

10th Mid-Atlantic Dairy Grazing Conference

Harvesting and Ensiling Quality Corn Silage on a Small Scale

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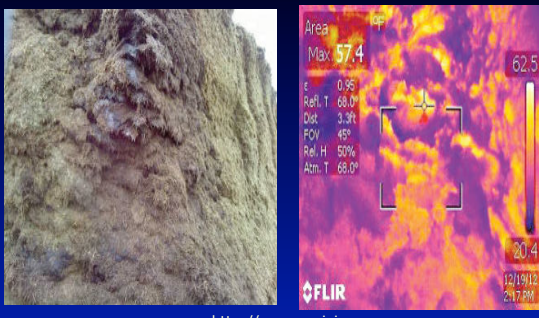
DM losses (shrink)

- Harvested 50 acres of corn silage at 20 tons/ac
- Ensiled 1000 tons
- Lost 25% to shrinkage (250 tons)
- Only 750 tons available to feed

D. Yungblut



Heating / Aerobic spoilage
Can cause additional losses up to 25%!!!



<http://www.aqrview.com>

How much losses (shrink) did you have on your dairy last year?



If you don't measure it, you can't manage it!!

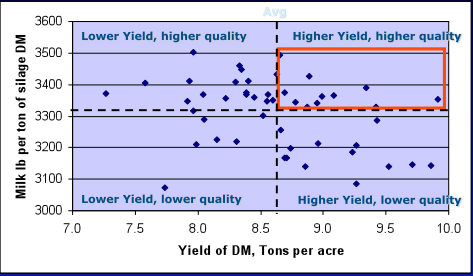
Management strategies to optimize silage quality and minimize losses

- Hybrid choice
- Plant spacing
- Fertilization, irrigation
- Maturity at harvest
- Chop length
- Packing density
- Seal type and timing
- Feedout rate
- Silo face management
- Additives & inoculants



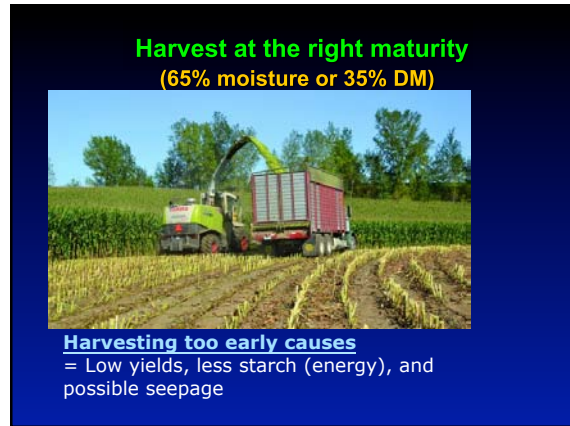
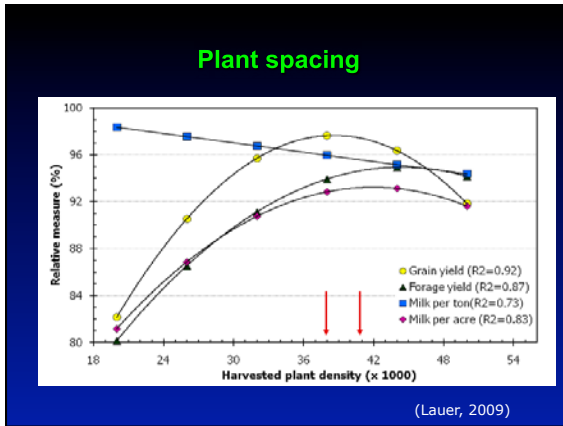
Hybrid choice

- Base hybrid choice on data from independent variety tests



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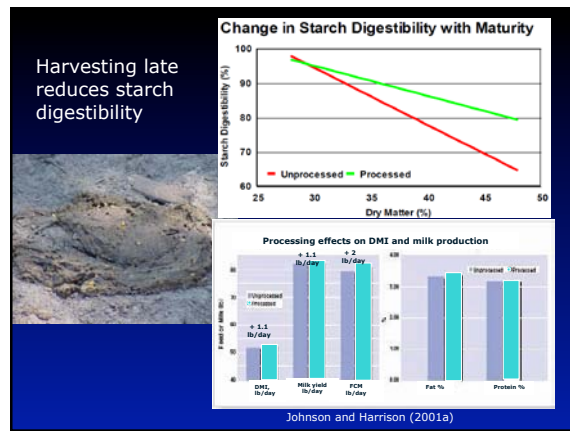
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Harvesting too late causes

- Poor packing,
- More porosity,
- More yeasts and molds,
- More spoilage & DM losses,
- Short bunk life,
- Disease and mycotoxins,
- Lower starch and fiber digestibility

Talk.newag.com
Betterfarming.com



Sample representative plants

- Start walking fields four weeks after silking
- Take at least 10 representative plants
- Use a chipper/shredder to chop them

millenniummale.com

Use DM at harvest to predict harvest date

www.dapi.vic.gov.au

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Chop properly

- ◆ Ideal chop length for corn silage
 - ◆ Unprocessed (1/4 –3/8 inch)
 - ◆ Processed (3/4 inch)



- Check sharpness of harvester blades/knives and roll clearance of processors before and during harvest

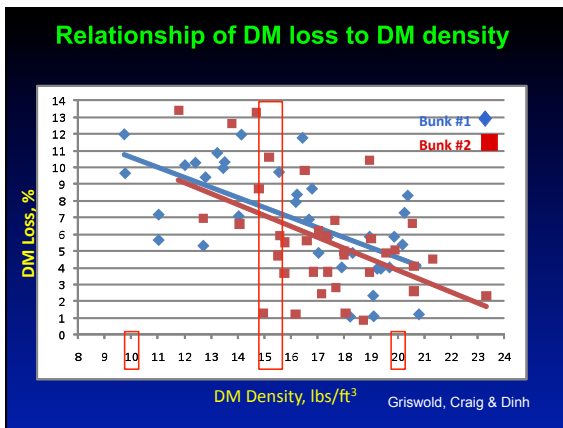
Pack Well!!!

Spot the difference!!!




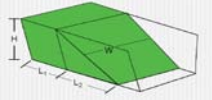
2 forage choppers were delivering 240 tons per hour, so packing time per ton was 45 seconds/Ton/Tractor ... and 13.8 lbs of DM per ft³!!!

Adapted from Bolsen, 2013



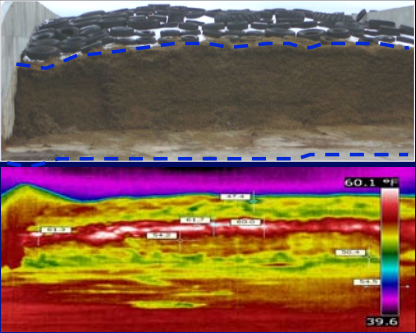
Excel at packing

(aim for 40 lb/cu ft, same as 15 lb DM /cu ft)

- Use heaviest tractor
- Divide tractor weight by 800 to get silage tons to pack per hour
- 40,000 lb tractor can pack 50 tons/hr.
- Use 'back to front' (wedge) packing method; 30=40% incline
- Spread no more than 6" layers at a time

Note side walls



Source: Bill Mahanna

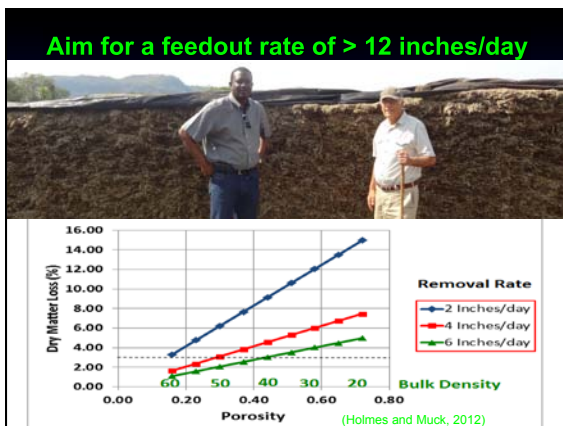
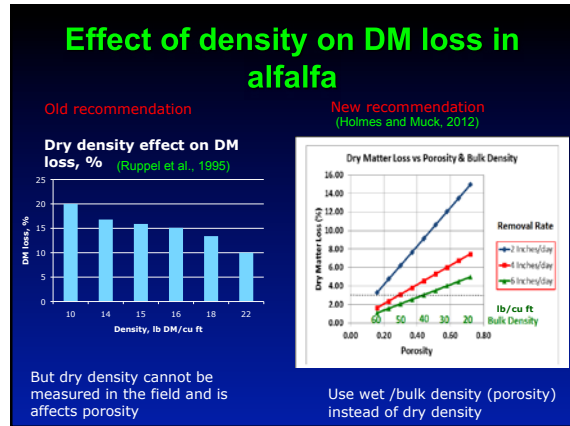
Seal immediately & properly

- Are your side walls covered?
- Are your tire walls touching?



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Making corn silage in bags

- Locate on well-drained, firm surface (preferably concrete or asphalt)
- Ensure easy access
- Mark bags with harvest date, field etc.
- Use a well-experienced custom bagger
- Don't locate bags too closely; mow weeds
- Aim to keep the silo face vertical
- Peel back only enough plastic to remove silage needed that day

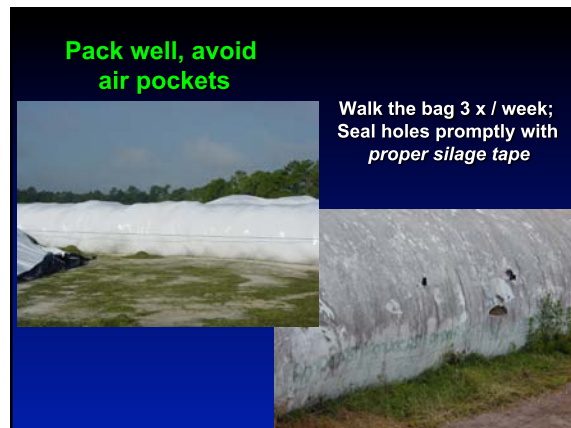
Which bag size should I use?



More waste from bigger bags



Pack well, avoid air pockets



Keep the face vertical



Drive-over piles

- May have higher shrink than bunkers if badly managed
- Management steps
 - Location
 - Sizing
 - Shape
 - Packing
 - Seal
 - Feedout



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Pile location

- **Location**
 - Locate on well-drained, firm surface (preferably concrete or asphalt)
 - Avoid areas that will allow rain, melted snow to seep into pile
 - Locate at least 100 feet away and down slope from wells to minimize seepage contamination
 - Ensure you have enough access
 - Locate as close to cow barn as possible

Pile size and packing

- Fill, pack and cover pile on the same day
- Pile apex should be less than maximum unloader reach
- For 1 vertical foot, you need at least 6 inches at base
- Slope should be at least 1 to 3 (even at edges)



Pile packing

- Pack with the 'wedge' method;
- Layers should be no deeper than 6 inches
- Aim for density of 40 lb/cu ft
- Use heaviest tractors for packing
- Never pack along the length of the slope
- Tractors with rear dual wheels are safer for packing



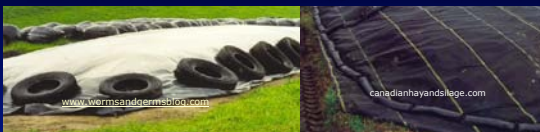
Overlap plastic properly

- If you must use 2 sheets overlap edges by 6 feet and weight down with heavy tires / multiple layers of tires



Pile covering and sealing

- Overlap silage edges with 6 feet of plastic
- Seal perimeter with dirt, gravel or sand bags
- Use two layers of plastic or oxygen-barrier plastic film



- Use touching tires



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Unloading

- Keep a vertical face
- Unload at least 12 inches per day
- Shave off face at right angles to the face if possible



Make two small piles instead of one big one



Take home message:

To maximize corn silage quality, every link in the silage-making 'chain' must be perfect

- Hybrid selection
- Growing the crop
- Predicting harvest dates
- Chopping
- Processing
- Packing and sealing
- Additives
- Feedout



Especially in the southeast

Further reading

- Drive-Over Silage Pile Construction - <http://www.extension.org/pages/64621/drive-over-silage-pile-construction#.VFec99JeZ8E>
- Bunkers, Piles, or Bags: Which is the most economical? <http://www.agmanager.info/livestock/budgets/production/default.asp#Dairy>

Wisconsin Stored density calculator spreadsheet
<http://www.uwex.edu/ces/crops/uwforage/storage.htm>