

HAY TESTING AND NEW MARKETING PROGRAM

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The Kentucky Department of Agriculture (Hay & Grain Branch) Hay testing program is now entering its 13th year of testing hay for Kentucky producers. The Department continues to use NIR forage analysis equipment. The program has made many improvements and much information has been gained. We continue to strive for quality control and producing accurate results. Recently, many new updates have occurred. New hardware and software have been added, along with the recent purchase of a second hay testing van. By placing a toll free call (1-800-248-4628) to the Department of Agriculture in Frankfort, we will find a convenient time to meet you at your farm to collect your hay samples. At the same time, you may have your hay visually appraised by the KDA sampler for characteristics such as maturity, color, odor, leafiness etc. The samples will then be added to the KDA database of hay for sale. It will also be included on the Department of Agriculture Internet web-site. Approximately 70% of all hay tested by the Department is not listed for sale, but will be used by the producer for feeding purposes. One new dimension that has been added is a joint effort between Kentucky Department of Agriculture and the University of Kentucky Extension Service to provide a beef ration-balancing program. Following receipt of the testing results, we can then calculate a least cost ration for your beef enterprises. All this can be obtained for a low fee of \$10.00 per sample or lot. I believe that qualifies as one of the bargains of the 21st century.

Mobile Hay Testing Vans

Since 1989, a mobile hay testing van has been made available to all counties in Kentucky for the purpose of demonstration and education as to how the hay testing process works. We are currently having a second van equipped to better serve more counties and producers. The vans are equipped with state-of-the-art computer supported NIR forage analysis equipment. They are used at field days, forage meetings, county hay contests, beef and dairy meetings, the State Fair, and other forage related activities. They require (3) 20 amp circuits of 110/120-volt electricity to support the NIR spectrophotometer, computer, sample preparation equipment, and to regulate the temperature inside the van. (The NIR instrument must be kept at 68 to 75 degrees to give accurate results.) The NIR instruments in the vans are calibrated to be just as accurate as the instrument used in the Frankfort office. There is no charge for samples analyzed by the van when used in conjunction with an educational event sponsored by county extension offices. If you have an educational forage event planned and would like to take advantage of this service call 1-800-248-4628 to secure the date of your

event. The Department would also be more than glad to furnish a speaker at forage related events even if the van is not needed.

Why Test Hay? There are at least three good reasons to have your hay tested.

- 1) It allows producers to know their hay's *true value*. By realizing the quality of each cutting of hay, it allows you to make an appraisal of your forage program. Many times producers are pleasantly surprised at the quality of the hay they have produced. At the very least, producers can grade the different cuttings of hay and feed their livestock for optimal gain and performance. It also allows the producer to make feeding decisions concerning livestock ahead of time thereby preparing for possible concentrates that may need to be purchased for the winter feeding program. This also puts the producer in the position to make sound financial decisions concerning the possibility of selling certain cuttings of hay.
- 2) To *balance rations for your livestock*. The guesswork is taken out of the winter feeding program when a least cost ration is formulated to meet the needs of the many livestock enterprises on the farm. Money can be made or saved by utilizing balanced rations for your livestock by eliminating unnecessary supplement purchases or avoiding underfeeding of critical nutrients such as energy and protein. In a very short period of time, your hay can be sampled, tested, and a computer generated rations program in the mail and ready to utilize in your feeding programs.
- 3) *Buying and selling hay*. For years, producers in the North and Western part of our country have been utilizing forage tests to help market their hay. Many of you here today are also marketing your forage crops based upon hay analysis. When you have your hay tested, you can actually show potential buyers exactly the kind of quality product you have to offer. Many buyers demand and will not purchase hay without an accompanying forage analysis. This also allows producers to evaluate their hay program and helps them to plan the improvement of future production. Many individuals, who locate hay with the intentions of buying, will call and request that it be tested before the purchase. This takes the guesswork out of knowing the quality of the forage before buying. Furthermore, it can also help in establishing a fair market price. The Department keeps a database of buyers and sellers and is constantly mailing, faxing, and/or e-mailing the lists to aid in marketing of the tested hay. Recently an Internet web site was established by the Kentucky Department of Agriculture and can be accessed at www.kyagr.com. This will also allow you to view the tested hay that is for sale.

New Marketing Program

As we enter the 21st century and look forward to the many exciting changes in agriculture, technology is at the top of the lists. Many joys and different activities in our society have been altered or completely redefined by computers and the technology generated from them. The Department of Agriculture is no different. We try to capitalize by making good use of the technology available to enhance the opportunities for buyers and sellers of Kentucky agricultural products. In August of 1999 The Department of Agriculture released a brand new and exciting Internet web-site. This web-site has complete information concerning the function, services, and the roll the Department plays in Kentucky agriculture. There are market reports, current agriculture news stories, and much, much more.

One of the highlights of this Web-site is the focus on the hay-testing program. By selecting the hay program in the Division quick finder, you can now access not only the details of how the program works, but also view the hay that has been tested and listed for sale. As previously mentioned, we mail fax, and e-mail the listings and you can also access this information from your home or office via this Internet site. Presently, the information available lists only the producers name, phone number and type of hay crop that is for sale. In the near future, complete information: name, address, phone number, type of hay, and the physical description (color, odor, leaf retention and mold) will be included. It will also provide the number of bales, bale size and weight, and the cutting number. To complete this listing, the nutrient analysis with the relative feed value (RFV), crude protein, acid detergent fiber (ADF), neutral detergent fiber (NDF), and total digestible nutrients (TDN) will be on this same report. Eventually we plan to add a color picture of each lot of hay that is listed for sale. Nowhere else in the country will such a detailed and complete listing of information be made available to its producers.

Another feature that will be available to producers will be the many different types of searches one can do when looking for hay for sale on this Internet site. By clicking on a drop down box, you will have the following options to search: 1) location (county), 2) hay type, 3) protein, or 4) relative feed value (RFV). This will minimize searching time for the type hay and quality that is needed for your individual livestock enterprise. Figure 1 is an example of hay that has been selected for all ranges of RFV, any Bale size, alfalfa/orchardgrass was the crop selected.

FIGURE 1



**KENTUCKY DEPARTMENT OF AGRICULTURE
 DIVISION OF REGULATION AND INSPECTION
 HAY AND GRAIN BRANCH
 106 WEST SECOND STREET
 FRANKFORT KY 40601**

Phone (800) 248-4628
 TTY # (502) 564-2075
 http://www.kyagr.com

01/13/2000

HAY LIST IN SELECTED COUNTIES

**RFV RANGE: ALL RANGE
 BALE SIZE: ANY SIZE
 CROPS: ALF-ORCHARD**

COUNTY: MONTGOMERY

NAME: ALLEN JOHNSON	NO. BALES: 1000	COLOR: LT-GREEN	RFV: 129.60
PHONE: (606)498-1105	BALE SIZE: 14"X18"X38"	ODOR: FRESH	CP: 21.00
CROP: ALF-ORCHARD	BALE WT./lb: 60	LEAF RETENTION: 75-90%	ADF: 29.80
LOT NUMBER: 3110498-000-98	CUTTING NO.: 1	MOLD: NONE	NDF: 47.10
RAIN DAMAGE: NO			TDN: 64.20

Another feature of this new web-site (www.kyagr.com) that is very exciting is the ability to create your own personal web page. This web page could include a listing of agricultural products produced on your farm. By following step-by-step instructions on the web-builder page located in the divisional quick finder, you can have your products made available to the whole world. Whether its livestock, fruits and vegetables, wood products, jams and jellies, or forages, it is possible to open new markets by submitting information and building your own web-page and listing those agriculture products to sale. This service is provided free of charge and can be done from any computer site that has Internet capabilities. You can also add your personal touch by adding your own photograph while creating your web page. I personally tried this by building my own web page and it took only 17 minutes to complete the whole process. If you should encounter problems, or have questions, and e-mail address is listed to request help.

As previously mentioned, there are changes being made to update the hardware and software. This will change the appearance of the analysis report. When you receive the results of samples collected and analyzed, you will see a considerable amount of new information. Not only will you receive the general information concerning the producer and the nutrient data; you will also receive the physical description of the hay if it is being listed for sale. This will allow the producer to show potential buyers a complete list of details concerning the specific lots of hay. It can also be used in faxing, mailing, or e-mailing personal lists of hay to clients and potential buyers.

This is an example of the new NIR Analysis report.

FIGURE 2



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 FRANKFORT KY 40601

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 TTY # (502) 564-2075
<http://www.kyagr.com>

NIR ANALYSIS REPORT

01/13/2000

ALLEN JOHNSON
 117 EVERGREEN COURT
 MOUNT STERLING, KY 40535

GENERAL INFORMATION

LOT NUMBER: 311048-000-98	CROP: ALF-ORCHARD	DATE SAMPLED: 10/10/1999
CUTTING DATE: 08/22/1999	INITIAL Amt./tons: 30.00	NO. OF BALES: 1000
DATE BALED: 08/24/1999	CUTTING NUMBER: 1	BALE SIZE: 14"X18"X38"
STORAGE: BARN	GRADE: PRIDE	BALE WT./lbs: 60

PHYSICAL DESCRIPTION

COLOR: LT-GREEN	FOREIGN MATERIAL (%): 1	FOXTAIL
ODOR: FRESH	INJURIOUS FOREIGN MATERIAL: NONE	
STEM TO LEAF: GOOD	LEAF RETENTION: 75-90%	
STEM TEXTURE: MED-MED	MOLD: NONE	
MATURITY: 50% BLOOM	PRESERVATIVE: NONE	
DRYING AGENT: NONE	RAIN DAMAGE: NO	

ANALYSIS DATA

	AS RECEIVED BASIS	DRY MATTER BASIS
RFV		129.60
CRUDE PROTEIN %	19.00	21.00
ACID DET. FIBER %	26.90	29.80
NEUT. DET. FIBER %	42.60	47.10
MOISTURE %	9.70	0.00
DRY MATTER %	90.30	100.00
TDN EST. %	57.90	64.20
NE/LACT, MCAL/LB	0.59	0.65
NE/MAINT, MCAL/LB	0.59	0.66
NE/GAIN, MCAL/LB	0.35	0.39

COMMENTS: Good access to Barns for loading semi's

Forage Quality Terms

Forage quality has been defined as the ability of forage to produce a desired level of animal performance when consumed by a certain type of livestock. For example: a cow/calf producer would want forage quality to be defined as forages that would supply adequate nutrients for milk production, cow condition, maintenance, heifer development and calf gain.

On this NIR forage report (figure 1), there are two columns of information, 'As fed Basis' and 'Dry Matter Basis'. The 'as fed' column of numbers represent nutrient concentrations in the forage as it was received in the lab, including all water in the forage. Water dilutes the concentration of all other nutrients, all numbers in the 'as fed' column will be less than the 'dry matter' column, except for moisture. The 'dry matter' column is the concentration of a given nutrient with all water removed. This column is used when balancing rations for beef cattle.

Moisture

Moisture is shown as a percent. It is the water present in the hay or forage when it is analyzed. Therefore, Dry Matter (DM) is the percentage of the hay that is not water.

Crude Protein (CP)

Crude Protein is a mixture of true protein and non-protein nitrogen, and is a measure of the forages ability to meet the protein needs of livestock. Since protein is one of the most costly supplements for livestock, high protein forages are desirable.

Heat Damage Protein (HDP)

Heat damage protein is an estimate of the protein that is associated with the indigestible fiber of the forage. The 'heat damage' name comes from the binding of protein to fiber that occurs in hay or silage that goes through excessive heating.

Acid Detergent Fiber (ADF)

Acid Detergent Fiber is the percentage of highly indigestible plant material present in the forage. ADF is a useful predictor of energy and digestibility in forages. Low ADF values mean higher energy value and digestibility. Therefore, low ADF values are desirable.

Neutral Detergent Fiber (NDF)

Neutral Detergent Fiber represents all of the structural or cell wall material in the forage. The NDF of forage is inversely related to the amount that a cow or calf is able to consume; therefore forages with lower NDF will have a higher intake than those forages with a high NDF.

Total Digestible Nutrients (TDN)

Total Digestible Nutrients is the percentage of digestible material in forage. TDN is calculated from ADF and expresses the differences in digestible material between forages. This term is used more often with rations for beef or sheep than with dairy rations.

Net Energy of Lactation (NE_L) and Maintenance (NE_M).

Net Energy of Lactation and Maintenance is an expression of energy value in forage, in megacalories (Mcal)/lb. They refer to the forage's ability to meet the energy requirements of dairy and beef cattle.

Net Energy for Gain (NE_G)

Net Energy for Gain is the amount of energy in forage to produce weight gain. The value of (NE_G) is always lower than NE_L or NE_M for a given forage because the forage is used less efficiently for gain than it is for maintenance.

Relative Feed Value (RFV)

Relative Feed Value is used to compare one forage to another on an energy basis. It is derived by taking into account the digestibility (calculated from ADF) and the potential intake (calculated from NDF) of a given forage. For comparison purposes, the RFV of mature, full bloom alfalfa was set at 100. The alfalfa in figure 1 has an RFV of 129.60; meaning it contains 29.4% more energy than mature alfalfa.

Summary

Hay testing is a service that is available to all forage producers in the State of Kentucky. However, this service is not being utilized by all forage producers. By using Near Infrared Reflectance (NIR) spectroscopy, it has aided in making forage testing more available, with faster results and less expense. Although hay testing is not free, the enhanced sales generated and the savings on feed purchases will more than exceed the cost of sampling your hay and the trouble and time invested. With the recent addition of the KDA web-site, everyone here today has the opportunity, at no cost to them, to list any and all agricultural products and create your personal web page by logging on to www.kyagr.com. The Kentucky Department of Agriculture stands ready to help our forage and livestock producers, and feel that we are moving in the right direction to accommodate producers. If we can be of assistance or if you have questions concerning the **Hay Testing Program** or the **New Marketing Initiative** on the Internet web-site, please feel free to call any of us at **1-800-248-4628**.