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LOUISIANA LESPEDEZA HAY

VERSUS

WESTERN TIMOTHY HAY

Issued by HARRY D. WILSON,
Commissioner of Agriculture and Immigration,
Baton Rouge, La.

(A Comparison)

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In the first place it should be understood that Lespedeza, like all the clovers, is a legume; while Timothy is a grass. The legumes are much richer in protein, which is the most expensive element in a feed, and, therefore, considered more valuable, pound for pound, than the grasses.

The principal digestible nutritive materials in a feed are protein, carbohydrates (starches), and vegetable fats or oils. The average percentages of these nutrients in the crude state in Lespedeza hay and Timothy hay are as follows:

	Protein	Carbohy- drates	Fat
	%	%	%
Lespedeza hay.....	11.70	43.80	3.60
Timothy hay.....	5.90	45.00	2.50

If we reduce the above percentages of crude materials by the average percentage of digestibility of each, we get the following:

	Digestible		
	Protein	Carbohy- drates	Fat
	%	%	%
Lespedeza hay.....	7.60	31.00	1.80
Timothy hay.....	2.80	28.30	1.40

The first table shows the amounts of crude materials in 100 pounds of each of the two hays; the second table, the amounts that are digestible; and it will be observed that the Lespedeza hay shows over 100 percent more digestible protein than is found in the Timothy hay.

Again, owing to the higher protein content of Lespedeza hay, it requires a lesser amount of it to balance a ration with such grains as oats or corn.

For example, the average daily requirement in digestible protein, carbohydrates and fat, or total carbohydrates, if we reduce the fat to its starch equivalent and include it as carbohydrates, for a horse or mule, weighing 1,000 lbs., and doing hard work, is about as follows, which is spoken of as the feeding standard for such an animal:

Protein (lbs.)	Total Carbohydrates (lbs.)
2.30	14.30

In other words, in the day's ration of grain and hay, which should amount to approximately 23.00 lbs., not including any moisture, there should be 2.30 lbs. of digestible protein and 14.30 lbs. of digestible total carbohydrates.

Suppose, then, that we want to compound a ration, that will approximate the above standard, out of shelled corn and Timothy hay:

	Dry Matter	Digestible	
		Protein	Total Carbohydrates
lbs.	lbs.	lbs.	lbs.
15 Shelled corn.....	13.35	1.18	11.46
36 Timothy hay.....	31.32	1.01	16.87
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	44.67	2.19	28.33

By comparing this ration with the standard requirements, it will be noted that, in order to approximate the necessary amount of protein, alone, 36 lbs. of Timothy hay would have to be fed, which would not only give an excess of over 21 lbs. of dry matter to be digested by the animal, which would hardly be

feasible under working conditions, and yet if it should not be eaten, the animal would not receive the required amount of protein; and besides, there would be a waste of something like 14 lbs. of total carbohydrates—the starchy part of the ration.

Now let us substitute Lespedeza hay for the Timothy, along with the same amount of grain (corn); and, in doing so, we will use only 13 lbs. of Lespedeza instead of 36 lbs. of the Timothy:

————Digestible————			
	Total		
	Dry Matter	Protein	Carbohydrates
lbs.	lbs.	lbs.	lbs.
15 Shelled corn.....	13.35	1.18	11.46
13 Lespedeza hay.....	11.57	1.04	6.04
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	24.92	2.22	17.50

The above gives practically a balanced ration and a saving of 23 lbs. of hay, all of which is chiefly due to the greater percentage of protein in the Lespedeza than in the Timothy hay.

Now let us take oats as the grain, and we will find almost a similar condition:

————Digestible————			
	Total		
	Dry Matter	Protein	Carbohydrates
lbs.	lbs.	lbs.	lbs.
15 Oats (grain).....	13.35	1.38	8.52
30 Timothy hay.....	26.10	0.84	13.94
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	39.45	2.22	22.46

————Digestible————			
	Total		
	Dry Matter	Protein	Carbohydrates
lbs.	lbs.	lbs.	lbs.
15 Oats (grain).....	13.35	1.38	8.52
12 Lespedeza hay.....	10.68	0.96	5.58
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	24.03	2.34	14.10

The ration with oats and Timothy hay, of which 30 lbs of the latter was used to obtain the approximate amount of protein, shows an excess of over 16 lbs. of dry matter to be digested, and a waste of about 8 lbs. of the starchy element—carbohydrates; while the same amount of oats can be balanced by the addition of only 12 lbs. of Lespedeza hay, or a saving in hay of 18 lbs. in a day's ration.

From the above simple illustrations, therefore, the greater feeding value of Lespedeza over Timothy hay must be very evident.

The comparisons made here are not for the purpose of belittling a valuable forage which belongs to another section of the country mainly, but to place our Louisiana product in its true light, and to afford information to our people who may be in ignorance of it, viz., that there is a real difference in the feeding value of the two products, and that the difference is in favor of Lespedeza hay as compared to Western Timothy hay, as the analyses, and other illustrations, plainly show; and which should commend judgment and discrimination in the purchase of these forages.

But there is another method of computation which may be even more convincing, perhaps, than the bare tables of analyses, which is to reduce the nutritive elements in each hay to a feeding-unit, or starch (carbohydrate) basis. This is almost universally accomplished by estimating each per cent of crude carbohydrates as the unit; each per cent of crude protein as worth $2\frac{1}{2}$ carbohydrate units; and each per cent of crude fat as equal to $2\frac{1}{4}$ carbohydrate units. By this method it will be found from the analyses given, that Timothy contains only approximately 66 of such feeding-units; while Lespedeza hay contains about 81 feeding-units.

Now, if we figure on the same basis, which is identical for each hay, the man who purchases Timothy for, say, \$25.00 per ton, which contains only 66 feeding-units, is paying for each unit approximately 38 cents. While, on the other hand, if he pays, say, \$15.00 per ton for Lespedeza hay, each unit is costing him a little less than 19 cents. In fact, if he should pay as high

as \$25.00 per ton for Lespedeza, the unit would cost him only a fraction over 30 cents, or 8 cents less per unit than for Timothy at the same price per ton.

A more impressive illustration of the money value of the two hays, based upon the feeding-units contained in each, may be shown as follows:

Calculating Timothy, for example, at \$25.00 per ton, and Lespedeza at \$15.00, we make the following computation:

If Timothy, with only 66 feeding-units, is worth \$25.00 per ton, then Lespedeza, with 81 feeding-units, ought to be worth \$30.68.

Or, if we figure it the other way: If Lespedeza, with 81 feeding-units, is only worth \$15.00 per ton, then Timothy with only 66 feeding units, should only be worth, in feeding value, \$12.22

These figures should speak for themselves. The analysis used in each case is the published average analysis of each of the two hays; the factors used in reducing to feeding-units are the same in each case; and while the prices per ton may not be exactly those at present current, they are sufficiently close to serve the purpose of illustration.

A few words concerning the feeding of hay may not be inappropriate here. With some feeders, hay simply means hay, without any judgment or discrimination, whatever, as to its composition, which has led, in many cases, to adverse criticism of some of our most valuable leguminous hays. As an illustration, if we refer back to the ration showing that it would take 36 pounds of Timothy (a grass hay), fed along with 15 lbs. of shelled corn, to approximate the protein requirement, alone, of the ration; and that the ration could be practically balanced, in all of its nutrients, by the use of only 13 pounds of Lespedeza (a leguminous hay), it must be evident that the latter contains a much larger percentage of protein, which is highly nitrogenous. Consequently, if as large an amount of leguminous hay, such as Lespedeza, alfalfa, clover, etc., should be fed as of Timothy, or other grass hay, there will not only be a waste of protein,

but the excessive amount in the system of the animal of this highly nitrogenous principle is liable to act deleteriously upon the kidneys; or, owing to its chemical composition, break up into the elements of fat and produce heat and excessive sweating, especially in warm weather. However, neither of these abnormal conditions should be blamed upon these valuable forages, as such, but upon the injudicious and irrational manner in which they are fed.

It would be difficult to get a more forcible example of the necessity of having the nutrients in a ration approximately balanced for the needs of the animal in order, not only to save feed, but to prevent the injurious effects of an excess, in either direction, on the health of the animal.

It is to be hoped that the figures and illustrations here given, of the comparative feeding value, and, necessarily, the money value, of the two hays under discussion, may have the effect of making our producers and feeders of Lespedeza hay realize more fully the greater value of the home product. In fact, instead of our buying so much of the western product (Timothy), and usually at such an exorbitant price for the number of feeding-units it contains, we should not only consume our more nutritious Lespedeza at home, but we should endeavor to introduce it into other sections of the country not yet familiar with it; and its price should be in keeping with its feeding value.

We should like to impress the fact, however, that the Lespedeza we have been figuring on, and the analysis we have given, represents a high quality of hay, and not the poor grades that we sometimes see on the market. We are inclined to the opinion that some of the producers of so-called Lespedeza hay do not fully realize the importance of purity or quality of their product as a readily saleable and marketable article.

To encourage a wider consumption of this hay, the utmost pains should be taken in its production, and in its prime condition for market. Where it is possible, all inferior grades, and Lespedeza straw, or hay from which the seed has been threshed, should be fed at home, and only the best and purest product placed upon the market, unless the inferior grades are classified

and sold for what they really are. It is poor business policy to try to "fool the other fellow," or the market. It may perhaps be accomplished once, but is not likely to be done a second time, and the "goose that is laying the golden egg" is liable to get a severe shock, if not entirely killed. And, once killed, is very difficult to revive. So that, while in our Lespedeza hay we have a most valuable forage crop, either for home consumption or for market, we must guard it very jealously as to quality of product, if we may hope to make the most out of it, especially as a readily marketable farm product. If we will take the necessary pains to produce it in the best and most saleable condition, the market will take care of itself.

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