SILAGE

THE HOWS & WHYS

By Bernard Adam

TUBE•LINE MANUFACTURING LTD

EXCUSES OR SOLUTIONS?

IT'S YOUR CHOICE!

THE BEST OF THE BEST EXCUSES..... OR THE WORST.

HEARD THROUGHOUT NORTH AMERICA

1 **A TIE FOR FIRST PLACE.**

- **Too much rain.**
- **Not enough rain.**

2

- **Hay is too short now.**
- **I remember back in 1978 we had to buy hay.**

WINNER OF THE MOST EXPENSIVE EXCUSE.

3

- **Hay is not green enough.**
- **We need one good rain and then we will start.**

#2 IN SOUTHERN PART OF U.S.A.

4

- **Too much rain.**
- **Ground is so soft that we have to wait.**

GOOD REASON BUT STRESSFUL.

5

- **I have to finish another job, then I will start.**

POOR EXCUSE, VERY EXPENSIVE, POOR PLANNING.

6

- **It will rain tomorrow afternoon.**
- **We don't have enough time.**

WRONG! YOU HAVE ENOUGH TIME FOR HAYLAGE.

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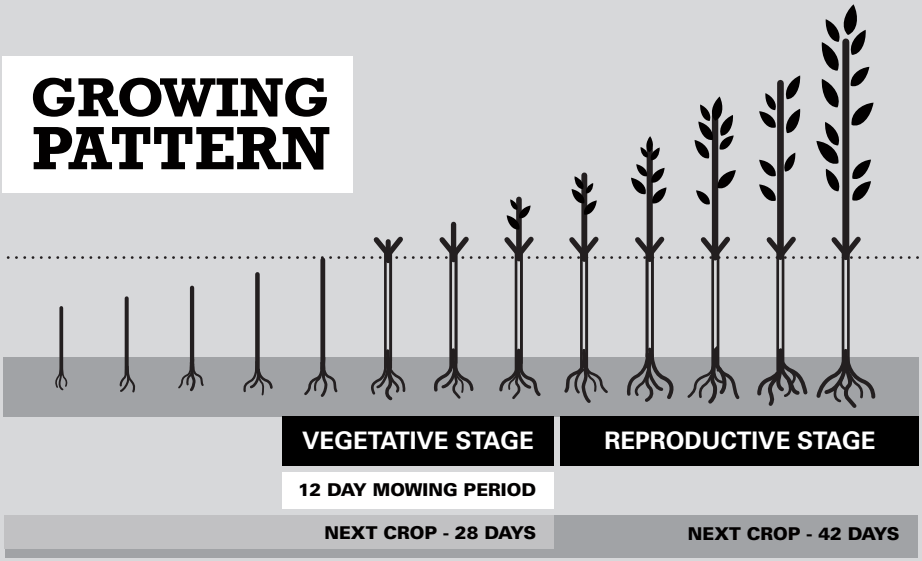
WHEN TO MOW

HARVEST DURING THE **VEGETATIVE STAGE**

GROWING PATTERN



HARVESTING DURING THE VEGETATIVE STAGE ASSURES:

- Optimum feed value
- Great resale value
- Time to do one or two extra crops
- More money and a relaxing season

28 DAY CROP

HARVESTING DURING THE REPRODUCTIVE STAGE MEANS:

- Feed value will be at the minimum
- Your herd will get what they need to survive, not grow
- You will spend money and work harder

42 DAY CROP

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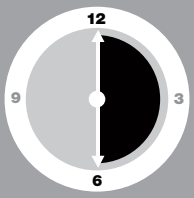
FIRST CROP

BEFORE HEADS OUT

OR LESS THAN 10% BLOOMS ON LEGUMES

NORTH OF THE DIXIE LINE

MOW AT 6 AM



READY TO BALE AND WRAP NEXT DAY AT 4 PM

ELAPSED TIME

34 : 00

MOW AT 10 AM

READY TO BALE AND WRAP NEXT DAY AT 8 AM

ELAPSED TIME

22 : 00

Legumes Should Be Mowed After 9 AM

SAME PRINCIPLE APPLIES TO ALL TYPES OF GRASSES, EXCEPT FOR ELAPSED TIME.

IT DEPENDS ON WHERE YOU LIVE

EXAMPLE: Louisana U.S.A. Elapsed time from 0 to 4 hours and you will normally have reached. 40% - 45% of Dry Matter (D.M.)

THE ONLY REQUIRED INFORMATION IS

MOISTURE CONTENT

OF YOUR CROP TO START BALING HAY

DETERMINE IT IN 15 MINUTES WITH 100% ACCURACY

SEE NEXT PAGE

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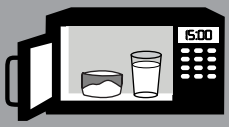
MOISTURE TEST

THE **BEST DECISION** YOU MAKE THIS YEAR

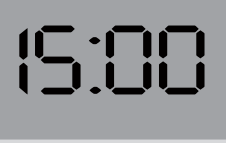
1. **PICK A SAMPLE OF HAY**
   One handful from the 3rd windrow.

2. **WEIGH THE SAMPLE**
   Put sample in plastic bag and place on digital weigh scale. (You need 50 to 60 grams of hay.)

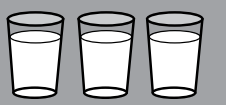
3. **PLACE IN MICROWAVE**
   Leave bag open and place in microwave. Place a glass of cold water next to it.



4. **SET FOR 15 MINUTES**
   Start microwave.



5. **REPLACE WATER EVERY TIME IT BEGINS TO BOIL**
   After 3 glasses, your sample should be dry.



6. **WEIGH SAMPLE AGAIN**

7. **RUN ONE MORE TIME FOR 2 MINUTES AND WEIGH SAMPLE AGAIN.**

FINAL WEIGHT ÷ ORIGINAL WEIGHT = DRY MATTER %

WHEN YOU REACH 40% OR MORE D.M. (60% MOISTURE) **START BALING!**

FOR LEGUMES YOU NEED 45% D.M. OR 55% MOISTURE

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STUBBLE HEIGHT

AFFECTS TONNAGE AND QUALITY

MOW AT 4″

MOW AT 2″

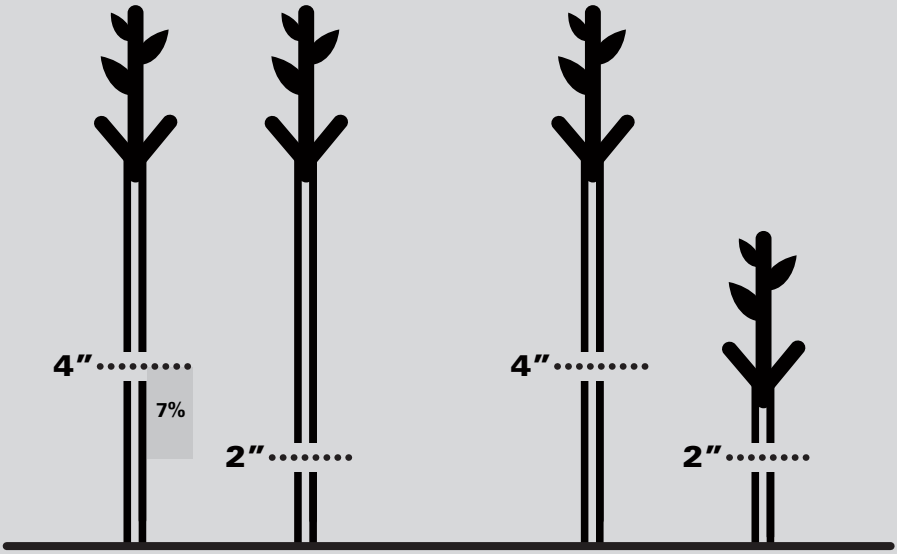
QUICKER SECOND CUT

Mowing at 4″ leaves a higher concentration of nitrates helping to boost regrowth. The growing point is saved and is able to immediately help growth.

HOWEVER:

Hay mowed at 2″ includes a higher concentration of nitrates, manure splash, ashes and dirt plus reducing palatability.

$ Money is needed to replace nitrates in the ground.



1ST CUT

4″ **vs.** 2″
7% less hay **vs.** mowing at 2″
Ex. 93 bales **vs.** 100 bales

BUT

2ND CUT (28 Days Later)

4″ **vs.** 2″
28 days later **vs.** 42 days or more
100 bales **vs.** 50 bales

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TIME & BENEFITS

SAVE TIME AND INCREASE BENEFITS

HOW TO SAVE TIME BY MOWING WIDE

- Swath width should be 85% of cutter bar width to speed up evaporation.
- A narrow swath will take more time and consume dry matter.

Moisture evaporates through the stomate opening (or pores) on the plant leaves. The stomate closes in dark environments, this induces sweating which results in draining energy and dry matter.

HOW TO INCREASE BENEFITS

- 25 lbs dry hay required for 1 lb of weight gain.
- 8 lbs of haylage required for 1 lb of weight gain.

9 OR 12 MIN

Haylage requires 9 minutes of time with a narrow swath (mowing, baling, hauling & wrapping) or 12 minutes with a wide swath (add raking) but higher quality and dry matter.

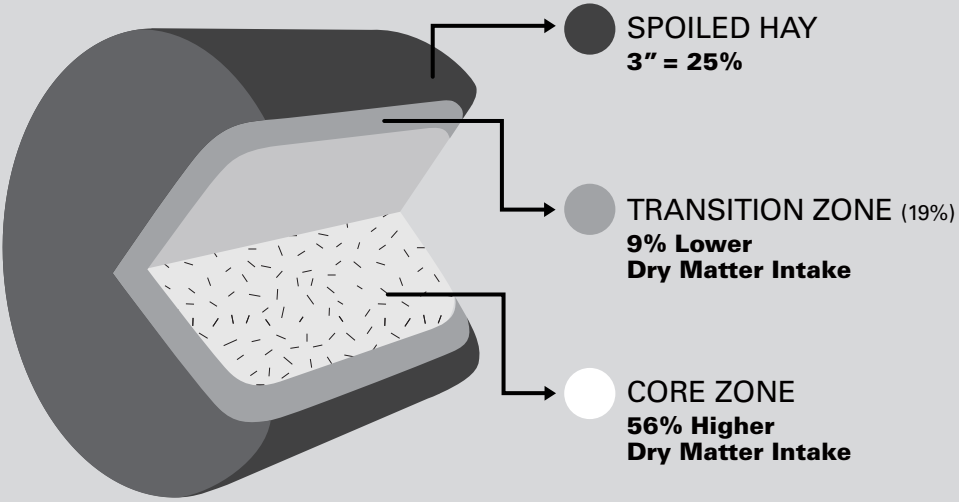
22 MIN

Dry hay requires 22 minutes of time per bale which includes mowing, tedding (once or twice), raking, baling, and moving bales to a storage site.

When the internal temperature of a bale reaches 110 degrees or higher the proteins will begin to bond. If the proteins bond digestibility and palatability will be affected. Bales with high levels of dust likely have bonded proteins and shouldn't be fed if it can be avoided.

DRY HAY

VALUE REDUCTION



ASSUMING YOU LOSE THE MINIMUM AMOUNT POSSIBLE IN NORTH AMERICA (25%)

- For every 100 bales of dry hay forage, you need to make 133 bales (100 bales ÷ 75% = 133 bales)
- If you put $300.00 worth of silage film on those 100 bales you will save 33 bales at approximately $40 each
- 33 bales x $40.00 = $1320.00 minimum value cost savings

$

EACH DOLLAR INVESTED IN SILAGE FILM IN SPRING
WILL SAVE $4.00 OR MORE IN WINTER

WHERE TO WRAP

IN THE FIELD OR AT THE STORAGE SITE

AT THE STORAGE SITE

PROS

Preferable system if there is no delay (maximum 4 hours) between baling and wrapping and if distance is less than 2 miles.

CONS

If more than 2 miles, you should leave the bales wrapped on the side of the field (if possible) and move them only when needed.

The ventilation of unwrapped bales during a long haul may create fermentation problems.

IN THE FIELD

PROS

- One man operation if you have a baler-wrapper. No delays between baling and wrapping. Bales need to be moved the same day.
- Two man operation, no delays if you have a self loading individual bale wrapper, or faster if you have a BaleLiner.

These conditions eliminate the weather problem, stress, and the risk of sweating and ventilation if you have a long distance to haul.

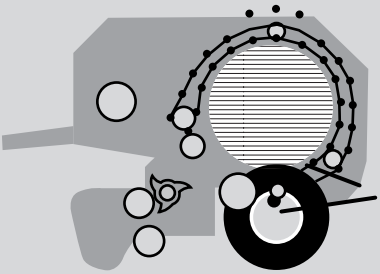
CONS

- Very few options known to move **wrapped** bales safely.
- Need plastic with very good puncture resistance in alfalfa field.

BALERS

FIXED CHAMBER VS VARIABLE CHAMBER

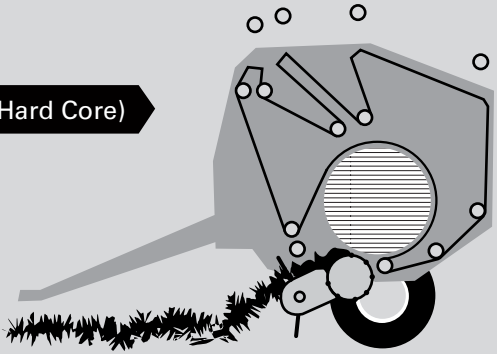
FIXED CHAMBER (Soft Core)



IDEAL BALER SIZE FOR HAYLAGE

4' x 4' or **4' x 5'**

VARIABLE CHAMBER (Hard Core)



OPTIMUM DIAMETER

48" to 56"

Never exceed 60"

BOTH HARDCORE OR SOFTCORE WORK FINE.
THE TRACTOR DRIVER HAS THE MOST INFLUENCE ON QUALITY.

- For haylage, drive slower but maintain high P.T.O. revolution.
- There is more feed value in a 4' x 4' wrapped haylage bale than in a 5' x 6' bale of dry hay.
- If you have a 5' x 5' instead of a 4' x 5', make your bale at a maximum of 55" in diameter. It is important for quality. No savings are achieved in making larger diameter bales.

WRAPPERS

INDIVIDUAL VS IN LINE

INDIVIDUAL

- Double the cost per bale in plastic
- 20 - 40 bales per/hr
- Do not move bale during fermentation

OR

IN LINE

- Half the cost per bale in plastic
- 80 - 120 bales per/hr
- Best fermentation

BALE MOVERS

WHAT ARE THE OPTIONS?

TECHNOBALE

960

1 KILOMETER TO 3 KILOMETERS

- 9 bale carrier, preferably with a 60 H.P. tractor (F.W.D. if you have slopes)
- For some crops, the weight of the trailer plus the bales may exceed 20,000 pounds.
- 60% less mileage driven on your field
- 50% and more on time savings

SPECIFICATIONS	
Remote Outlets Required	2
Horsepower Requirement	60 HP min
Tires	12.5 x 15
Shipping Width	9'8"
Operating Width	10'5"
Weight	4,735 lbs
Bale Size	4x4 to 5x5

980

3 KILOMETERS OR MORE

- If you can move the bale during winter months, leave them wrapped, beside the field, until you are ready to feed your herd. If you can't, consider making dry hay on this field.

SPECIFICATIONS	
Remote Outlets Required	2
Horsepower Requirement	120 HP min
Tires	32\15.50x16.5
Shipping Width	10'
Operating Width	12'
Weight	8,100 lbs
Bale Size	4x4 to 6x5

***1 km = 0.6 mile**

SILAGE FILM

SOME HELPFUL SUGGESTIONS FOR YOU

WHAT IS THE DIFFERENCE BETWEEN MANUFACTURERS?

Some are **COMMITTED** to their customers by learning first, through research, what you as a farmer need.

Some are interested in your **MONEY**, thinking that all films are alike. They may discount their product to get your business.

WHAT TO LOOK FOR WHEN SELECTING SILAGE FILM

1. You are free to pick the one you want. A good silage film will provide an excellent oxygen barrier that will keep the CO_2 inside the bale. If you lose the CO_2, your haylage will develop molds.

2. You need the film to last at least one year outside in the sun. This requires good U.V. protection.

3. You need enough tack or cling on the film to seal the bale.

4. Plastic, exposed to heat and cold will keep expanding and contracting so you need a blown film to compensate for that.

5. This plastic **SHOULD BE WHITE** to reflect the heat. Any other colour will **ABSORB** the heat instead of reflecting it. Too high a temperature inside the bale will bond the protein to the fiber and increase the time needed by cows to digest the fiber, thus reducing the space in the cows rumen for new forage intake. This is known as the "bounded protein" effect. **It will result in a loss of profitability!**

6. **PRECAUTION.** During periods of hot weather, you must clean the pre-tensioner rollers frequently to remove cling deposits. This will control the stretch to levels you need (55% to 75%). Overstretched plastic, 75% and greater, may result in premature film degradation and barrier properties. The lack of oxygen barrier allows the CO_2 inside the bale to escape.

CROP MANAGEMENT

TIMING IS EVERYTHING

LENGTH OF FEED VALUE

Every bale made on your farm has a different conservation period. You can know at time of wrapping the length of time that the feed value will be at 100%.

TWO THINGS TO REMEMBER:

MATURITY: If the hay is all headed or all bloomed, there is not enough sugar left in the plant to ferment properly. Overly mature hay will typically develop mold after three months.

MOISTURE: When hay is too wet upon baling, butyric acid may develop 42 days after the wrapping has been done. The feed value will start to diminish after 90 days. In some instances with legumes, fermentation may even be **impossible.**
When hay is too dry, the palatability will be affected and haylage may be refused by cows after 6 months.

SUMMARY POINTS:

- The ideal stage to mow is the vegetative stage i.e. just before it is all headed for grass and for legumes when you see about **10%** flowers.
- Moisture level is **40% to 60%** for grass and **40% to 55%** for legumes. This haylage will maintain it's feed value for one year.
- If moisture level is **30% to 40%**, it's not as good after 6 months, but perfect before, so feed first.
- If moisture level is more than **60%**, feed as soon as possible within 3 months.

NOTES:

BALELINER

PRODUCTIVITY JUST
MULTIPLIED

TECHNOBALE

UNBEATABLE PERFORMANCE

LESS **MACHINERY**
MORE **EFFICIENCY**

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