GRAZING COVER CROPS FOR PROFIT

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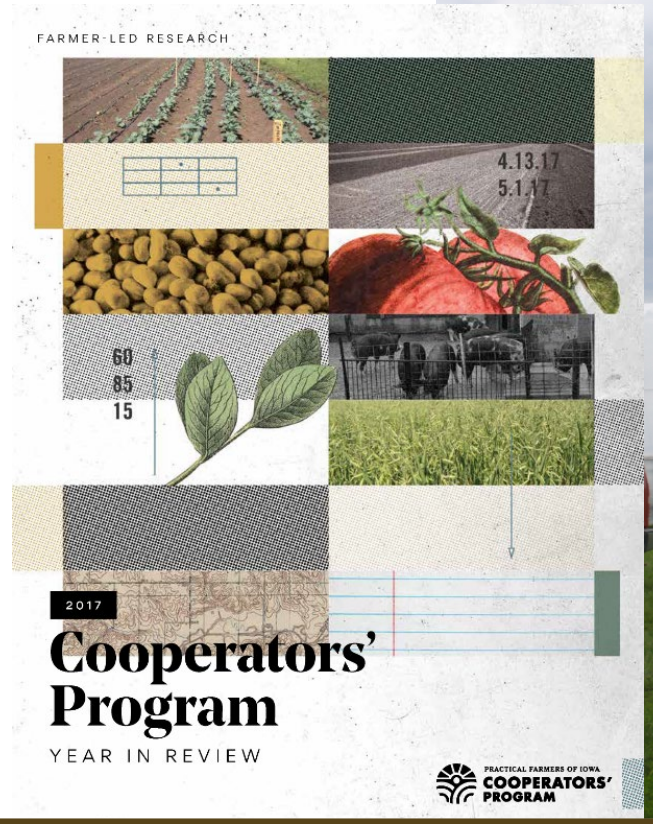
Photo courtesy of Lynn Betts



54 COOPERATORS TOOK PART IN 77 RESEARCH TRIALS IN 2018

PRACTICAL FARMERS OF IOWA
COOPERATORS' PROGRAM
FARMER-LED RESEARCH

Why Graze Cover Crops?

- Extend grazing season in fall and spring
- Provide relief to spring pastures
- Provide a fresh, clean calving pasture
- Save $$ and reduce reliance on stored feed
- Deposit manure where needed
- Increased carrying capacity

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Grazing Cover Crops Adds Value

Economic Returns
&
Soil Health Benefits

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But how much value?

Ben Albright
Lytton, IA
Rye and oats seeded on 9/6/16
Picture taken on 11/10/16

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working together, always learning

Livestock Research

Economic Impact of Grazing Cover Crops in Cow-Calf Operations

Staff Contact:
Meghan Filbert – (515) 232-5661
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Cooperators:
- Wesley Degner - Lytton
- Bill Frederick - Jefferson
- Mark Schleisman - Lake City

Funding By:
Iowa Department of Agriculture and Land Stewardship's Water Quality Initiative

Web Link:
http://bit.ly/pfi_livestock

In a Nutshell

- Planting and grazing cover crops is a practical way to effectively reduce nutrient pollution, plus provide short-term economic returns.
- Three cow-calf producers in northwest Iowa have been grazing cover crops and keeping records to show the economics of this system.
- Utilizing cover crops as forage represents a win-win for livestock producers and water quality.

Key findings:

- Three farmers reported that over

https://www.practicalfarmers.org/farmer-knowledge/research-reports/

IDALS-WQI Project
2015-2021

7 cooperators

IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP

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Objective

To demonstrate the economic benefits of utilizing cover crops as forage on integrated crop and cattle farms

vs.

www.noble.org

Methods – Livestock Feed Requirements

- Dry matter (DM) requirements of cattle during cover crop grazing periods
- # of cows x weight x 4.0% x number of days grazed
  - (2.5-3% daily intake, 0.5 trampling loss, 0.5-1% buffer - NRCS)
- Animal weights not taken; assumed maintained weight

20 cows X 1200 lb X 4.0% = 960 lb DM

960 lb DM X 10 days = 9,600 lb DM required

Value of cover crop forage =

current market price for hay or other feed

https://www.ams.usda.gov/market-news/hay-reports

- Assume hay costs $80/ton @ 90% DM
- Supplemental feed accounted for

Methods – Costs

- Cover crop seed, application and termination
- Labor
- Fence and water

*If same costs would have been spent grazing stalks with no cover crop, or herbicide would have been used regardless; costs not included

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Table 6

Economic impact of grazing cover crops at each farm.

REVENUE	Wesley Degner		Bill Frederick		Mark Schleisman	
	2015-2016	2016-2017	2015-2016	2016-2017	2015-2016	2016-2017
Approximate tons of DM required (t)	35	30	76	57	525	656
Value of grazed forage + crop residue[x]	$2,793	$2,398	$4,571	$3,174	$38,735	$50,670
Value of cost share payment	$3,462	$3,462	$1,000	$1,000	$21,616	$17,034
Total added value	$6,255	$5,860	$5,571	$4,174	$60,351	$67,704
COSTS						
Costs for establishment & termination	$4,727	$3,275	$2,970	$3,310	$20,159	$27,705
Costs for grazing labor[y]	$156	$78	$520	$520	$0	$0
Costs for fences, waterers[y]	$1,017	$1,017	$247	$223	$0	$0
Total added costs	$5,900	$4,370	$3,737	$4,053	$20,159	$27,705
TOTALS						
Total net economic gain or loss	**$355**	**$1,490**	**$1,834**	**$121**	**$40,192**	**$39,998**
Net economic gain (loss) per acre	**$4.17**	**$17.53**	**$19.72**	**$1.56**	**$60.09**	**$47.78**
Net gain (loss) without cost share	$(3,107)	$(1,972)	$834	$(879)	$18,576	$22,965
Net gain (loss) without cost share per acre	$(36.55)	$(23.20)	$8.96	$(11.26)	$27.77	$27.43

[x]See Table 3 for Degner; Table 4 for Frederick; Table 5 for Schleisman.

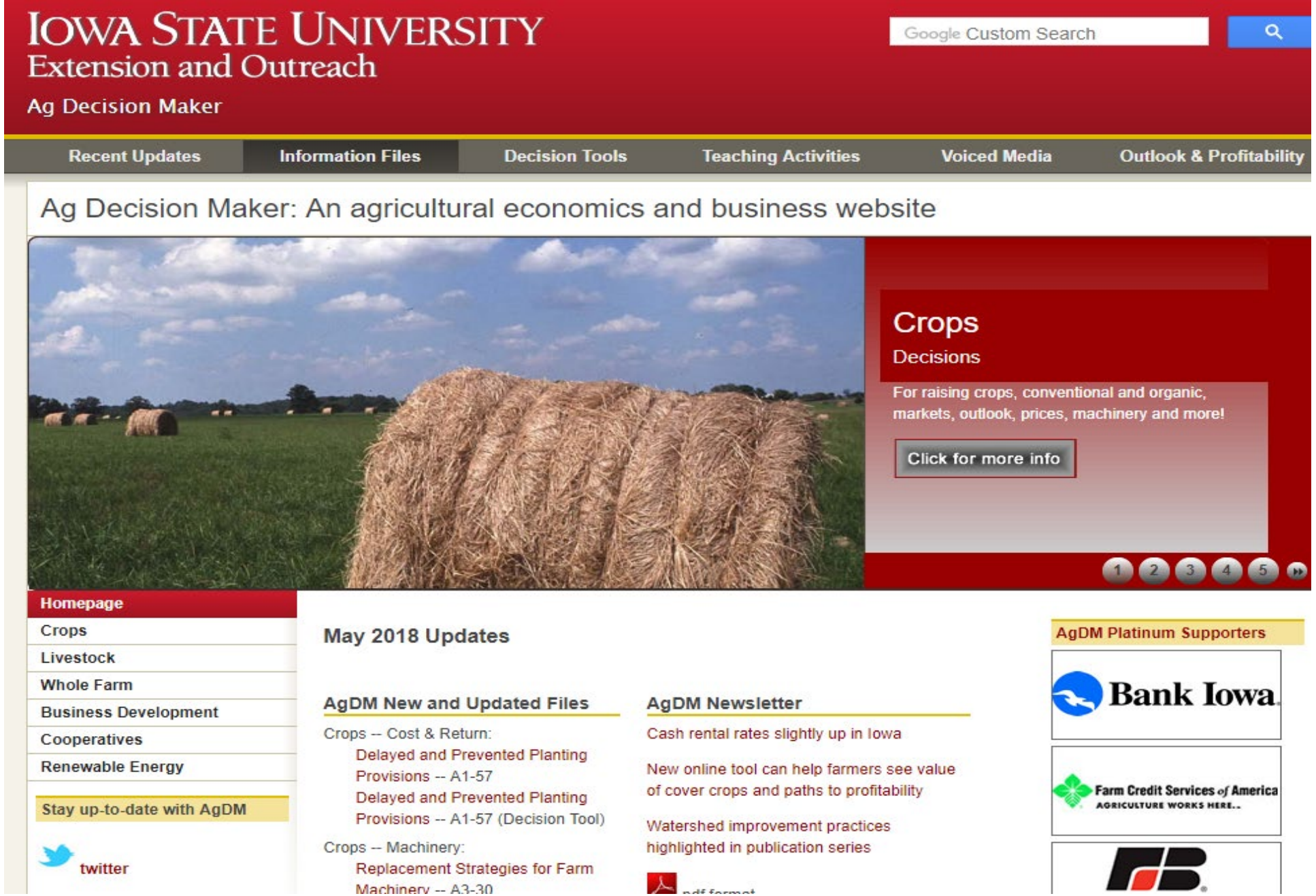
[y]Mark Schleisman's labor, fence and waterer costs total $0 because equal costs would have been spent grazing crop residue alone, therefore no additional costs were incurred when grazing cover crops + crop residue.

Bill Frederick

In 2107,
Spring forage value = $457
Termination costs = $1,360

"Spring calving young pairs and the health benefits of fresh pasture to calves is worth more than the value of the forage. Rye fields keeps calves clean and dry in the spring."

“The way you make money from cover crops is from decreased inputs, not increased yields,” - Bill Frederick



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Ag Decision Maker

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- Homepage
- Crops
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- Whole Farm
- Business Development
- Cooperatives
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Meet the author

William Edwards

retired economist

Questions?

Economics of Cover Crops

The decision tool, Economics of Cover Crops, provides worksheets to analyze three different cover crop scenarios:

- Projected economic costs and benefits of crop crops without grazing or harvesting
- Projected economic costs and benefits of crop crops with grazing or harvesting
- Actual economic costs and benefits resulting from cover crops, including grazing or harvesting.

File A1-91
Written March, 2018

Other resources on cover crops include:

- Practical Farmers of Iowa: Grazing Cover Crops fact sheet
- Practical Farmers of Iowa cover crop information
- CARD Cover Crop website
- Economic Evaluation of Cover Crops in Midwest Row Crop Farming
- Iowa Learning Farms

William Edwards, retired ISU economist. Questions? Email agdm@iastate.edu
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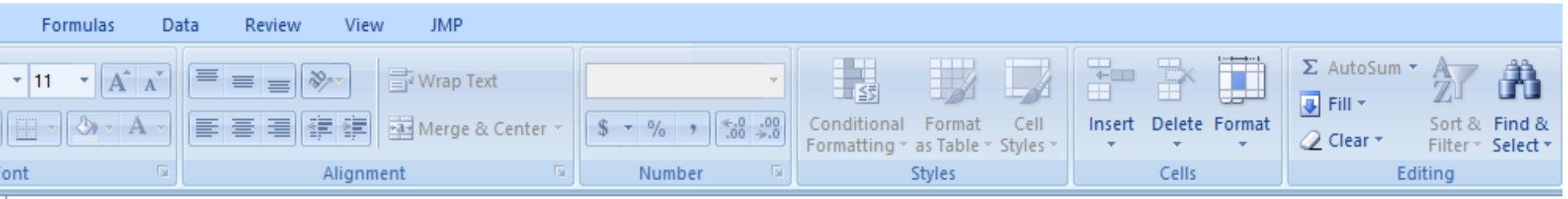

Economics of Cover Crops

Iowa State University Extension and Outreach - Ag Decision Maker

See the Ag Decision Maker page, Economics of Cover Crops, for more information.

This decision tool contains three different worksheets:

Cover Crops Budget	For analyzing the projected economic costs and benefits of cover crops, without grazing or harvesting.
Grazing Cover Crops Budget	For analyzing the projected economic costs and benefits of cover crops, with grazing or harvesting.
Grazing Cover Crops Results	For analyzing the actual economic costs and benefits resulting from cover crops, including grazing or harvesting.

More information on the economics of cover crops can be found at:

Practical Farmers of Iowa: Grazing Cover Crops fact sheet, www.practicalfarmers.org/app/uploads/2013/11/Grazing-Cover-Crops-Fact-Sheet-2013.pdf
Practical Farmers of Iowa cover crop information, www.practicalfarmers.org/member-priorities/cover crops/
On-farm research quantifies value of grazing cattle on cover crops, www.practicalfarmers.org/news-events/newsroom/news-release-archive/28152/
CARD Cover Crop website-forthcoming, www.card.iastate.edu/

Version 1.3_32018
Authors: William Edwards, retired ISU economist,
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Meghan Filbert, livestock program manager, Practical Farmers of Iowa, and
Ann Johanns, ISU Extension Program Specialist.
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Economics of Cover Crops: Actual Costs and Returns with Grazing and/or Harvesting

Iowa State University Extension and Outreach - Ag Decision Maker

See the Ag Decision Maker webpage, Economics of Cover Crops, for more information.

Cells in yellow are for input values.

Name of producer or farm: Example — Year: 2017-18

Values shown on this sheet are for example purposes only, and do not represent actual research or producer results.

Name or number of field		Field 1	Field 2	Field 3	Field 4	Field 5	Whole Farm
Costs for establishing the cover crop							
Types of cover crops seeded		cereal rye	cereal rye, turnips	oats			
Total acres of cover crop seeded	acres	50	40	25			1
Cost for seed type 1	$ per acre	$ 10.00	$ 10.00	$ 9.00			$ 1,1
Cost for seed type 2	$ per acre		$ 11.00				$ 4
Seeding or drilling, custom rate (*if custom hired*)	$ per acre	$ 15.00	$ 15.00	$ 15.00			$ 1,7
Seeding or drilling, variable costs (*if done by operator*)	$ per acre						$ -
Operator labor for seeding or drilling	total hours per field						
Value of operator labor	$ 15.00 /hour						$ -
Total establishment costs		$ 1,250	$ 1,440	$ 600	$ -	$ -	$ 3,2

Added costs for terminating the cover crop (beyond normal practices)		Field 1	Field 2	Field 3	Field 4	Field 5	Whole Farm
Additional herbicide applied for termination	$ per acre	$ 13.00	$ 13.00				$ 1,1
Applying additional herbicide, custom rate (*if not in line above*)	$ per acre	$ 6.50	$ 6.50				$ 5
Applying additional herbicide, variable costs (*if done by operator*)	$ per acre						$ -
Added tillage, custom rate (*if custom hired*)	$ per acre						$ -
Added tillage, variable costs (*if done by operator*)	$ per acre						$ -
Added operator labor for terminating cover crop	total hours per field						$ -
Total costs for terminating the cover crop		$ 975	$ 780	$ -	$ -	$ -	$ 1,7

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Yield Data + Other Payments

			Field 1	Field 2	Field 3	Field 4	Field 5	Whole Farm
Other income or costs								
Yield impact on cash crop following cover crop								
Crop following the cover crop			soybeans	corn	corn			
Expected yield of the crop when not following a cover crop	bushels per acre		65	200	200			
Expected selling price of crop following cover crop	$ per bushel		$ 9.00	$ 3.20	$ 3.20			
Expected percentage yield change (+ or -)	%		2%	0%	-1%			
Net value of yield impact	$ per acre		$ 11.70	$ -	$ (6.40)	$ -	$ -	$ 42
Cost share payments and crop insurance discounts received								
Value of cost share payment received	$ per acre		$ 25.00	$ 15.00	$ 25.00			$ 2,47
Value of crop insurance premium discount	$ per acre							$ -
Acres in field receiving cost share payment or crop insurance discount	Acres		50	40	25			
Other added or reduced costs for cover crops			Field 1	Field 2	Field 3	Field 4	Field 5	Whole Farm
Cash rent paid if acres are rented just for seeding cover crops	$ per acre							$ -
Other **added** costs for cover crops acres (irrigation fuel, etc.)	$ per acre							$ -
Other **reduced** costs due to cover crops (erosion control, cash rent, etc.	$ per acre							$ -

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Harvest Costs & Value

102							
103	**Harvesting cover crops** ***(leave the following section blank if cover crops are not harvested for forage***						
104	**Estimated costs and returns for harvesting forage**		**Field 1**	**Field 2**	**Field 3**	**Field 4**	**Field 5**	**Whole Farm**
105	Acres harvested							0
106	Total amount of forage harvested	tons						
107	Value or price per ton	$ per ton						
108	Total value of harvested forage	$ per ton	$ -	$ -	$ -	$ -	$ -	$ -
109	Enter variable costs or custom charge							
110	Mowing	$ per acre						$ -
111	Windrowing or raking	$ per acre						$ -
112	Harvesting (baling, chopping, etc.)	$ per ton						$ -
113	Handling and hauling	$ per ton						$ -
114	Added labor for harvesting cover crop	total hours per field						$ -
115	Total		$ -	$ -	$ -	$ -	$ -	$ -

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Summary of economic impact

Summary of direct economic impact of cover crops		Field 1	Field 2	Field 3	Field 4	Field 5	Whole Farm	Per Acre	Per Animal-Unit
Total acres of cover crop seeded	acres	50	40	66	18	48	222		
Value of yield impact on cash crops following cover crops		$ (320)	$ (256)	$ (422)	$ 162	$ 432	$ (404)	$ (1.82)	$ (6.72)
Added income									
Value of cost share payment received		$ 625	$ 400	$ 480	$ 1,008	$ -	$ 2,513	$ 11.32	$ 41.78
Value of crop insurance premium discount		$ -	$ -	$ -	$ -	$ 220	$ 220	$ 0.99	$ 3.66
Value of reduced costs and labor due to cover crops		$ 186	$ 148	$ 245	$ 67	$ 178	$ 824	$ 3.71	$ 13.70
Value of feed replaced by grazing cover crops		$ 1,721	$ 1,377	$ 2,271	$ 619	$ -	$ 5,988	$ 26.97	$ 99.55
Value of forage harvested from cover crops		$ -	$ -	$ -	$ -	$ 1,875	$ 1,875	$ 8.45	$ 31.17
Total added income		**$ 2,531**	**$ 1,925**	**$ 2,996**	**$ 1,694**	**$ 2,273**	**$ 11,420**	**$ 51.44**	**$ 189.86**
Added costs									
Added costs for establishing cover crops		$ 1,286	$ 1,020	$ 948	$ 384	$ 768	$ 4,406	$ 19.85	$ 73.25
Added costs for terminating cover crops		$ -	$ -	$ 498	$ -	$ -	$ 498	$ 2.24	$ 8.28
Other added costs for cover crops (cash rent, irrigation, etc.)		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Added costs for labor for grazing cover crops		$ 81	$ 65	$ 107	$ 29	$ 78	$ 360	$ 1.62	$ 5.99
Added costs for investment in fences, waterers		$ 660	$ 167	$ 665	$ 112	$ 648	$ 2,252	$ 10.14	$ 37.44
Added costs for mechanically harvesting cover crops		$ -	$ -	$ -	$ -	$ 1,273	$ 1,273	$ 5.74	$ 21.17
Total added costs		**$ 2,027**	**$ 1,251**	**$ 2,218**	**$ 525**	**$ 2,768**	**$ 8,789**	**$ 39.59**	**$ 146.12**
Total net economic gain or loss per year		**$ 184**	**$ 418**	**$ 356**	**$ 1,331**	**$ (62)**	**$ 2,226**	**$ 10.03**	**$ 37.01**
Total net economic gain or loss per acre		**$ 3.68**	**$ 10.44**	**$ 5.39**	**$ 73.96**	**$ (1.30)**	**$ 10.03**		

Revenue – Costs = Net Profit (forage value)

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Added value not accounted for

Note: this analysis does not take into account the long-term impacts of cover crops on soil health, soil erosion, nutrient retention, or other benefits.

Version 1.3_32018
Authors: William Edwards, retired ISU economist,
Meghan Filbert, livestock program manager, Practical Farmers of Iowa, and
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Questions? Email agdm@iastate.edu

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- Nutritional value of forage
- manure deposition
- effect of grazing on plant and root growth
- cattle health
- resting perennial pastures

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Wesley Degner

- Planted 85 acres of cereal rye in 2016, 293 acres in 2017 and 279 acres in 2018
- 170 bu/ac corn in 2015, 210 bu/ac in 2016, 230 bu/ac in 2017

Photo courtesy of Lynn Betts

"Putting cows on the cover crops makes it worth it. I probably wouldn't do much of it if I didn't reap these benefits."

– Wesley Degner

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10/26/2017

10/26/2017

Mark Schleisman, 2017-2018

- Triticale, rye, rapeseed, radish, oats =$23.00/acre
- Drilled or air seeded = $9.50/acre

https://www.americanagriculturist.com/cover-crops/cost-shared-air-seeding-cover-crops-flying-high

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Mark Schleisman, 2017-2018

- 370 cow-calf pairs grazed fall, winter, spring
- Stalks available in fall & winter
- Feed 50% of TMR in spring
- Cover crop forage valued at $110/ton
- Fall + winter grazing > spring grazing
- Fence & water already in place
- Termination costs = pre-plant burndown

Net Economic Revenue, 2017-2018		
	Per Acre	Per AU
With cost-share	$107	$89
Total revenue = $117,133		
Without cost-share	$87	$71
Total revenue = $93,643		
Costs saved/AU/day when grazing cover crops = **$1.84**		

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Partial Budget Example

Partial budget comparing costs and returns between grazing corn stalks vs. cover crops and corn stalks at Mark Schleisman's farm in 2015-2016.

Corn Stalks		**Corn Stalks + Cover Crops**	
Costs	*$/ac*	*Costs*	*$/ac*
Grazing labor	$728	Cover crop seed	$13,805
Fence and water	$1,239	Cover crop application	$6,354
Supplemental feed[1]	$13,722	Grazing labor	$728
		Fence and water	$1,239
		Supplemental feed	$3,296
TOTAL COSTS	$15,689	TOTAL COSTS	$25,442
Returns	*$/ac*	*Returns*	*$/ac*
Value of corn stalk[1]	$28,278	Value of grazed forage + crop residue	$38,735
RETURNS - COSTS	$28,278-$15,689 = **$12,589**	RETURNS – COSTS	$38,735 - $25,442 = **$13,293**

[1]This examples assumes corn stalks provide 67% and supplemental feed provides 33% of winter feed requirements valued at $80/ton and 90% DM (Williams, 2014).
[2]Herbicides used for termination part of pre-plant burn down and not changed to cover crop.
*Cost-share for cover crops not included, which totaled $21,616.

Other benefits: better consumption of stalks, potential crop yield increases, soil erosion control, increase water infiltration…..

Corn Stalks		Corn Stalks + Cover Crops	
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		Fence and water	$1,239
		Supplemental feed	$3,296

Control over winter feed costs

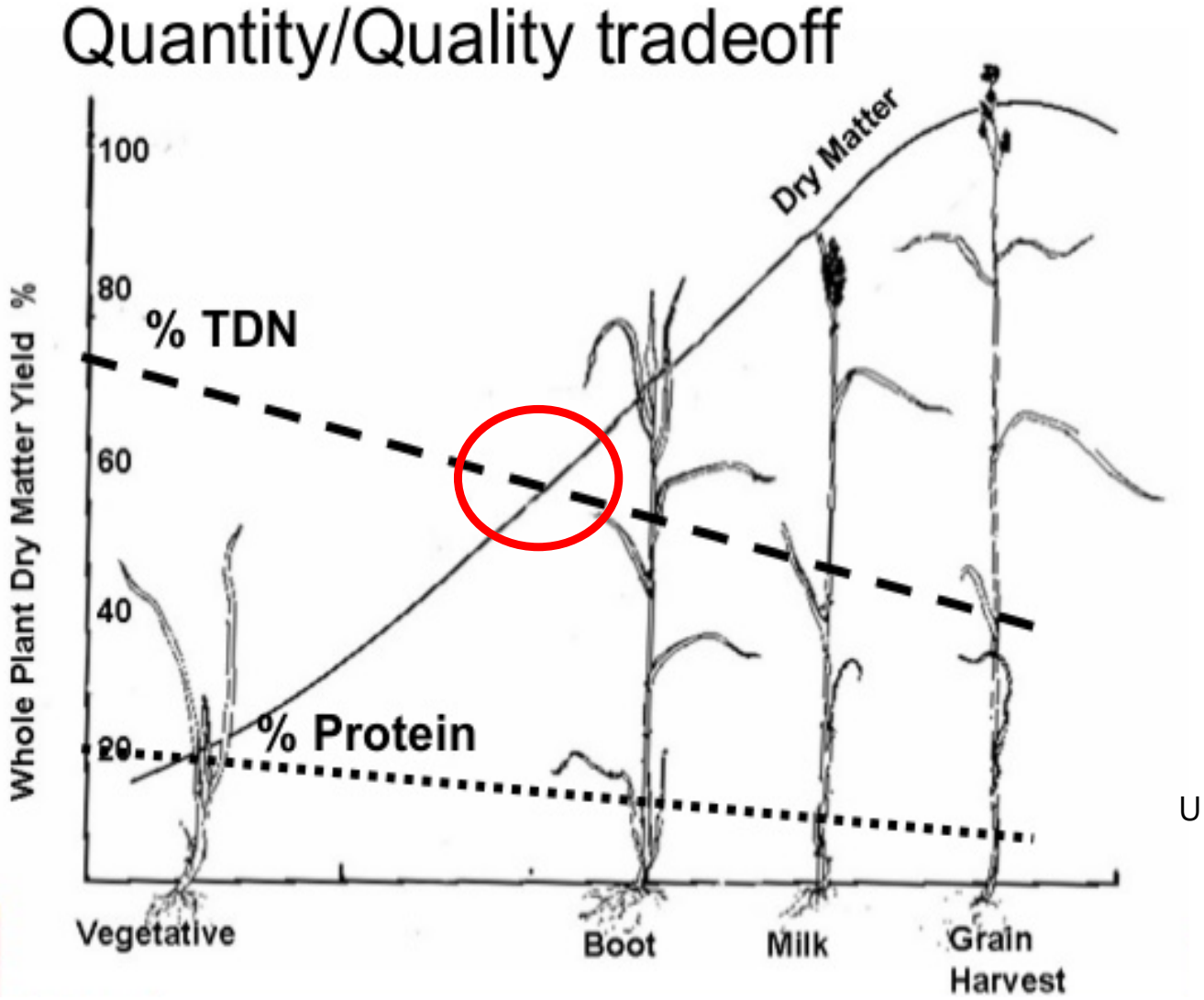
The price of hay in Iowa in April 2018 was ~$150/ton

Mark Schleisman

"We started planting cereal rye because it was easy to calve in. Now, most all of our covers are grazed as a way to justify the costs."

"My dad ran 200 cow-calf pairs on the same acres that we now run 360 pairs on. Because we graze cover crops, we're producing more on the same amount of land."

Harvest as an alternative to grazing



Denise Schwab, ISU Extension Beef Specialist

Table 1 Nutrient compositions of spring harvested rye forage.

	Average	Range
Yield D.M.Tons/acre	2.37	1.34 – 3.88
RFQ	180	149-205
CP %	16.2	9.5 – 17.5
ADF %	27.6	24.6 – 31.4
NDF %	52.2	47.2 – 66.0
P %	0.39	0.29 -0.48
K %	3.05	2.10 – 4.37

U of Wisconsin, Fall Forage Rye for Dairy Heifers and Dry Cows, 2010

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Fred Abels, Holland, IA

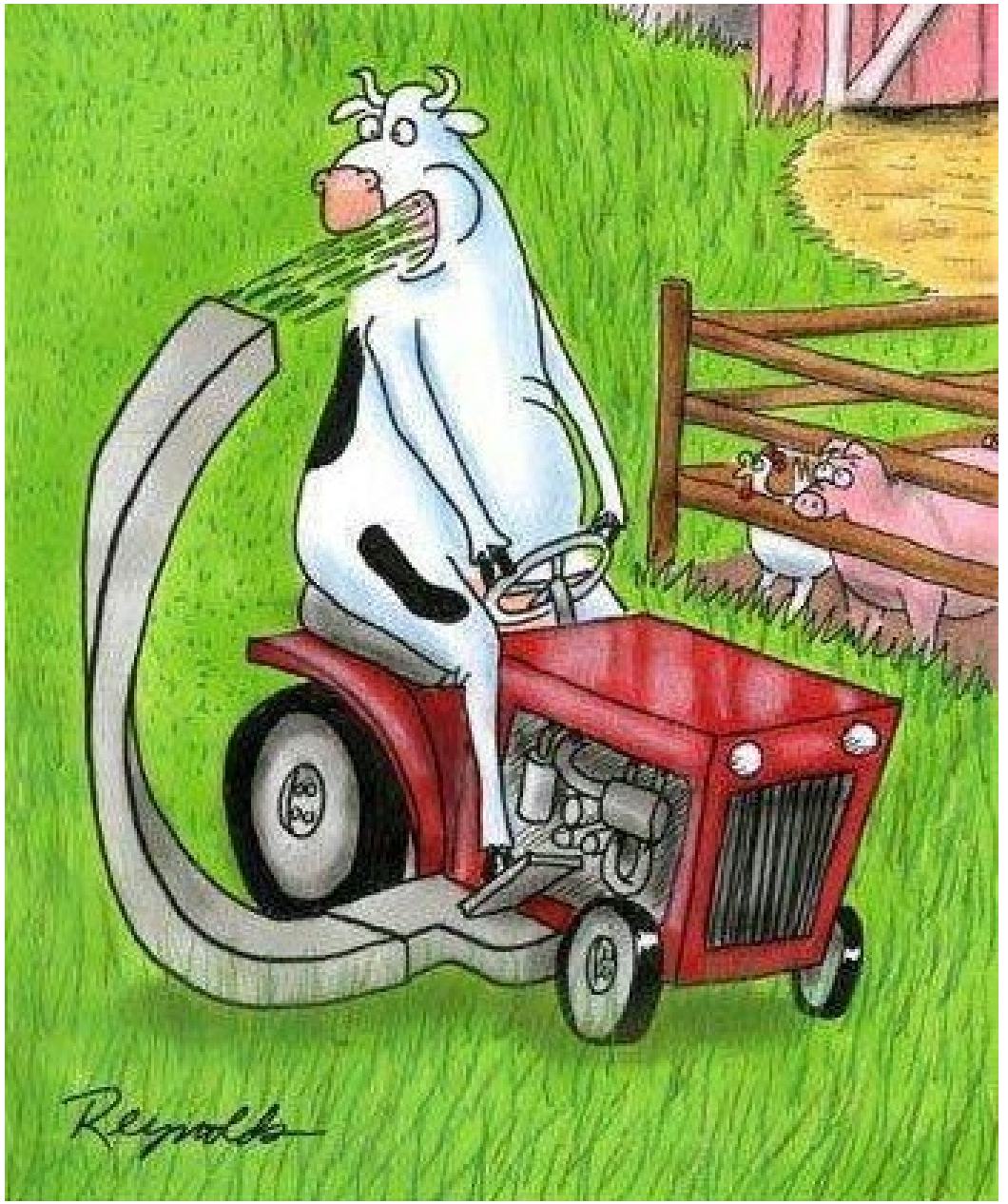
Harvested rye on May 23
"Heard you could get 6 tn/ac and up to 22% CP"
Got 6 tn/ac on 18 acres = 108 tons, put up in 3 hours, 11% CP

Jim Larson, Sioux Rapids, IA

Put up rye on May 22 – first heads were coming out
Cut, then put up the next day
Choppers estimate was 330 tons of silage from 28 acres = 11.8 tons/acre

"Both fields were more mature then I like but now I know ways to get it up right and will sure share with others"

Do you work for your cows or do your cows work for you?



Soil Health Benefits = Future Profits

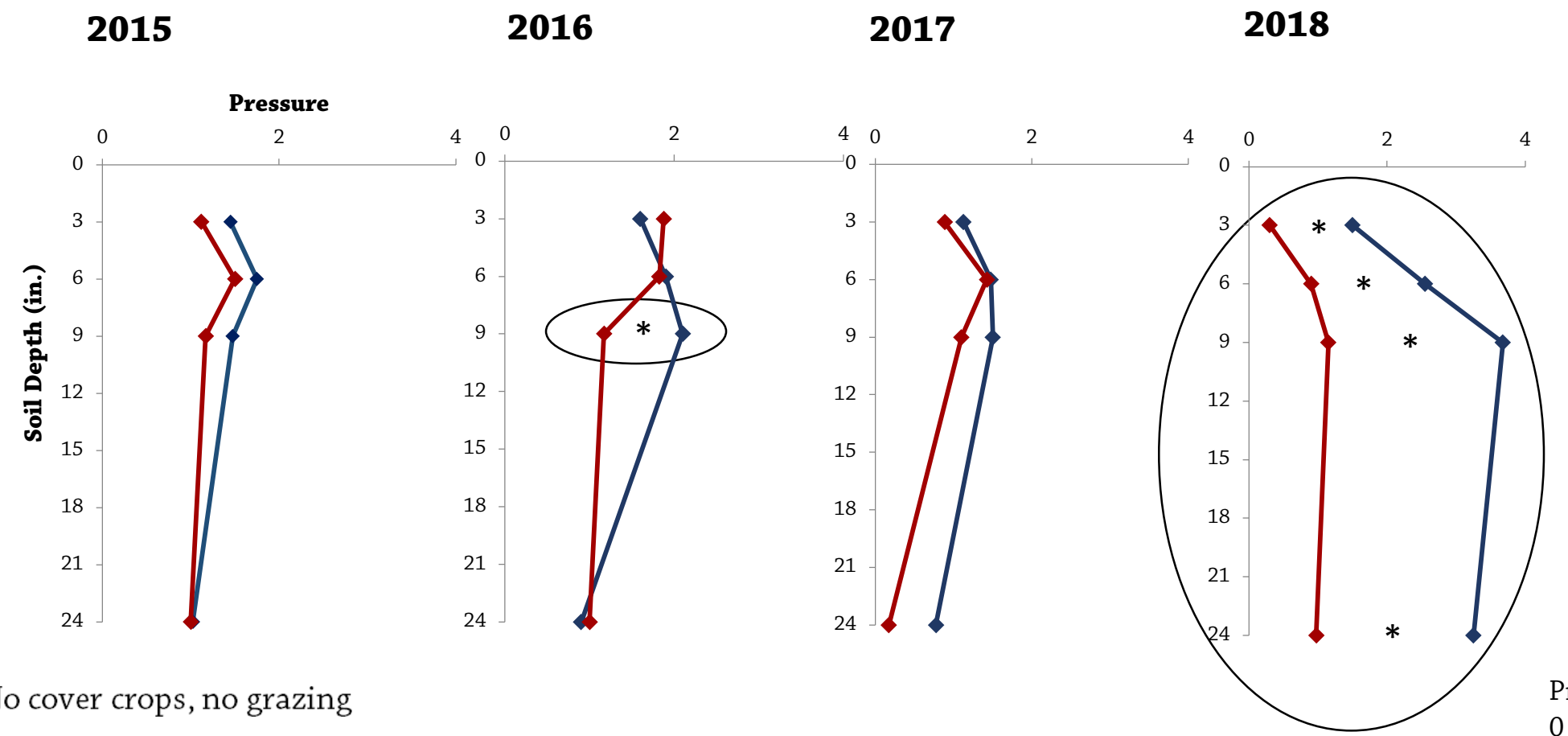
Soil Health Benefits

- The Pasture Project, Wallace-Winrock Center
- Federal Conservation Innovation Grant
- 4 years of soil data, 8 farms
- 2015-2018

Control = corn/soybean with no cover

Treatment = corn/soybean +
6 species cc mix with grazing

Compaction Results, Maxwell, IA



*Significant at P<0.05

Pressure key:
0 = 100 PSI
1 = 200 PSI
2 = 300 PSI
3 = 400 PSI
4 = >400 PSI

Data from 8 farms, 2015-2018

Plot	pH	OM	CEC	K/Mg	Ca/Mg
Con	6.51	3.86	22.13	0.15	5.30
Trt	6.54	3.97	24.76	0.16	4.77

Plot	TOC	IC	TC
Con	275	12.4	289
Trt	307	30.2	338

Plot	TLMB	GD	TBB	G+	Act	Rhiz	G-	TF	AMF	SF	Prot
Con	2537	1.39	1328	875	293	33	489	223	68	154	15
Trt	3071	1.41	1670	1064	352	36	606	296	98	198	26

OM = organic matter, TC = Total carbon (inorganic + organic), TLMB = total living microbial biomass

DEVELOPED IN PARTNERSHIP WITH:

PRACTICAL farmers of Iowa
working together, always learning

LAND STEWARDSHIP PROJECT

sustainable farming association
sfa

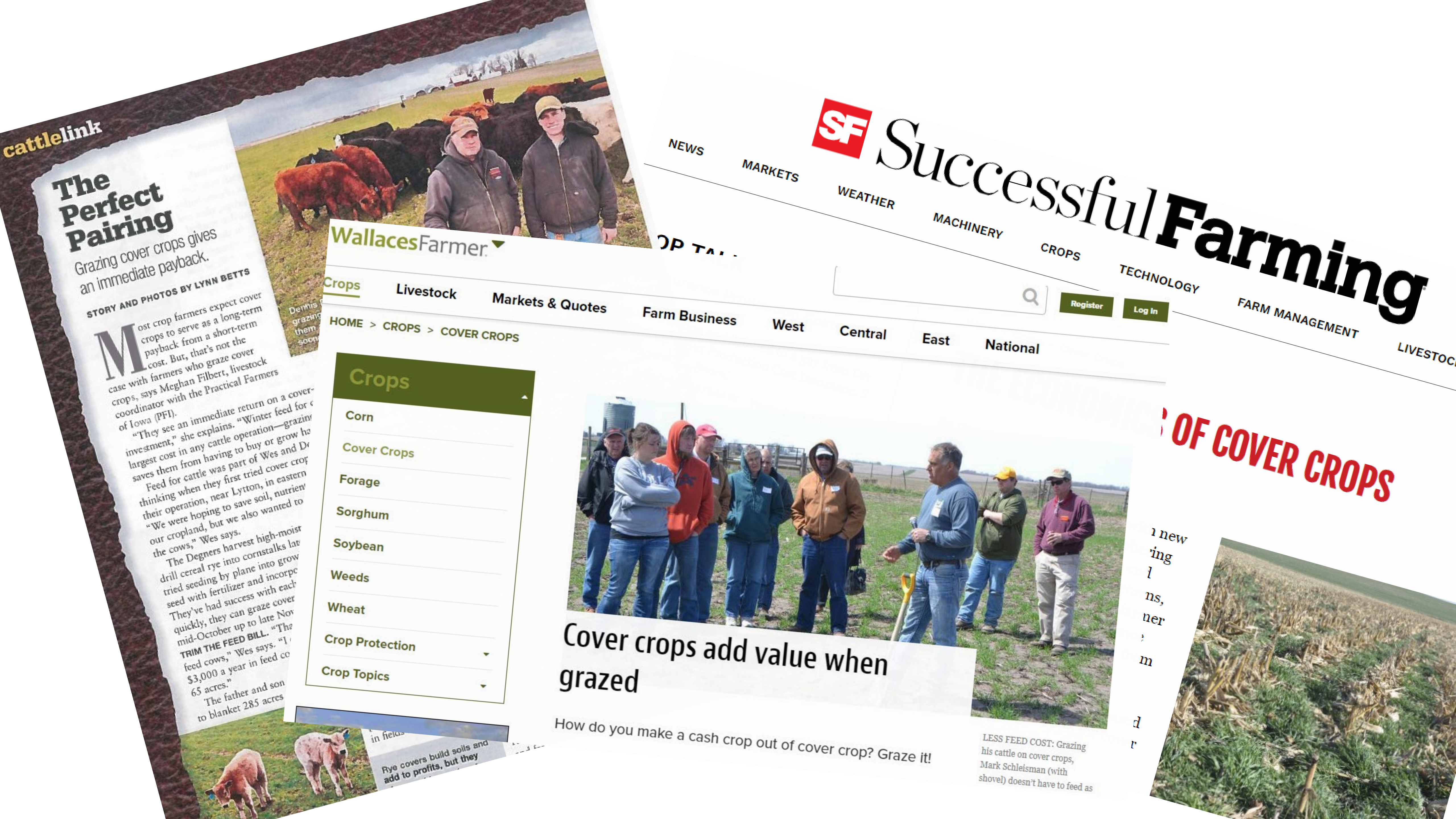
http://pastureproject.org/resources

Lessons Learned

- Fall + winter grazing > spring grazing
- Spring termination costs can exceed spring grazing value
- In some cases, cost-share can make or break it
- Early establishment + wait to graze
- Grazing covers has the potential to put money back in your pocket within the same year of planting
- Roots in the ground, active grazing, and manure = soil health

Lessons Learned cont…

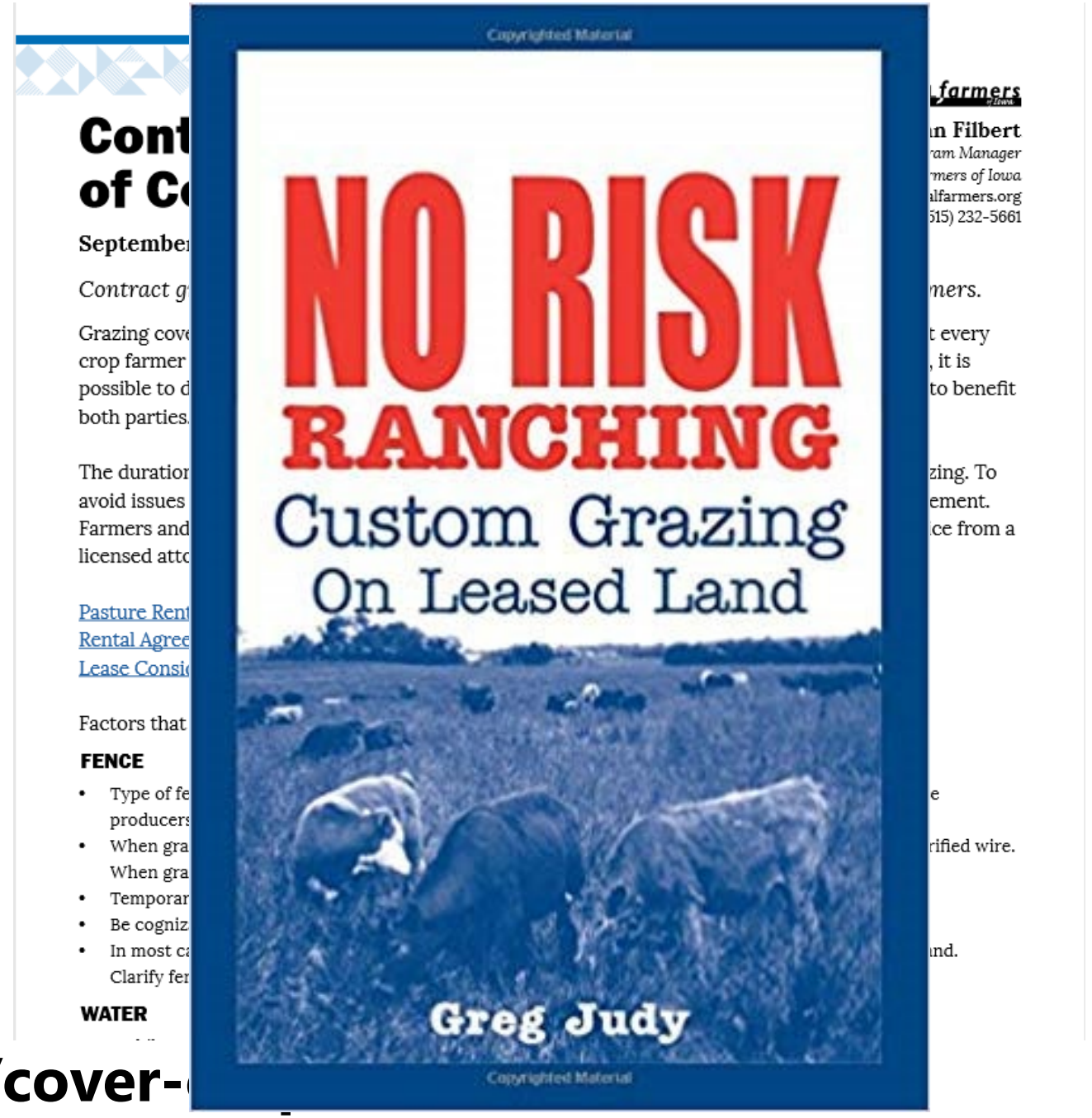
- In corn & bean systems, profitability windows are slimmer
- Diverse rotations & small grains = windows open wide
- Small grains provide straw = additional profit
- Small grain ➞ summer cover crop ➞ fall cover crop
- Pair annual forages with perennial pasture for year-round grazing


cattlelink
The Perfect Pairing
Grazing cover crops gives an immediate payback.
STORY AND PHOTOS BY LYNN BETTS
Most crop farmers expect cover crops to serve as a long-term payback from a short-term cost. But, that's not the case with farmers who graze cover crops, says Meghan Filbert, livestock coordinator with the Practical Farmers of Iowa (PFI).
TRIM THE FEED BILL.
WallacesFarmer
Crops
Livestock
Markets & Quotes
Farm Business
West
Central
East
National
Register
Log In
HOME > CROPS > COVER CROPS
Crops
Corn
Cover Crops
Forage
Sorghum
Soybean
Weeds
Wheat
Crop Protection
Crop Topics
Cover crops add value when grazed
How do you make a cash crop out of cover crop? Graze it!
LESS FEED COST: Grazing his cattle on cover crops, Mark Schleisman (with shovel) doesn't have to feed as
Rye covers build soils and add to profits, but they
SF Successful Farming
NEWS
MARKETS
WEATHER
MACHINERY
CROPS
TECHNOLOGY
FARM MANAGEMENT
OF COVER CROPS

Contract Grazing

- Win-win for graziers and row croppers
- Opportunity for beginning farmers
- Funding to focus on this

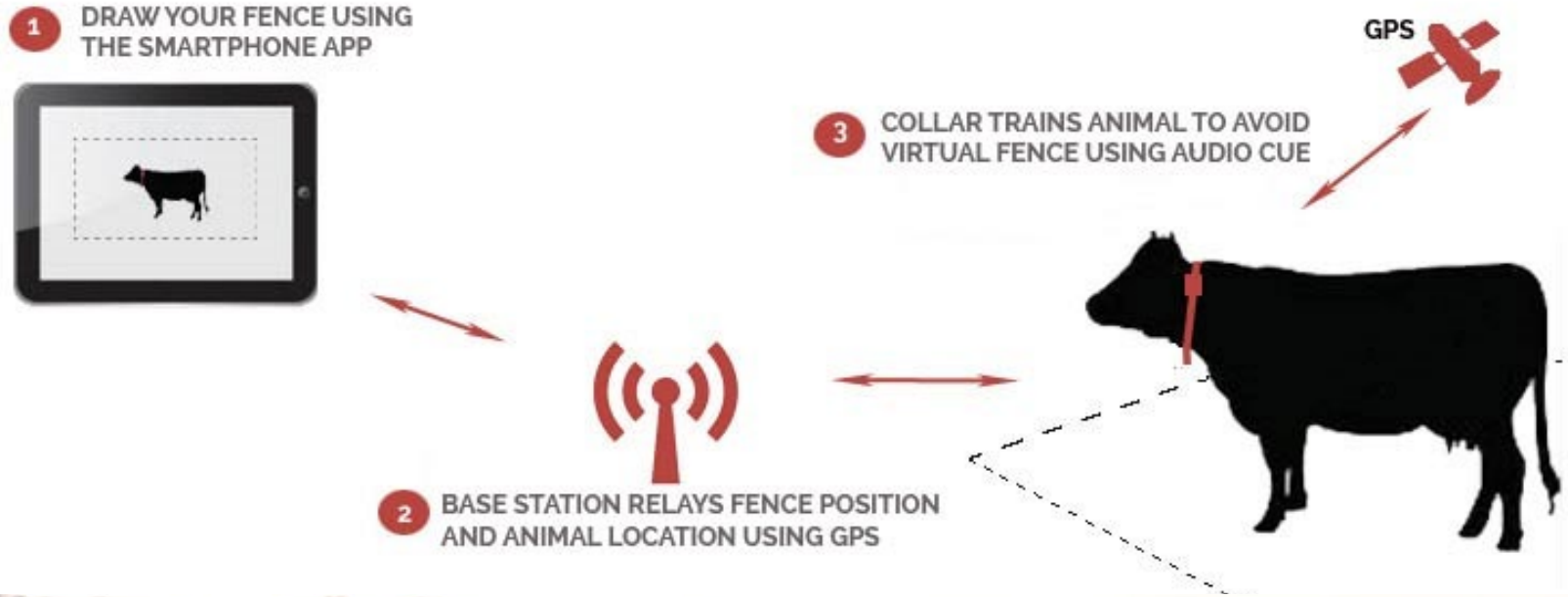
IAWA
IOWA AGRICULTURE WATER ALLIANCE



practicalfarmers.org/programs/cover-

Ag tech for contract grazing

- “Uber” for cover crops
- Grazing brokerage
- Virtual fencing



Need fence for cover crops?

ICA and PFI are working to reduce barriers for cattlemen and women interested in grazing cover crops

- Would you like to graze more cover crop acres?
- Would cost-share opportunities for fence and water help you?

Text “covercrops” to 313131 for link to survey

Fill out by January 25

ARE YOU A GRAZIER

who would enjoy getting together with other like-minded livestock farmers?

PRACTICAL farmers of Iowa

practicalfarmers.org

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