

# Harvest Management (Ch 16 pg 377-388) (Dr Mark Sulc)

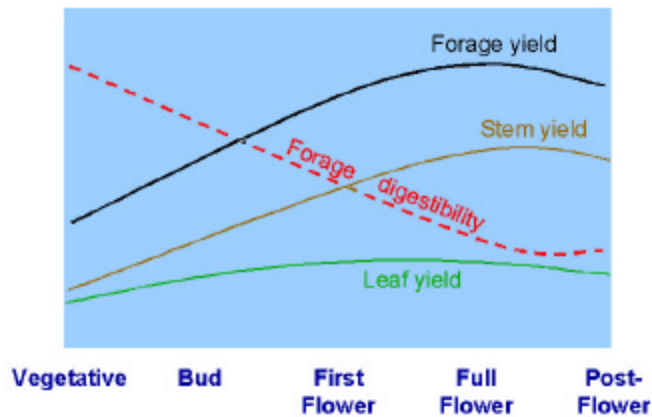
## Introduction

Harvest decisions influence:

- Yield (.....)
- Forage quality (.....)
- Stand persistence (.....)
- Insect damage (harvests can be .....) )
- Disease infestation
- Field and storage losses (too dry, too wet, rain - all increase losses)

PROFIT (all the above affect profit)

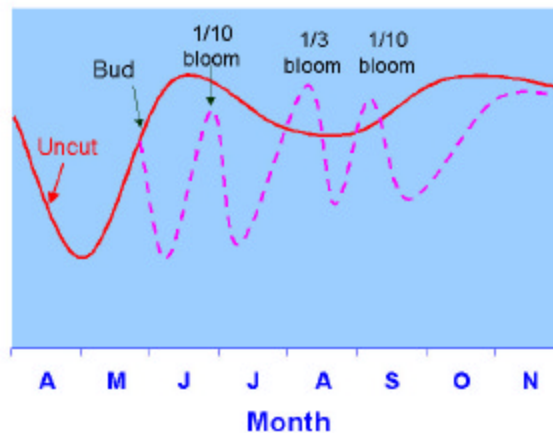
Relationship between growth stage, yield and quality (Fig 16.8 pg 383)



Effect of Harvest Timing on Root Reserves in Alfalfa (Fig 4.6 pg 88)



Root Reserves in 4-cut System (see Fig 4.8 pg 90 for a 2-cut system)



## Harvest Management

### Seeding year

Harvest depends on seeding date

- Spring seeding (no companion crop):
  - .....
  - .....
  - .....
- Spring seeding with companion crop First harvest based on companion crop stage
  - .....
- Late summer seedings – .....

### First Harvest Timing in Established Stands

- .....
- as plants mature, forage quality .....
- basing harvest on maturity can be deceiving
- use PEAQ method for alfalfa
- for dairy quality grass - ..... (.....)

### Summer Harvest Timing

- can generally use .....
- intensive cutting can be done, requires
  - .....
  - .....

### Fall Harvest - Cautions

- increased .....
- increase .....
- roots need time to .....
- is the forage REALLY needed???

### Fall Harvest - Tips

- complete last harvest by .....
- do NOT harvest during late September & October
- cut after ..... (25F for several hours)
- if fall harvesting, select fields that are well-drained, good fertility & good pH
- is the forage REALLY needed???

### Alfalfa Quality by Maturity

Stage	CP	ADF	NDF	RFV
	23	28	38	164
	20	29	40	154
	18	31	42	144
	17	35	46	125
	15	37	50	112

## Matching Forage to Animal Needs

Need to know:

- Energy Requirements: Animals with ..... requirements need ..... forage (e.g. lactating animals)
- Intake Potential: Animals that have to eat large amounts of feed need .....
- Amount of forage fed: Forage quality not that important for animals fed low forage diet (e.g. feedlot steers)
- Economics  
Cost of feed relative to value of product.  
A high producing dairy cow generates \$3000/yr in gross income, a gestating beef cow generates \$450/yr.

## Forage Quality for Beef Cows

Beef cows (TDN 56 to 62%)

	ADF	NDF	CP
Grass	37-42	57-69	10-13
Alfalfa	33-39	43-50	17-20
Mix	35-40	48-55	15-18

Note: high fiber = low TDN

- CP less than 10% tend .....
- TDN values less than 55% .....
- Most beef cows require less than ..... (high lactation breeds in first 3 months need 12-14% CP). CP fed in excess is simply excreted in urine (no value to the cow)

## Forage Quality for Dairy

*Average producing cow (RHA < 18,000)*

NEL: >0.6 Mcal/lb

ADF: <35%

NDF: <60% (Grass)

<48% (Legume)

*High producing and early lactation*

NEL: >0.64 Mcal/lb

ADF: <32%

NDF <55% (Grass, 50% is ideal)

<44% (Legume, <42 is better)

Forages lower in quality reduce intake and usually result in lower milk production

Difficult to balance diets to maintain good intake with low quality forages

## Assessment of Moisture Content of Hay - A Practical Guide

% Moisture Condition	
30 - 40%	Leaves begin to rustle and do not give up moisture unless rubbed hard. Juice easily extruded from stems using thumbnail or knife or with difficulty by twisting in hands.
25 - 30%	Hay rustles - a bundle twisted in the hands will snap with difficulty, but should extrude no surface moisture. Thick stems extrude moisture if scraped with thumbnail.
20 - 25%	Hay rustles readily - a bundle will snap easily if twisted, leaves may shatter, a few juicy stems remain.
15 - 20%	Swath-made hay fractures easily, snaps easily when twisted, juice difficult to extrude.

Reproduced from Hoard's Dairyman 132. 1987.

## Forage Growth-staging Methods

### Alfalfa Maturity Visual Rating (from NAAIC Standard Tests)

- 1 = Vegetative (stems have no buds or flowers)
- 2 = Early bud; 1-33% stems have buds
- 3 = Mid bud; 34-65% stems have buds
- 4 = Late bud; 66-100% stems have buds (no flowers present)
- 5 = Early flower; 1-33% stems have open flowers
- 6 = Mid flower; 34-65% stems have open flowers
- 7 = Late flower; 66-100% stems have open flowers (no seed pods present)
- 8 = Post flower; stems have pods or seeds

### Alfalfa Stem Staging (from Kalu and Fick, 1981)

- 0 = Stems < 16 cm, no buds or flowers
- 1 = Stems 16-30 cm, no buds or flowers
- 2 = Stems >30 cm, no buds or flowers
- 3 = 1-2 nodes with visible buds, no flowers
- 4 = 3 or more nodes with buds, no flowers
- 5 = 1 node with an open flower, no seed pods
- 6 = 2 or more nodes with open flowers, no seed pods
- 7 = 1-3 nodes with green seed pods
- 8 = 4 or more nodes with green seed pods
- 9 = Nodes with mostly brown mature seed pods

### Grass Maturity Visual Rating (from Moore et al., 1991)

- VE = Emergence of first leaf
- V1 = First leaf collared
- V2 = Second leaf collared
- Vn = Nth leaf collared
- E0 = Onset of stem elongation
- E1 = First node palpable/visible
- E2 = Second node palpable/visible
- En = Nth node palpable/visible
- R0 = Boot stage
- R1 = Inflorescence emergence/first spikelet visible
- R2 = Spikelets fully emerged, but peduncle not emerged
- R3 = Inflorescence emerged and peduncle fully elongated
- R4 = Anther emergence/anthesis
- R5 = Post-anthesis
- S0 = Seed caryopsis visible
- S1 = Milk stage
- S2 = Soft dough