“NEW & IMPROVED” BROWN MID-RIB SORGHUM-SUDANGRASS MEASURES UP AS A CORN SILAGE REPLACEMENT

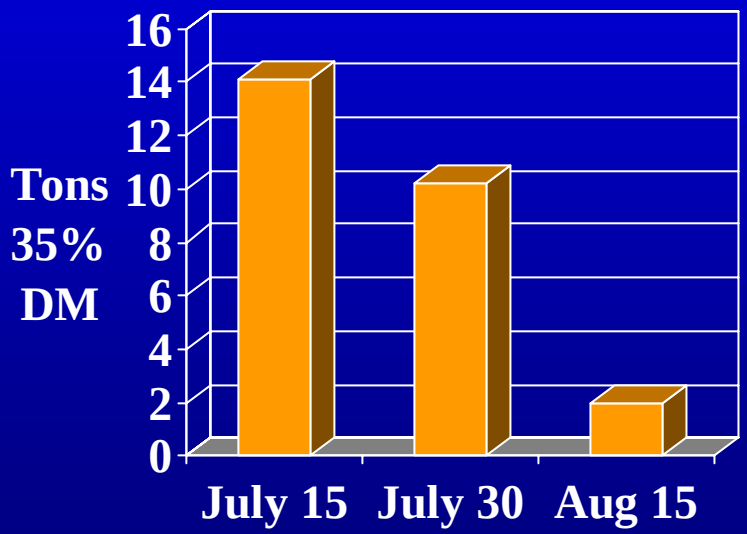
Link to U.S. DFRC Home

Cornell Cooperative Extension
Tom Kilcer - Rensselaer County
Paul Cerosaletti - Delaware County
Pete Barney - St. Lawrence County
Dr. Quirine Ketterings - Cornell University

WHY BMR SS: Improved Crop Production

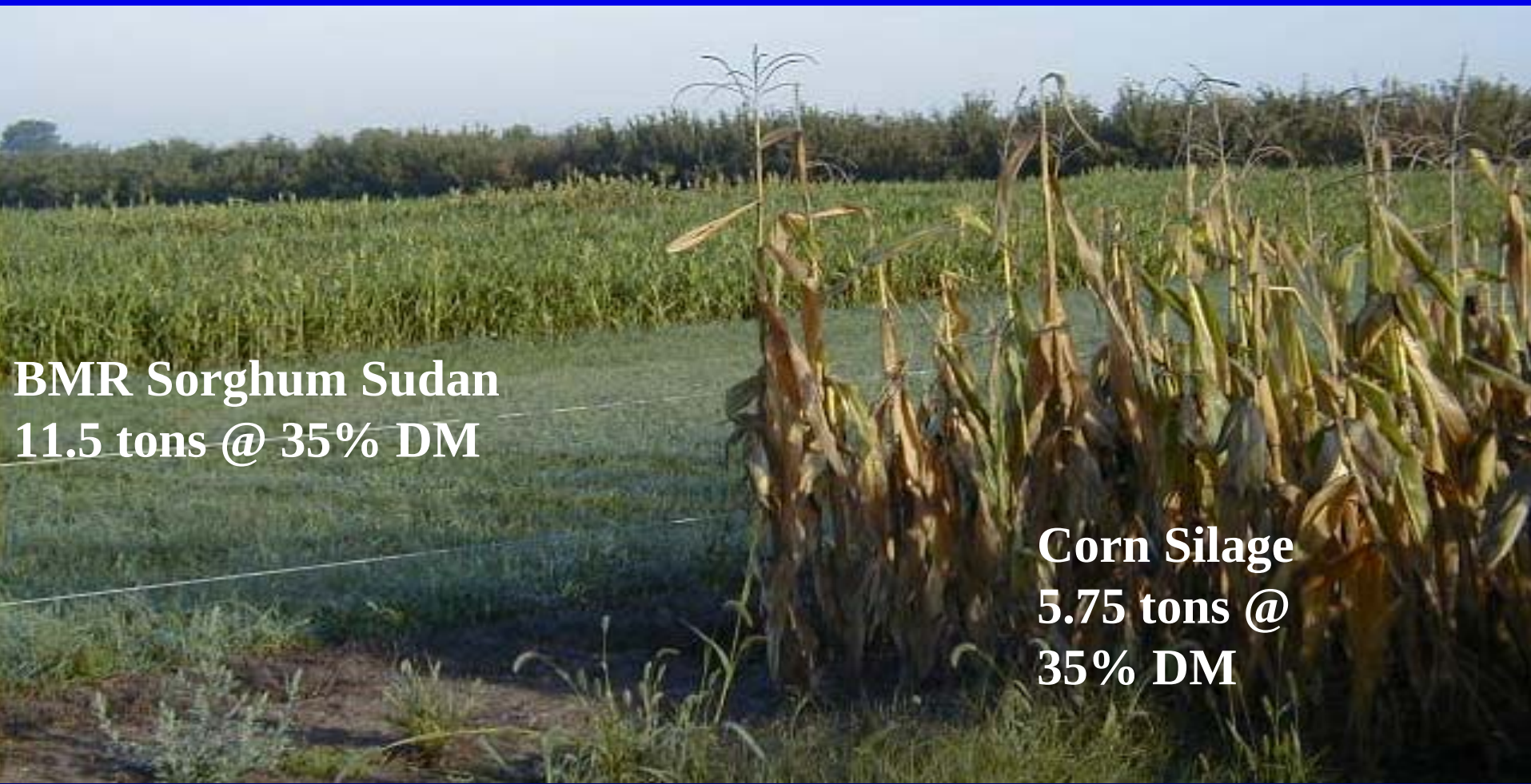
- Tolerant (Yield & Quality) of later planting date (June 1 to July 30)
  - **No need to wait for mature grain**

Yield by Planting Date (wet year)

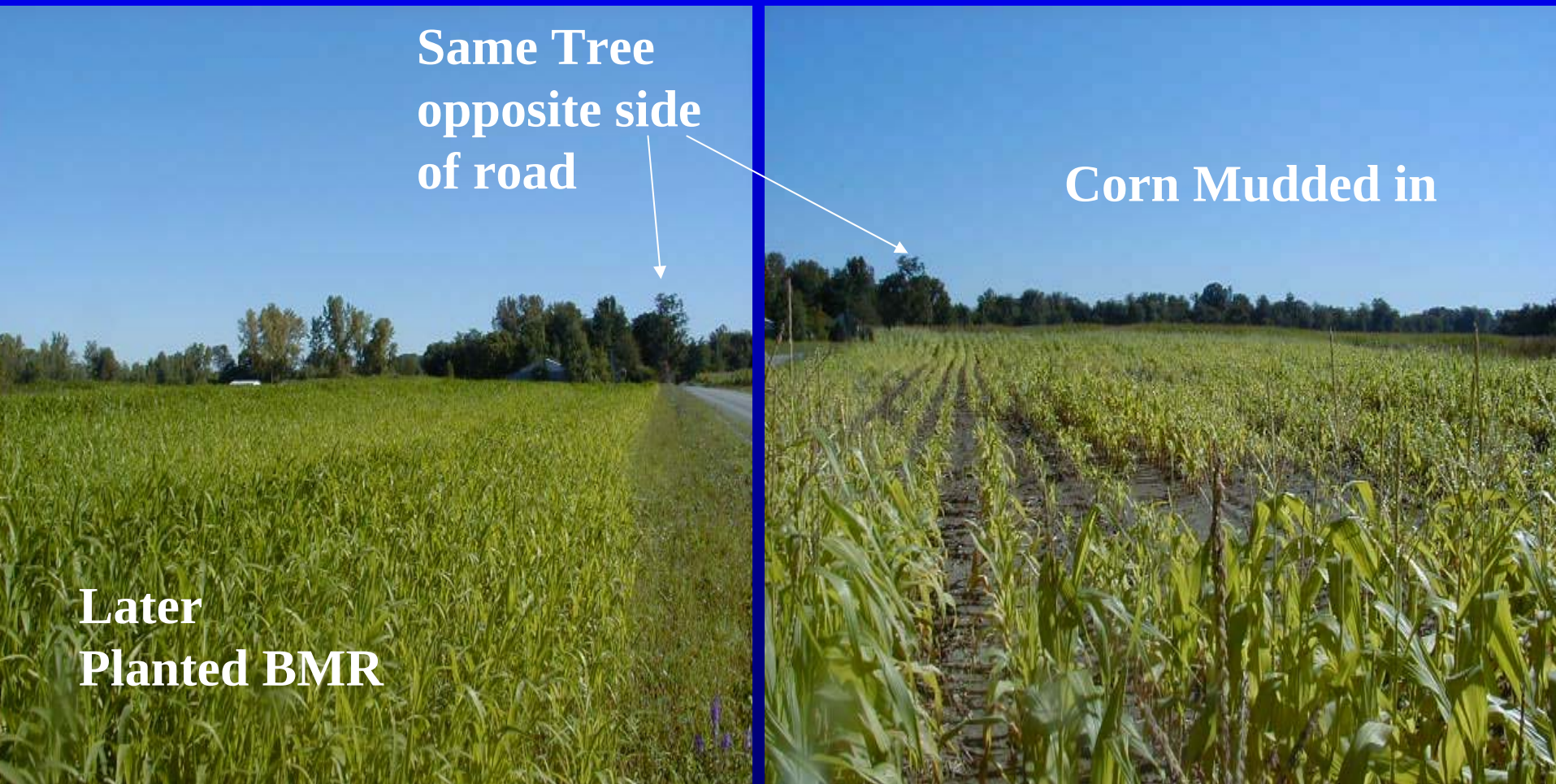


WHY BMR SS: *Consistent Yield on Droughty Soils*

1 inch water = .84 tons Corn silage; 1.76 tons BMR SS silage



WHY BMR SS: Can wait for proper soil conditions instead of mudding in the crop



WHY BMR SS: Protection of the Environment

½ the soil erosion of conventional corn

Corn **BMR-Sorghum-Sudan**

WHY BMR SS: *Consistent Yield* Through Flexible Harvest Options

BMR SS on river flat harvested 3 days **before** Hurricane Isabel hit – no need to wait for grain fill!

BMR SS: Can plant after 1st (& 2nd) cut grass harvest

- **Crop 1: Grass Hay**
- 100 lbs N per acre @ green up
- Cut 6/9
- 2.5 t/ac DM (7.0 @ 35% DM)
- Could have taken 2nd cut!!!

Crop 2: BMR SS

Planted July 10

Cut 9/8 Baleage

2.2 t/ac DM (6.2 @ 35% DM)

Double Crop Opportunity in Northern Climates – Less than ideal drained soil

September -May

Forage Triticale

June - September

BMR Sorghum-Sudan

BMR SS Double Cropping with winter triticale

Winter Triticale no till seeded (with conventional drill) into BMR SS stubble;

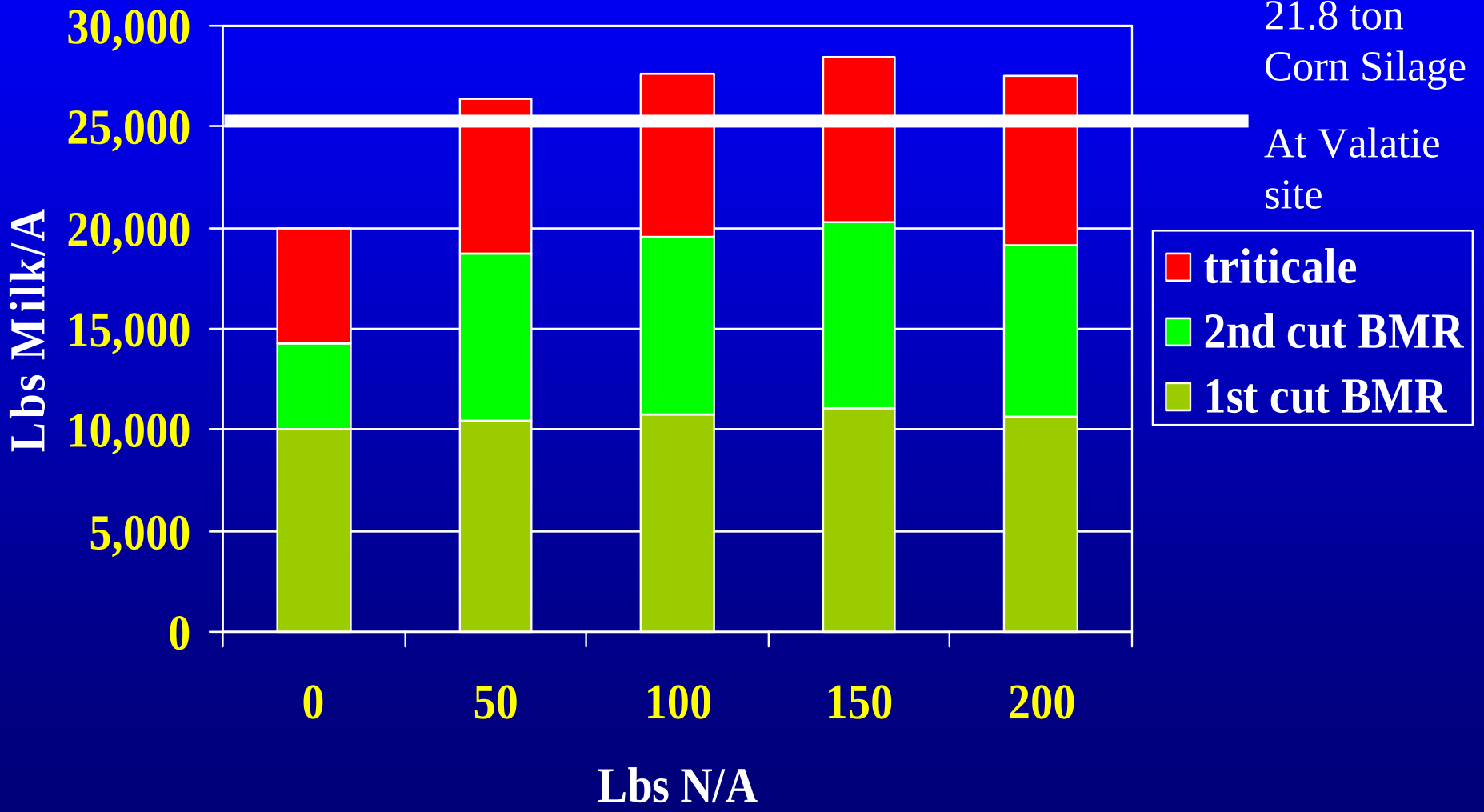
BMR SS planted 6/28/03

BMR SS harvested 8/17/03

Winter Triticale planted 8/25/03

BMR SS: Environmental Benefits - Double Cropped with winter triticale

2003 season (milk 2000 v. 7.54) Triticale/BMR at Valatie Site



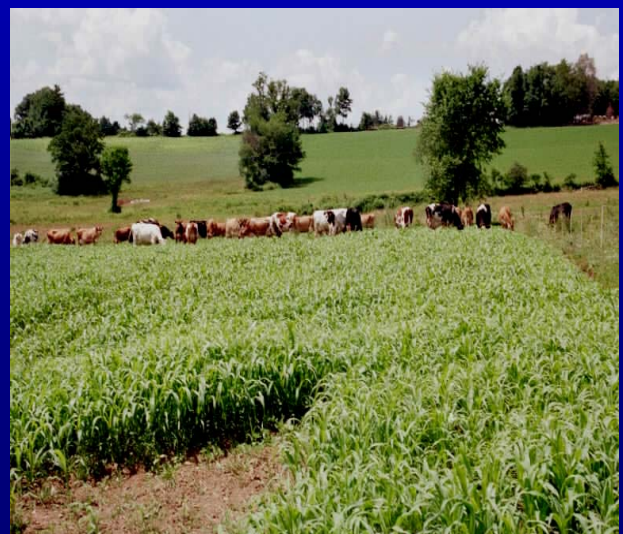
BMR SS: As A Nurse Crop seeding year

As a Nurse Crop with Red Clover/Orchardgrass

BMR SS: Crop Production

- Doesn't require special equipment
  - No corn planter or corn head
  - Planted with hay equipment
  - Harvested with hay equipment
- Harvestable as:
  - Chopped silage
  - Baleage
  - Grazed

Small & large farm friendly



Few Pest Problems

- Deer hide in it – eat alfalfa
- Rootworms are killed by it
- Armyworm will occasionally eat it

Why NOT BMR Sorghum-Sudan

- Late planting means 85% of sunlight available (unless double crop)
- It does poorly in cool temperatures
  - Planted too early

    Cool summers

There is **NO** Perfect Crop

Management can Make or Break the Profitability of Any Crop

Buying the wrong seed:
Not all BMR's are the same
Ask your seed dealer for BMR-6!

		Forage Sorghum		
	Corn Silage	Cytoplasm 6	Cytoplasm 18	Non BMR
4% FCM lb./day	73.3	74.1	68.6	64.0

Grant et al 2003

For a Good Crop
Use Good Planting Techniques

- Soil **MUST BE WARM** >60F (cool conditions –annual grass – destroys crop
- Broadcast and disk/roll = failure
- Cultipacker seeder = failure
- Drill ½ - 1 inch deep
- Band fertilizer on poorer soils

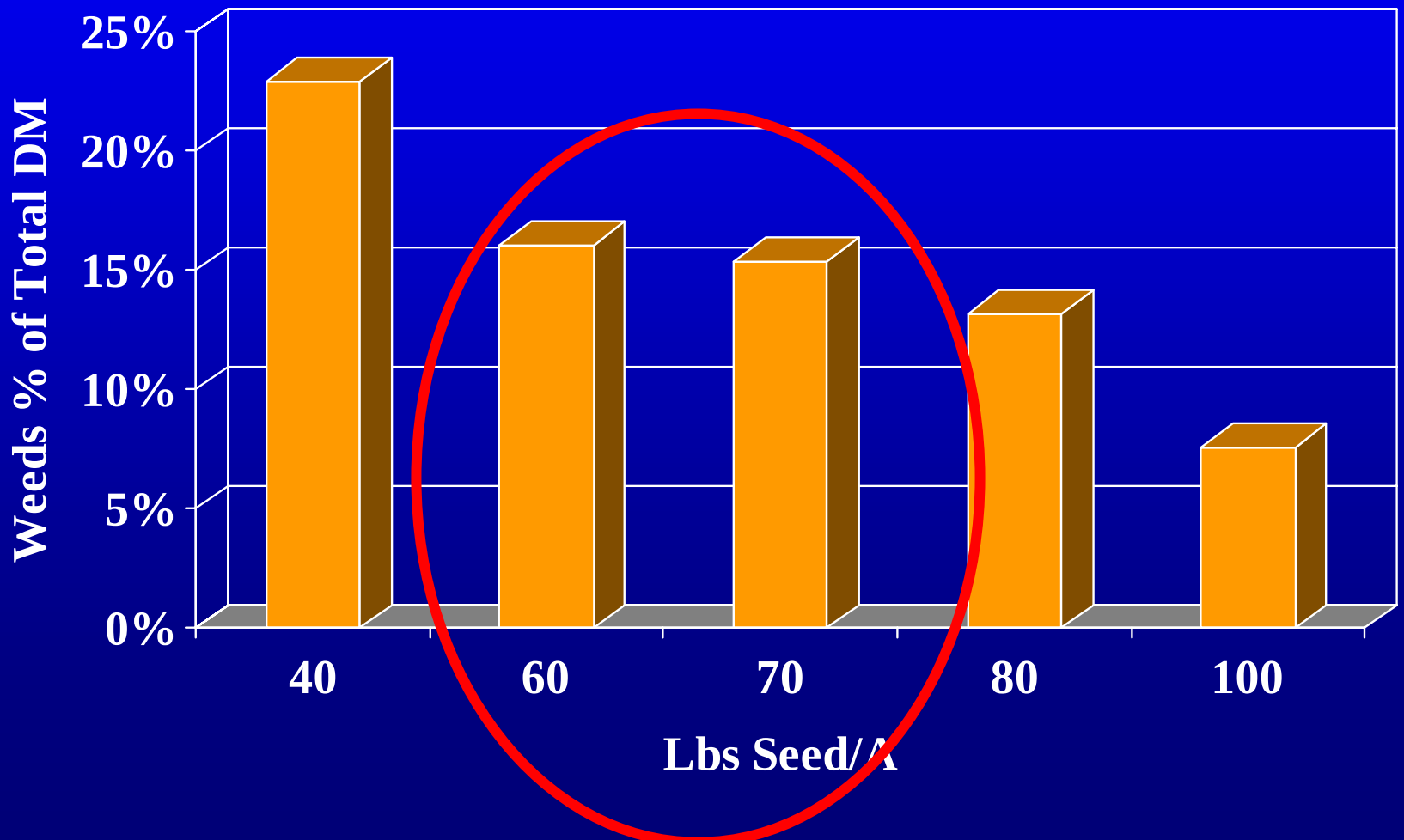
BMR SS: Can Min Till or No-till

Need to drill 1 inch deep in no-till

Critical to Use Enough Seed

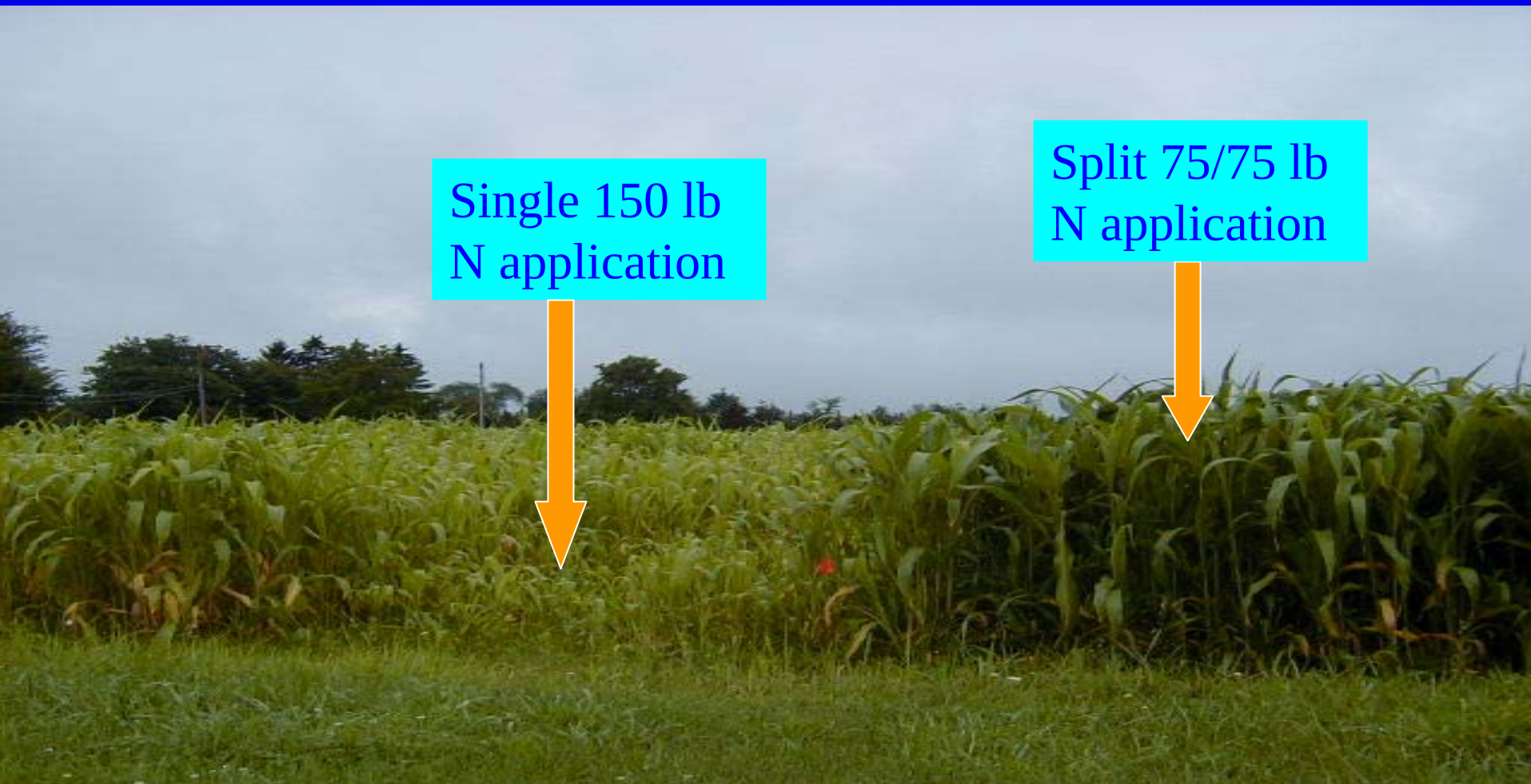
Weeds fill in empty spots

Enough Seed = Less Weeds



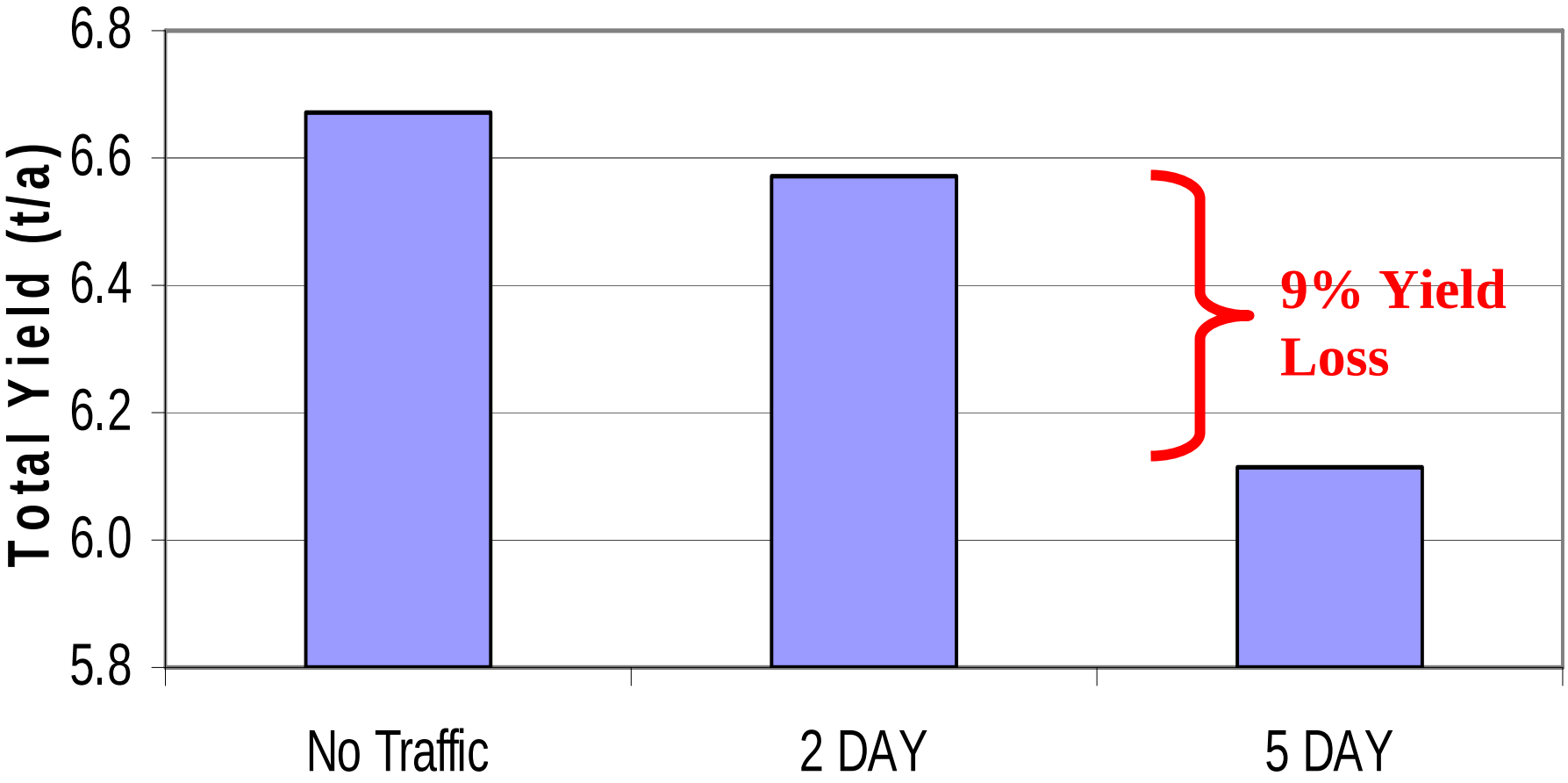
Like Corn: Short on N = Short on Yield
High Return on N Applied

Like any grass -Needs to be fed each cut

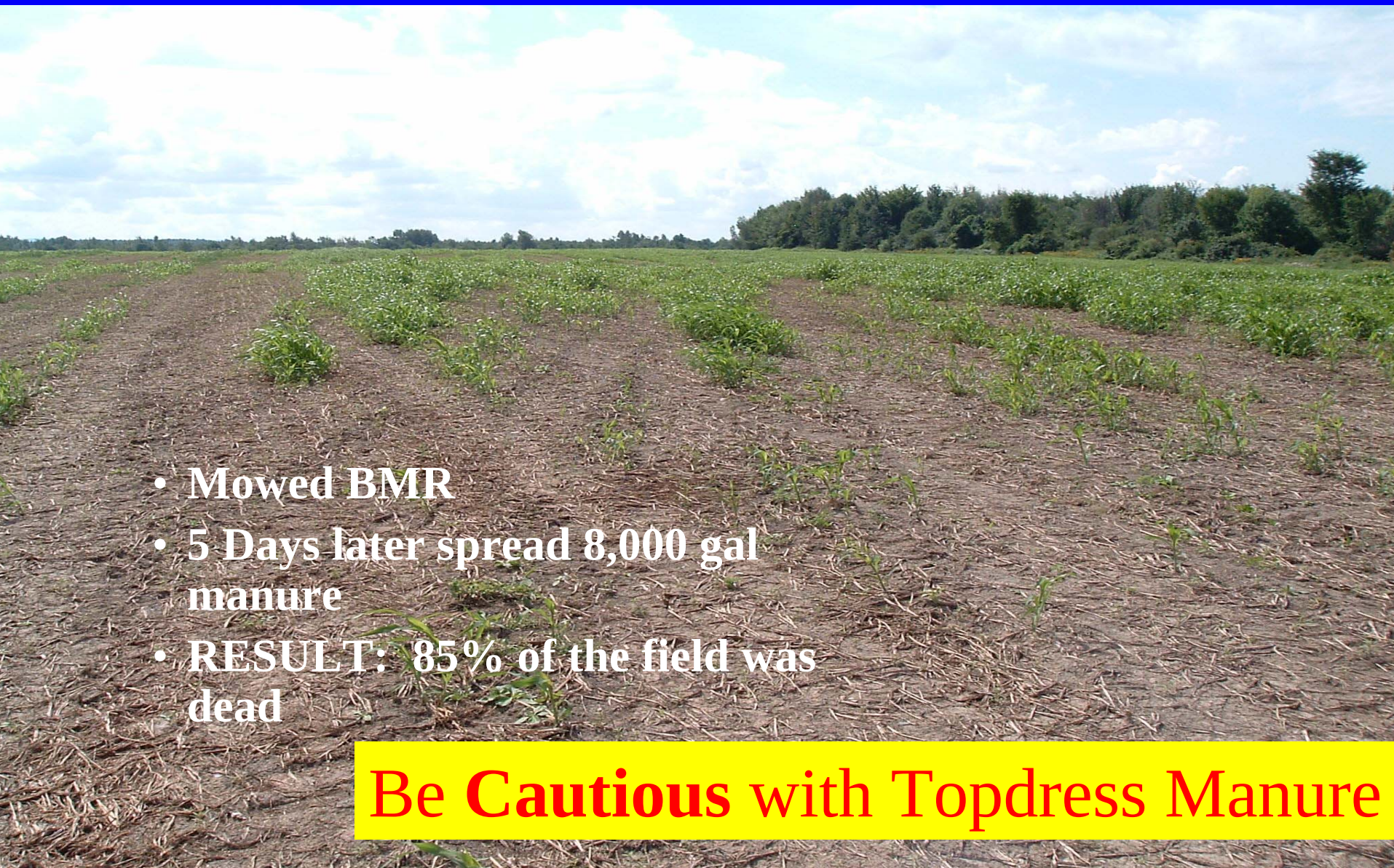



BMR Sorghum-Sudan
Thrives on Pre-Plant Manure
Needed N except manure was!
09 28 2002

Effect of Traffic Timing on Alfalfa Yield, Arlington, WI 2002



BMR SS: Crop Failures



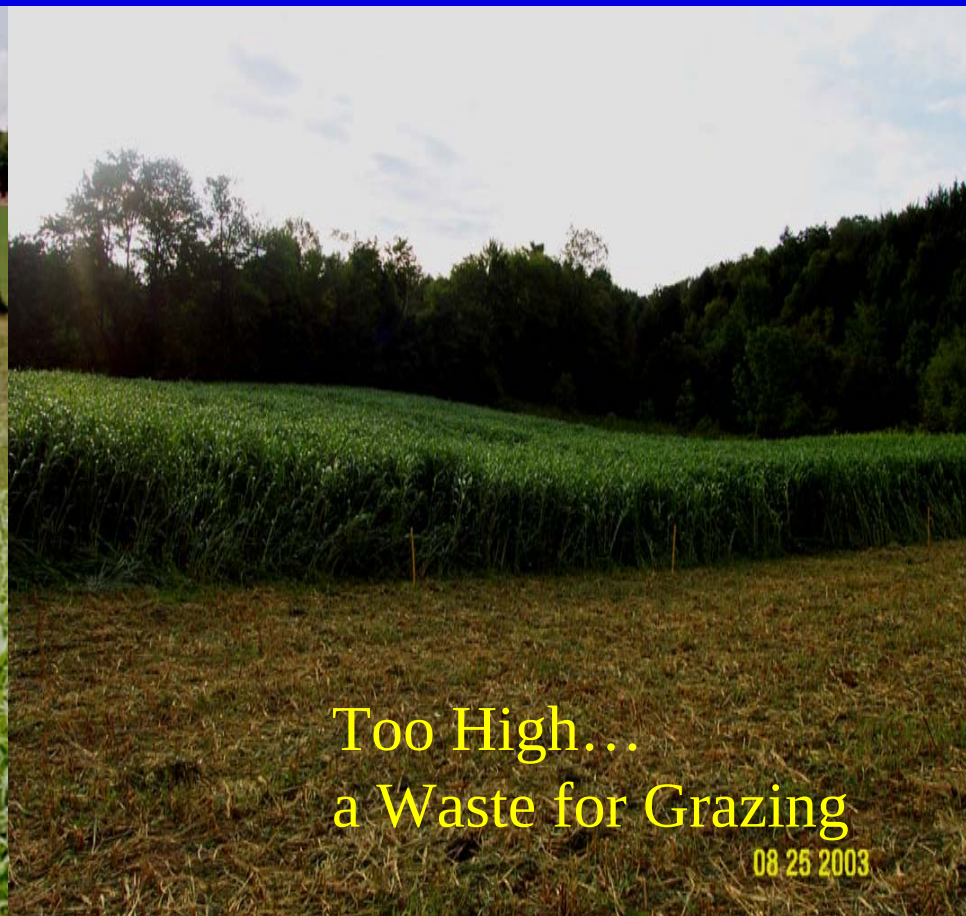
- **Mowed BMR**
- **5 Days later spread 8,000 gal manure**
- **RESULT: 85% of the field was dead**

Be **Cautious** with Topdress Manure

Harvest
Storage
Feeding
BMR Sorghum-Sudan

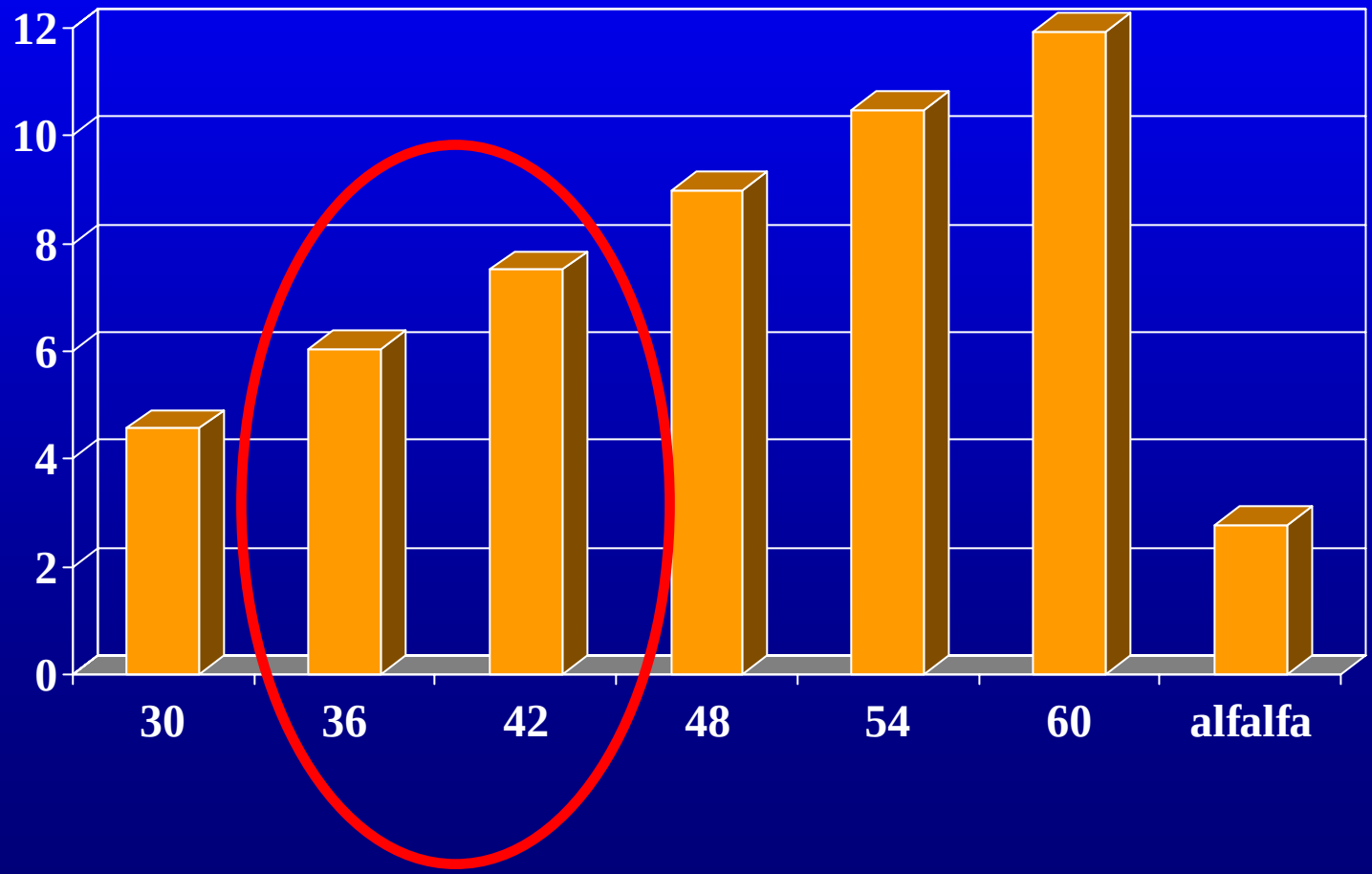

Rapid Growth Gets Away on You
Went From 34” to 54” in one week!

Rapid Growth Gets Away on You
Went From 34” to 54”
in one week!

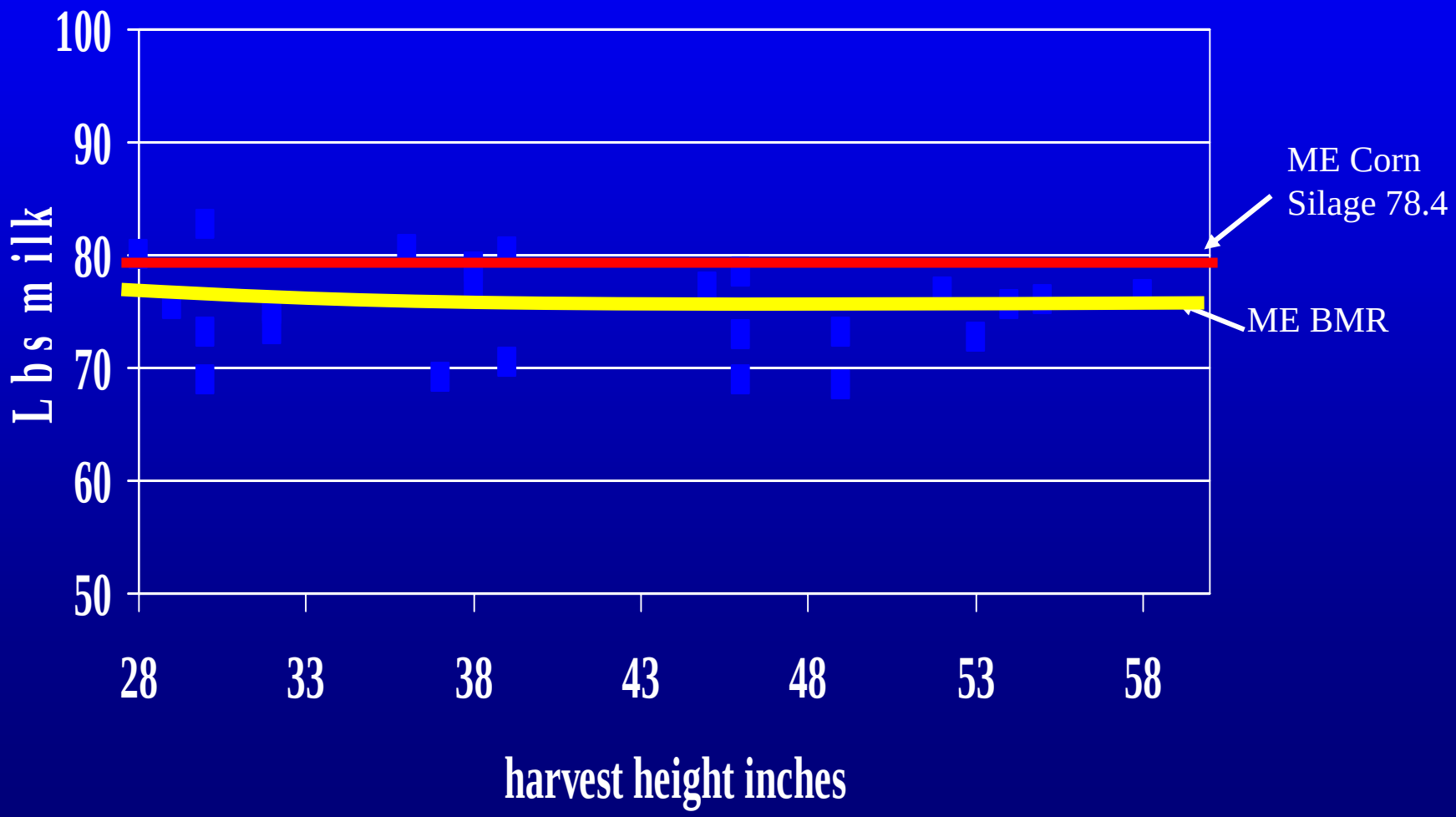


Taller crop equals more water/acre

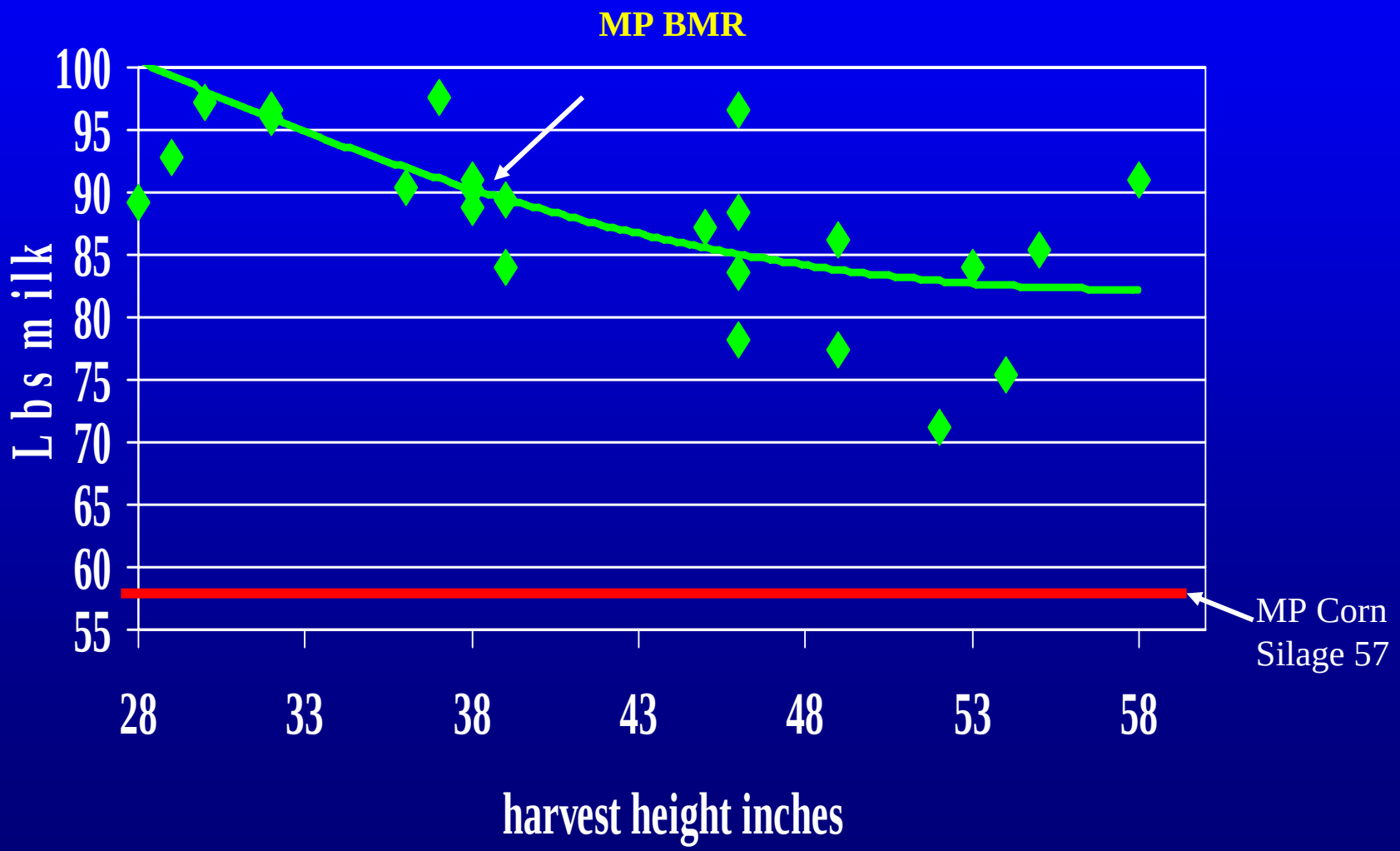
Predicted Water Removed for 35% DM



Milk Energy From BMR SS by Height



Milk from Protein by BMR SS Height




DISCBINE
NEW HOLLAND
1411

Harvest Management is Key to Preserving Quality

- **Set blade at 5 - 6 inch (37% more yield from faster regrowth + leaves rocks in the field).**

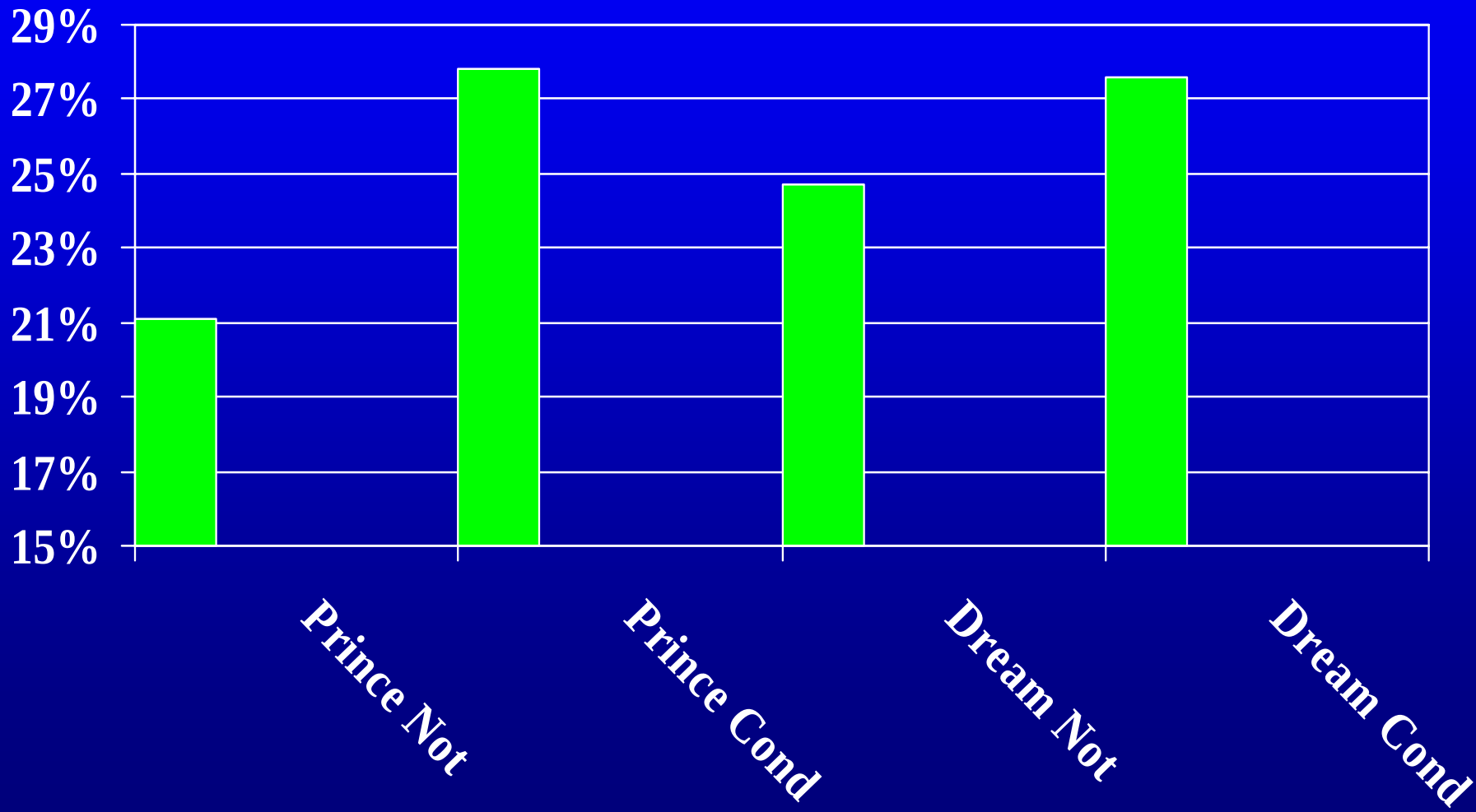
Wide Swath for Rapid Drying

Use a Roller Conditioner

Intermesh rollers shred stems for faster drying

Flail conditioners – Not as good
Ranges from minimal broken stems to Cole slaw like silage

Impact of Intermesh Roll Conditioning
Mowed at 8am; sampled 5.5 hours later



Impact on Milk/Ton

	BMR
Narrow Fresh	3364.4a
Wide Fresh	3030.9b
Narrow Ferment	2725.4A
Wide Ferment	3021.3A
lbs Milk/ton	295.9
$/ton	$38.47

@2.5 Ton DM/cut x $38.47 = $96/cut x 2 cuts = $192/A

Harvest Management is Key to Preserving Quality

- Set blade at 5 = 6 inch (37% more yield from faster regrowth + leaves rocks in the field.
- Wide swath for rapid drying – like hay
- **Merge/rotary rake when correct moisture**


40
KRONE


H&S

Harvest Management is Key to Preserving Quality

- Set blade at 5 = 6 inch (37% more yield from faster regrowth + leaves rocks in the field.
- Wide swath for rapid drying – like hay
- Merge/rotary rake when correct moisture
- **Chop @ 68 – 70% moisture**
- **Chop at ¾-1 inch length – longer for bagger and upright silos**

- If chopped too fine, lose effective fiber

Regular vs BMR

BMR SS: Forage Analysis

- Invitro digestibility analysis for best energy estimate

Cutting Height	34”	46”	59”	69”
In vitro adj. NeL, Mcal/lb	0.74	0.72	0.71	0.66
NIR NeL, Mcal/lb	0.62	0.61	0.60	0.61

Maximize BMR type forage in the diet

	Normal Corn Silage 50% forage diet	BMR Corn Silage 50% forage diet	BMR Corn Silage **65%** forage diet
Milk, lbs/day 3.5% FCM	**74.6**	**73.3**	**79.2**

US Dairy Forage Research Center

BMR SS: Quality

- Crude Protein: 15 – 16%
- NDF Digestibility:
  - Typical Range – 70-85% of NDF
  - Regular corn silage - 45-55% of NDF
  - Affected by weather
    - 2002 – lots of sun, higher NDFD
    - 2003 – lots of rain – increased lignin – lower NDFD

BMR SS: In the ration

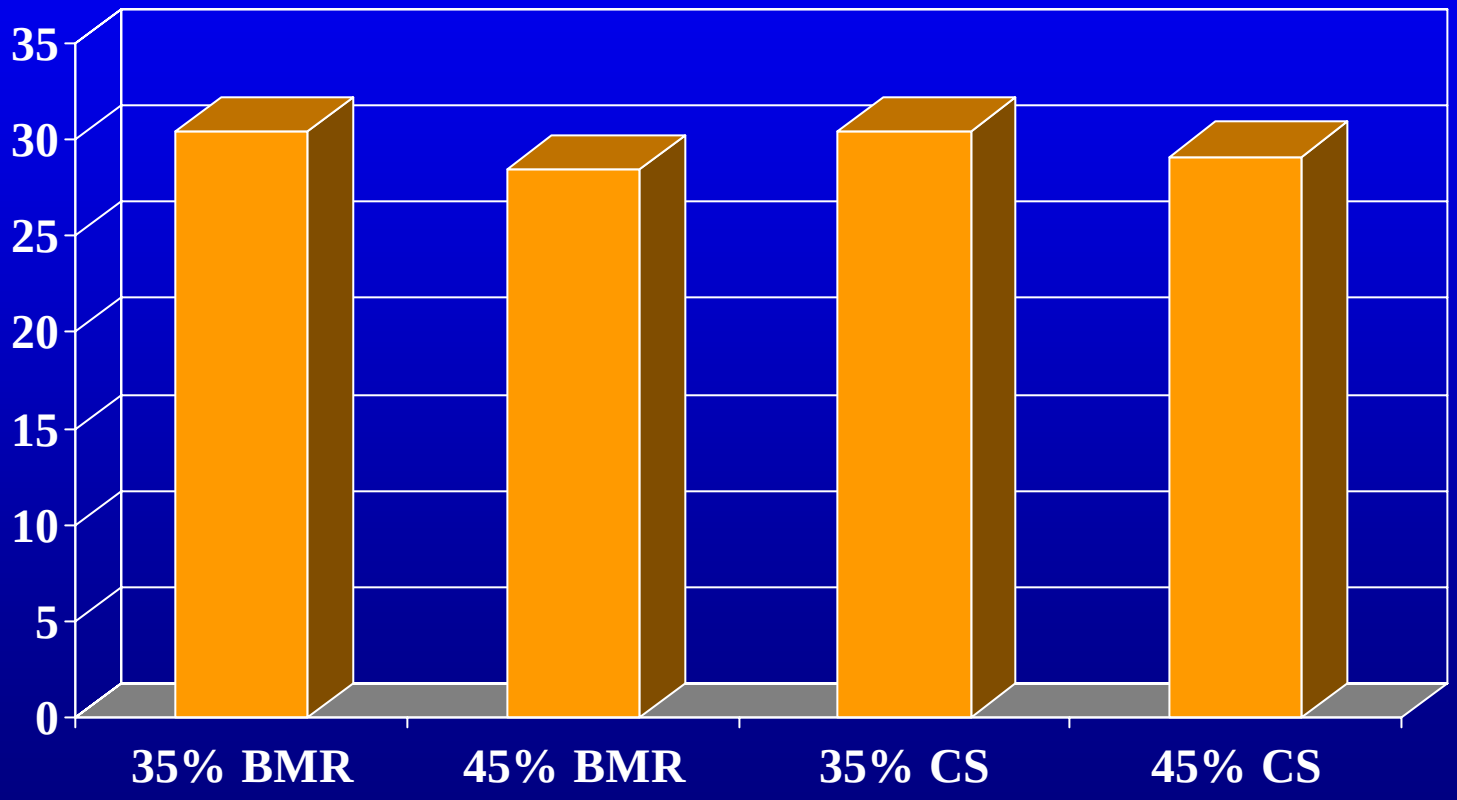
- Balancing diets with BMR SS:
  - If replacing **corn silage –**
    - Should be able to reduce protein supplementation
    - will need to supplement with starch sources
      - » Goal: NFC content of diet - 34-38% of DM

NFC = Non Fiber Carbohydrate

Feeding Trial

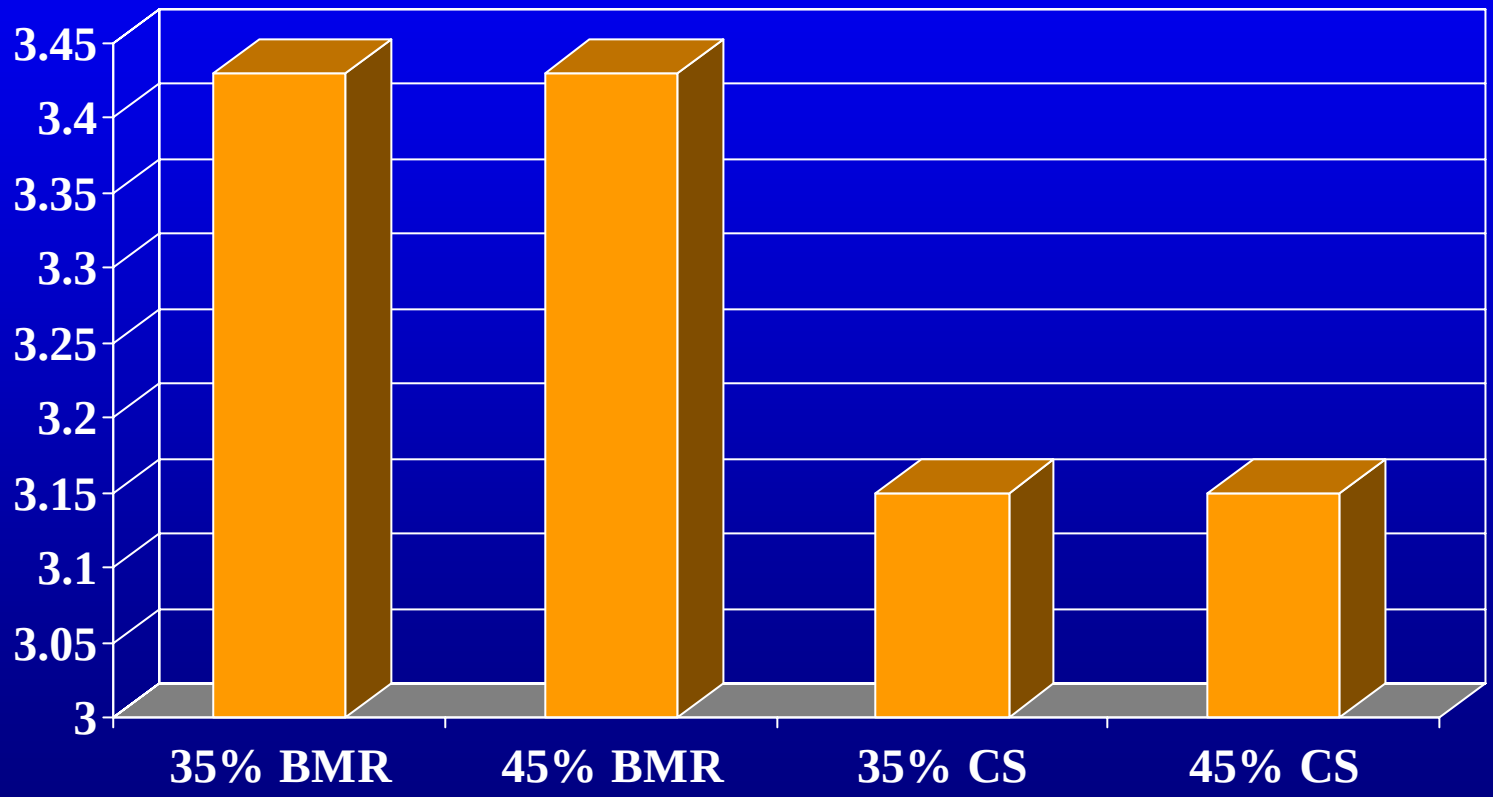
- DMI was 3 pounds above predicted levels
- Needed to add 2 lbs of corn meal to balance
- Removed 2 lbs of soy (which costs 2x as much)
- Milk production was the same as corn silage
- BMR Sorghum Sudan = high quality corn silage

3.5 % Fat Corrected Milk



Grant et al 2006

% Fat



Grant et al 2006

They found

- BMR-SS > body weight gain similar BCS
- Efficiency (solids corrected milk/DMI) was 28% greater for BMR-SS over Corn Silage.
- Rumen pH greatest @ 45% BMR 2nd at 35% BMR; lowest at 35% & 45% CS
- Conclude: BMR-SS an effective alternative to corn silage @ 35% or 45% of diet

Grant et al 2006

BMR SS: Why Not?

Commitment

- Farmer has to be committed to working with new crop, learning
- Nutritionist has to be committed to analyzing for fiber digestibility and accounting for higher forage protein

There is **NO** Perfect Crop

Management can Make or Break the Profitability of Any Crop

www.cce.cornell.edu\rensselaer\agriculture

BMR Sorghum-Sudan: The Un-Corn