25	0.64	0.34	3.31	1.60	0.08	7.33
0.75-Ton 4WD Pickup	0.73	0.52	0.50	1.74	0.75	1.50	0.43	0.23	2.48	4.80	0.24	9.02
4WD-ATV	0.09	0.06	0.01	0.16	0.02	0.14	0.04	0.02	0.19	0.88	0.04	1.23
50HP-WT with bucket	0.19	0.22	0.04	0.44	0.05	0.43	0.12	0.06	0.54	1.10	0.06	2.09
<b>Total</b>	<b>18.92</b>	<b>12.53</b>	<b>3.18</b>	<b>34.62</b>	<b>11.12</b>	<b>32.43</b>	<b>9.27</b>	<b>4.89</b>	<b>50.58</b>	<b>29.51</b>	<b>1.48</b>	<b>114.71</b>

<sup>1</sup>Taxes, housing, insurance, and licensing

**Table 13. Per Acre Machinery Costs for Establishing Dryland Organic Alfalfa, >15" Annual Rainfall (1 cutting)**

Type of Machine	Depreciation (\$/acre)	Interest (\$/acre)	THI&L <sup>1</sup> (\$/acre)	Total					Total Variable			Total Costs (\$/acre)
				Fixed Costs (\$/acre)	Repairs (\$/acre)	Fuel (\$/acre)	Fuel (gal/acre)	Lube (\$/acre)	Costs (\$/acre)	Labor (\$/acre)	Labor (hr/acre)	
23' Chisel, 300HP-CH	1.40	1.03	0.13	2.56	0.82	2.53	0.72	0.38	3.73	1.86	0.09	8.15
35' Tandem Disk, 300HP-CH	1.77	1.00	0.12	2.89	0.89	1.69	0.48	0.25	3.31	1.38	0.07	7.58
53' Rotary Harrow, 300HP-CH	0.92	0.65	0.08	1.65	0.35	1.24	0.35	0.19	1.78	1.01	0.05	4.44
30' Disk Drill, 300HP-CH	1.76	1.14	0.36	3.26	1.58	2.98	0.85	0.45	5.86	1.83	0.09	10.95
40' Packer, 300HP-CH	0.51	0.42	0.06	0.99	0.23	1.58	0.45	0.24	2.50	0.97	0.05	4.46
<i>For re-seeding (10% of the time):</i>												
35' Tandem Disk, 300HP-CH	0.18	0.10	0.01	0.29	0.09	0.17	0.05	0.03	0.33	0.14	0.01	0.76
53' Rotary Harrow, 300HP-CH	0.09	0.07	0.01	0.17	0.04	0.12	0.04	0.02	0.18	0.10	0.01	0.44
30' Disk Drill, 300HP-CH	0.18	0.11	0.04	0.33	0.16	0.30	0.09	0.05	0.59	0.18	0.01	1.10
40' Packer, 300HP-CH	0.05	0.04	0.01	0.10	0.02	0.16	0.05	0.02	0.25	0.10	0.00	0.45
20' Flail Shredder, 300HP-CH	1.33	0.88	0.21	2.42	0.72	2.25	0.64	0.34	3.31	1.60	0.08	7.33
18' Swather	2.48	1.27	0.58	4.33	1.15	1.65	0.47	0.25	3.05	2.75	0.14	10.13
Side Delivery Rake, 300HP-CH	1.11	0.81	0.12	2.04	0.57	2.32	0.66	0.35	3.24	1.89	0.09	7.17
1500-lb Round Baler, 300HP-CH	1.43	0.89	0.22	2.54	1.19	2.21	0.63	0.33	3.73	1.24	0.06	7.51
Bale Spear, 300HP-WT	1.54	1.24	0.21	2.99	0.75	5.91	1.69	0.89	7.55	3.96	0.20	14.50
20' Flail Shredder, 300HP-CH	1.33	0.88	0.21	2.42	0.72	2.25	0.64	0.34	3.31	1.60	0.08	7.33
20' Flail Shredder, 300HP-CH	1.33	0.88	0.21	2.42	0.72	2.25	0.64	0.34	3.31	1.60	0.08	7.33
0.75-Ton 4WD Pickup	0.73	0.52	0.50	1.74	0.75	1.50	0.43	0.23	2.48	4.80	0.24	9.02
4WD-ATV	0.09	0.06	0.01	0.16	0.02	0.14	0.04	0.02	0.19	0.88	0.04	1.23
50HP-WT with bucket	0.19	0.22	0.04	0.44	0.05	0.43	0.12	0.06	0.54	1.10	0.06	2.09
<b>Total</b>	<b>18.42</b>	<b>12.21</b>	<b>3.12</b>	<b>33.74</b>	<b>10.82</b>	<b>31.68</b>	<b>9.05</b>	<b>4.78</b>	<b>49.24</b>	<b>28.99</b>	<b>1.45</b>	<b>111.97</b>

<sup>1</sup>Taxes, housing, insurance, and licensing

**Table 14. Per Acre Machinery Costs for Producing Dryland Organic Alfalfa, <15" Annual Rainfall (1 cutting)**

Type of Machine	Depreciation (\$/acre)	Interest (\$/acre)	THI&L <sup>1</sup> (\$/acre)	Total					Total Variable			Total Costs (\$/acre)
				Fixed Costs (\$/acre)	Repairs (\$/acre)	Fuel (\$/acre)	Fuel (gal/acre)	Lube (\$/acre)	Costs (\$/acre)	Labor (\$/acre)	Labor (hr/acre)	
53' Rotary Harrow, 300HP-CH	0.92	0.65	0.08	1.65	0.35	1.24	0.35	0.19	1.78	1.01	0.05	4.44
53' Rotary Harrow, 300HP-CH	0.92	0.65	0.08	1.65	0.35	1.24	0.35	0.19	1.78	1.01	0.05	4.44
18' Swather	2.48	1.27	0.58	4.33	1.15	1.65	0.47	0.25	3.05	2.75	0.14	10.13
Side Delivery Rake, 300HP-CH	1.11	0.81	0.12	2.04	0.57	2.32	0.66	0.35	3.24	1.89	0.09	7.17
1500-lb Round Baler, 300HP-CH	1.43	0.89	0.22	2.54	1.19	2.21	0.63	0.33	3.73	1.24	0.06	7.51
Bale Spear, 300HP-WT	1.54	1.24	0.21	2.99	0.75	5.91	1.69	0.89	7.55	3.96	0.20	14.50
20' Flail Shredder, 300HP-CH	1.33	0.88	0.21	2.42	0.72	2.25	0.64	0.34	3.31	1.60	0.08	7.33
20' Flail Shredder, 300HP-CH	1.33	0.88	0.21	2.42	0.72	2.25	0.64	0.34	3.31	1.60	0.08	7.33
0.75-Ton 4WD Pickup	0.73	0.52	0.50	1.74	0.75	1.50	0.43	0.23	2.48	4.80	0.24	9.02
4WD-ATV	0.09	0.06	0.01	0.16	0.02	0.14	0.04	0.02	0.19	0.88	0.04	1.23
50HP-WT with bucket	0.19	0.22	0.04	0.44	0.05	0.43	0.12	0.06	0.54	1.10	0.06	2.09
<b>Total</b>	<b>12.07</b>	<b>8.07</b>	<b>2.26</b>	<b>22.39</b>	<b>6.62</b>	<b>21.14</b>	<b>6.04</b>	<b>3.20</b>	<b>30.96</b>	<b>21.84</b>	<b>1.09</b>	<b>75.19</b>

<sup>1</sup>Taxes, housing, insurance, and licensing

**Table 15. Per Acre Machinery Costs for Producing Dryland Organic Alfalfa, >15" Annual Rainfall (2 cuttings)**

Type of Machine	Depreciation (\$/acre)	Interest (\$/acre)	THI&L <sup>1</sup> (\$/acre)	Total					Total Variable			Total Costs (\$/acre)
				Fixed Costs (\$/acre)	Repairs (\$/acre)	Fuel (\$/acre)	Fuel (gal/acre)	Lube (\$/acre)	Costs (\$/acre)	Labor (\$/acre)	Labor (hr/acre)	
53' Rotary Harrow, 300HP-CH	0.92	0.65	0.08	1.65	0.35	1.24	0.35	0.19	1.78	1.01	0.05	4.44
53' Rotary Harrow, 300HP-CH	0.92	0.65	0.08	1.65	0.35	1.24	0.35	0.19	1.78	1.01	0.05	4.44
18' Swather	2.48	1.27	0.58	4.33	1.15	1.65	0.47	0.25	3.05	2.75	0.14	10.13
Side Delivery Rake, 300HP-CH	1.11	0.81	0.12	2.04	0.57	2.32	0.66	0.35	3.24	1.89	0.09	7.17
1500-lb Round Baler, 300HP-CH	1.43	0.89	0.22	2.54	1.19	2.21	0.63	0.33	3.73	1.24	0.06	7.51
18' Swather	2.48	1.27	0.58	4.33	1.15	1.65	0.47	0.25	3.05	2.75	0.14	10.13
Bale spear, 300HP-WT	1.54	1.24	0.21	2.99	0.75	5.91	1.69	0.89	7.55	3.96	0.20	14.50
Side Delivery Rake, 300HP-CH	1.11	0.81	0.12	2.04	0.57	2.32	0.66	0.35	3.24	1.89	0.09	7.17
1500-lb Round Baler, 300HP-CH	1.43	0.89	0.22	2.54	1.19	2.21	0.63	0.33	3.73	1.24	0.06	7.51
Bale Spear, 300HP-WT	1.54	1.24	0.21	2.99	0.75	5.91	1.69	0.89	7.55	3.96	0.20	14.50
20' Flail Shredder, 300HP-CH	1.33	0.88	0.21	2.42	0.72	2.25	0.64	0.34	3.31	1.60	0.08	7.33
20' Flail Shredder, 300HP-CH	1.33	0.88	0.21	2.42	0.72	2.25	0.64	0.34	3.31	1.60	0.08	7.33
0.75-Ton 4WD Pickup	0.73	0.52	0.50	1.74	0.75	1.50	0.43	0.23	2.48	4.80	0.24	9.02
4WD-ATV	0.09	0.06	0.01	0.16	0.02	0.14	0.04	0.02	0.19	0.88	0.04	1.23
50HP-WT with bucket	0.19	0.22	0.04	0.44	0.05	0.43	0.12	0.06	0.54	1.10	0.06	2.09
<b>Total</b>	<b>18.63</b>	<b>12.28</b>	<b>3.39</b>	<b>34.29</b>	<b>10.28</b>	<b>33.23</b>	<b>9.49</b>	<b>5.02</b>	<b>48.53</b>	<b>31.68</b>	<b>1.58</b>	<b>114.50</b>

<sup>1</sup>Taxes, housing, insurance, and licensing

**Table 16. Machinery Complement for Dryland Organic Alfalfa Production**

Type of Machine	Current Value \$	Age When Purchased	Years of Life	Annual Hours of Use	Salvage Value \$	Annual Repairs (Materials & Labor) \$	Gallons of Fuel/Hr.	Labor Multiplier	Acres per Hour
50HP-WT with bucket	15,000	10	20	150	3,500	150	2.9	1.10	
300HP-Challenger	95,000	5	15	600	20,000	2,500	10.0	1.10	
23' Chisel	17,500	0	15	125	2,000	700	10.0	1.10	11.85
35' Tandem Disk	19,000	8	12	75	1,000	750	9.0	1.10	16.00
53' Rotary Harrow	19,500	0	15	100	2,000	350	10.0	1.10	20.00
50' Rotary Hoe	18,000	0	10	100	7,000	400	10.0	1.10	56.00
Side Delivery Rake	12,000	0	10	200	3,000	500	10.0	1.10	12.00
40' Packer	9,500	0	20	100	1,000	150	9.0	1.10	25.00
30' Disk Drill	35,000	0	12	170	5,000	2,800	12.0	1.20	13.00
20' Flail Shredder	14,000	0	10	150	2,500	670	10.0	1.10	12.00
18' Swather	66,500	0	10	250	12,500	2,500	4.8	1.10	8.73
1500-lb Round Baler	20,000	0	10	150	3,300	1,784	10.0	1.20	5.00
Bale Spear	600	0	20	150	-	-	-	1.20	5.55
3/4-Ton Pickup	22,000	0	10	400	7,500	1,500	12.0	1.20	
4WD-ATV	5,000	0	10	150	1,500	75	1.2	1.10	