

2016 North Idaho Forage & Grazing School: Economics of Grazing Cover Crops



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Worldwide glut of wheat is keeping prices low

Grain prices for wheat sold from Portland, OR, June - October, 2016

Crop	Price, \$/bu	Less trans. (rail)	Net Price, \$/bu
DNS, 14% protein, No. 1	\$5.99	\$1.27	\$4.72
Soft white winter wheat, No. 1	\$4.88	\$1.27	\$3.61

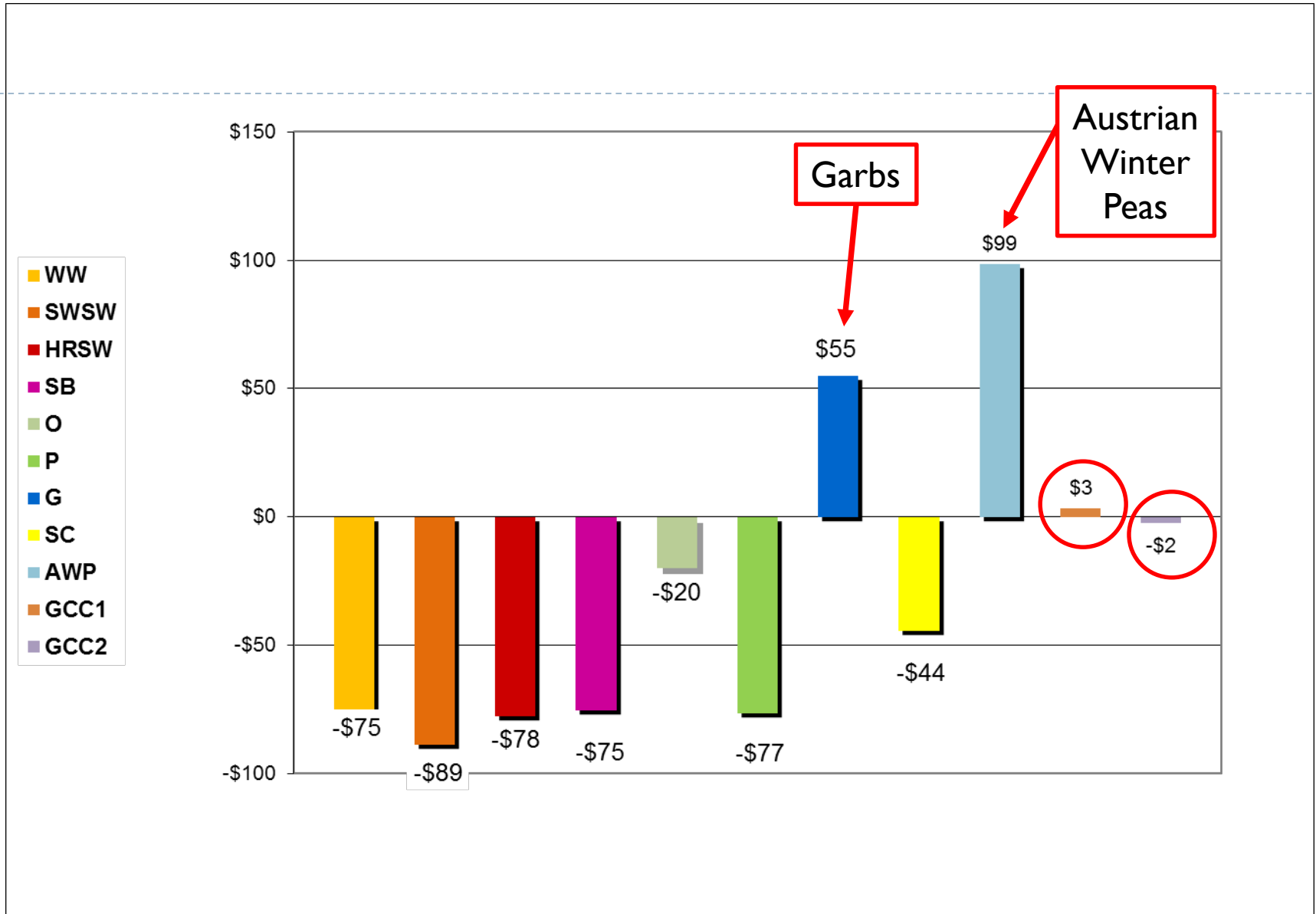


Summary of net returns by crop, conventional tillage

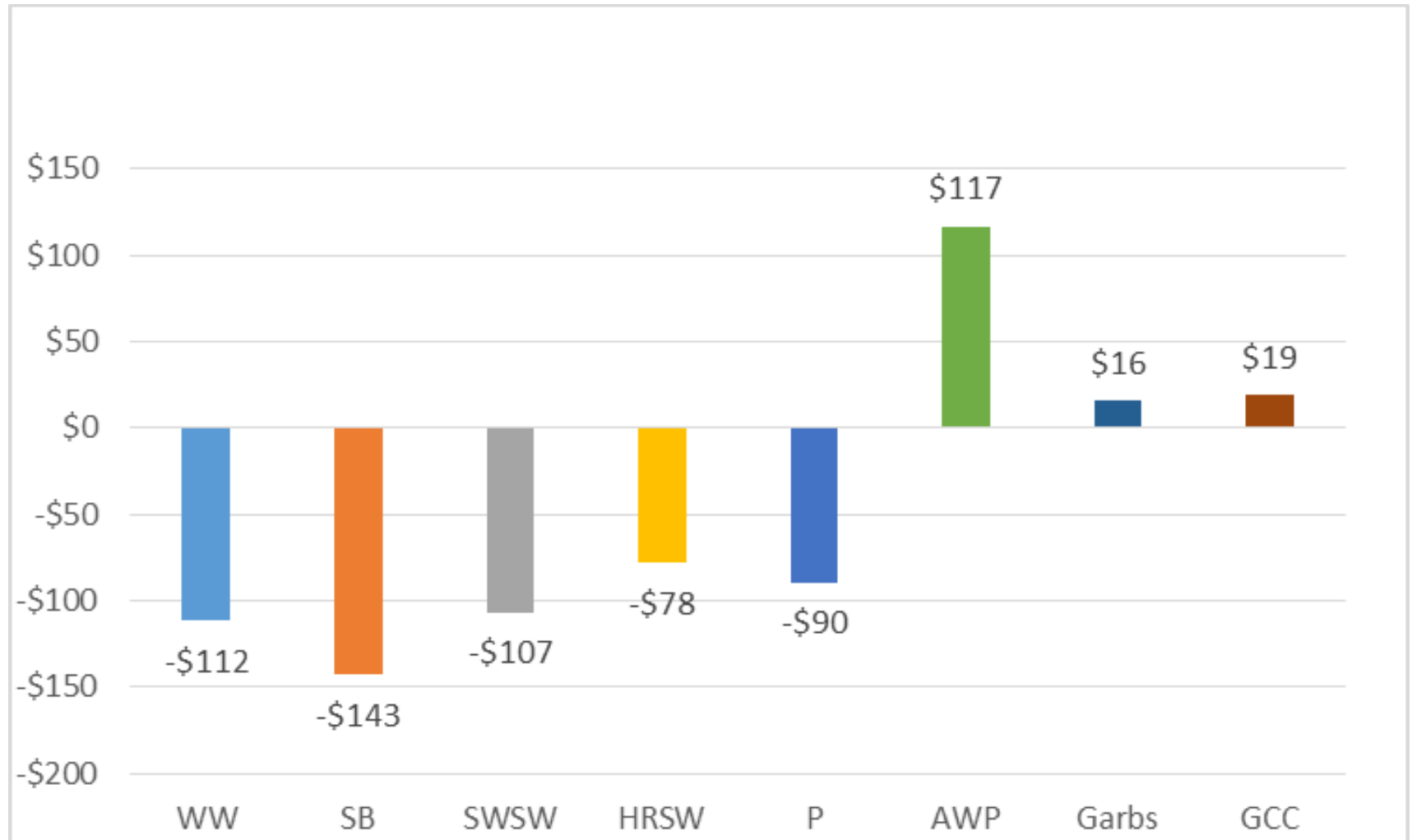
By Crop:	Unit	Yield per acre	2016 Price (est.) per unit	Returns over TC (\$/acre)
<u>Winter Wheat (WW)</u>	bu	85	\$3.61	-\$75
<u>Soft White Spring Wheat (SWSW)</u>	bu	55	\$3.61	-\$89
<u>Dark Northern Spring Wheat (DNSW)</u>	bu	55	\$4.72	-\$78
<u>Spring Barley (SB)</u>	ton	1.9	\$92.00	-\$75
<u>Oats (O)</u>	ton	1.50	\$140.00	-\$20
<u>Peas (P)</u>	lb	1700	\$0.12	-\$77
<u>Austrian Winter Peas (AWP)</u>	lb	2000	\$0.25	\$99
<u>Garbanzos (G)</u>	lb	1200.00	\$0.32	\$55
<u>Spring Canola (SC)</u>	lb	1800	\$0.16	-\$44
<u>Cover Crop, 4-way, grazed (CC)</u>	AUM	8	\$18.00	\$3
<u>Cover Crop, 6-way, grazed (CC)</u>	AUM	8	\$18.00	-\$2



Net returns over total costs by crop, CT, 2016 prices



Net returns over total costs by crop, DS, 2016 prices



Summary of net returns, alfalfa production

By Crop:	Unit	Yield per acre	Price* per unit	Revenue per acre	Total Cost (TC) of Operation	Returns over TC (\$/acre)	Crop & Cost Share** Cost (\$/acre)
Barley seeded with alfalfa	ton	1.25	93	\$116	\$327	-\$211	\$0
Alfalfa Hay Production	ton	2.5	114	\$285	\$375	-\$90	\$67
Stand life, in years	4						

Note: Negative returns for the barley/alfalfa establishment year are amortized over the productive life of the stand. Thus, alfalfa hay production returns include payment for the establishment year.

Summary of net returns, hay production

Table 1. Summary of Returns by Crop and Rotation (\$/acre)

		Yield	Price*	Revenue	Returns	Returns	Crop & Cost	%	
By Crop:	Unit	per acre	per unit	per acre	over TC (\$/acre)	over VC (\$/acre)	Share** Cost (\$/acre)	Share	
<u>Establishing Grass Hay</u>	ton	0	0	0	-157	-123	0	67/33	Operator
<u>Grass Hay Production</u>	ton	2.5	85	213	-35	77	39	67/33	Owner
Stand life, in years	6								

Note: Establishment costs are amortized over the productive years of the hay stand. The negative returns for the establishment year are carried forward as a cost for each year of production.



Grass hay: Variable (operating) production costs

Variable Costs

Fertilizer:

\$69.75

Base your rate on your soil test results.

The following fertilizer estimates are typical:

Nitrogen	25	lb	\$0.59	\$14.75
Phosphorus	70	lb	\$0.71	\$49.70
Sulfur	10	lb	\$0.53	\$5.30

Machinery:

\$28.98

Fuel	3.14	gal	\$2.00	\$6.27
Lubricants	1	acre	\$1.02	\$1.02
Machinery Repairs	1	acre	\$8.23	\$8.23
Machinery Labor	0.76	acre	\$17.80	\$13.46

Custom & Consultants:

\$23.50

Custom Haul & Stack	2.50	ton	\$9.00	\$22.50
Fertilizer Rental	1	acre	\$1.00	\$1.00

Other:

\$9.63

Baling twine	2.50	ton	\$3.85	\$9.63
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Operating Interest¹

\$3.30

Total Variable Costs

\$135.16

Grass hay: Ownership (fixed) production costs

Ownership Costs:

Machinery depreciation				\$14.69	\$14.69
Machinery interest				\$9.06	\$9.06
Machinery insurance, taxes, housing, licenses				\$2.73	\$2.73
Land Cost*	1	acre		\$39.35	\$39.35
*Based on share rent percentage:					
Landlord	33%				
Tenant	67%				
Cash Rent					\$0.00
Amortization of establishment costs**	5.8%	acre		\$31.75	\$31.75
**Based on years of production:	6				
Overhead					\$4.50
Management fee					\$10.00
Total Fixed Costs					\$112.08



Different strategies for hard times: Improve soil and raise a cover crop?

- ▶ **Costs of production for cover crops**
 - ▶ Conventional tillage
 - ▶ Direct seeding
- ▶ **Potential revenue from grazing**
- ▶ **Potential revenue from harvesting (silage)**
- ▶ **Potential future revenue from improved yields in future years**



Cover crop production, direct seeding

- ▶ Heavy harrow
- ▶ Spray glyphosate
- ▶ Seed cover crop
 - ▶ May need to seed larger-seeded varieties separately from smaller seeded ones



Cover crop production, conv. tillage

- ▶ Spray glyphosate
- ▶ Cultivate/harrow twice
- ▶ Seed cover crop
 - ▶ May need to seed larger-seeded varieties separately from smaller seeded ones



Costs for producing a cover crop: Seed

4-way mix:

Seed:				\$27.50	
Forage Oat Seed, Stampede	20	lb	\$0.50		\$10.00
Forage Barley Seed, Stockford	20	lb	\$0.60		\$12.00
Spring Pea Seed	20	lb	\$0.20		\$4.00
Spring Canola Seed	2	lb	\$0.75		\$1.50

6-way mix--add the following:

\$33.13 total

Forage Radish, Daikon	2.5	lb	\$1.50		\$3.75
Forage Turnip, Purple Top	1.5	lb	\$1.50		\$2.25



Costs for producing a cover crop: Conv. tillage

Table 37. Machinery Costs for Cover Crops (\$/acre)

	Ownership Costs (\$/acre):				Operating Costs (\$/acre):				Labor		Fuel Use	Total Cost (\$/acre)
	Depreciation	Interest	Taxes, Housing, Insurance, Licenses	Total Ownership Costs	Repairs	Fuel	Lubricants	Total	(\$/acre)	(hr/acre)	(gal/acre)	
<i>350HP Wheel Tractor with:</i>												
36' JD455 Drill	\$1.83	\$1.21	\$0.38	\$3.42	\$1.35	\$3.45	\$0.52	\$5.32	\$1.42	0.10	1.73	\$10.16
36' Cultivator with Harrow	\$0.89	\$0.88	\$0.13	\$1.90	\$0.63	\$2.94	\$0.44	\$4.01	\$1.32	0.07	1.47	\$7.23
36' Cultivator with Harrow	\$0.89	\$0.88	\$0.13	\$1.90	\$0.63	\$2.94	\$0.44	\$4.01	\$1.32	0.07	1.47	\$7.23
<i>200HP Wheel Tractor with:</i>												
100' Sprayer	\$0.44	\$0.40	\$0.06	\$0.90	\$0.24	\$0.55	\$0.08	\$0.87	\$0.43	0.02	0.28	\$2.20
Total:	\$4.05	\$3.37	\$0.70	\$8.12	\$2.85	\$9.88	\$1.48	\$14.21	\$4.49	0.25	4.94	\$26.82



Costs for producing a cover crop: Direct seed

Machinery Costs for No-Till Cover Crop (\$/acre) from the University of Idaho Machinery Cost Calculator												
	Fixed Costs (\$/acre):				Variable Costs (\$/acre):				Labor		Fuel Use	Total Cost (\$/acre)
	Depreciation	Interest	Housing, Insurance, License	Total Fixed Costs	Repairs	Fuel	Lubricants	Total	(\$/acre)	(hr/acre)	(gal/acre)	
<i>Seasonal operations:</i>												
200HP Trac+100'Sprayer	\$0.61	\$0.51	\$0.08	\$1.20	\$0.46	\$0.34	\$0.05	\$0.85	\$0.43	0.02	0.17	\$2.48
200HP Trac+60'Harrow	\$0.48	\$0.41	\$0.07	\$0.96	\$0.23	\$0.40	\$0.06	\$0.69	\$0.51	\$0.03	\$0.20	\$2.16
450HP Tractor+NT Drill, 36'	\$5.27	\$4.23	\$1.57	\$11.07	\$2.79	\$2.68	\$0.40	\$5.87	\$1.49	0.07	1.34	\$18.43
Fertilizer Tanks+Pumps	\$1.02	\$0.59	\$0.06	\$1.67	\$0.68	\$0.00	\$0.00	\$0.68	\$0.00	0.00	0.00	\$2.35
200HP Trac+100'Sprayer	\$0.61	\$0.51	\$0.08	\$1.20	\$0.46	\$0.34	\$0.05	\$0.85	\$0.43	0.02	0.17	\$2.48
Total:	\$7.99	\$6.25	\$1.86	\$16.10	\$4.62	\$3.76	\$0.56	\$8.94	\$2.86	0.14	1.88	\$27.90



Potential Revenue Sources for Cover Crops

- ▶ Grazing revenue, estimated at 8 AUMs per acre at \$18 per AUM = \$144
 - ▶ Assumes you have fencing and access to water
- ▶ Harvest cover crop as hay or silage
- ▶ Reap the benefit of yield improvements in future crops
 - ▶ An additional \$146 per acre in benefits would be necessary to cover all production costs of the cover crop
 - ▶ At \$5 per bu, that would be 30 bu per acre additional yield for grain
 - ▶ The yield benefit might take several years to achieve



Resources: 2016 Crop Budgets for Northern Idaho

- ▶ **NEW: 2016 Direct Seed Budgets for Northern Idaho**
 - ▶ Featuring updated machinery costs
 - ▶ Winter wheat, soft white spring wheat & dark northern spring (DNS) wheat, Spring barley, dry peas, Austrian winter peas, garbanzos, **cover crops**
- ▶ **UPDATED: 2016 Conventional Tillage Budgets for Northern Idaho**
 - ▶ Winter wheat, soft white spring wheat & dark northern spring (DNS) wheat, Spring barley, dry peas, Austrian winter peas, garbanzos, **cover crops**
- ▶ **UPDATED: 2016 Grass Hay Production, small square bales**
 - ▶ Includes establishment costs with barley; amortization of establishment costs over variable years of production
- ▶ **UPDATED: 2016 Alfalfa Hay Production, small square bales**
 - ▶ Includes establishment costs and amortization of establishment costs over variable years of production



Questions?



Thank you!

