



NEW Predicted Alfalfa Leaf Percent

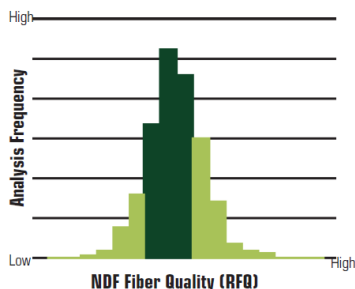
Leaf loss is one of the major factors negatively impacting harvested alfalfa forage quality. Leaf percentage accounts for 71% of variation in forage quality. Undersander, 2017 NAFA News)

- Leaves 15 to 20% NDF = ~ 450 RFQ
- Stems 60 to 70% NDF = ~ 70 RFQ
- This new prediction equation included in the Calibrate® HQ analysis can explain 84% of the variation in leaf percentages of all samples in the calibration sample set.
- **Average whole plant standing alfalfa is 50% leaves and 50% stems.**

Why Use Calibrate® HQ Forage Analysis?

- An improved NIR data base developed from numerous in-vitro results and 10+ years of research representing a wide range of forage quality from across the US, placing emphasis on samples of extreme quality (high and low) makes it more precise.
- See Alfalfa Quality Chart, below. The dark green bars represent a typical frequency distribution of a lab's alfalfa sample quality results, and the light bars at the ends of the "bell curve" represent a lower frequency samples, testing either high or low quality.

Alfalfa Quality Ranges




- Calibrate® HQ analysis can provide more accurate sample results in these low frequency ends.

RFQ and RFV Index Are DIFFERENT

- The RFQ equation is calculated from NDF, NDFd, crude protein, fat and ash values. These are all important indicators of forage quality.
- RFV index does not take into account NDFd, ash and protein. **Therefore, RFV and RFQ may not be similar values.**

How Should I Use the Alfalfa Leaf Percent value?

- To support the discussion of alfalfa sample quality test results.
- If the RFQ, NDFd, or Crude Protein is lower than expected, check for leaf loss as a potential cause.
- Recommend areas for alfalfa management improvement:
 - Use of foliar applied fungicides can benefit leaf retention and influence forage quality and yield.
 - Plant a more disease/pest resistant variety.
 - Manage crop moisture to maximize leaf retention.
 - Harvest equipment choices and settings.

Calibrate High Quality Forage Analysis									 CALIBRATE™
Report Date: <u>10/12/2020</u>									
Account: _____									
Sampled By: <u>CROPLAN</u>		Address: _____							
Sampled For: <u>Farm</u>									
Sample ID	% Moisture	% Crude Protein (Dry Basis)	%Ash (Dry Basis)	%NDF (Dry Basis)	%NDFD (% of NDF)	RFV	RFQ	TDN	% Leaves 2020 Equation
Dry Hay 1	-	22.91	11.87	32.99	44.72	194	187	62.20	55
Dry Hay 2	-	19.29	11.07	42.59	47.16	137	141	59.03	41
Haylage 1	62.65	19.28	13.00	33.02	45.81	194	187	61.59	52
Haylage 2	66.95	21.28	13.06	41.97	39.08	140	122	54.10	45

% Crude Protein - An indicator of plant maturity (lower CP = mature plant) or excessive leaf loss.

% Ash - Over 8 to 10% indicates soil contamination.

% NDF - An indicator of plant maturity (high NDF value = mature plant), or excessive leaf loss.

% NDFD - The portion of the NDF that is digestible (30-hr analysis)

RFV - An index of forage quality but does not take CP, Ash, or NDFD into account.

RFQ - Equation formulates an overall forage quality value based on all parameters above.

TDN - Used to show energy content and nutrient digestibility.

***NOTE:** % Leaves can exceed 50% when plants are immature before stem elongations OR during drought stress situations the stem does not elongate causing a higher leaf to stem ratio.

How Do I Get Started?

- Submit your alfalfa sample to a licensed lab for the Calibrate® HQ analysis.
- If you need a sample submission form, or if you already have Calibrate® HQ results and would like to have the leaf percent value added, or for any other questions about this test, please contact:

Brad Hodne (BDHodne@foragegenetics.com; 605-310-6758) or

Randy Welch (RCWelch@landolakes.com, 608-206-3859).

Commercial Labs Offering Calibrate® HQ Analysis:

SureTech Labs, Dairyland Labs, and Rock River Labs.

ALFALFA



UNDERSTANDING LEAF LOSS

What Causes Leaf Loss in Alfalfa?

- Leaf diseases, fungal and other diseases
- Mower/conditioner type and settings
- Merging or raking when the alfalfa is less than 40% moisture
- Baler type and settings or chopping too dry
- Grinding and excessive mixing of dry hay in windy conditions

What is Normal Leaf Percent Content in Alfalfa?

- Average alfalfa leaf to stem ratio is 50:50.
- A Calibrate Predicted Alfalfa Leaf Percent value less than 48% should be suspected of excessive leaf loss.

Hay and Haylage Management: Leaf Loss

Alfalfa leaf loss is additive: Forage dry matter loss can occur in each harvest step.

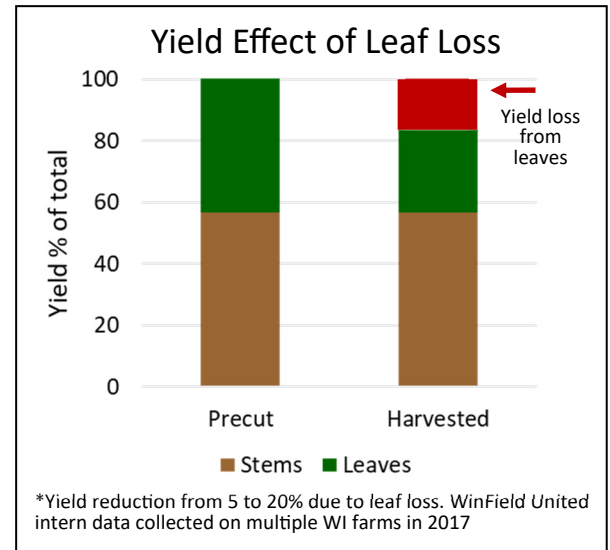
1. Unmanaged leaf diseases can defoliate the lower portion of the alfalfa plant.
2. Cutting/conditioning operations can defoliate alfalfa during the process, especially in high leaf diseased alfalfa.
3. Merging/raking can "shatter" the leaves if alfalfa is too dry. Always merge and rake at 40% or greater moisture. Final dry down should occur in the windrow.
4. Chopping/baling operations can also impact leaf loss as chopping forage too dry may "vaporize" a portion of leaves.

Each Manipulation of the Alfalfa Can be a Possible Source of Leaf Loss

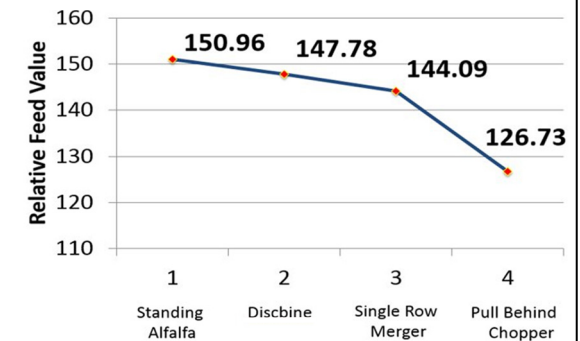
- Leaf loss results in both quality and yield reduction.
- This test can help the alfalfa producer identify which process steps may need improvement; mowing, raking, merging, tedding, chopping, baling, storing, and unloading.
- Forage quality and yield can suffer greatly; more leaves are lost than stems during the hay-making process.
- Leaf losses cannot be eliminated but can be reduced.

What Can Be Done to Improve Leaf Retention During Harvest?

- Harvesting at the appropriate moisture, as the plant matures significant leaf drop occurs in the lower canopy, can significantly reduce leaf losses.
- This can also help to improve your overall RFQ and forage quality.
- Merging or raking at the appropriate moisture, when the forage in the swath is above 40% moisture will help to increase leaf retention.
- Raking when the forage is too dry increases leaf shatter, leading to overall dry matter yield and quality losses.
- The type of rake can also impact leaf retention. Ground-driven rakes like rotary and wheel rakes can increase leaf loss compared to mergers and PTO-driven rakes.
- Use of flail conditioners also can impact leaf loss, ensure that you always check settings prior to conditioning.
- For dry hay, type of baler can also impact leaf retention.



Actual Forage Quality Loss on Farm From Field to Bunker



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