



Switchgrass in the Dairy Industry- Bedding and Feed Use

Marlene Paibomesai

Ontario Ministry of Agriculture,

Food, and Rural Affairs

Dairy Specialist

March 27th, 2015

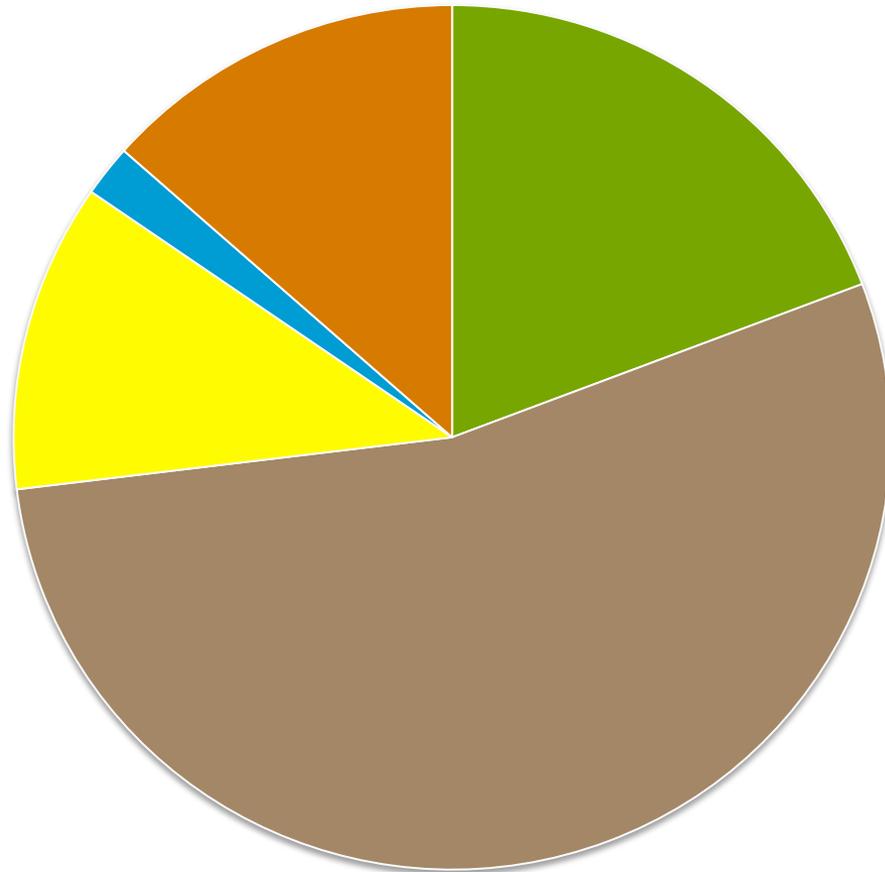
Objectives of Bedding

Clean and healthy cows

- Clean, dry resting surface
- Absorbs/drains surface moisture
- Reduces bacterial growth
- Reduce occurrence of injury



Typical Cow Day – Free Stall Barn

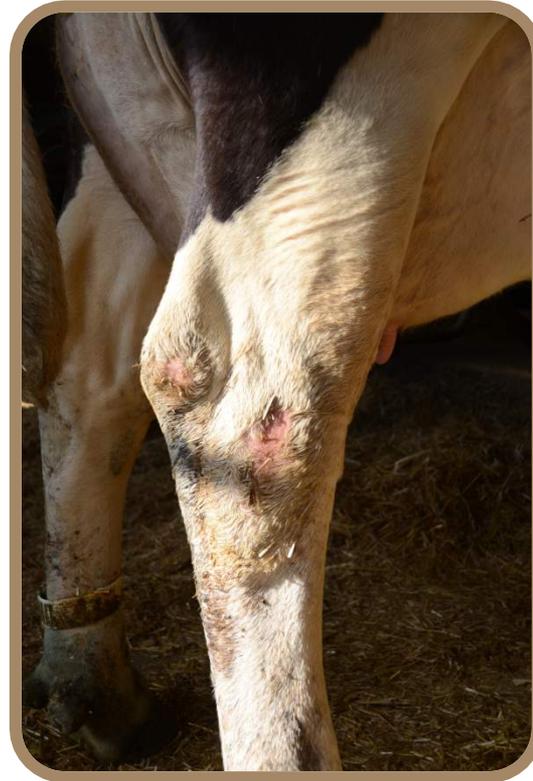


Hours/Day

- Eating
- Lying (Resting)
- Standing, Walking
- Drinking
- Milking

Qualities of Good Bedding

- Cushion
- Conform to cow
- Resists compaction
- Traction
- Prevents injury
- Dry
- Reduces undesired bacterial growth





Current Bedding Used

Organic

- Sawdust/ Wood chips
- Straw
- Dried Manure Solids
- Paper
- Other (Peat moss, recycled dry wall, etc)

Inorganic

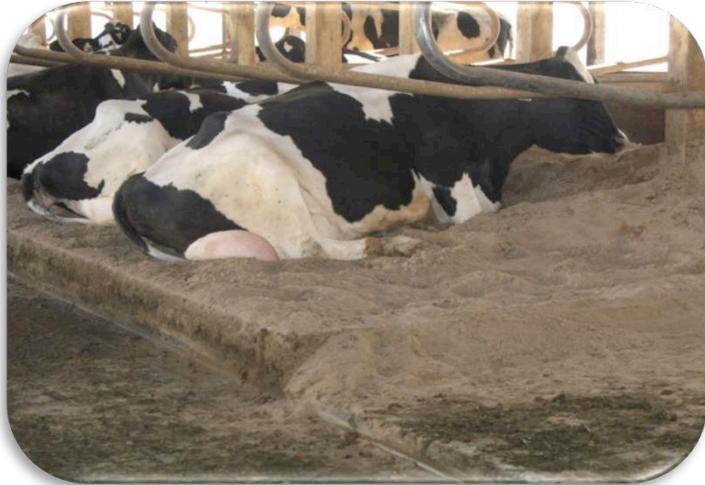
- Sand
 - Silica
- 

Maintenance – Organic

- Cleaned 2-3x daily
- Less udder health problems with more cleaning
- Addition of new bedding/day

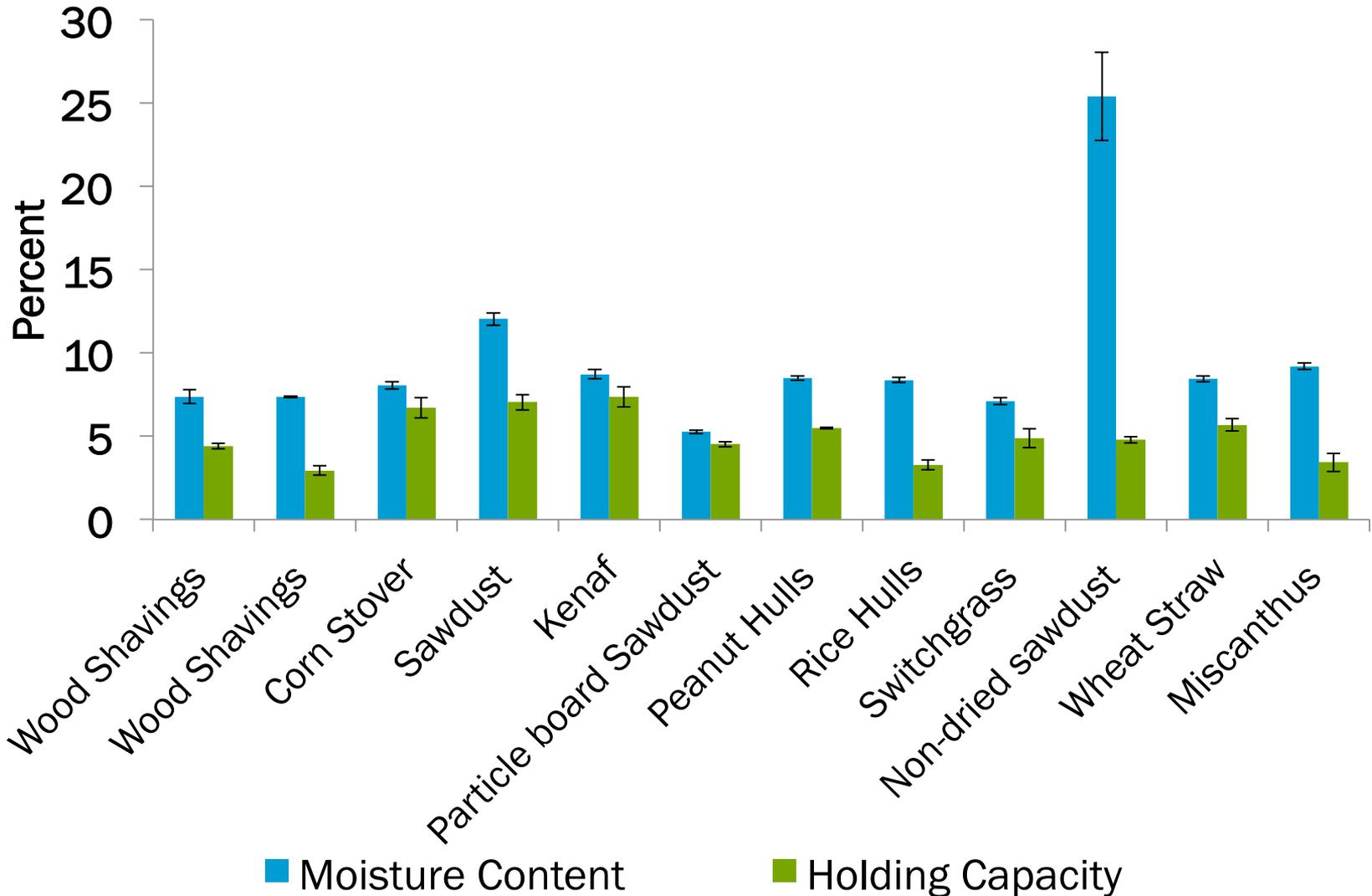


Maintenance – Inorganic



- Clean stalls 3 times daily
~25-50lbs/day –addition
1-2 times/week
- Superior Cow Comfort
- Difficult on manure
systems and equipment

Moisture Content and Absorptivity of Bedding Material for Bedded Packs



Bedding Requirements for Dairy Cattle

Bedding Material	Freestall	Bedded Pack
	lb/day per 1,000 lb of animal weight	
Chopped Straw	2.7	11.0
Long Straw	NR	9.3
Shavings	3.1	NR
Sand	20-40	NR

Recommendations by Midwest Plan Service. Dairy Bedding.

Cost of bedding

**Table 1: Estimated Annual Bedding Costs in New Brunswick
(Dollars per cow per year)**

Bedding Type	Shavings/ Sawdust	Straw	Sand	Peat	Dried Manure Solids
Range of Costs	\$78 - \$127	\$44 - \$110	\$8 - \$127*	\$72- \$101	NA
Average Cost	\$100	\$72	\$75*	\$89	NA

New Brunswick Bedding Manual, Milk 2020. Nov 2012.

Bedding with Switchgrass?



Dairy Bedding and Feeding with Switchgrass

- Primarily bedding for dry cows and heifers
- Some instances of mixing into dry cow ration
- Ontario switchgrass growers selling to Michigan and Ohio dairies 3 years ago for feed.



Pilot: Rene Brinke, Clinton Switchgrass at Dairy 220 milking cows

- 220 milking cows – June 2014
- Bedding for far-off dry cows on pack
- Cautious about making changes for milking cows for bedding
 - Currently on mattresses with chopped straw
- Fibres were 6”-10”



Pilot: Kees VanEsveld, Clinton Switchgrass Bedding

- Bedded pack for dry cows
- Switchgrass: 7 days before top-up
 - Wheat straw: 5-6 days
 - Switchgrass 9% moisture in bale
 - Wheat straw 16% moisture in bale
- Switchgrass seems less “fluffy” than wheat straw
- Interested in dedusted switchgrass, 3”



Pilot: London Dairy, London, ON Switchgrass Bedding



- Bedding dry cow and calves
- Chopped with Hay Buster
- 3-4” particle length
- Dried over winter provided better bedding material

Maintenance – Compost Bedded Packs

- Add new bedding daily & cultivate



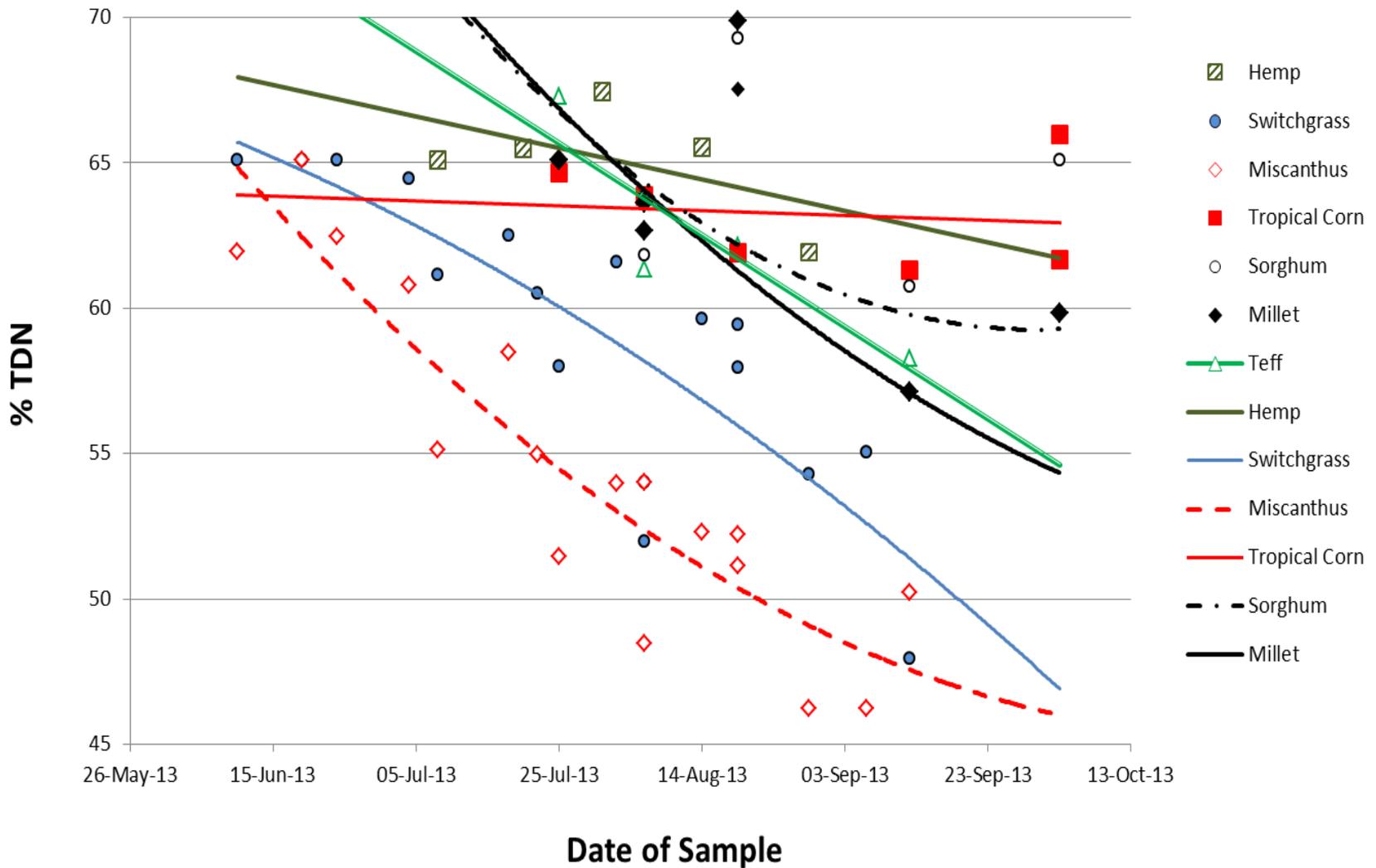
Feed Use for Switchgrass



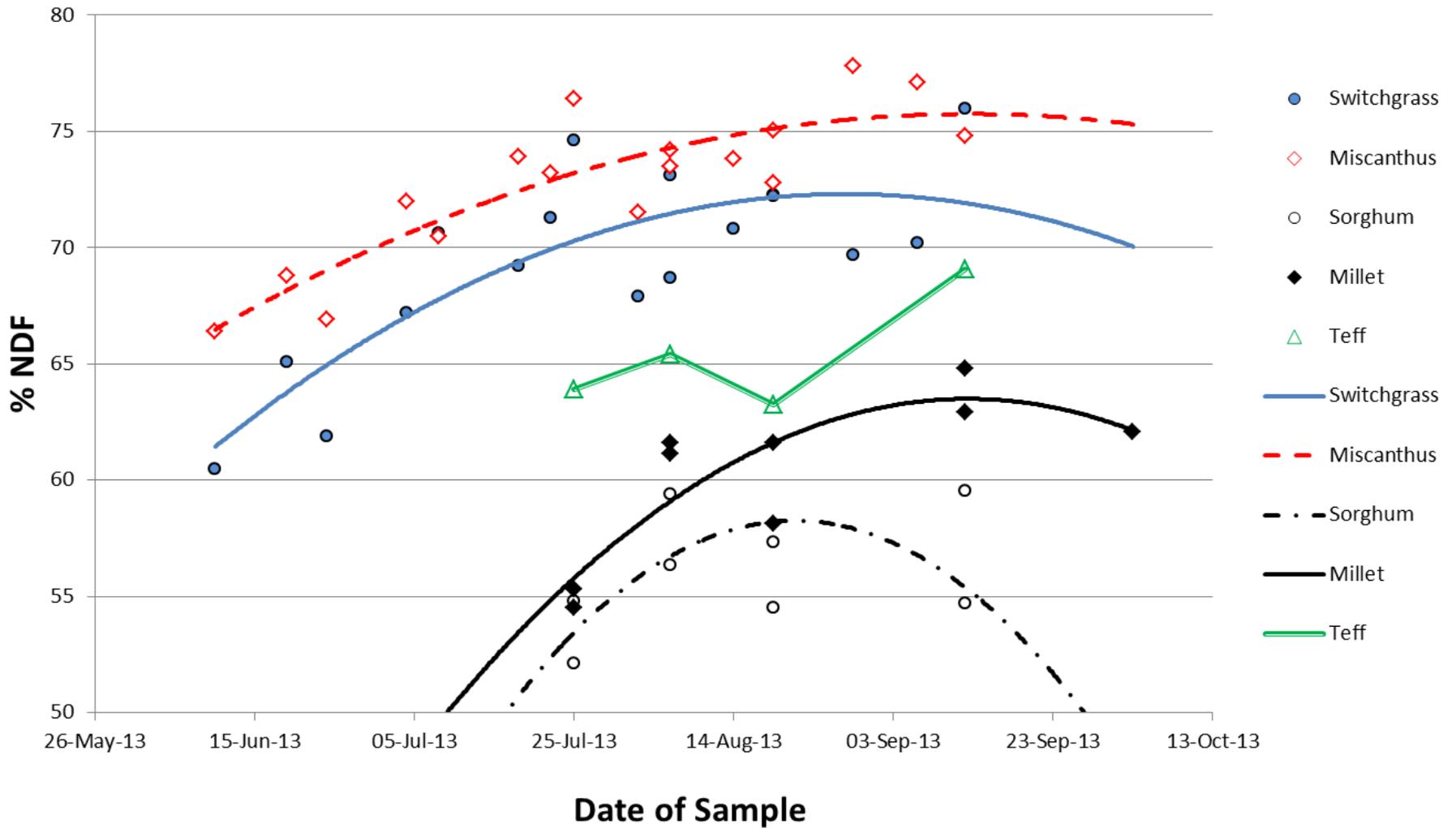




Total Digestible Nutrient (TDN) Content by Date



Neutral Detergent Fibre (NDF) Content by Date



Pilot: Rene Brinke, Clinton Switchgrass at Dairy

- Fall-harvested switchgrass.
- Low potassium compared to wheat straw – better for dry cows
 - For dry cows $<2\%$ K, this fall-harvested switchgrass was 0.8%
- Manure:
 - Visibly didn't look any different





Pilot London Dairy, London ON

- Dry cow and replacement ration
 - Mixed with straw
 - Uniformity is key
 - Hay buster before TMR Mixer reduces time in the mixer
 - Tested forage quality comparable to wheat straw
- 

Considerations...



Variety
Harvest date
Chop Length
Ease of use



To date...

- Pilot studies on dairy farms using switchgrass
 - Research is on-going to evaluate switchgrass and switchgrass-lime on mattresses as alternative bedding
- 



Thank you!

Marlene Paibomesai – Dairy Specialist

Marlene.Paibomesai@ontario.ca

@Dairytastic