


Producers, Custom Operators, Nutritionists and Growers Are we all talking the same Language?

Chris Wacek-Driver
Forage Innovations, LLC



*“The Greatest Competitive Advantage of any
Industry or Business,
large or small
is continuing growth and development of its
people”*

Bob Milligan



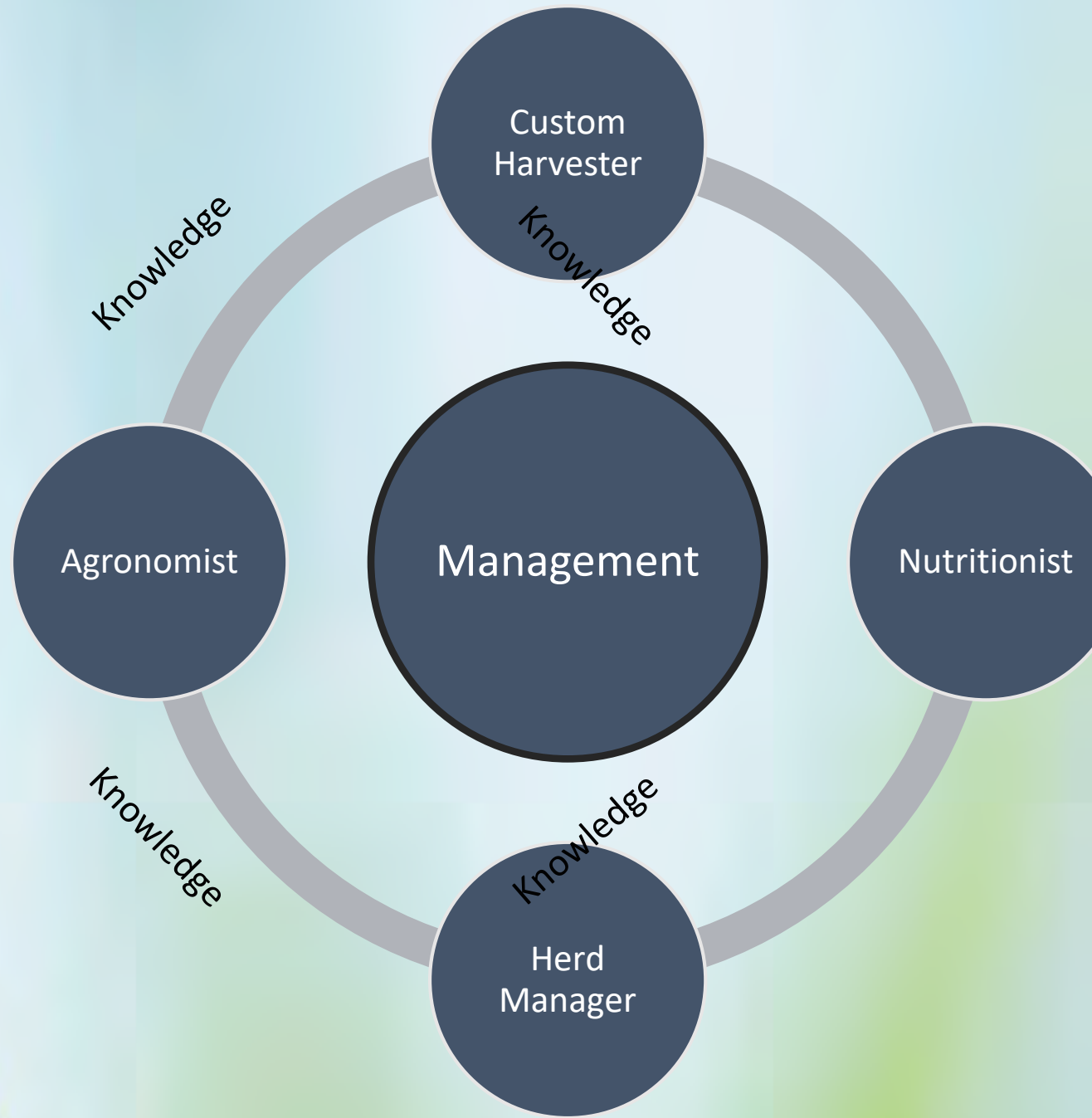


Outline

1. Planning – Setting Goals
2. Working the Plan
3. Evaluating the Results
4. Few thoughts on Language




Planning the Work or Setting Goals





Top Challenges Cited

- Corn Silage Too Dry
- Butyric Haylage
- Burnt/Dry Haylage
- Too much Shrink



Goals-Haylage

- Moisture
 - Target 52-63%
- Sweet Spot 55=60%
- RFV
 - Target 170-235
 - Sweet Spot 190-220
- Reduce Shrink
- Improve Forage Consistency



Consequences of Harvesting Alfalfa Too Wet or Too Dry

Too Wet

- Clostridia- protein degradation
- DM loss/ Energy Loss
- Decreased digestibility
- Butyric acid/poor fermentation
- Effluent run off

Too Dry

- Poor Packing
- Aerobic spoilage
- Heat damaged protein
- Low digestibility



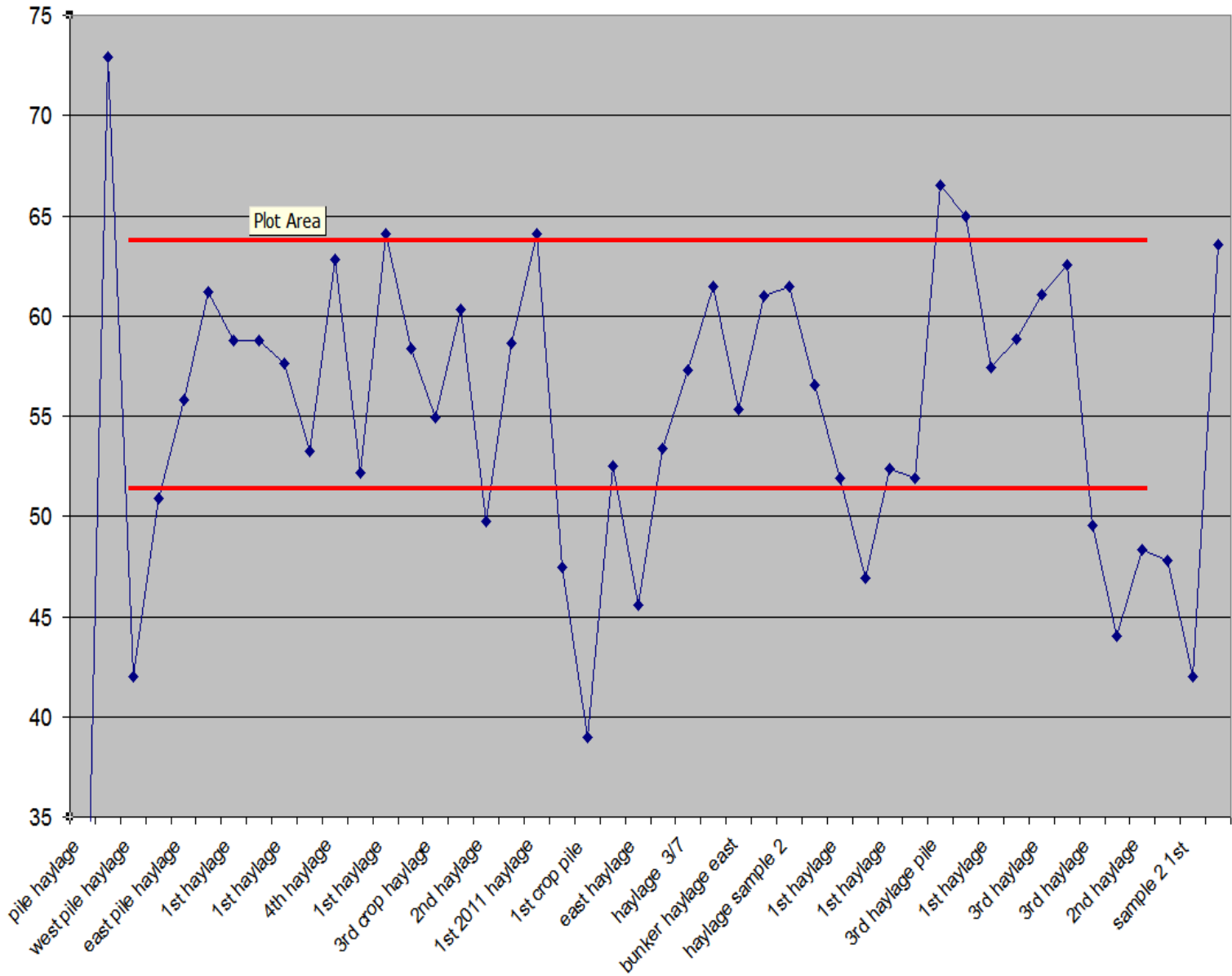
Working the Plan

Evaluating the Results

- Did we hit our Goals? Why or why not?
- Could a better plan could be developed? Do we need a “B” plan?
- Who do we need to visit with to improve it?
- If you Couldn't control it – don't beat yourself up about it



Haylage Moisture





Are We Talking the Same
Language?

The tug o' war....

Long Cut-TLC

**Adequate
Processing**

**Cover more
Acres**

Less power

**Less breakdowns
Maintenance**



Short Cut -TLC

**Excellent
Processing**

Slow Down

More Power

Wear and Tear

What we know.....

- Corn Silage is unique -it is a mixture of grain and stover- variable amounts
- Both Fiber and non-fiber components (starch & sugar) affect the nutritional value of corn silage
- It has become a larger portion of diets- yield potential and nutrient management



What we know.....

Particle size affects both components

- The digestion of starch in kernels and fiber
- The physical effectiveness of fiber.





What we know.....

Particle size also affects:

packing density

fermentation

power/fuel consumption

harvest time



What Do We *Think* the Cow Wants?

Cow (rumen and bugs) need fiber

- Digestion
- Chewing activity
- Rumen health & function



The Language...

are we speaking the same vocabulary

1. Fiber particle Size
2. Processing

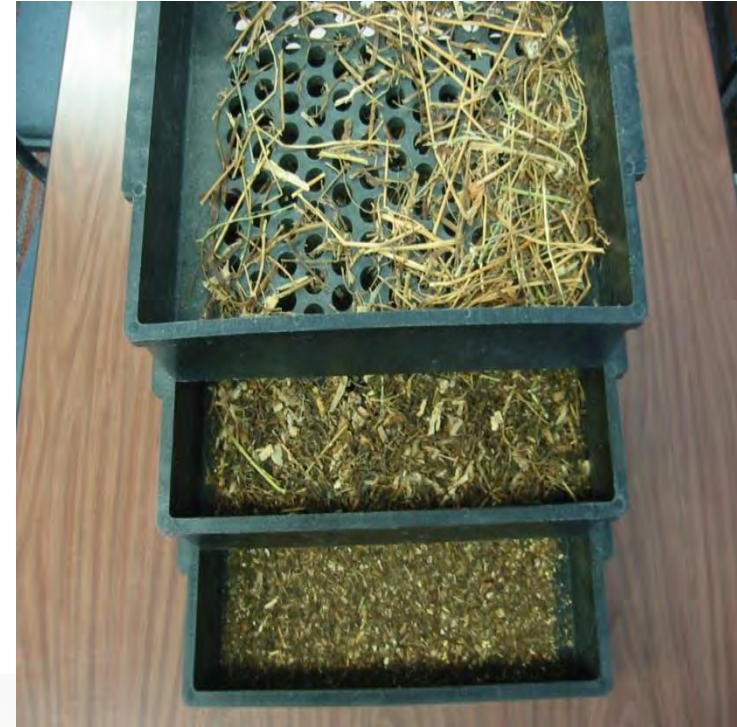
So how do harvesters measure length?

TLC- Theoretical Length of Chop

How do we set it?

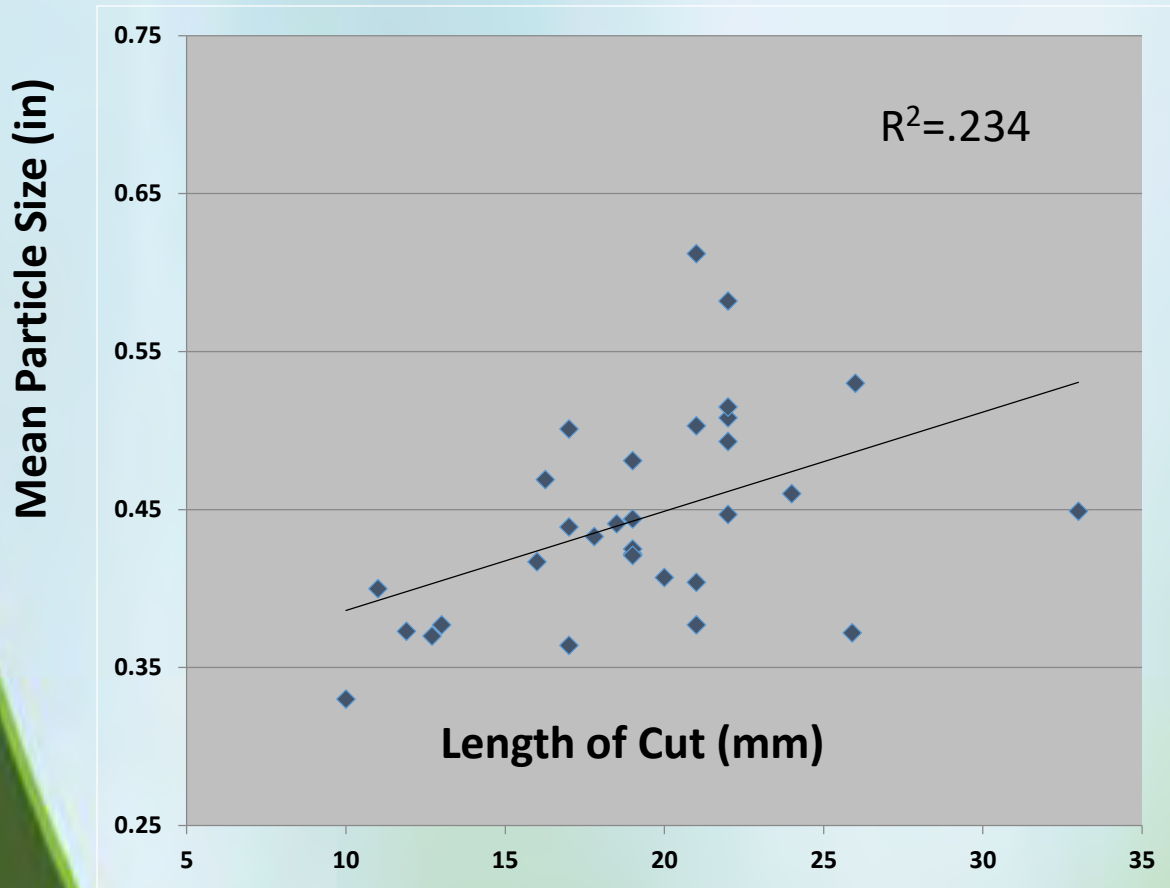


How do Nutritionists measure it?



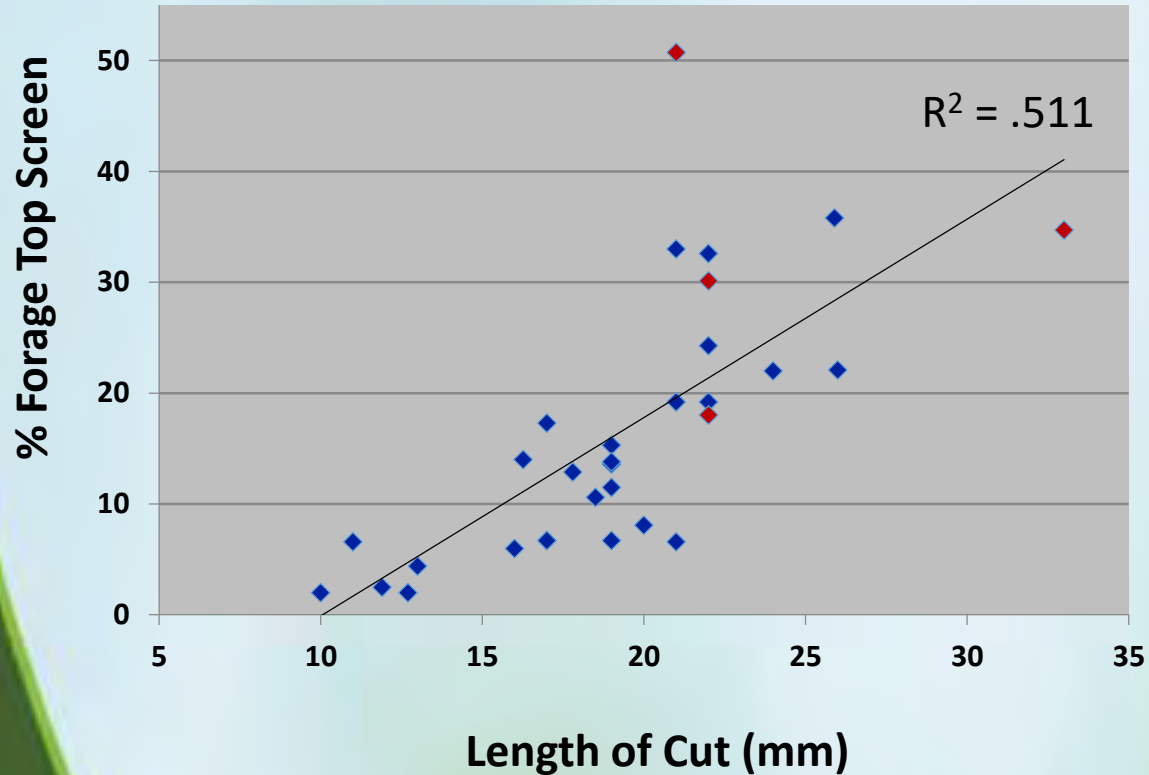
So how do they Compare???

Length of Cut vs. Mean Particle Size Corn Silage



TLC vs. Forage on Top Screen Penn State Box

Length of Cut vs. % Forage on Top Screen





The Language.....

are we speaking the same vocabulary

1. Fiber particle Size
2. Processing

What Do We *Think* the Cow Wants?

- To maximize starch digestion
- Coarse particles >4.75 mm
 - Rate of digestion will be slow
 - May escape rumen as unchewed particles
- It costs money to not have it processed

What affects it?

Environment

Temperature
Moisture
Soil Type
Fertilization



Machinery

Length of cut – shorter is easier
Processor design & wear
Roll gap
Roll aggressiveness
Differential
Capacity- Tons/hr.

Crop

Kernel Moisture/Maturity
Time in Storage
(fermentation)
Endosperm characteristics
Kernel or Cob Size?



So how do Harvesters measure processing?

- Processor Roll Gap?
- Visual?
- Setting on the Chopper?

How do Nutritionists measure it?

% of Starch passing through a 4.75 mm screen



Water Test



Figure 1. Chopped whole-plant corn placed into water.



Figure 2. Gently agitating material to help the kernels sink to the bottom of the container.



Figure 3. Skimming and removing the floating stover.



Figure 4. Carefully draining the water so only the kernels remain in the container.



Figure 5. Example of separated stover and kernel fractions using the water separation technique.

Wisconsin Water Test




Technology, Design, Lab tests, Data can help....



**but knowledge and people
will move us forward**





Ultimately For a system to work optimally knowledge needs to flow between components of the entire system.

Everyone needs to be on the team or the system won't work optimally