

# Why Consider Strawlage and the Challenges in Production

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Peter Robinson

# Cooperative Extension

- The System Design
- Farm Advisors – Producers
- Farm Advisors – Specialist
- Knowledge to applied solutions

Thanks to the Rice Research  
Board for 15 year of funding

# Drought

- Limited feed resources
- Limited water for straw decomposition
- Potential benefit to both

# Knowledge and Risk

- University – research all the questions
- More knowledge less risk
- Tell what we know from
  - Two years of demonstration
  - Producers experiences

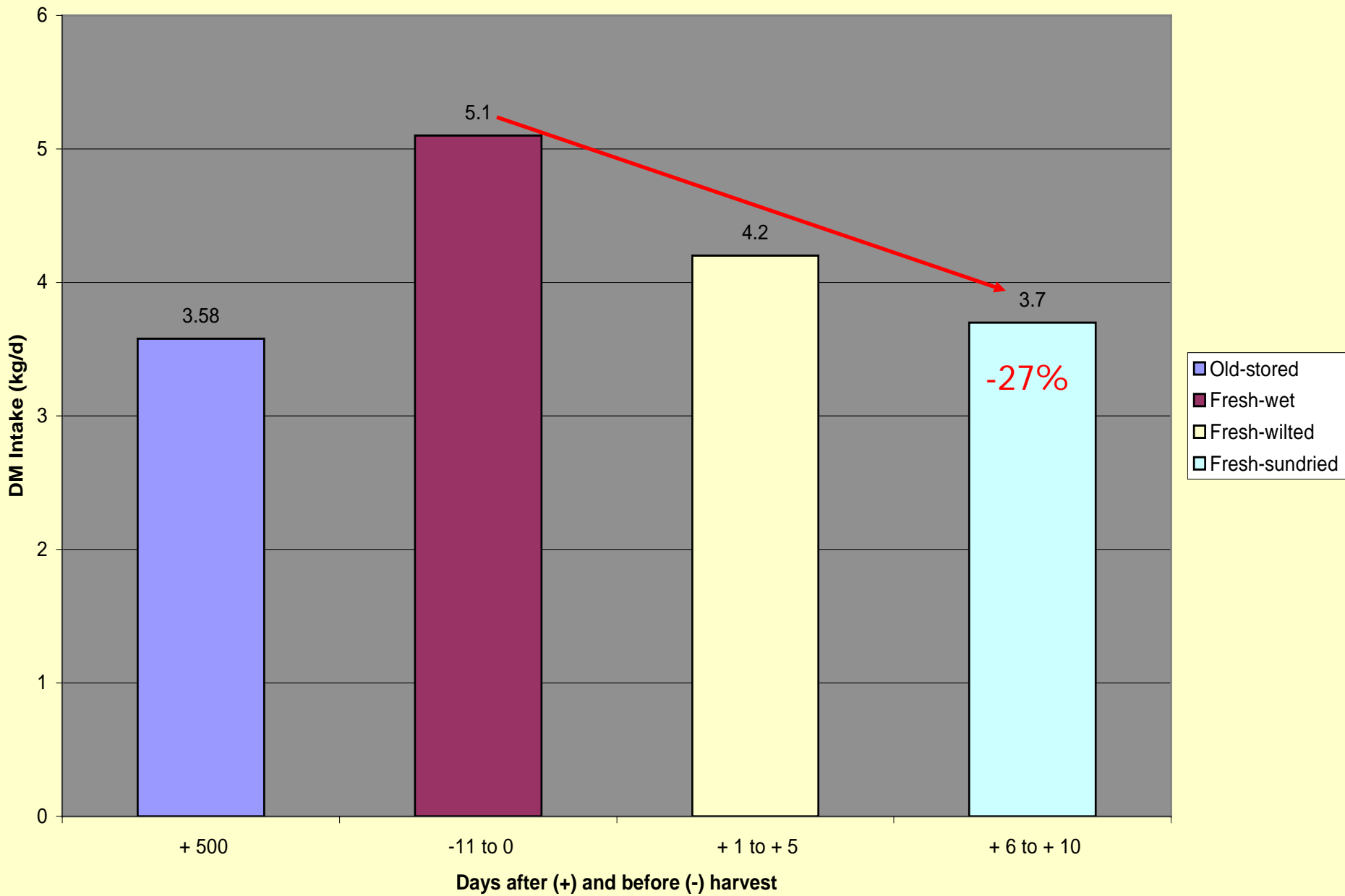
# Today's Meeting

- Present what we know
- Let each evaluate risk in their operation
- Go home with all the tools to implement

# Research on intakes of rice straw at Different Moistures

- Fed straw
  - At harvest - fresh wet
  - Dry in field –fresh wilted
  - Sun dried
- Measured animal intakes

# Mean dry matter intake from old-stored, fresh-wet, fresh-wilted and fresh-sundried rice straw





# Research Conclusions

- 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

# Why the Nutrient loss with Drying

- Silica
- Cellulose structure
- Pectin – wax coating
- Henry Smith – Just do it

# Strawlage

- Less moisture loss higher digestibility
- Not silage, lower temperatures, less sugars
- Bale right behind the harvester
- 55 to 75% moisture – target range
- 80% and up can cause botulism

Round Bale wrap  
Henry Smith Ranch  
1999 - 2000











# Intakes

## Mature cows

The following consumption (lbs/day) for rice strawlage was measured:

	<u>401 half plant</u>	<u>Koshi</u>	<u>M202</u>	<u>401 whole plant</u>
1-15-01 to 2-5-01	28	28.28	25.91	25.99
2-06-01 to 2-27-01	25.92	26.36	28.75	26.52
2-28-01 to 3-18-01	20.52	23.88	23.33	23.33

57 to 63% moisture

# Cost /Bale

■ Baling	4
■ Netting	.8
■ Loading in the field	2
■ Trucking 8 miles	4
■ Wrapping plastic	<u>3</u>
■ <b>Total</b>	<b>13.8</b>

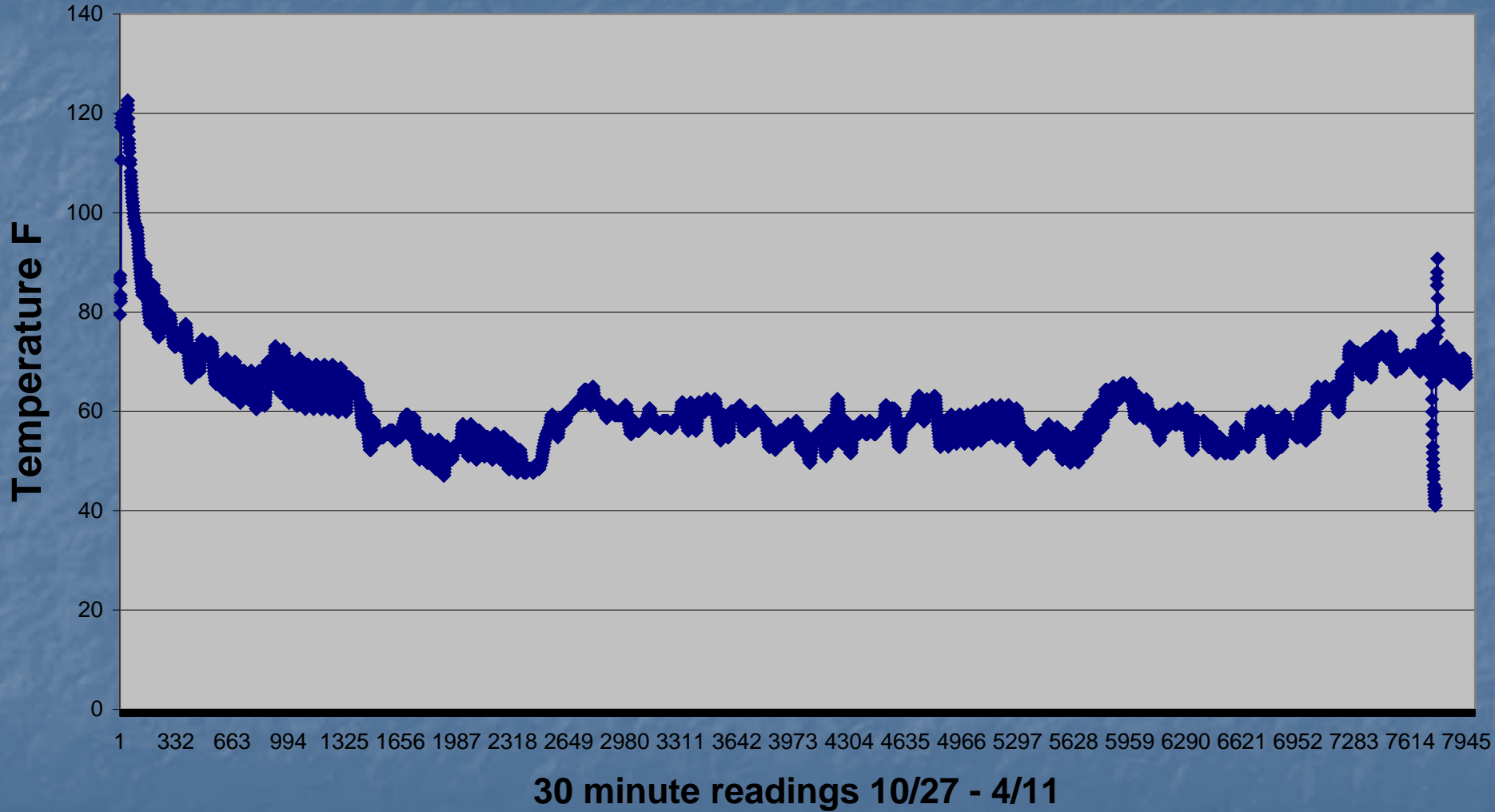
- 840 lbs. bale avg. at 60% moisture = 336 lbs.  
or \$79/ton

# Smith Ranch – Marysville

## 2 years



# Rice Straw Haylage



# Mold







# How to Address the Mold Smith Ranch

- Tighter bales (decrease oxygen)
  - Pay custom baler by ton not by bale
  - Make tighter bales
- Nitrogen (urea and UN-32)



# 2013 Demonstration Design

- Bale right behind the Harvester (50% moisture)
- 3 treatments
  - Control
  - Urea and UN 32
  - Cropsaver – (Buffered propionic acid)
- Sample for nutritional analysis
- Monitor for mold formation
- Feed demonstration

# Henry Smith explains how UC needs to make rice strawlage



# Ron LaGrande

Baling at 49% moisture  
2 hrs behind harvester

Spraying on Un32



# Urea application



# Ammonia for nutritional & Mold Prevention at Herb Holzapfel's

## UN 32



24 -1640 bales pounds  
6.7 pounds of urea/ton or \$3.35/ton and UN 32  
at 52 pounds/ton or \$12.87/ton.

The total pounds of nitrogen applied - 19.4  
pounds/ton at a total cost of \$16.22.

No labor costs

## Urea



# CropSaver (8 lbs/ton)

Tank



Pick up spray nozzles



At the 8.4 pound application rate per ton = \$11.65/ton.

# Cover Stacks

Day 0

Day 60



Bale to keep tarp on

# Nutrition and Temperature Data

Peter Robinson



# Tarping of Strawlage Stacks

# Tarp Cover - Smith Design

Side View



End View



Bottom 25' or 20' x 100'

Bales 4x8x3









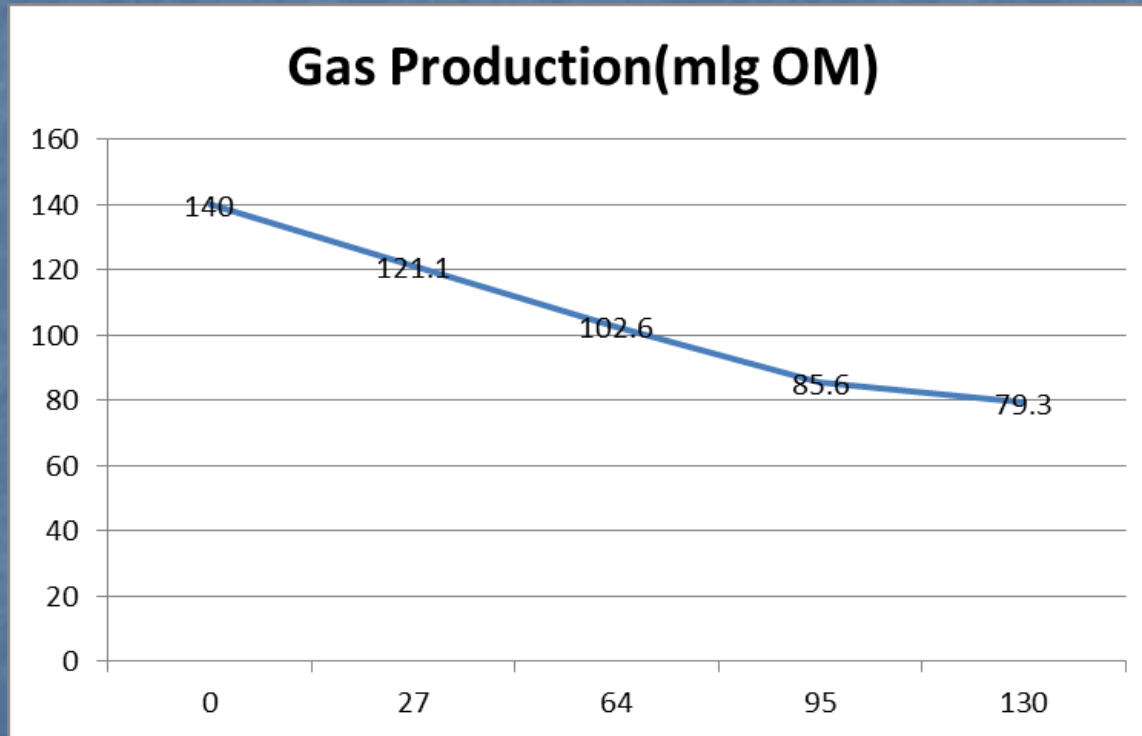






# Nutritional Loss 2013

## Better tarping?







# MOISTURE TESTERS



## Windrow Hay Moisture Tester

### The only one of its kind in the world!

One of the most important decision points in the management of quality hay occurs while the hay is drying in the windrow. Determining the correct moment to begin raking, baling or chopping hay and forage is dependent upon the moisture content.

AGCO is pleased to introduce the first portable Windrow Hay Moisture Tester for quickly measuring hay moisture in the windrow, before baling. Haymakers can finally drive out to the windrow and check moisture content without committing the valuable time and expense of using their baling or chopping equipment before the hay is at the correct moisture.

### Testing is easy!

Add loose hay or forage to a five gallon plastic bucket (not included) and press tester into the hay or forage for measurement.

### Features

- Quickly measures loose hay and forage from a windrow
- Time from sample to test result: 30 seconds to one minute
- Testing range: 13% to 70% moisture
- Accuracy:  $\pm$  2% to 4%
- Two year limited warranty

**AGCO Part No. FX07940**



**GEMPLER'S®**



**\$300.95**

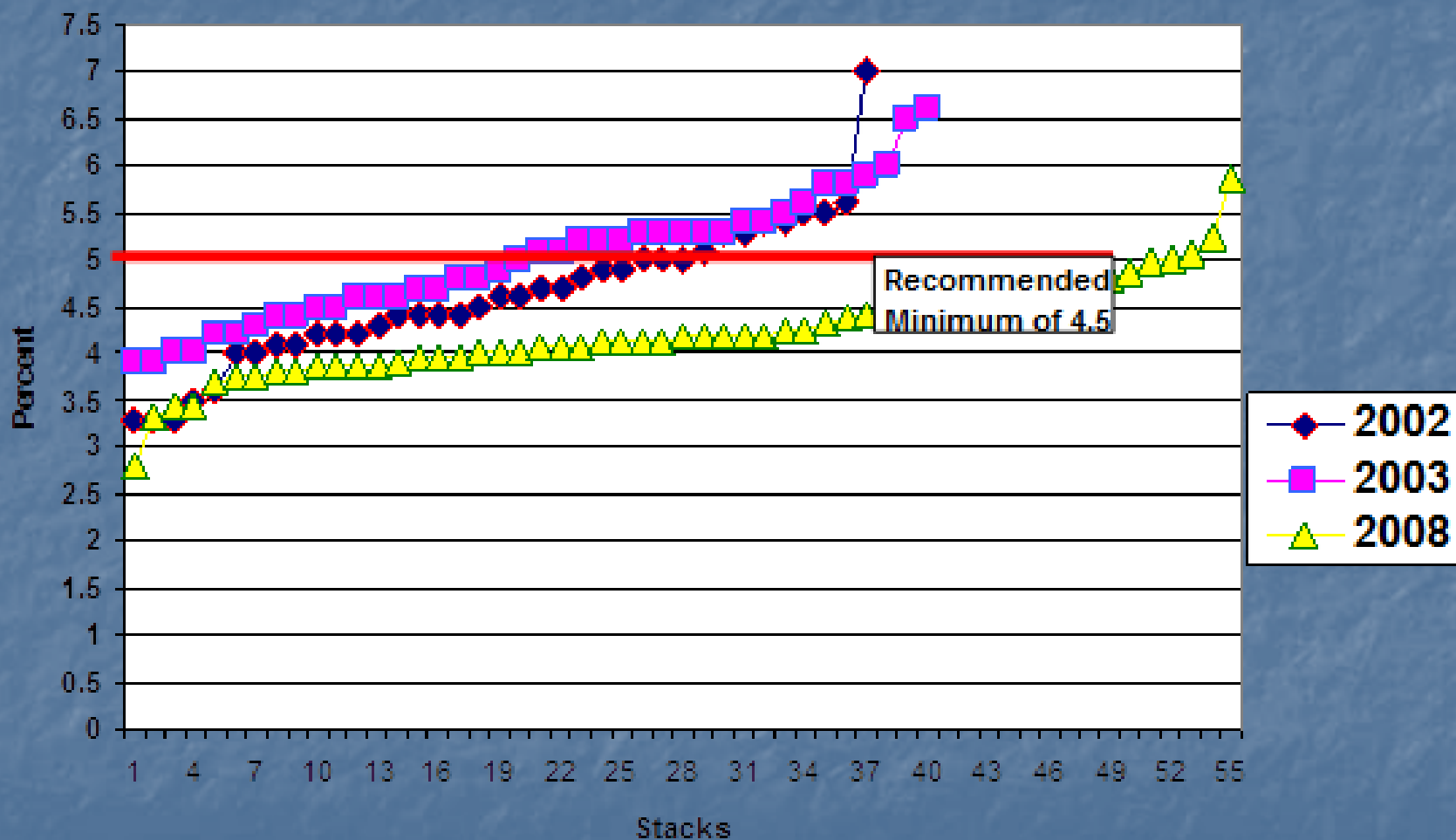
# Challenges

- Keeping a tarp on out in open rice fields when north wind blows
  - Stack in protected areas
- Moisture condenses up against the tarp – top bale has 3" slime straw
  - Silage vents in the top of the tarp?
- Bales are soggy and harder to handle with farm hand
  - Use hay probes to pickup

# Reminder

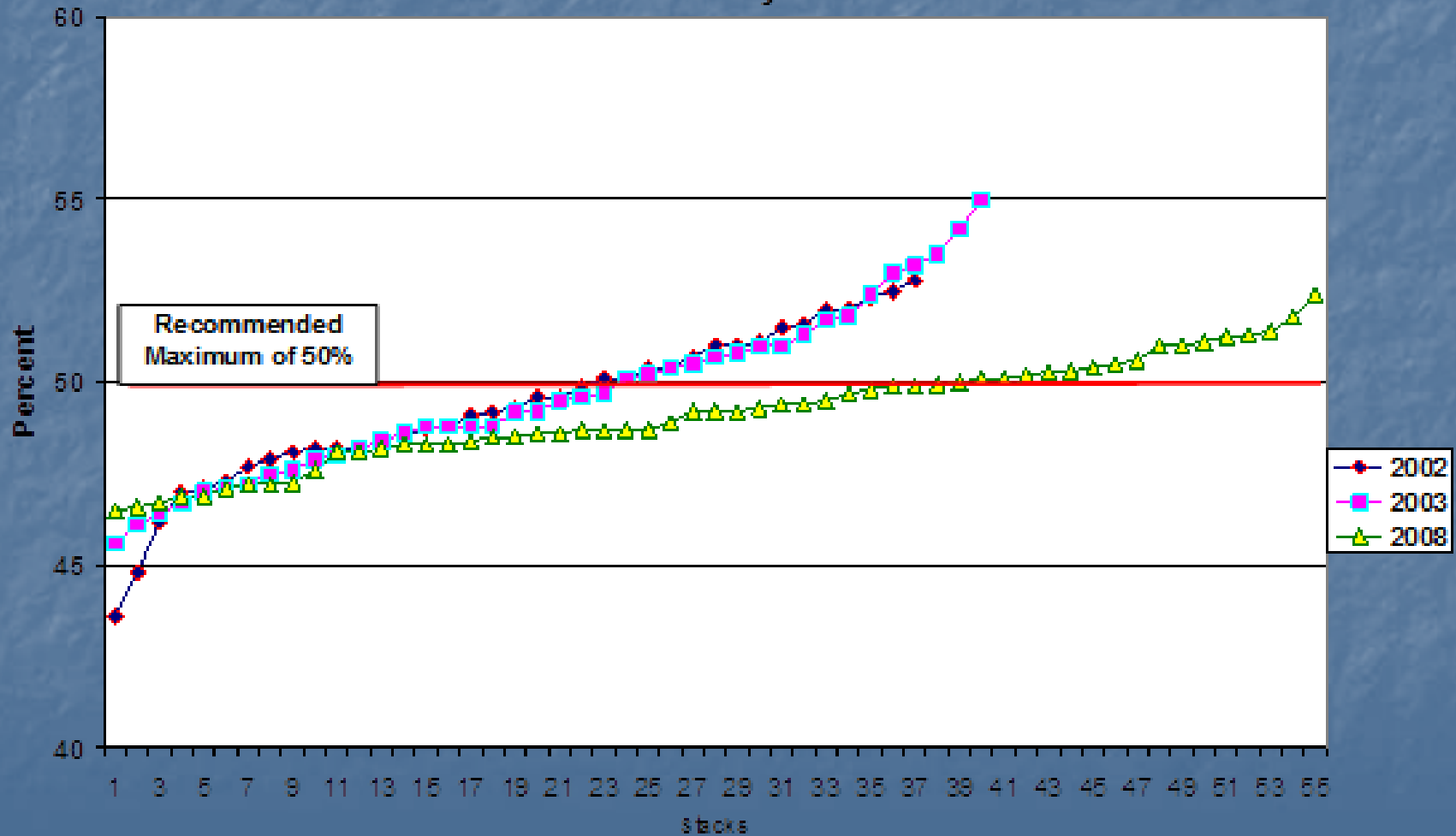
- Rice straw varies in quality greatly
- Reasons
  - Nitrogen management
  - Variety
  - Harvested head moisture

# Crude Protein of Rice Straw for three years



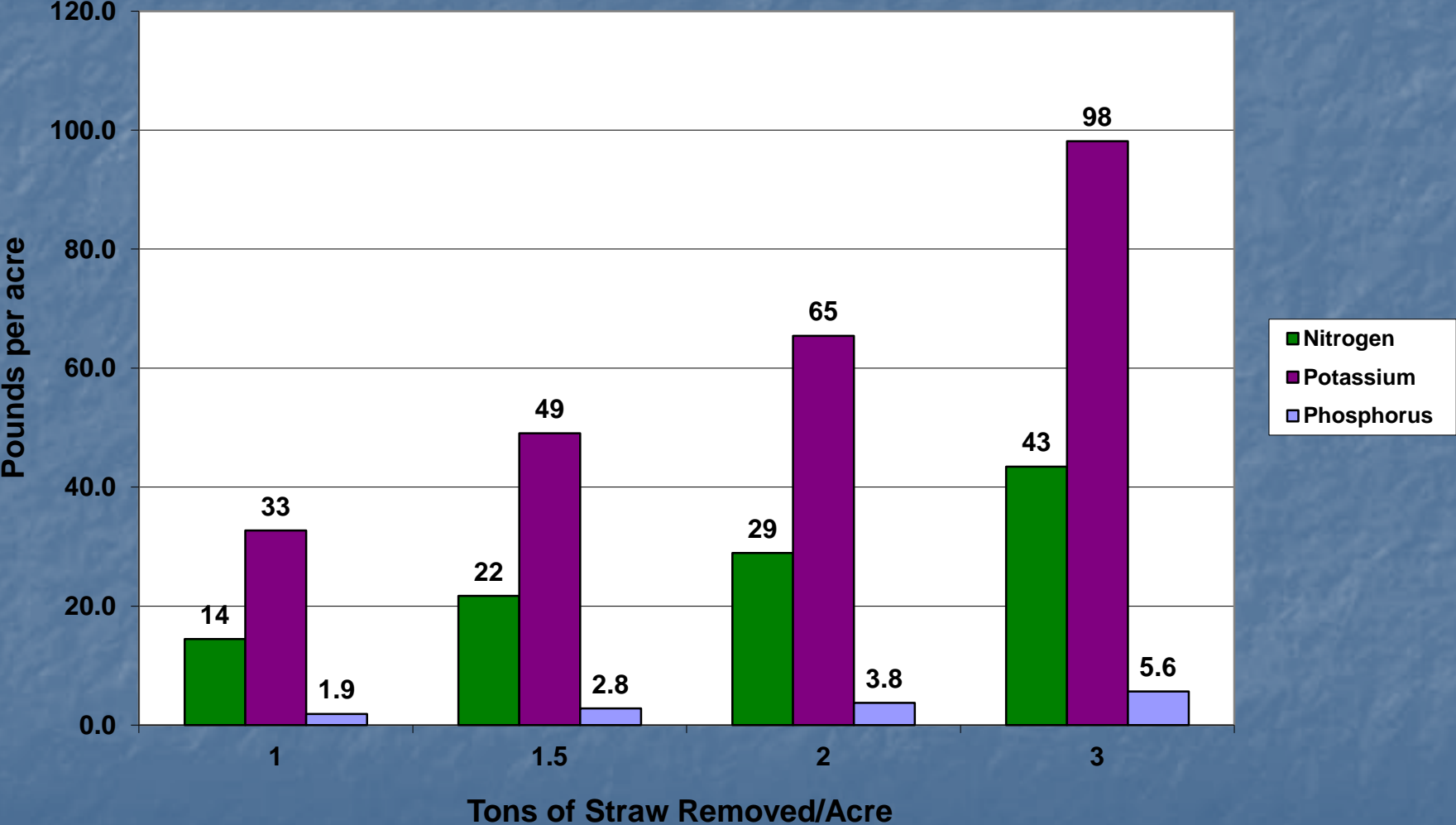


## ADF of Rice Straw for three years

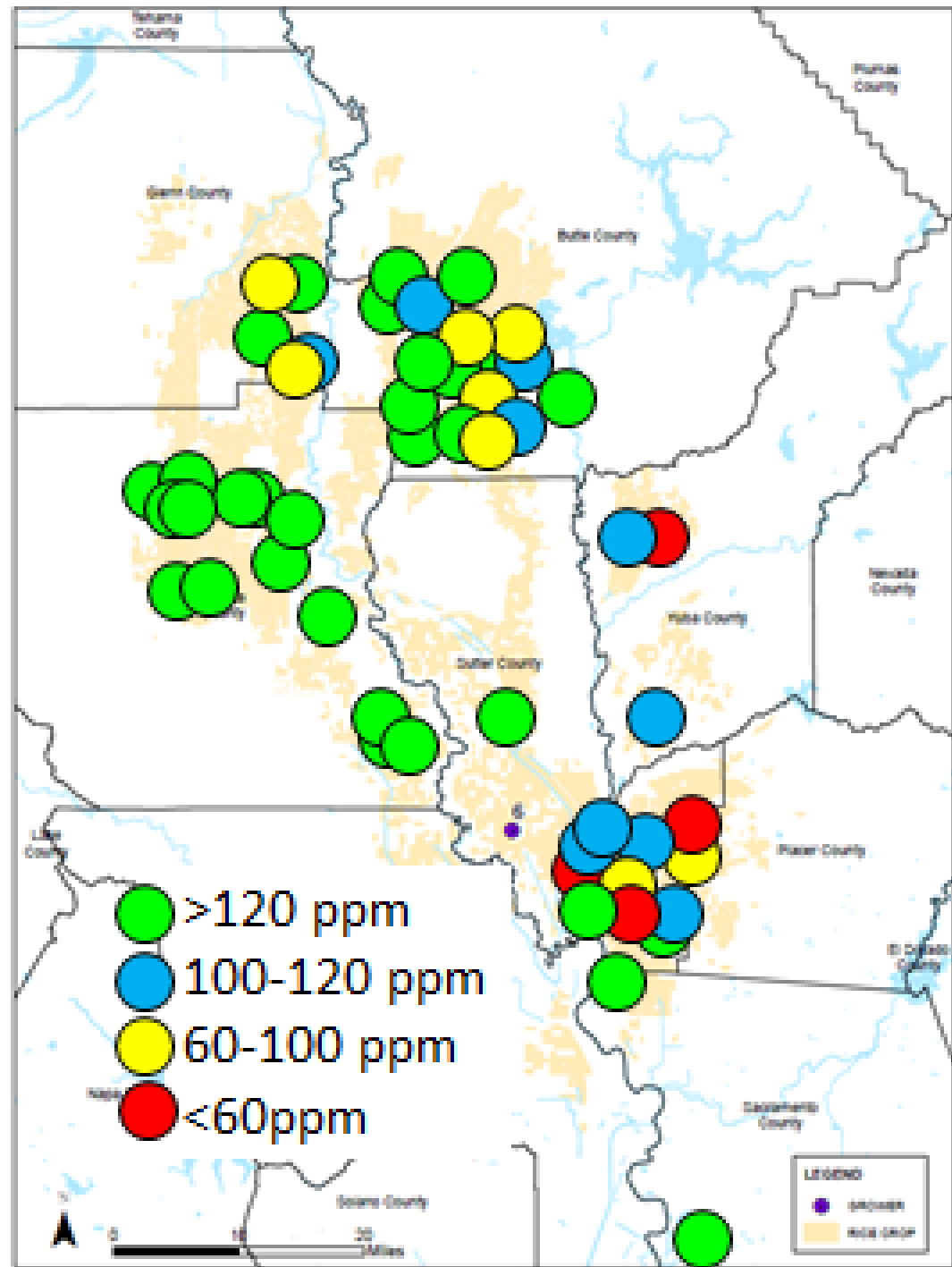


# Rice Field Nutrient Removal with Strawlage

# Nutrient Loss with Straw Removal

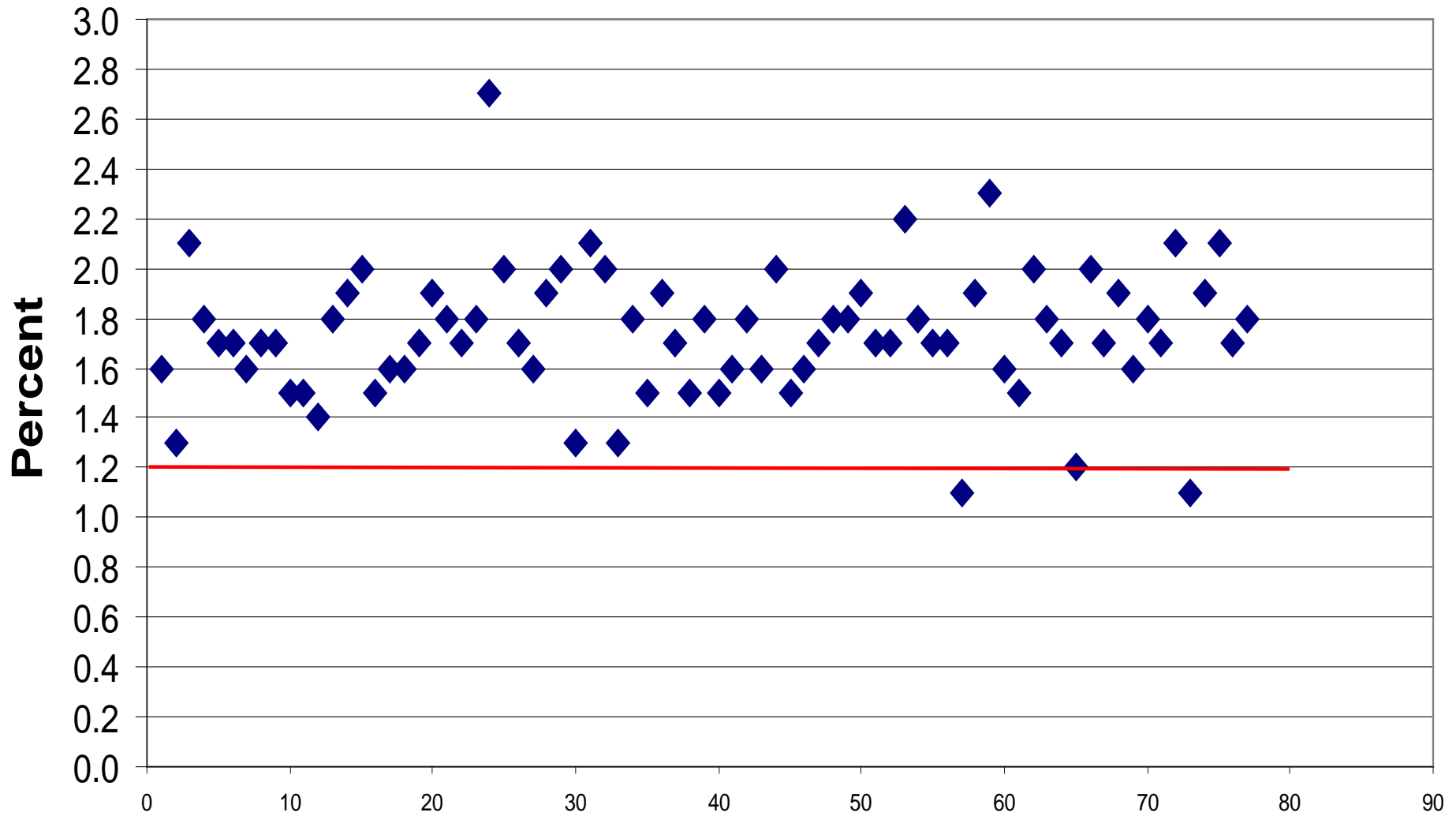


# Soil K by location

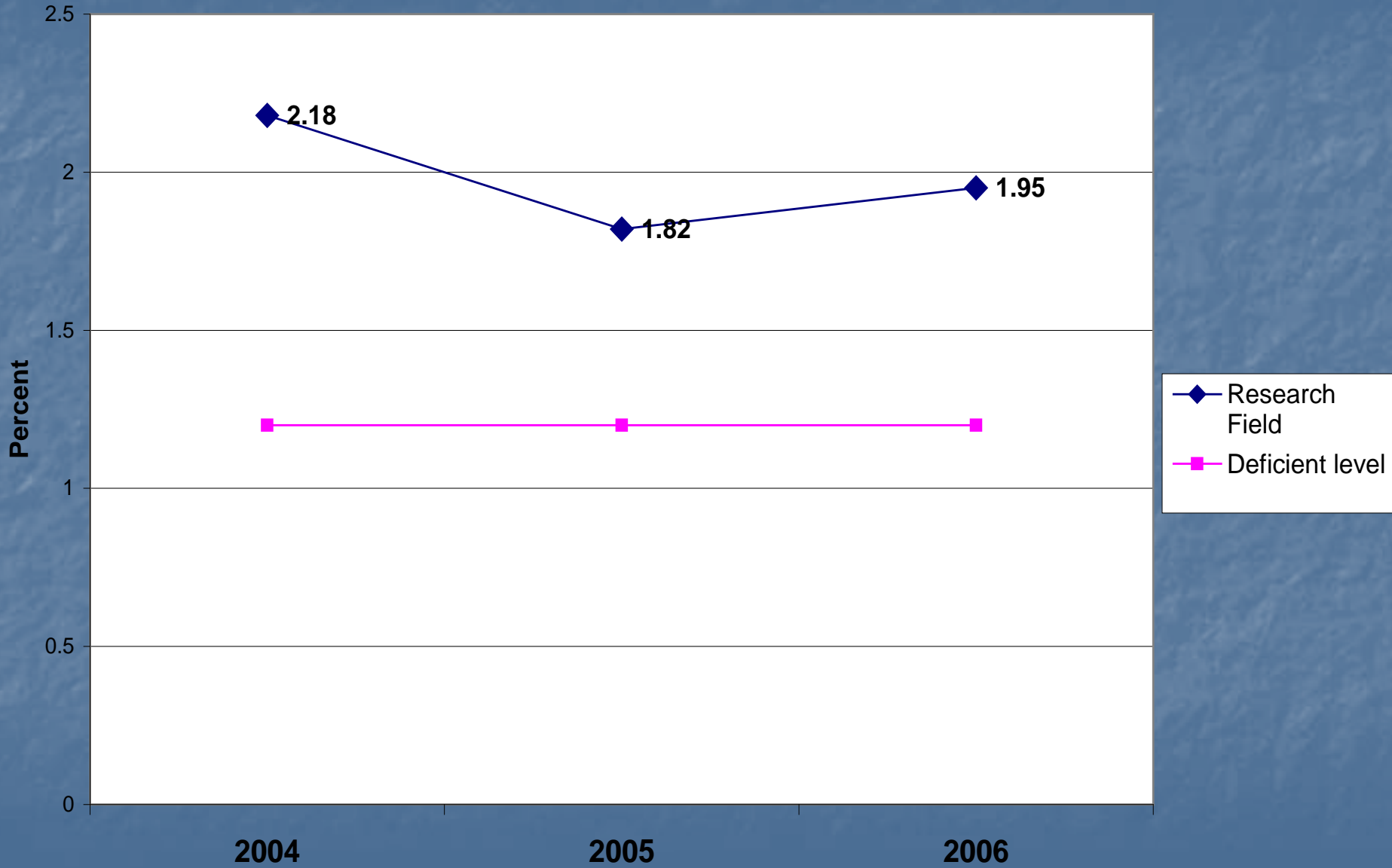


# Potassium

## Rice Straw 2002-2003



# Potassium Levels Over 3 Years



# **Rice Balage in Japan**


**Prepared by**

**Larry Roth, Ph.D., PAS**

**Promote<sup>®</sup> Forage Team**



# Rice Balage in Japan

- ✓ Japanese climate is not conducive to making dry hay
  - ✓ Imported hays are too expensive for growing heifers and beef cattle
  - ✓ Japanese government is seeking to boost domestic rice grain prices
  - ✓ Solution: harvest some rice as whole-crop rice balage rather than harvest for grain
- 






# Rice Balage in Japan

- ✓ Rice balage is typically 65-55% moisture
- ✓ Cut, windrow, bale and individually wrap quickly
- ✓ Northern Japan makes rice balage in Nov
  - Weather too cool for silage inoculants
  - Use buffered organic acids
- ✓ Southern Japan makes rice balage late Nov
  - Warm weather allows silage inoculants
  - Also use buffered organic acids



# Rice Balage in Japan

- ✓ Rice balage provides nutrition similar to medium-quality grass hay
  - ✓ Nutrition better than lab assay suggests
  - ✓ Mold can be a problem unless balage is treated
- 




# Rice Balage in Japan

Promote<sup>®</sup> Forage Preservative Program

@50-60% Moisture

Promote<sup>®</sup> Storage-Mate<sup>™</sup> Liquid

- ✓ 4 lb per ton balage applied at baler
  - ✓ Buffered prop acid- control molds
  - ✓ Sodium benzoate – control yeasts and molds
  - ✓ Potassium sorbate – control yeasts and molds
- 



# Rice Balage in Japan

Promote<sup>®</sup> Forage Preservative Program

@50-60% Moisture

Promote<sup>®</sup> VS-3 silage inoculant

- ✓ 300,000 CFU/g forage applied at baler
  - ✓ High level of bacteria to reduce forage pH
- 




# Rice Balage in Japan

Promote<sup>®</sup> Forage Preservative Program

@40-50% Moisture

Promote<sup>®</sup> HayDefender<sup>™</sup>

- ✓ Liquid fermentation product applied at baling
  - ✓ Reduce yeast and mold growth
  - ✓ Enhance palatability
- 

# Rice Balage in Japan

- ✓ Important forage source
- ✓ Feeds like a medium-quality grass hay
- ✓ Must treat to reduce mold growth
- ✓ Quickly wrap to reduce mold growth

# Keys to Success

- Moisture meter
- Proper tarping
  - Hire
- Mold control
  - Propionic acid
  - Enzymes
  - Quadris
- Move the bales close to feeding area

# Ratios



# Rice Bran

- Brown to white rice- polished
- CP 14%
- TDN 76%
- Phos 1.67%
- \$210/ton
- More than 20% - fiber digestion
- Rancid in warm weather

# Rice Bran - Supplement

- Salt to control intake
- 50% to start
- Salt increases water consumption

# Almond Hulls

- Depends on what is sent – shell, trigs
- CP - 4.2
- TDN - 54
- \$172-190/ton Hanford

# Shells with Hulls

# Hulls



Shell

# Canola Meal

- Trans fat and biodiesel
- Canada Unit trains \$70/ton shipping costs
- Pellets
- July 24 price \$302 SJ Valley
- 4-8% dairy rations

	TDN	NE-L	CP	Fat	ADF
Canola Meal	75	0.77	39	3.9	19

# Strawlage Ration

- Dry cow – 7% protein
- Strawlage – 5%
- Computer ration analysis
- 27 pounds (50%) strawlage
- 6 pounds of Rice Bran
- Lab under estimates strawlage

# Rancher Experiences

- Herb Holzapfel
- Ron LaGrande
- Henry Smith