NORTHWEST CROPS & SOILS PROGRAM
VERMONT AGENCY OF AGRICULTURE, FOOD & MARKETS www.Agriculture.Vermont.gov
USDA United States Department of Agriculture Natural Resources Conservation Service
NORTHEAST DAIRY BUSINESS INNOVATION CENTER

CORN SILAGE HARVEST: GUIDELINES FOR SUCCESS

1. DM/Moisture

Targets: 32-35%: Bunks & Piles 35-38%: Uprights and Bags

Too Wet (<30% DM) = effluent & nutrient loss

Too Dry (>40%) = Yeast and Mold risk & low starch digestibility

Monitor: Milkline DOES NOT EQUAL Whole Plant DM

Dry Down Rate is about 0.6% /day depending on soil moisture, weather (wind) and plant death

1 week can result in over 4 units of DM: 32% now will be >36% in 7 days

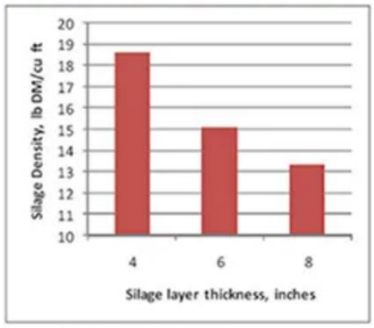
2. Packing- PACK PACK PACK

Goal: >16-18 lb/ft^3 DM or >50-55 lb/ft^3 Wet

Too loose (<15 lbs DM/ft^3 or 45 lbs AF/ft^3) = 16-20% DM loss

Silage density (lb DM/ft^3)	DM loss at 180 days (%)
10	20.2
14	16.8
15	15.9
16	15.1
18	13.4
22	10

Source: Ruppel et al., 1992.



Source: Holmes & Muck, 1999.

Layers: Make thin 6-10" layers

Pack each layer until tire ruts <3" = only tire treads visible

Fill rate: Total Packing Weight/800 = T/h Max

40,000lbs/800 = 50 T/h If 15 T/Truck = 3.3 Truck Loads/h

STAY ON THE GREEN

Stay on the forage as much as possible, minimize soil contamination and idling on concrete.

Slope: The Flatter the Better- Keep less than 1' Rise over 3' Horizontal

Too steep = tires churning up what was just packed

This paper is 8.5"x11". Fold it in thirds length wise to be 2.8" x 11"; fold again on the diagonal for slope.

Stay under 3.5" x 11" on forage slope

3. Particle Size/Length of chop/Kernel Processing

Goal: ½" – ¾" If DM >38% chop shorter at ½"

Monitor as you go- just because you set to ¾" doesn't mean you're getting ¾"

Troubleshooting silage harvester problems

Problem	Possible causes
Poor or ragged cut stalks Excessive cob lengths	Dull knives, worn stationary knife, excessive stationary-to-cutterhead-knife clearance
Ragged stubble	Improper knife register on row crop unit; knives not centered on row
Lack of or spout blow	Hole in spout liner; excessive blade to band clearance
Excessive power requirement	Dull knives; dull or misaligned stationary knife

Kernel processing: Kernels must be eviscerated, <1/4" fragments

EXPOSE the internal starch to optimize starch digestibility

4. COVER COVER COVER

Goal: ASAP

Minimize the amount of time the forage is exposed to retain quality and potential

Weights: Tires, Stone Bags

5. OTHER Considerations

Preservatives: Inoculants vs Acid

All Good ONLY if you PACK well. Nothing Cures Poor Packing

Chop Height: 6", 12", 18"…

Higher = Slight gains in NDF digestibility **BUT** large loss in DM yield

In situations where wet weather has caused lots of soil to splash up onto lower corn stalk, chopping higher can reduce soil contamination

6. Cover Cropping/Double cropping

Timing: Plan silage harvest with post-harvest planting in mind

Small window of time to complete many field operations

Cover crops need to be planted **by late September** to establish and tiller

Figure 1. Rye at fall harvest in late October. From left to right: planted 30-Sep, 15-Sep, and 2-Sep.

Equipment: Be ready to go

Grain drill or broadcast **BUT** must have good seed to soil contact either way

Calibrate your equipment to attain the proper seeding rate and adjust for germination

Source high-quality seed from reputable vendors- poor quality seed isn't worth it

Species selection: Consider your goals

Just trying to stabilize the soil? Fix N? Winterkill or overwinter? Break up compaction?

Winter rye isn't necessarily the only choice nor the right choice for your farm's goals

What about harvesting/grazing cover crops for additional forage?

Winter grains can provide an additional 1-2.5 tons DM/acre of high-quality forage

Forage	Dry Matter	Protein	NDF	Lignin	Acetic Acid
	%		% of DM		% of Total Acids
Grass	42.2	15.8	48.3	4.27	1.64
Alfalfa	53.4	19.9	37.8	7.19	0.61
Ryegrass	23.5	19.5	49.5	4.81	6.77
Triticale	26.3	16.4	47.5	2.93	3.06
Triticale	25.6	17.0	51.1	2.38	2.84