Use of Alternative feedstuffs in Cow Calf Operations

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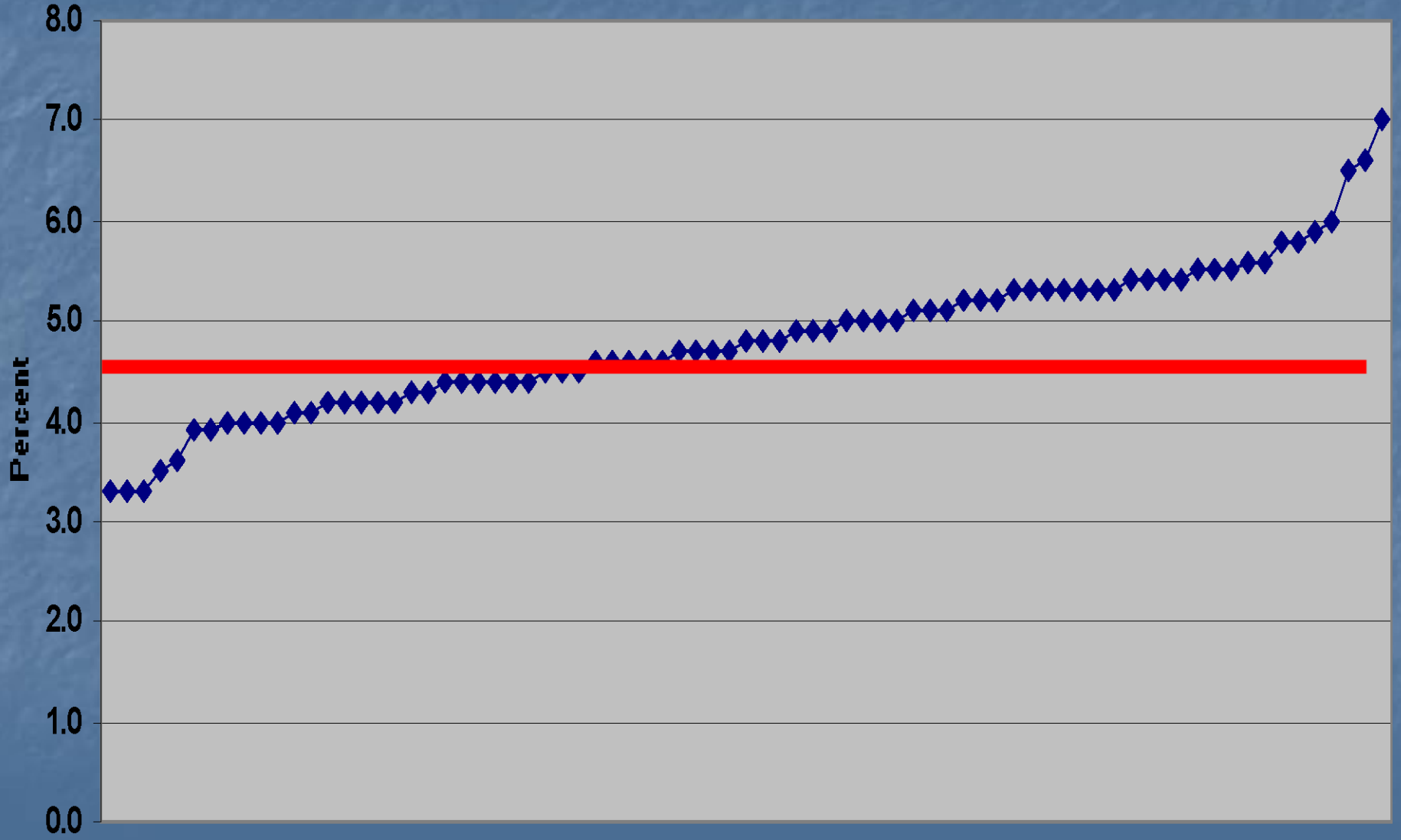
Roughages

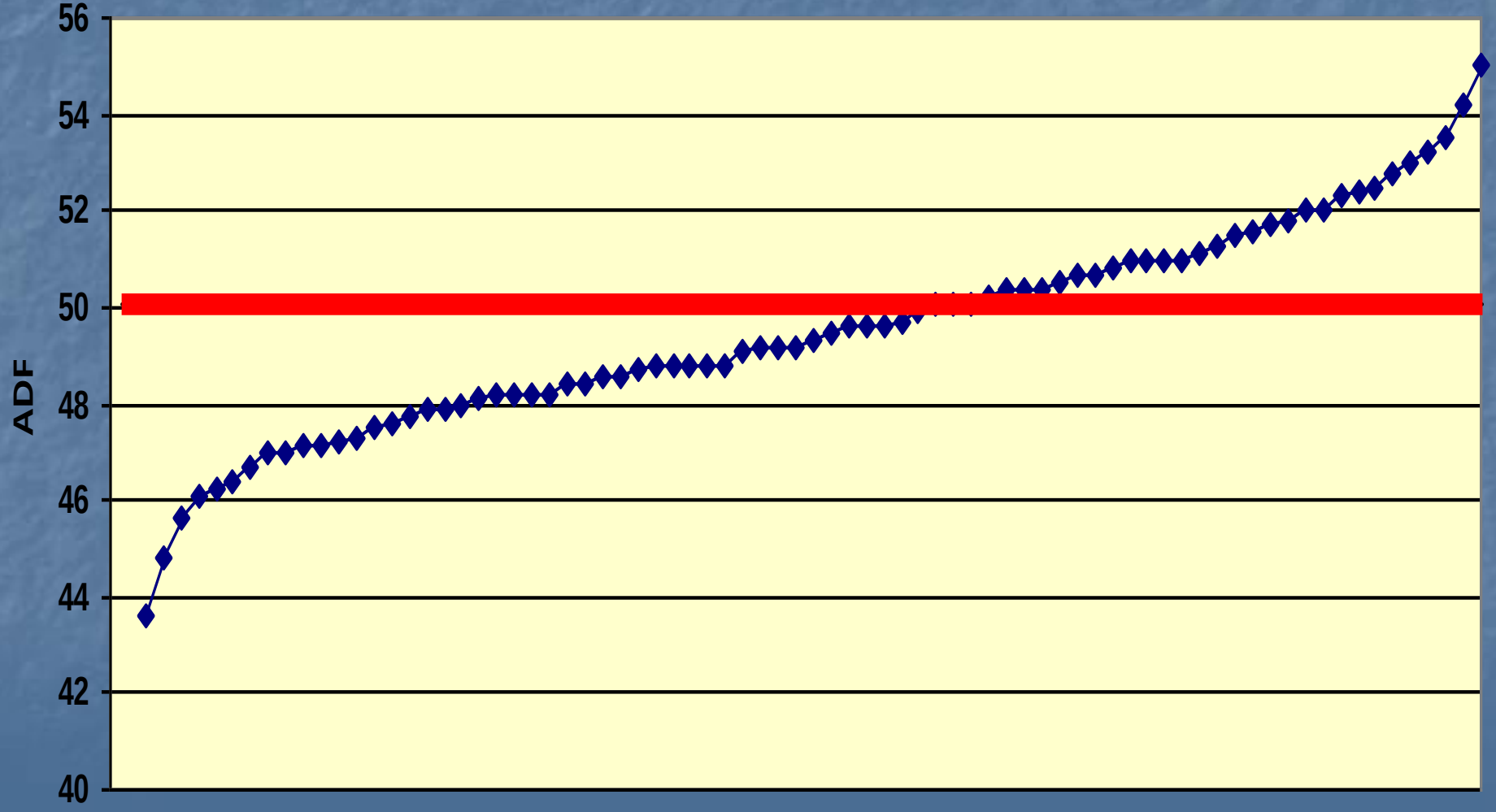
Rice Straw

- Lab testing
- Minimum criteria
  - ADF – 50 or lower
  - CP 4.5 or higher
  - 10- 13% moisture (Not Dairy)
  - Only 31.4 percent of samples met these guidelines
- http://www.ricestrawmarket.org/

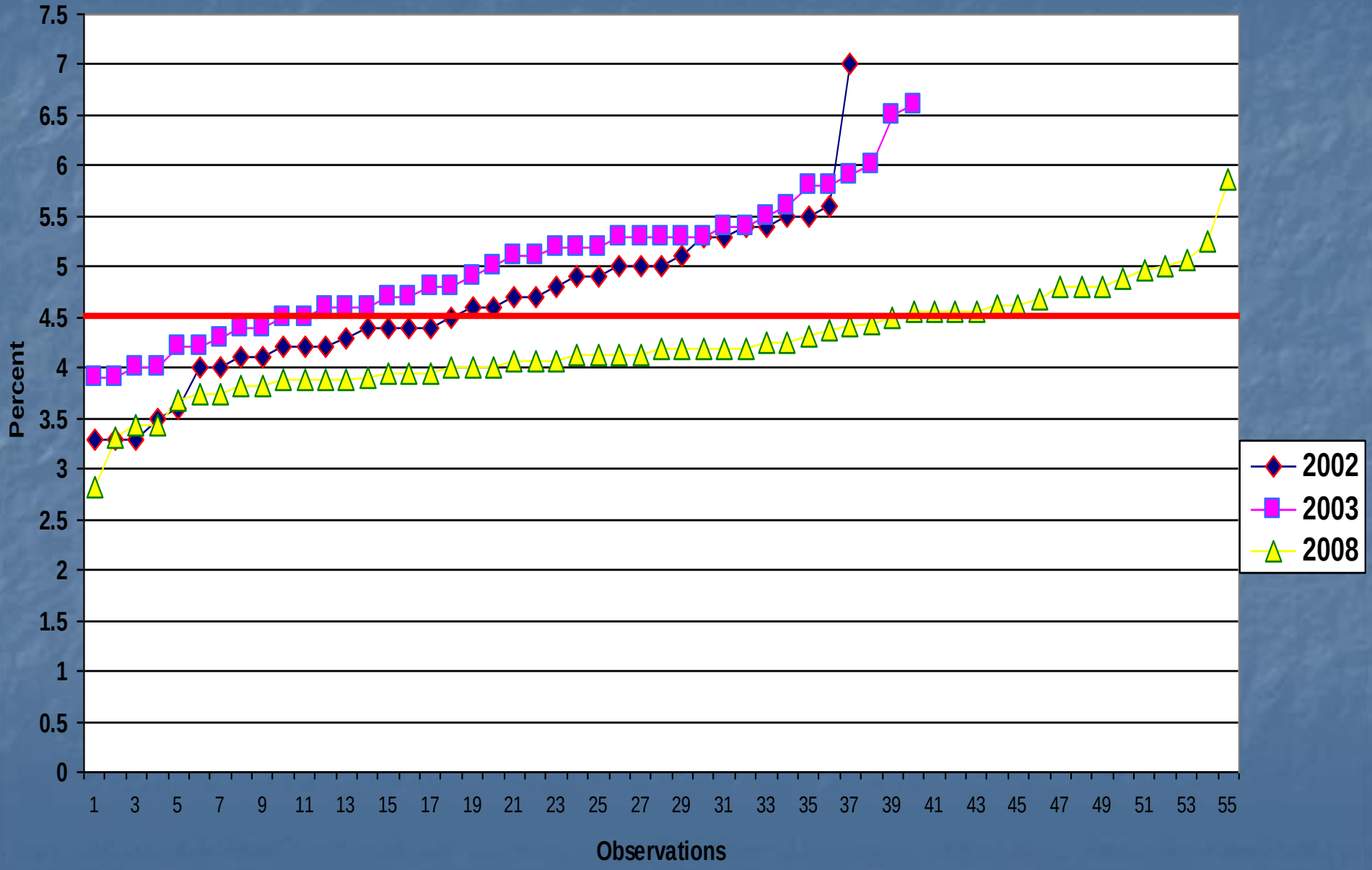
Crude Protein

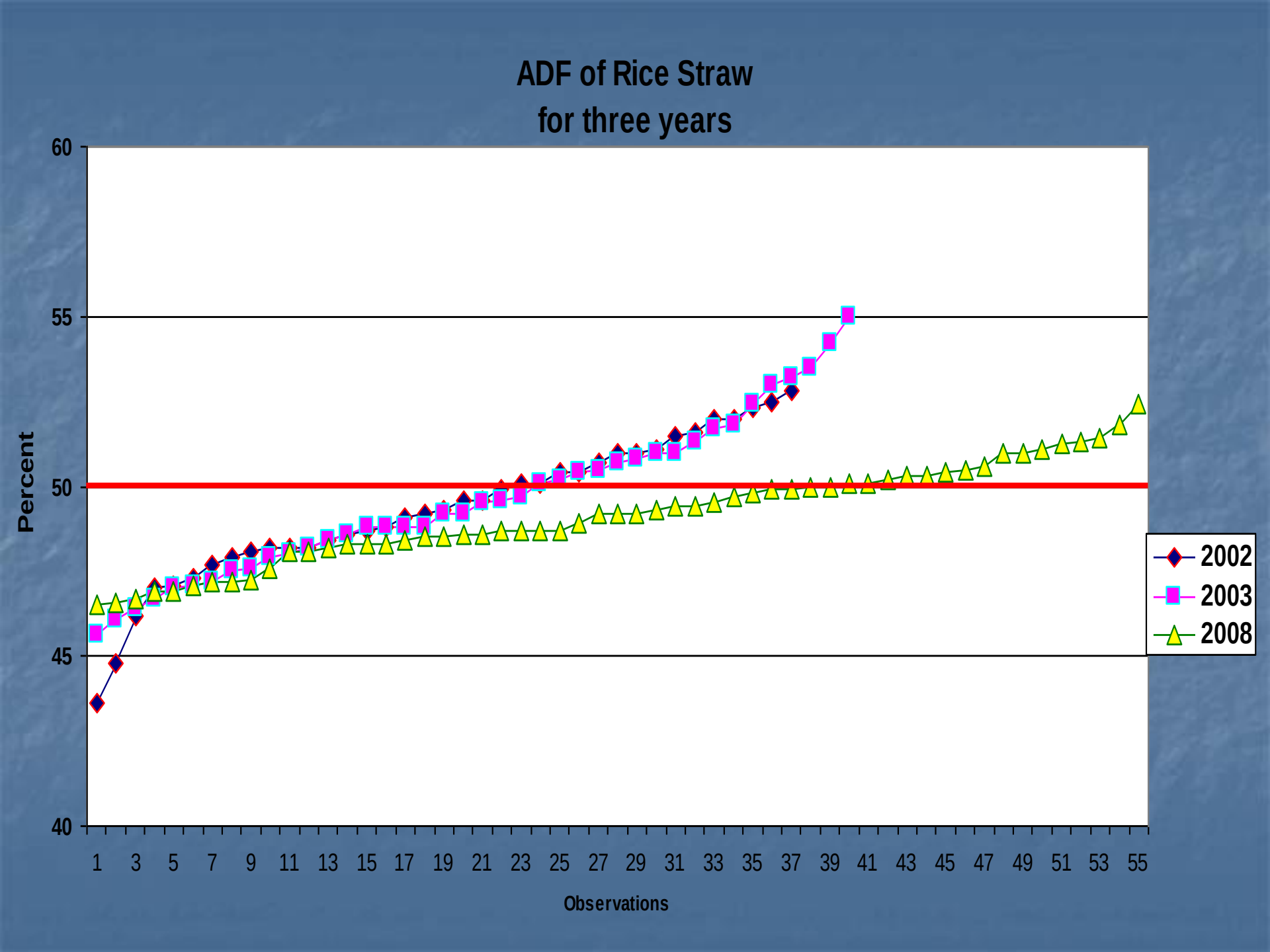


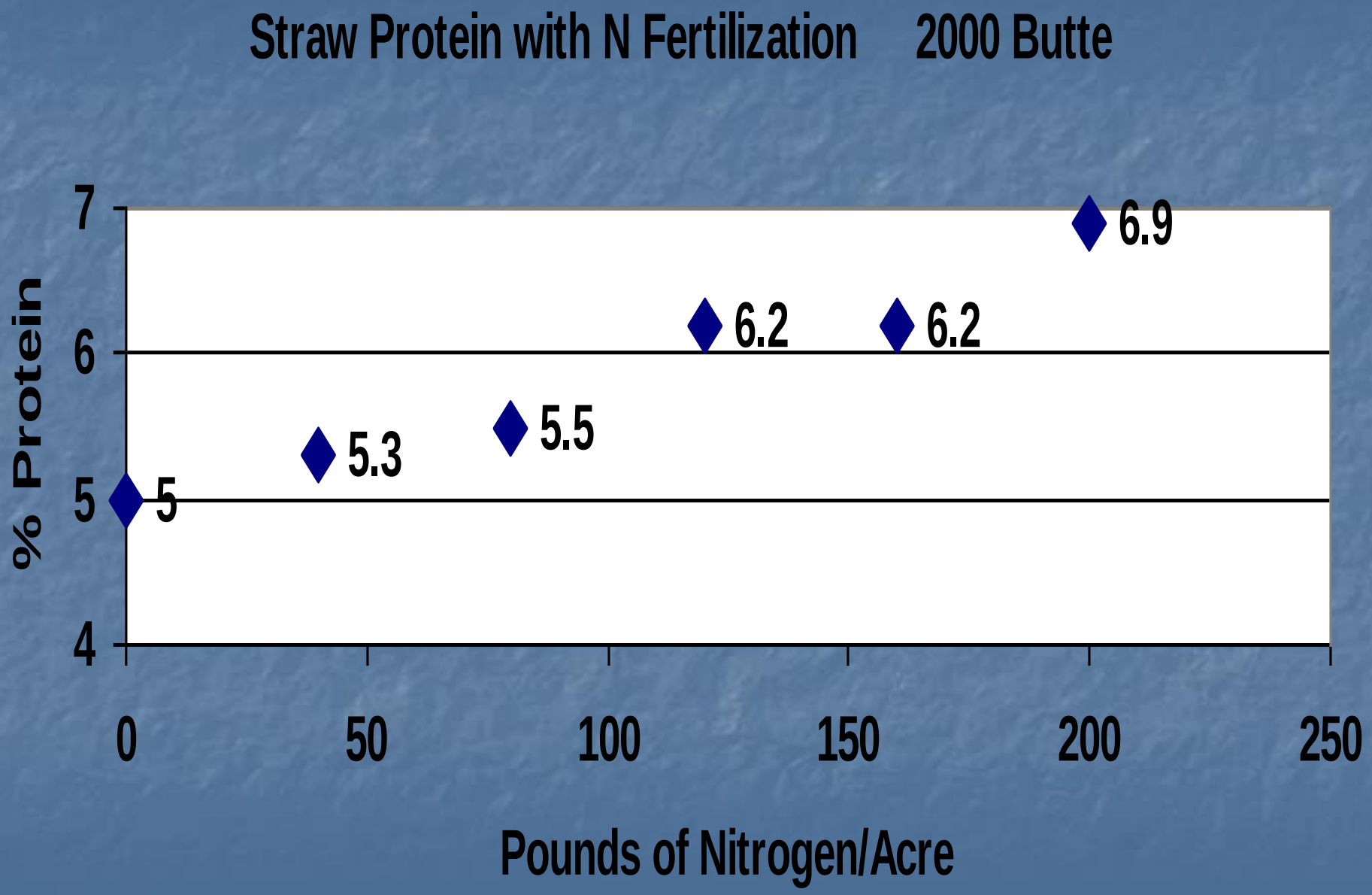
Rice Straw Variability Study (2002/2003)
77 samples



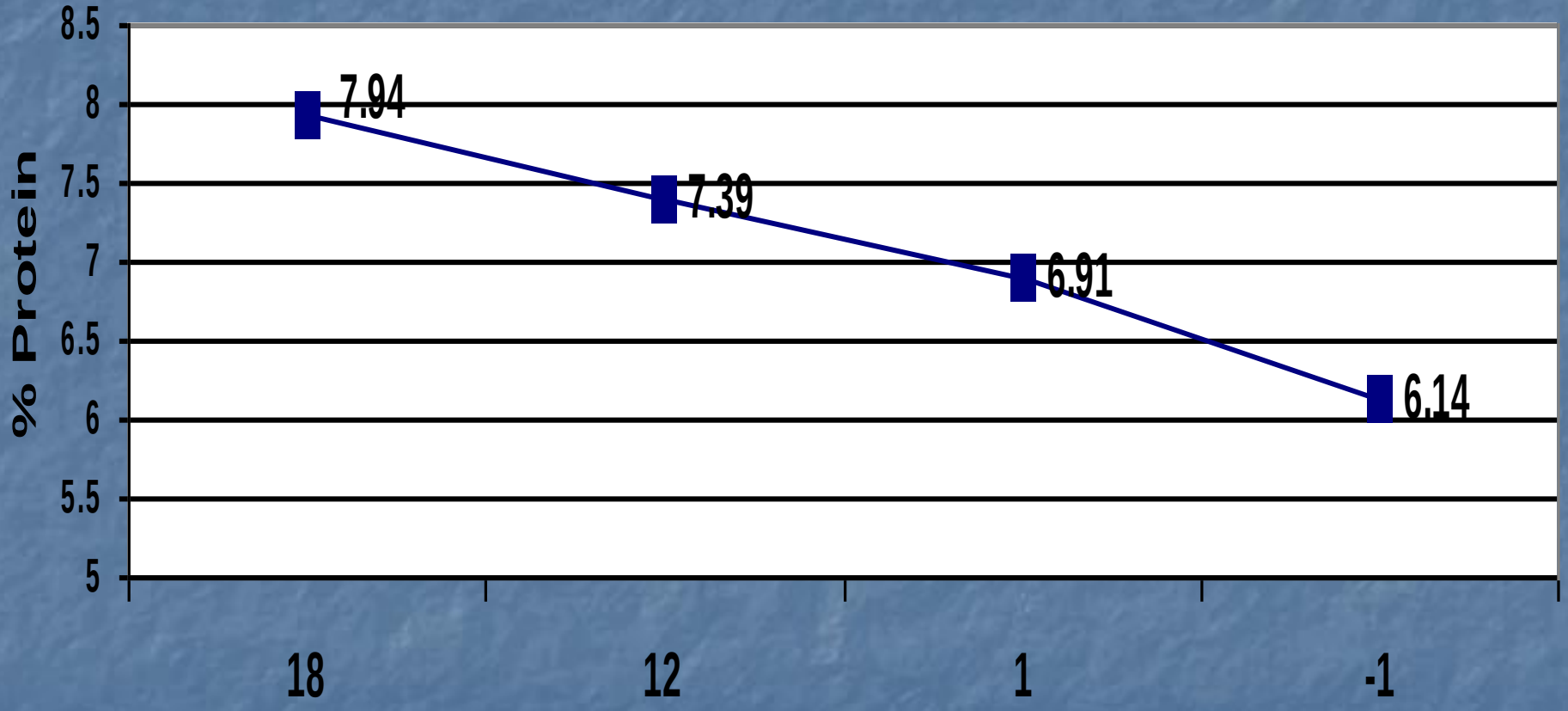
Crude Protein of Rice Straw for three years



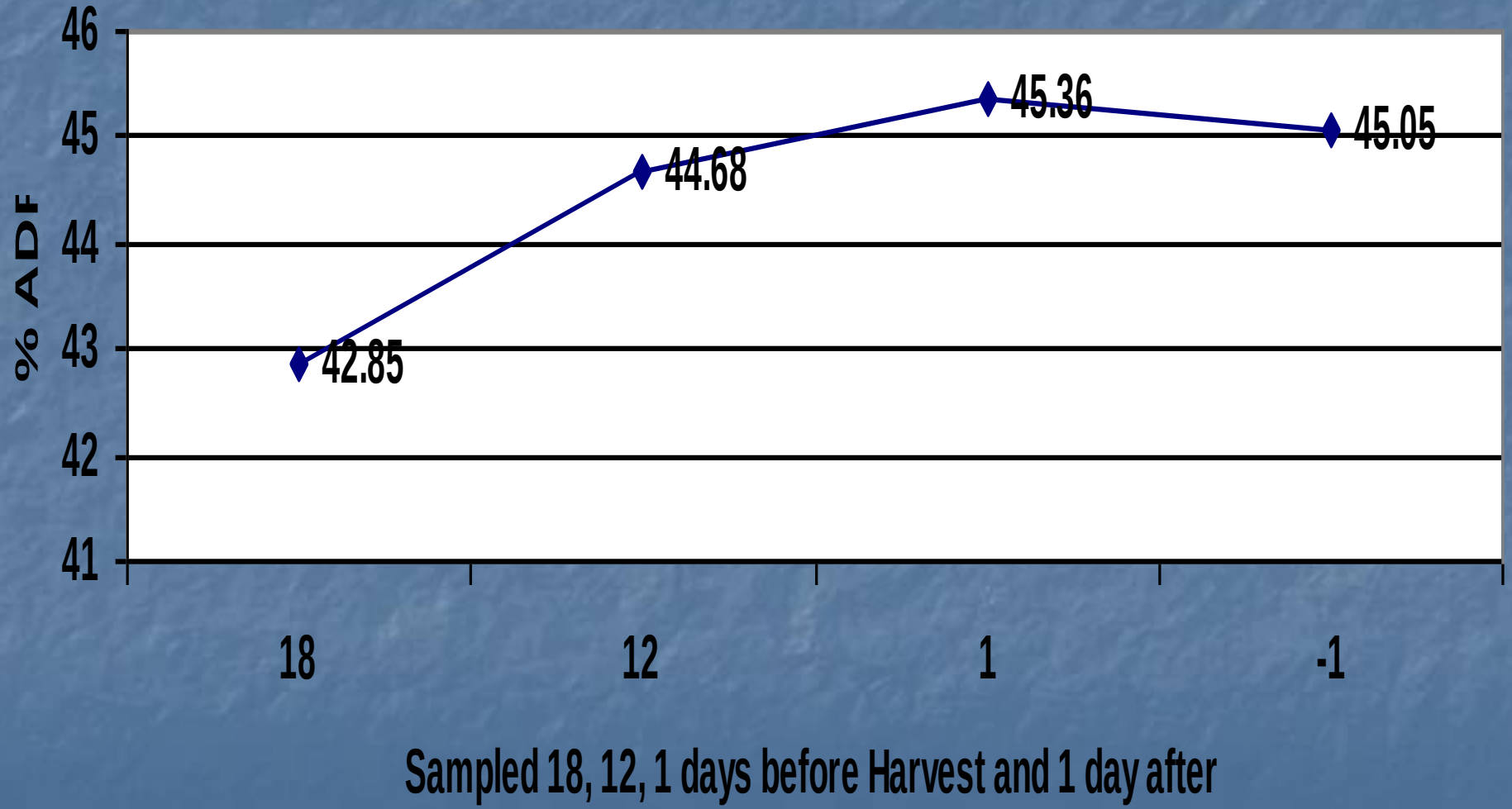

ADF of Rice Straw
for three years
60
55
50
45
40
Percent
1
3
5
7
9
11
13
15
17
19
21
23
25
27
29
31
33
35
37
39
41
43
45
47
49
51
53
55
Observations
2002
2003
2008


Straw Protein with N Fertilization 2000 Butte
% Protein
7
6
5
4
6.9
6.2
6.2
5.5
5.3
5
0
50
100
150
200
250
Pounds of Nitrogen/Acre

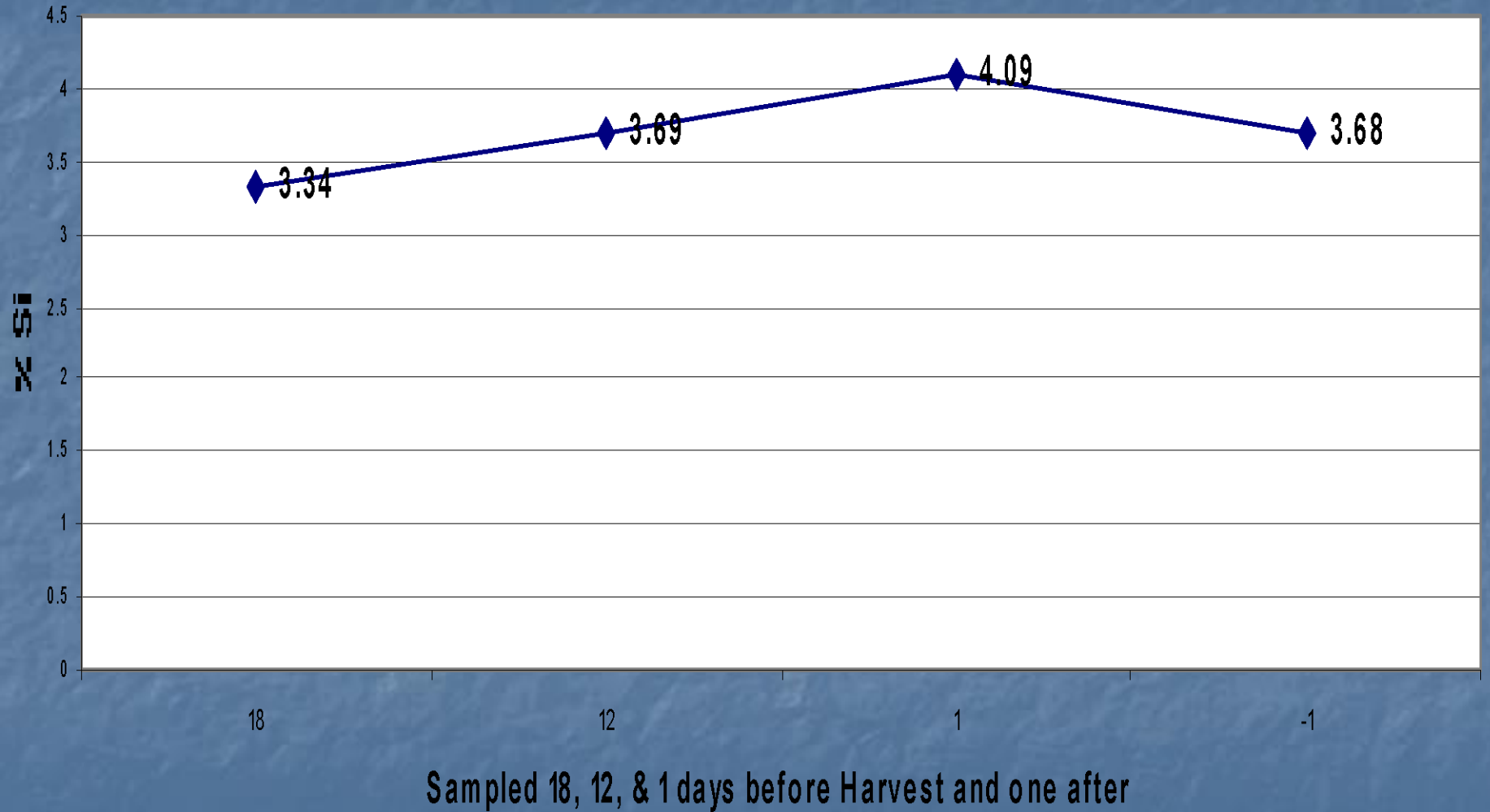
Rice Straw Protein Content Over 19 days

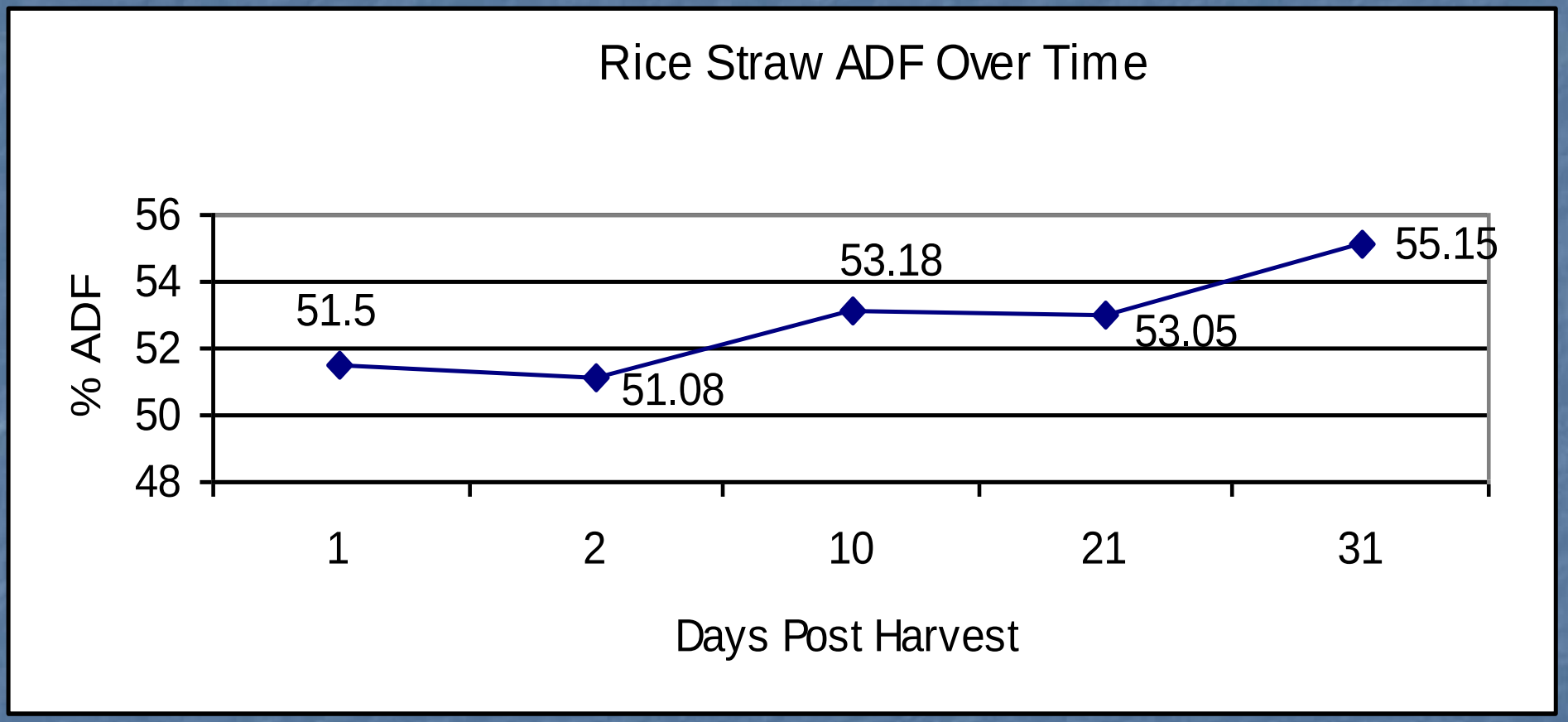


Rice Straw Acid Detergent Fiber Content over 19 days

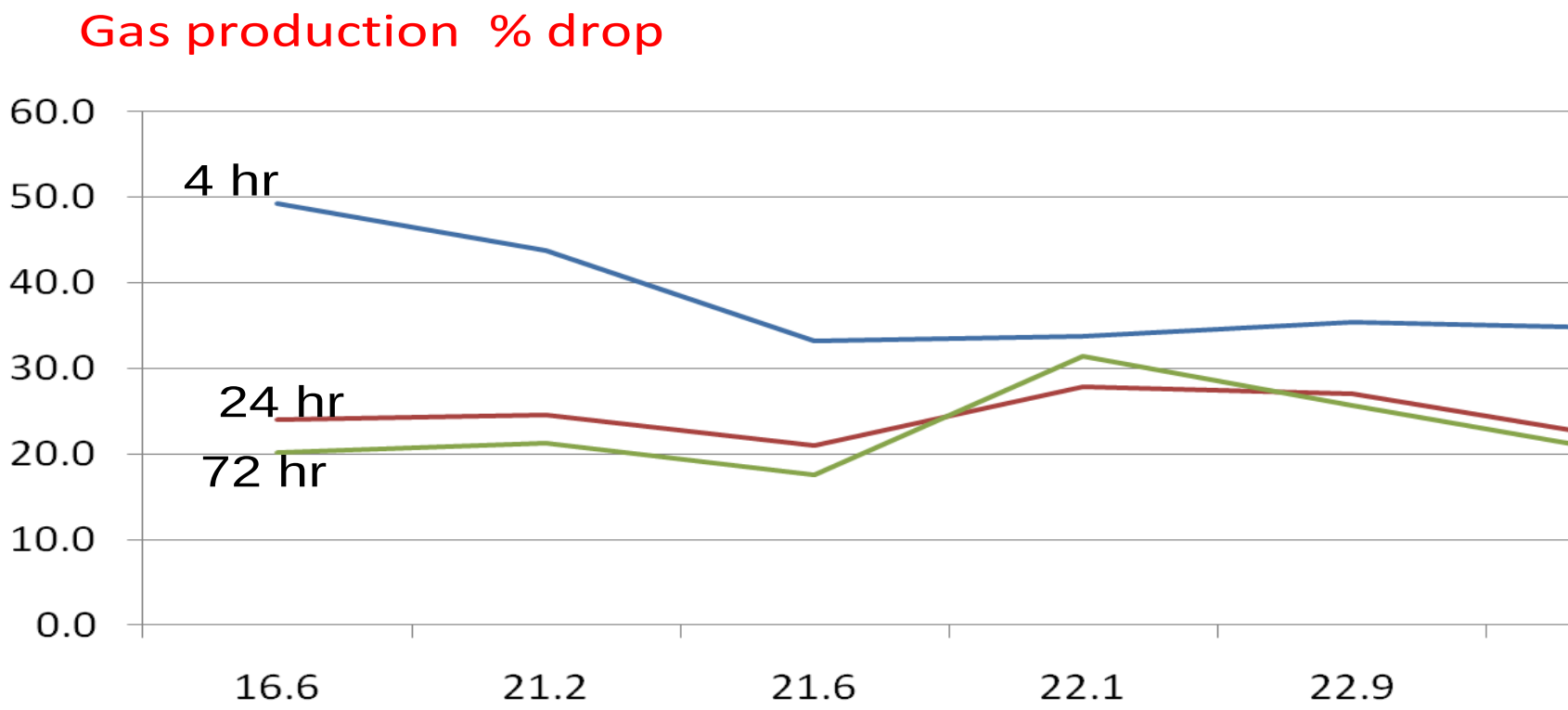


Rice Straw Silica Content




Rice Straw ADF Over Time
% ADF
56
54
52
50
48
51.5
51.08
53.18
53.05
55.15
1
2
10
21
31
Days Post Harvest

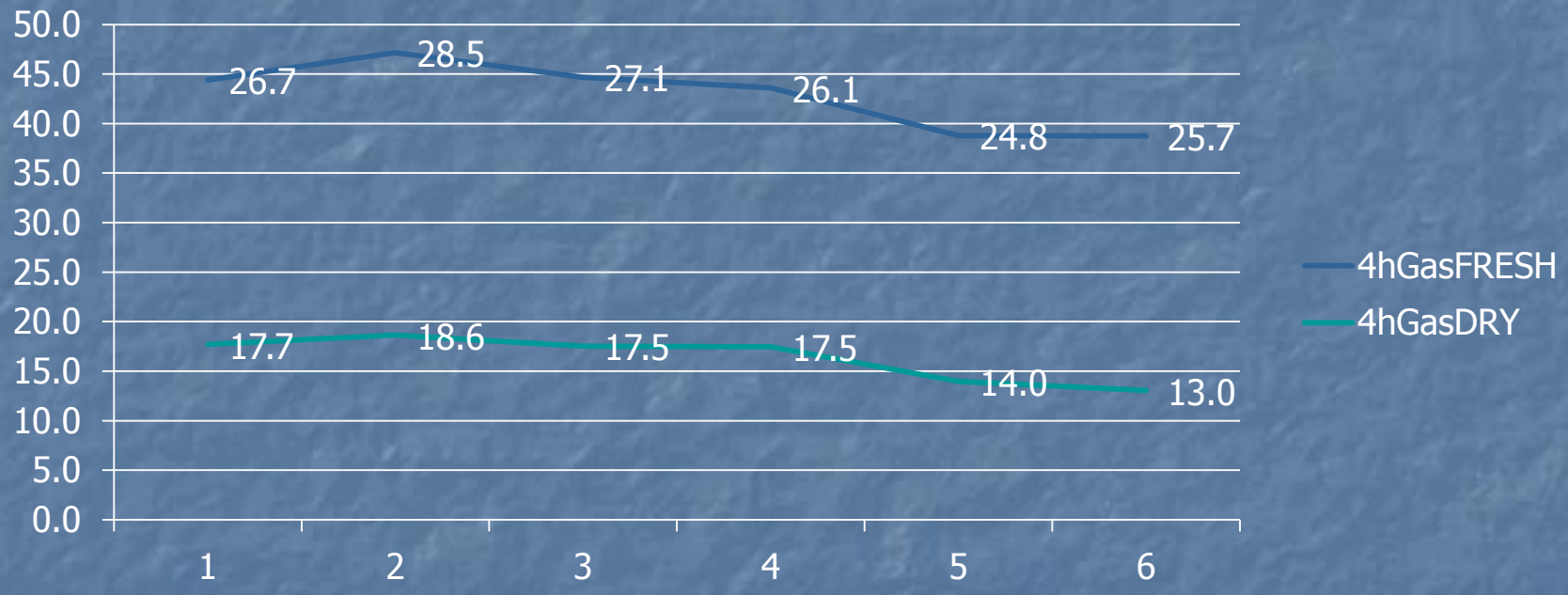
Wet verses Dry In Vitro Gas Production



- 4h gas production registered the biggest drop from fresh to dry plants

Rice straw study 2008

4h Gas production (ml /gOM)



p (Age /Linear) = 0,041

Variation in Quality

- Fertility (Protein)
- Plant Maturity (ADF, Protein)
- Location – soils (Silica)
- Variety (ADF, Protein)
- Time of Baling (6 days)

PUBLICATION **8079**

Feeding Rice Straw to Cattle

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Feed is the largest single cost of producing beef. Producers who have access to alternative feeds often have economic advantages due to the lower costs of production. However, alternative feeds can present challenges due to variable consistency, variable supply, potential toxicants, and unusual composition. Rice straw, a by-product of the rice grain industry in Northern California, is a potential alternative feed for cow and calf producers. Increasing regulations and restrictions on burning rice straw has stimulated interest in using it for other purposes, including cattle feed.

Because rice straw has limited nutritive value (low crude protein and digestibility), it should be used only as a replacement for part of the forage in a ration. It should not be used as a complete ration. Studies of feeding rice straw have shown mixed results, depending on the quality of the straw and how it was used in the ration (see Garret 1978; Garrett and Dunbar 1992; Hull et al. 1972; Nader 1999, 2000; Nader et al. 1998). Poorer animal performance has usually occurred when rice straw was the only feed.

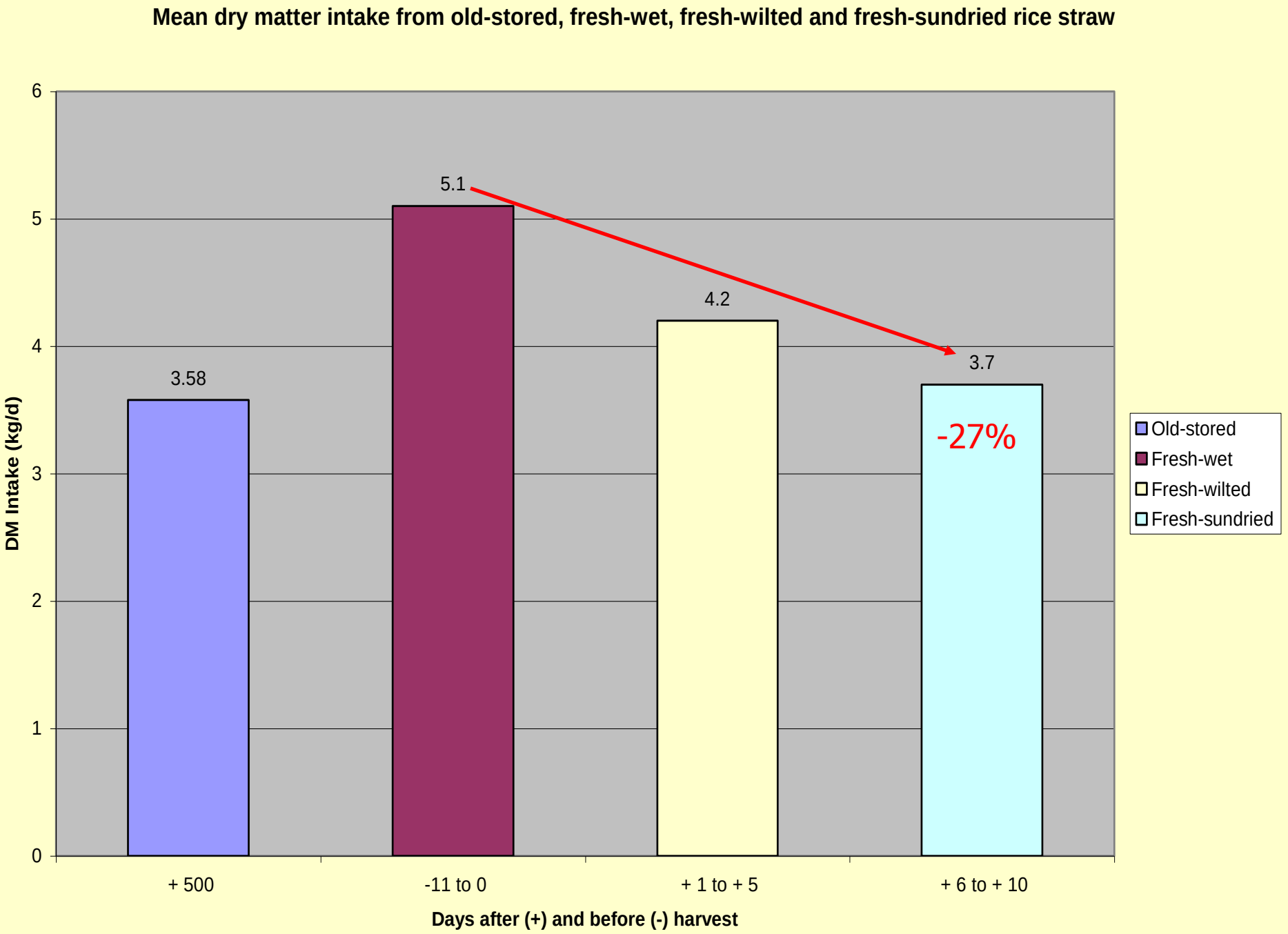
UC PEER REVIEWED

Management by rice growers to produce higher-quality rice straw permits cattle producers to use rice straw as a feed. In this way, straw, a by-product for the rice grower, does not become an air-quality hazard when burned and is converted instead into high-quality human food.

KEYS TO MAKING RICE STRAW WORK IN YOUR CATTLE FEEDING OPERATION

- Make sure the rice straw was baled within 10 days of harvest.
- Test the rice straw for crude protein and ADF, preferably before purchase.
- Determine what other feeds or supplements will have to be provided to meet the nutritional needs of animals.
- Compare costs of feeding options or alternatives.

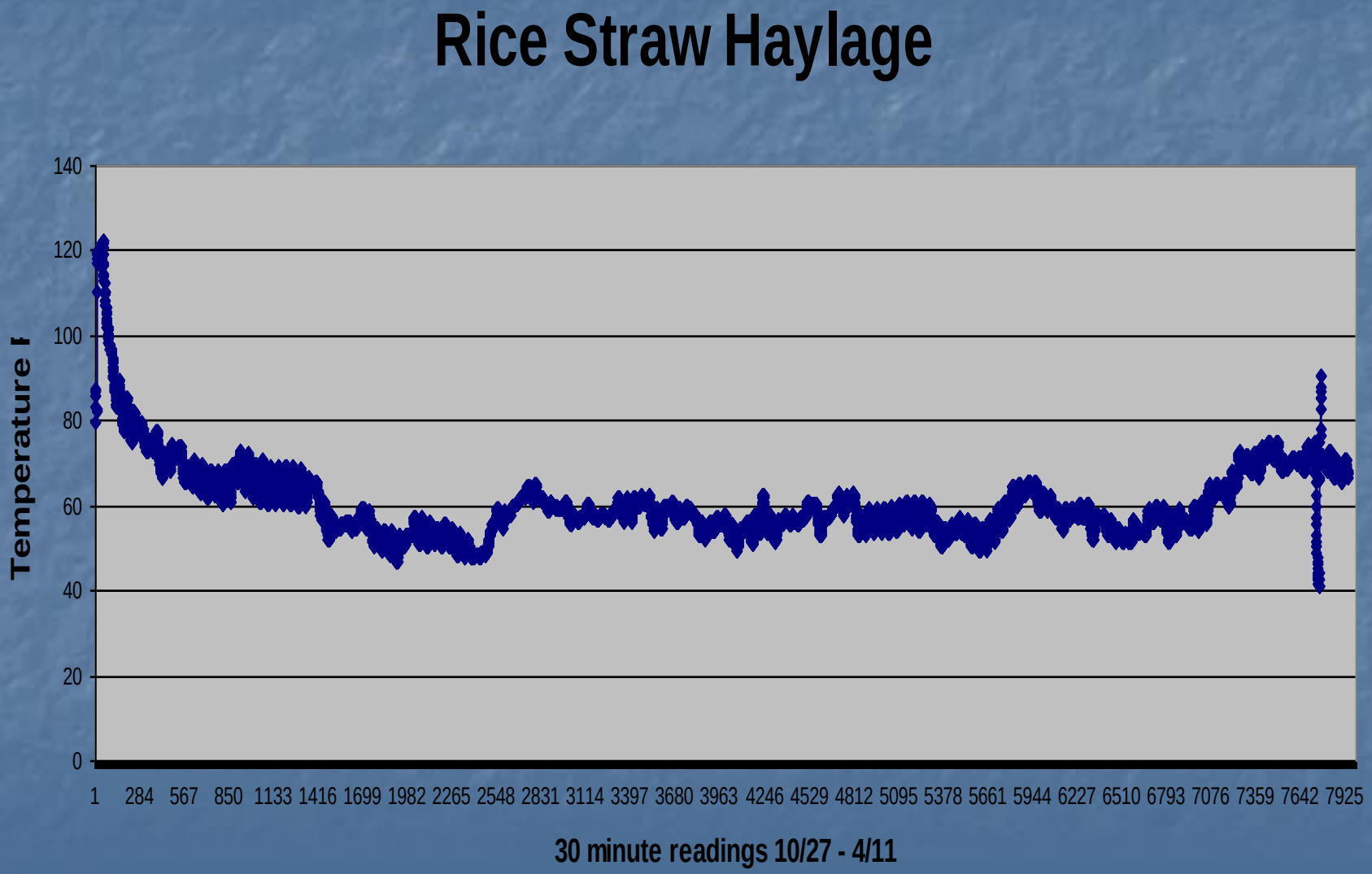
- UC Peer Reviewed
- 18 pages
- Online http://anrcatalog.ucdavis.edu/pdf/8079.pdf


Mean dry matter intake from old-stored, fresh-wet, fresh-wilted and fresh-sundried rice straw
DM Intake (kg/d)
0
1
2
3
4
5
6
3.58
5.1
4.2
3.7
-27%
+ 500
-11 to 0
+ 1 to + 5
+ 6 to + 10
Days after (+) and before (-) harvest
Old-stored
Fresh-wet
Fresh-wilted
Fresh-sundried

CONCLUSION

- Dry down is associated with a change in rice straw that reduces
  - ~ 20% loss in fermentability
  - ~ 30% loss in intake
    - moves a modest value forage to poor

Temperature



	Averages			
	M202 Swath	Koshi Swath	401 Swath	401 Half Plant
Dry matter	42.6	35.2	36.7	38.0
Organic matter (% DM)	82.0	83.8	82.6	83.3
Crude Protein (% DM)	4.82	5.62	6.02	5.95
Digested CP (% CP)	88.2	86.8	90.1	89.7
Fat (% DM)	1.65	1.87	2.52	2.52
NDF (% DM)	64.9	71.3	68.6	69.2
Digested NDF (% NDF)	27.4	27.1	33.6	32.2
ADF (% DM)	49.6	51.0	49.5	48.8
ME (Mcal/lb DM)	0.47	0.40	0.53	0.51
Dry Straw ME	.35			

Intake

401 half plant	Koshi	M202	401 whole plant
28 (11.2)	28.28 (11.3)	25.91 (10.36)	25.99 (10.4)

Corn Stover

- Increase in corn production
- Feeders
- Varies in value
- CP – (3.7 to 5.2)
- TDN - (49 to 54)
- Dirt
- Nitrates

Equipment that compresses cobs, husks and leaves into bales, such as this Challenger system from AGCO, are the newest option for biomass harvest.

Corn Stover

NO3-N ->1500 to 4500= Caution

Corn Stover Analysis Results

	DM	CP	TDN	NO3-N
1	85.8	3.7	53.4	
2	82.1	4.5	52.5	1270
3	84.6	5.1	54.3	1560
4	77.8	5.2	49.8	750
5	84.8	3.9	55.2	705
Average	**83.02**	**4.48**	**53.04**	**1071**

all results are reported on a Dry Matter basis

Comparison

	Crude Protein	TDN	Ash
Corn Stover	5.9	50	5.8
Rice Straw	4.5	41	16.6
Lima Bean Straw	11.3	51	9.3

Source - By-Products and Unusual Feedstuffs in Livestock Rations Western Regional Extension Publication, No. 39

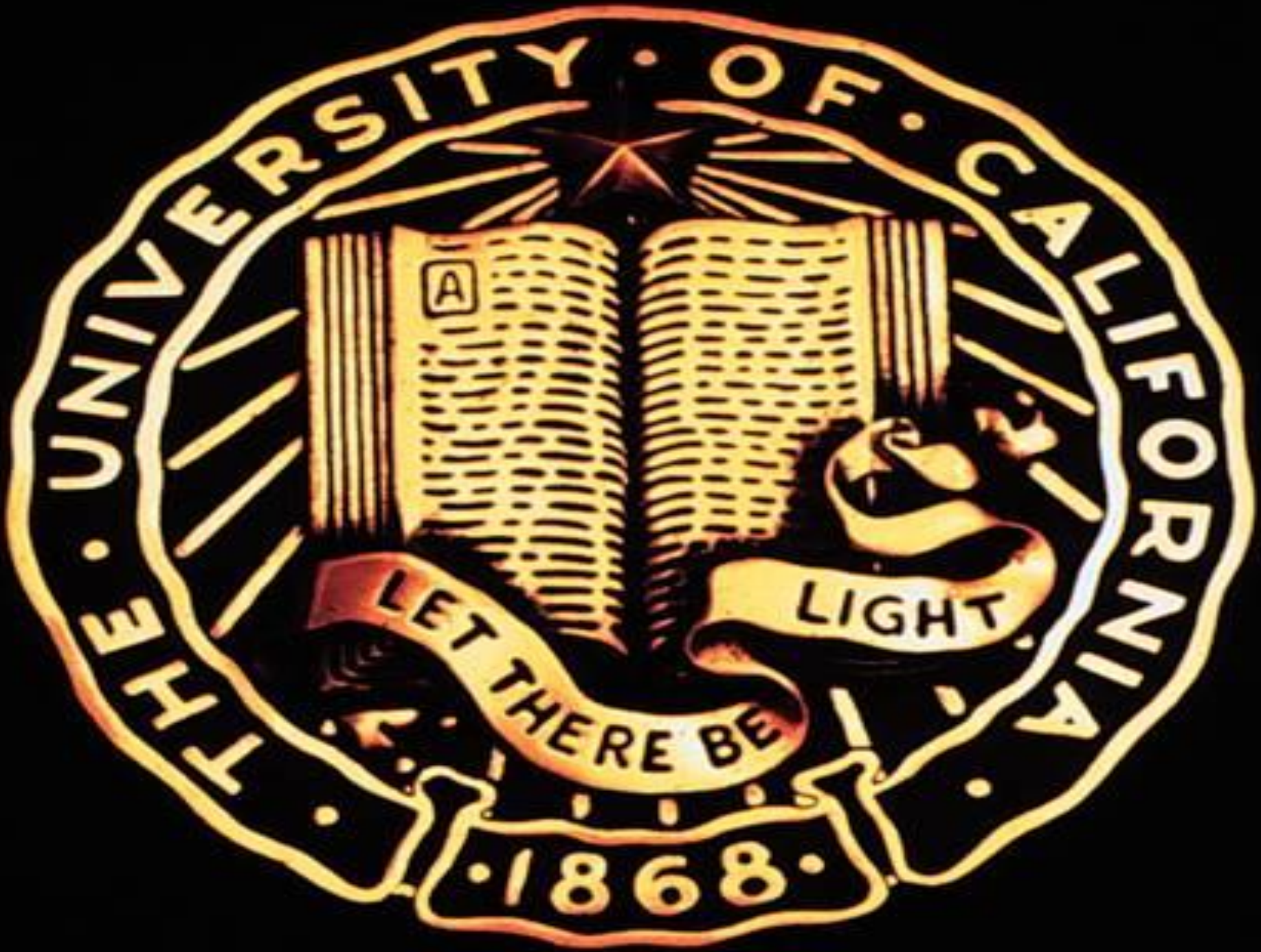
Rice Bran

- Brown to white rice- polished
- CP 14%
- TDN 76%
- Phos 1.67%
- More than 20% - fiber digestion
- Rancid in warm weather

Rice Bran - Supplement

- Salt to control intake
- 50% to start
- $235-265/ton (2012 $160)

Cowboy Logic: *"Life is like a roll of toilet paper.*
The closer it gets to the end, the faster it goes."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LET THERE BE LIGHT
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