Tips and Tricks to Feeding 2022 Corn Silage

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Notes:

PowerPoint Slides on next page

Tips & Tricks to Feeding 2022 Corn Silage

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Goeser's Agenda

- Economic opportunity in Dairy
- Basic silage nutrition training
- Zero in on 2022 Silage quality
- Arm you with insight & strategy for better nutrition decisions:
  - Feeding 2022 silage
  - Growing & harvesting better 2023 silage

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ECM, lb.	Purch. Feed $ / cwt ECM	Total Feed $ / cwt ECM	ECM / DMI - Feed Effic.	DMI
106.52	$5.51	$8.25	2.01	53.1
106.60	$6.24	$9.13	1.77	60.4
103.49	$5.22	$8.54	1.80	57.6
109.60	$5.74	$9.29	1.79	61.3
107.35	$8.97	$8.97	1.62	66.2
98.02	$5.37	$8.80	1.76	55.8
98.75	$4.08	$9.07	1.74	56.8
90.99	$3.06	$8.14	1.71	53.2
98.59	$6.17	$9.52	1.76	55.9
93.82	$2.31	$8.85	1.74	53.8
92.54	$5.39	$9.09	1.58	58.6
95.84	$3.56	$10.25	1.55	61.8
104.69	$6.91	$11.07	1.73	60.6
102.79	$6.69	$10.76	1.68	61.2

$2.43 / cwt. ECM

1.73 v 1.80 FCE

Data courtesy Stacy Nichols, personal communication

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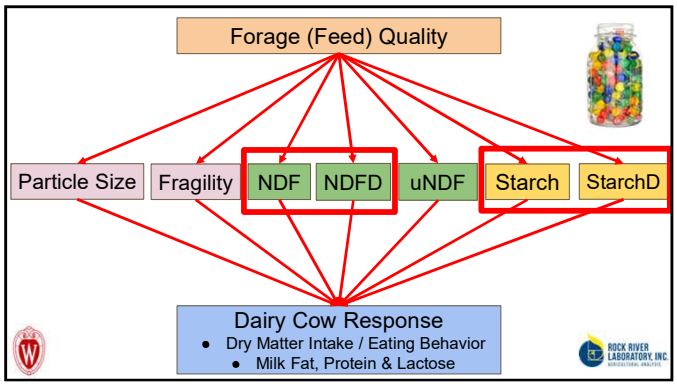
Forage (Feed) Quality
Particle Size
Fragility
NDF
NDFD
uNDF
Starch
StarchD
Dairy Cow Response
Dry Matter Intake / Eating Behavior
Milk Fat, Protein & Lactose

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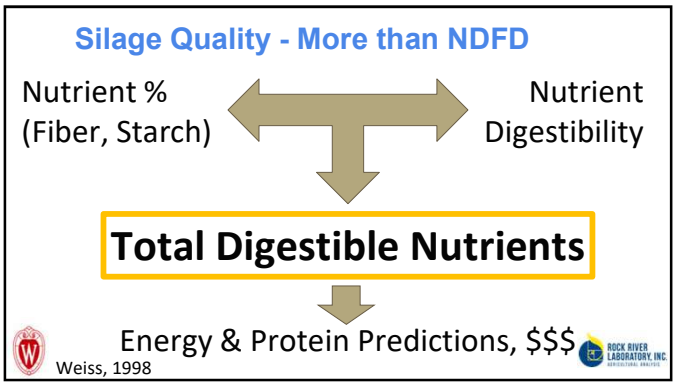
Silage Quality - More than NDFD
Nutrient %
(Fiber, Starch)
Nutrient
Digestibility
Total Digestible Nutrients
Energy & Protein Predictions, $$$
Weiss, 1998

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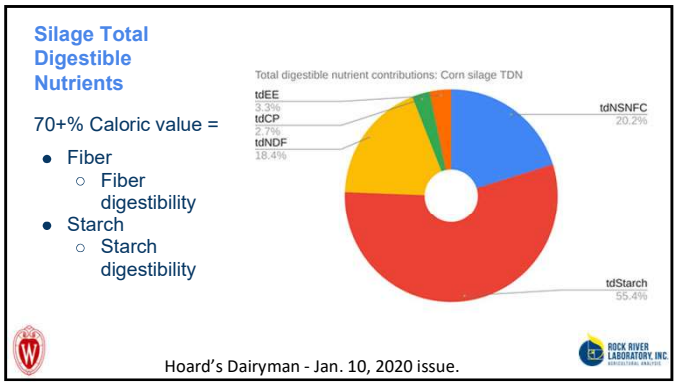
Silage Total Digestible Nutrients
70+% Caloric value =
Fiber
Fiber digestibility
Starch
Starch digestibility
Total digestible nutrient contributions: Corn silage TDN
tdEE 3.3%
tdCP 2.7%
tdNDF 18.4%
tdNSNFC 20.2%
tdStarch 55.4%
Hoard's Dairyman - Jan. 10, 2020 issue.

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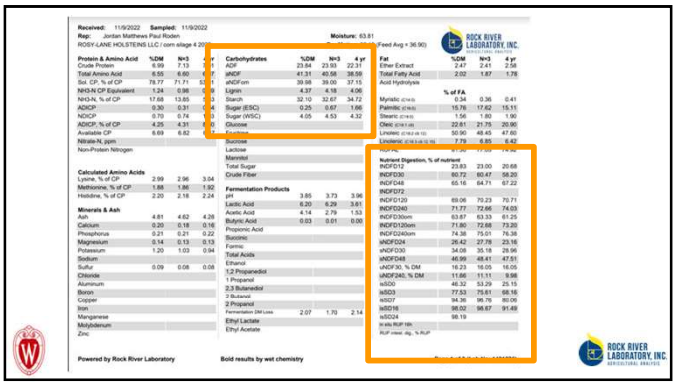

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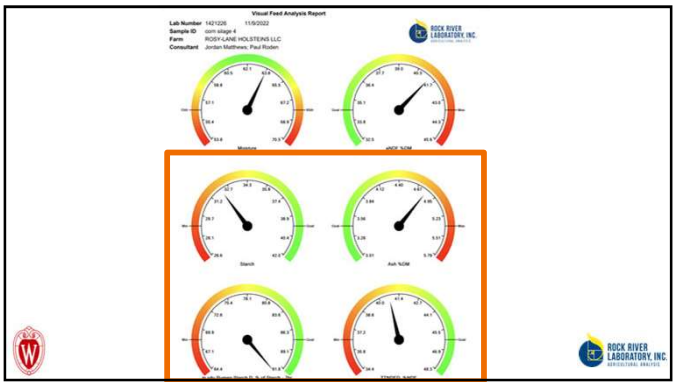

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General Thoughts

- 2022 was a wild ride
  - Extreme drought out West
  - Extremely expensive input
    - Water
    - Fertilizer
- Highly variable growing conditions for US as a whole
- 2022 looked like 2021 for some…
- 2022 Silage? A unique beast in starch & fiber
  - ***Zero in*, know what you've got, & feed around it**

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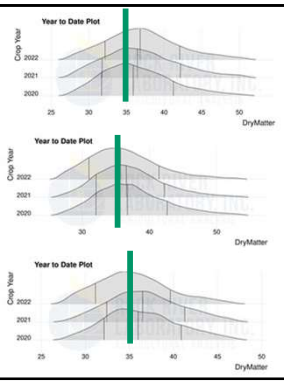
'22 Silage Dry Matter / Moisture

- Very different crop by region
- E -> drier
- MW -> wetter
- W -> wetter

…Maturity impact?



Eastern US

Midwestern US

Western US

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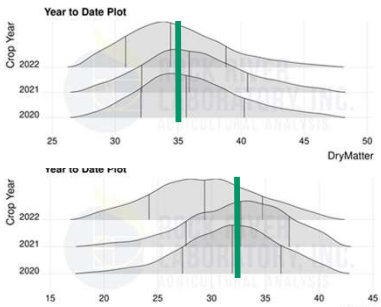
Western Corn Silage

- Ideal moisture in 2022
- Starch levels are way down
  - Expensive input impact?
  - Water $ impact?



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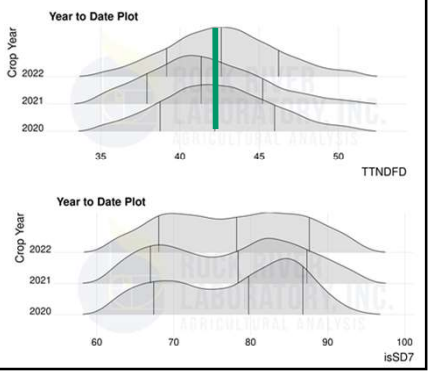
Western Corn Silage

- TTNDFD looking good on average
  - Faster digesting fiber
- Wide ranging StarchD
  - Western silage winning here



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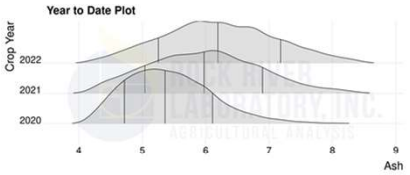
Western Corn Silage

- Ash is an issue
- Extreme drought & blowing dust / dirt

Watch-Out: fermentation quality



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Overly Simple 2022 Silage Recap

Region/Parameter	Moisture	Maturity	Starch	NDFD	StarchD	Feeding Potential?
East	Down	Up	Up	Down	Down	Down
Midwest	Up	Not sure	Up	Up	Down	Neutral to Up
West	Up	Down	Down	Up	NC	Neutral to Down

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Unique Observations / Questions

- Extremely wide range to quality across the US this year
  - **Western US higher moisture, less starch, ash creeping up and average NDFD**
  - Eastern US lower moisture and more mature corn silage
  - Midwestern US ideal moisture, more starch but less starchD, and decent TTNDFD … Black Sheep?!
  - Southern US silage looks to be good quality
- Watch outs for feeding 2023
  - ***Know what you've got… incredible variation in our pits & piles***
  - West? Fermentation quality
  - East & Midwest? Rumen starch digestibility!

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Zeroing in on your Silage - Like sighting in a rifle

— Dr. John Goeser —

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Sample with a 3 to 5 shot group

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Sample with a 3 to 5 shot group

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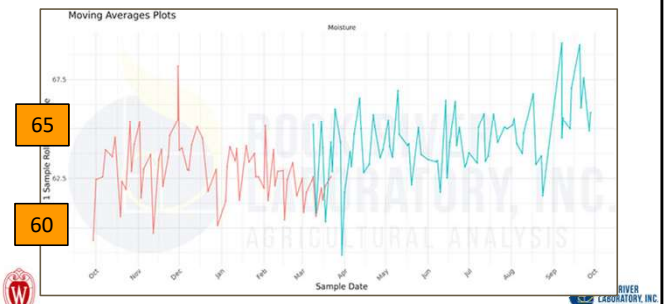
Single samples miss the buck



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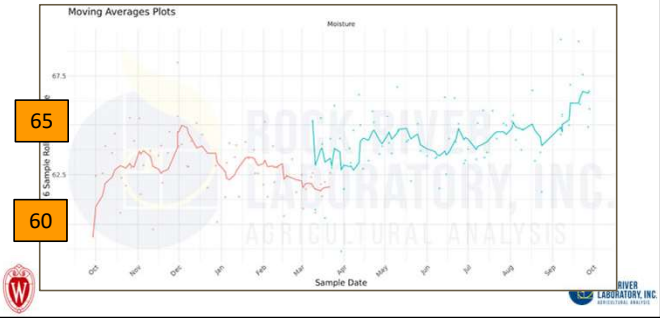
Six shot average for the win



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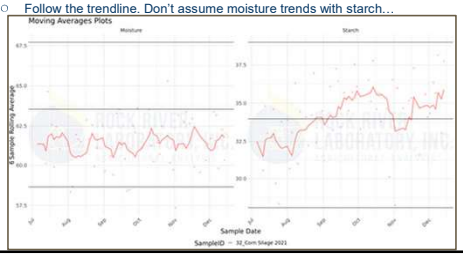
Making Silage Adjustments

- Use 3 to 5 shot groups
- There's more changing in your silage than we've known
  - Follow the trendline. Don't assume moisture trends with starch…



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Planning your next $500,000 purchase

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Hybrid Plots: Your Dairy can do this!

- Control for:
  - Growing conditions
  - Plant population
  - Soil type & fertility
  - Crop protection
- **Basic**:
  - Run strips
  - Measure yield & 3+ samples per hybrid for quality
  - Compare hybrids
- **Advanced**:
  - Plant replicated plots
  - Measure Yield
  - Several samples per replicate plot
  - Data robust for stats analysis

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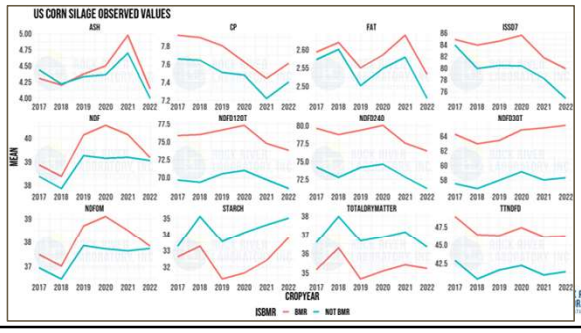
BMR v Conventional: RRL Database



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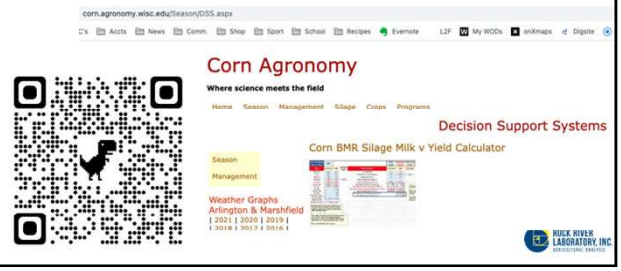
Turning the page to 2023 - Economic Driven Decisions



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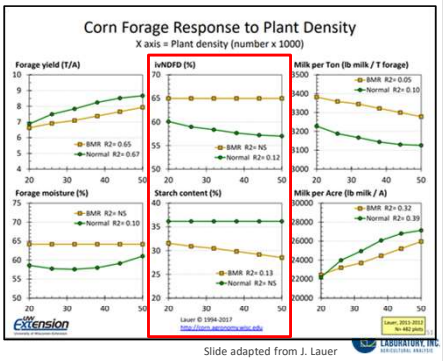
Plant Population Impact

- Plant populations matter
- Conventional corn responds differently than BMR



Slide adapted from J. Lauer

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Crop Input Decisions

- Expensive $$$, but…
- 2023 crop needs to be in position to succeed
  - Fertility
  - Crop health / NDFD
  - Grain yield

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Harvest 2023

Moisture vs. Kernel maturity disconnect may impact our harvest timing

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Cut Height Impact

Table 2. Effects of cutting height on nutritive value of whole-plant corn silage. [1,2]

Parameter	n	Effect
Dry matter, % of as fed	62	+2.18
NDF, % of DM	64	-2.48
Lignin, % of DM	25	-0.29
NDFD, % of NDF	49	+2.02
Starch, % of DM	55	+2.08
DM yield, ton/acre	52	-0.52

[1] Adapted from Paula et al. (2019).
[2] Data expressed as expected response per each 10-inches of increased cutting height.
[3] NDFD – ruminal in vitro or in situ NDF digestibility at 30 or 48 h.

Table courtesy of Luiz Ferraretto (2020, personal communication)

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Cut Height Performance Impact

High cut vs Normal CC			Diet outcome		
	Normal	High (+10")		Normal	High (+10")
CP	15.4	15.4	CP	15.4	15.4
aNDF	40.0	37.5	aNDF	29.2	27.4
Starch	33.0	35.1	Starch	26.3	27.0
Fat	2.5	2.5	Lbs dig fiber	7.34	7.26
Ash	4.0	4.0	Lbs rumen dig starch	10.5	10.8
uNDF240	10.0	9.0	Lbs uNDF240	4.09	3.90
NDF kd	3.0	3.2			
St Starch	25.0	25.0			
Starch kd	25.0	25.0	TTSD	95.60%	95.60%
Rum. StarchD	77.7	77.7	Rum. StarchD	72.3	72.3
TTNDFD	41.5	43.6	TTNDFD	47.3	48.2
NDFD48	75.0	76.5			
Lbs Fed	19.0	19.0	DMI	55	55
			Forage/Conc	52.7%	52.7%
			Milk/Cow	88.0	89.2
			FCE	1.60	1.62
Milk Price	$20.00	$20.00	Milk $/cow	$17.61	$17.85
Cost/lb TMR	$0.11	$0.11	Feed $/cow	$6.05	$6.05
			Feed cost / CWT	$6.87	$6.78

Projections using table provided by Luiz Ferraretto (2020, personal communication)

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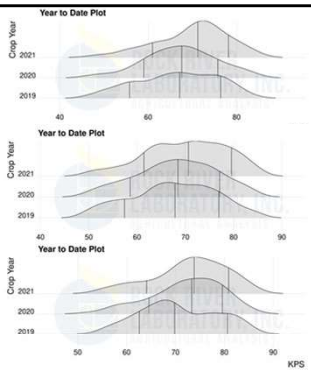
Corn Silage Kernel Processing Score

- Western US leading the pack!
- *New goal in KPS is 75 to 80*
  - Top 15% producers hitting this mark



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