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THE COMPARATIVE VALUES OF CORN SILAGE, ALFALFA HAY,
BEAN PODS, AND CLOVER HAY FOR WINTERING FWE LAMBS.

THESIS FOR THE DEGREE OF M. S.

HUNG CHUN CHANG.

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THESIS

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THE COMPARATIVE VALUES OF CORN SILAGE, ALFALFA HAY,
BEAN PODS, AND CLOVER HAY FOR WINTERING EWE LAMBS.

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THE COMPARATIVE VALUES OF CORN SILAGE, ALFALFA HAY,
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INTRODUCTION.

This experiment is conducted for the purpose of testing various roughages and concentrates for wintering ewe lambs for breeding purpose. Due to the large quantities of bean pods and bean straw on farms this experiment was undertaken to obtain the comparative values of corn silage, alfalfa hay, bean pods, and clover hay as roughages for wintering ewe lambs. The grain of oats was used as the concentrate for the lambs. But owing to the low protein content of bean pods a part of cull beans was used to balance one ration fed to one lot for a comparison of bean pods with oats and oats and cull beans. In testing the feeding value of bean pods this experiment was conducted only for a period of 50 days on account of shortage of bean pods. Then clover hay and corn silage were used as roughages to complete the work of the entire period of this experiment. Therefore this experiment was divided into two parts; one for the comparative values of bean pods and alfalfa hay and the other for the comparative values of corn silage, alfalfa hay, and clover hay for wintering ewe lambs.



OBJECT AND OUTLINES OF THE EXPERIMENT.

A comparison was to be made of the values of bean pods, alfalfa hay, clover hay, and corn silage and combinations of these various roughages for wintering ewe lambs economically and substantially.

Twenty one lambs were divided into three lots as nearly equal in weight and quality as possible. They were weighed individually for two weights in two days and an average weight taken of these two weights as the initial weight and the experiment started on the 25th. of January.

The average weight of each individual lamb and each whole lot shown in the following tables:

Lot 1.

Breeds.	Ear mark numbers.	Average weight.
Hampshire.	No tag.	105.5 pounds.
Dorset horn.	1962.	103. pounds.
Oxford.	1946.	75. pounds.
Hampshire.	1939.	79. pounds.
Shropshire.	2001.	74. pounds.
Rambouillet.	1974.	92.5 pounds.
Shropshire.	1937.	68.5 pounds.
Total---		601.5 pounds.

Lot 2.

Breeds.	Ear mark numbers.	Average weight.
Hampshire.	No tag.	106.5 pounds.
Dorset Horn.	No tag.	102.5 pounds.
Oxford.	1942.	76.5 pounds.
Oxford.	1940.	34.5 pounds.
Hampshire.	1923.	39. pounds.
Rambouillet.	1975.	91. pounds.
Shropshire.	1939.	54. pounds.
Total---		604. pounds.

Lot 3.

Breeds.	Ear mark numbers.	Average weight.
Hampshire.	1929.	94. pounds.
Dorset Horn.	1965.	109.5 pounds.
Oxford.	1953.	74.5 pounds.
Oxford.	1945.	33. pounds.
Shropshire.	1992.	90.5 pounds.
Rambouillet.	1973.	34. pounds.
Shropshire.	1991.	65. pounds.
Total---		600.5 pounds.

The feeding period extended over a period of 13 weeks and the entire period was divided into two parts; one for comparison of bean pods and alfalfa and the other for corn

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that this is crucial for ensuring transparency and accountability in the organization's operations.

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3. The third part of the document focuses on the role of technology in data management and analysis. It discusses how modern software solutions can streamline data collection, storage, and reporting, thereby improving efficiency and accuracy.

4. The fourth part of the document addresses the challenges associated with data management, such as data quality, security, and integration. It provides strategies to overcome these challenges and ensure the integrity and availability of data.

5. The fifth part of the document discusses the importance of data governance and compliance. It outlines the key principles and practices for ensuring that data is managed in a responsible and lawful manner.

6. The sixth part of the document explores the future of data management, including emerging trends and technologies. It discusses how these developments will shape the way organizations collect, store, and analyze data in the coming years.

7. The seventh part of the document provides a summary of the key findings and recommendations. It emphasizes the need for a holistic approach to data management that integrates all aspects of the organization's operations.

8. The eighth part of the document discusses the importance of data literacy and training. It highlights the need for employees to have the skills and knowledge to effectively use data in their work.

9. The ninth part of the document addresses the role of data in strategic planning and decision-making. It discusses how data can provide valuable insights into the organization's performance and help identify opportunities for growth and improvement.

10. The tenth part of the document discusses the importance of data security and privacy. It outlines the key measures and practices for protecting sensitive data and ensuring compliance with relevant regulations.

11. The eleventh part of the document provides a conclusion and final thoughts. It reiterates the importance of data management and the need for continuous improvement and innovation in this field.

12. The twelfth part of the document discusses the importance of data in the context of the organization's overall mission and vision. It highlights how data can be used to drive the organization's success and achieve its long-term goals.

13. The thirteenth part of the document provides a final summary and key takeaways. It emphasizes the need for a data-driven culture and the importance of investing in data management capabilities.

14. The fourteenth part of the document discusses the importance of data in the context of the organization's external stakeholders. It highlights how data can be used to build trust and transparency with customers, partners, and the public.

15. The fifteenth part of the document provides a final conclusion and call to action. It encourages the organization to embrace a data-driven approach and to continuously improve its data management practices.

silage, alfalfa hay and clover hay as roughages for wintering ewe lambs. The weight was taken every two weeks and the comparative values of the feeds were made on the basis of the results of each weight during the feeding periods. All the three lots were fed under exactly identical conditions, except as regards feeds. The amount of grain fed to each lot was the same but less roughage fed to lot 3.

STATEMENT OF FEEDS USED.

The ration for lot 1 consisted of bean pods, corn silage and oats. During this period of the experiment the lambs received 1.423 pounds of bean pods, 1.423 pounds of corn silage and .357 pound of oats in the first 31 days per head per day with a nutritive ratio of 1:9.25. The ration was increased February 25th and the lambs were receiving 2 pounds of bean pods per head per day but the amounts of oats and corn silage were the same as before. This ration had a nutritive ratio of 1:9.53 and was fed to the 15th. of March, the end of the first part of the experiment.

The ration for lot 2 consisted of bean pods, corn silage, oats and cull beans. During the first 31 days the lambs received 1.423 pounds of bean pods, 1.423 pounds of corn silage, .2357 pound of oats and .5714 pound of cull beans per head per day with a nutritive ratio of 1:6.34. From the 25th. of February the ration was increased and then the lambs received 2

pounds of bean pods and the amounts of oats, corn silage and cull beans remained the same. The new ration with a nutritive ratio of 1:7.32 was fed to the end of the first part of the experiment, the March 15th.

The ration for lot 3 consisted of alfalfa hay, oats and corn silage. During the entire period of the first part of the experiment the lambs received 1 pound of alfalfa hay, 1.423 pounds of corn silage and .357 pound of oats per head per day. This ration had a nutritive ratio of 1:5.89 and was fed from January 25th. to March 15th, the end of the first part of the experiment.

Cats and cull beans were all fed whole to the three lots throughout the entire period of the experiment.

The seven lambs of each lot were snut in small pens in the sheep barn throughout the entire period of the experiment. They were fed morning and evening and the ration was divided equally between the two feeds. Salt was kept before them all the time and water being given twice a day. It was sometimes found in the lot 1 and lot 2 that some bean stems were left in the troughs, while in lot 3 all the alfalfa hay was eaten up clean.

Composition of feeds.

The analysis of the feeds as follows:

Feeds.	Dry matter %	Protein %.	Carbohydrates %.	Fat %.
Alfalfa.	91.4	10.6	39.	.9
Bean pods.	39.5	3.6	42.4	.7
Clover.	37.7	7.9	38.9	1.1
Corn silage.	26.3	1.1	15.	.7
Cull beans.	37.2	13.3	54.3	.3
Oats.	90.8	9.7	52.1	3.8

The feeds were charged at the following prices.

Alfalfa.	\$15.00	@ ton.
Clover.	\$12.00	@ ton.
Bean pods.	\$ 6.00	@ ton.
Corn silage.	\$ 4.00	@ ton.
Cull beans.	\$15.00	@ ton.
Oats.	\$00.40	@ bushel.

Part 1.

First feeding period.

January 25.---February 21.

The daily rations of the three lots as follows:

Lot 1.

Feeds.	Dry matter.	Protein.	Carbohydrates.	Fat.
10# bean pods.	3.95	.36	4.24	.09
10# corn silage.	2.63	.11	1.5	.07
6# oats.	5.443	.532	3.126	.233
	17.026	1.052	3.866	.333

The total digestible nutrients 10.791 The nutritive ratio 1:9.25

Lot 2.

10# bean pods.	3.95	.36	4.24	.09
10# corn silage.	2.63	.11	1.5	.07
4# cull beans.	3.433	.732	2.172	.032
2# oats.	1.316	.194	1.042	.076
	16.334	1.396	8.954	.263

Total digestible nutrients 10.953. Nutritive ratio 1:6.34

Lot 3.

7# alfalfa.	6.393	.742	2.73	.063
10# corn silage.	2.63	.11	1.5	.07
6# oats.	5.443	.532	3.126	.233
	14.476	1.434	7.536	.361

Total digestible nutrients 9.602 Nutritive ratio 1:5.69

The rations fed to lot 1 and lot 2 supplied the same amounts of roughages and concentrates but differed in kinds of

grains. The nutritive ratios of the three lots could not be worked out nearly the same due to the fact of low content of protein in bean pods. So the ratios varied a great deal as shown in the above tables.

Digestible nutrients per lot per day.

	Lot 1.	Lot 2.	Lot 3.
Dry matter.	17.029#	12.684#	14.472#
Protein.	1.052#	1.292#	1.424#
Carbonhydrates.	3.322#	3.954#	7.522#
Fat.	.235#	.223#	.321#

The digestible nutrients consumed by the three lots varied somewhat as shown in the above tables; lot 1 received more pounds of dry matter and less pounds of protein than lot 3 and also lot 1 received more pounds of total digestible nutrients than lot 3, but as the result lot 3 did better in gain.

Digestible nutrients per head per day.

	Lot 1.	Lot 2.	Lot 3.
Dry matter.	2.4325#	2.412#	2.063#
Protein.	.1503#	.1992#	.2051#
Carbonhydrates.	1.226#	1.2791#	1.051#
Fat.	.0554#	.0332#	.0516#

Gains.

	Lot 1.	Lot 2.	Lot 3.
Total gain.	30.5 pounds.	12 pounds.	40.5 pounds.

	Lot 1.	Lot 2.	Lot 3.
Average gain			
per head per day.	.1552#	.08164#	.20663#

Lot 3 gained 40.5 pounds, the largest gain made during this period. Lot 1 ranked second, gaining 30.5 pounds in 23 days. Lot 2 was last, gaining only 13 pounds. The results showed that the combination of alfalfa, silage and oats did the best and the combination of bean pods, silage and oats gave better gain than that of bean pods, corn silage, cull beans and oats.

Feed consumed per pound gain.

Lot 1.	Lot 2.	Lot 3.
Bean pods. 9.13#	Bean pods. 17.5#	Alfalfa. 4.6395#
Corn silage. 9.13#	Corn silage. 17.5#	Corn silage. 6.9136#
Oats. 5.51#	Oats. 3.5#	Oats. 4.1431#
	Cull beans. 7.#	

In the above table it showed that Lot 1 required 5.51 pounds of grain and 13.36 pounds of roughage to produce one pound of mutton, lot 2 required 10.5 pounds of grain and 35 pounds of roughage and lot 3 required 4.143 pounds of grain and 11.7531 pounds of roughage. As the results lot 2 consumed the largest amount of feed per pound gain.

Cost per pound gain.

Lot 1.	Lot 2.	Lot 3.
11.5¢	13.4¢	10.2¢

The cost of lot 1 and lot 3 was much less than that of lot 2, due to the larger gains being made during the 23 days.

Total feed consumed per lot in the 23 days period.

	Lot 1	Lot 2.	Lot 3.
Pean pods.	230#	230#	
Alfalfa.			192#
Corn silage.	230#	230#	230#
Oats.	163#	52#	163#
Cull beans.		112#	

Total digestible nutrients per lot.

	Lot 1.	Lot 2.	Lot 3.
Dry matter.	476.743#	472.752#	405.323#
Protein.	29.456#	29.033#	40.125#
Carbonnydrates.	243.243#	250.712#	205.963#
Fat.	10.364#	7.504#	10.103#

Digestible nutrients per pound gain.

	Lot 1.	Lot 2.	Lot 3.
Dry matter.	15.632#	29.547#	10.01#
Protein.	.9655#	2.443#	.9907#
Carbonnydrates.	8.1425#	15.669#	5.035#
Fat.	.3561#	.469#	.2496#

Second feeding period.

From February 22 to 24 the same rations used in above were fed to the three lots and from February 25 the rations of lot 1

and lot 2 were increased.

February 25---March 15.

The daily rations of the three lots as follows:

Lot 1.

Feeds.	Dry matter.	Protein.	Carbohydrates.	Fat.
14# bean pods.	12.53	.504	5.936	.093
10# corn silage.	2.63	.11	1.5	.07
6# oats.	5.443	.532	3.126	.233
	20.605	1.196	10.562	.396

Total digestible nutrients. 12.649 Nutritive ratio. 1:9.53

Lot 2.

14# bean pods.	12.53	.504	5.936	.093
10# corn silage.	2.63	.11	1.5	.07
4# cull beans.	3.433	.732	2.172	.032
2# oats.	1.316	.194	1.042	.076
	20.464	1.54	10.65	.276

Total digestible nutrients. 12.511. Nutritive ratio. 1:7.32

Lot 3.

7# alfalfa.	6.393	.742	2.73	.063
10# corn silage.	2.63	.11	1.5	.07
6# oats.	5.443	.532	3.126	.233
	14.476	1.484	7.356	.361

Total digestible nutrients. 9.60225. Nutritive ratio. 1:5.69

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3. The third part of the document focuses on the interpretation of the results and the identification of key trends and patterns. This involves a thorough analysis of the data and the use of appropriate visualization techniques.

4. The fourth part of the document discusses the implications of the findings and the potential for future research. This includes a discussion of the limitations of the study and the need for further investigation in this area.

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Digestible nutrients per lot per day.

	Lot 1.	Lot 2.	Lot 3.
Dry matter.	20.603#	20.484#	14.476#
Protein.	1.196#	1.54#	1.434#
Carbonhydrates.	10.562#	10.65#	7.356#
Fat.	.396#	.276#	.361#

The digestible nutrients varied a great deal in the three lots. Lot 1 and lot 2 received twice as much roughage as lot 3 and also the different nutrients of lot 3 were lower than those of lot 1 and lot 2 except fat.

Digestible nutrients per head per day.

	Lot 1.	Lot 2.	Lot 3.
Dry matter.	2.944#	2.923#	2.063#
Protein.	.1736#	.22#	.2051#
Carbonhydrates.	1.5033#	1.5214#	1.0509#
Fat.	.0563#	.0394#	.0516#

Gains.

	Lot 1.	Lot 2.	Lot 3.
Total gain.	12 pounds.	5.9 pounds.	3.6 pounds.
Average gain per head per day.	.0779#	.0333#	.0553#

The gains made during this period were very poor. The weight was taken by three weeks instead two weeks because during that period the lambs were sheared and shrunk a great deal. How-

ever even the weight was taken in three weeks a poor result was obtained. But it still showed that the combination of alfalfa, corn silage and oats and the combination of bean pods, oats and corn silage were much better than the other.

Feed consumed per pound gain.

Lot 1.	Lot 2.	Lot 3.
Bean pods. 24.263#	Bean pods. 50.169#	Alfalfa. 17.903#
Corn silage. 13.332#	Corn silage. 37.239#	Corn silage. 25.531#
Oats. 11#	Oats. 7.457#	Oats. 15.343#
	Cull beans. 14.915#	

In the above table it showed that lot 1 required 42.999 pounds roughage and 11 pounds grain to produce one pound of mutton, lot 2 required 37.453 pounds roughage and 22.3733 pounds grain and lot 3 required 43.437 pounds roughage and 15.343 pounds grain. The gains were abnormally low during this period.

Cost per pound gain.

Lot 1.	Lot 2.	Lot 3.
24.32¢	43.02¢	37.73¢

Total digestible nutrients per lot in 22 days.

	Lot 1.	Lot 2.	Lot 3.
Dry matter.	442.716#	419.492#	313.352#
Protein.	25.33#	31.314#	31.543#
Carbohydrates.	227.272#	217.75#	131.332#
Fat.	3.623#	5.152#	7.942#

Total feed consumed in the 22 days.

Lot 1.	Lot 2.	Lot 3.
Bean pods. 292#	Bean pods 292#	Alfalfa. 154#
Corn silage. 220#	Corn silage. 220#	Corn silage. 220#
Oats. 182#	Oats. 44#	Oats. 182#
	Cull beans. 33#	

Digestible nutrients per pound gain.

	Lot 1.	Lot 2.	Lot 3.
Dry matter.	36.393#	71.1#	37.0177#
Protein.	2.1562#	5.3075#	3.6634#
Carbohydrates.	13.9363#	36.906#	13.3176#
Fat.	.719#	.6732#	.9235#

RESULTS AND SUMMARY.

According to the results obtained it will be seen that the two feeding periods varied a great deal in consumption of feed per pound gain and cost per pound gain. In the first feeding period lot 1 made a gain of .1556 pound per head per day, lot 2 made an average gain of .0313 pound and lot 3 made an average gain of .2063 pound, while in the second period lot 1 made an average gain of .0779 pound, lot 2 made an average gain of .0335 pound and lot 3 made an average gain of .0553 pound. During the first period it cost 11.5¢ per pound gain for lot 1, 13.4¢ for lot 2 and 10.2¢ for lot 3, while in the second period it cost 24.32¢ per pound gain for lot 1, 43.02¢ for lot 2 and 37.73¢ for

lot 3. The low rate gain of the second period was due to the cold weather immediately following shearing.

Since two feeding periods varied a great deal in results the best way is to take the two feeding periods into one period and an average should be taken for the results.

Average daily rations.

Lot 1.	Lot 2.	Lot 3.
Bean pods. 11.52#	Bean pods. 11.52#	Alfalfa hay. 7#
Corn silage. 10#	Corn silage. 10#	Corn silage. 10#
Oats. 2#	Oats. 2#	Oats. 6#
	Cull beans. 4#	

Total feed consumed in 50 days.

Lot 1.	Lot 2.	Lot 3.
Bean pods. 576#	Bean pods. 576#	Alfalfa hay. 350#
Corn silage. 500#	Corn silage. 500#	Corn silage. 500#
Oats. 300#	Oats. 100#	Oats. 300#
	Cull beans. 200#	

The three lots consumed the same amount of grain and corn silage but lot 3 consumed only a little over two-third as much dry roughage as lot 1 and lot 2. But lot 3 gave the largest gain during the whole period of the 50 days.

Total digestible nutrients.

	Lot 1.	Lot 2.	Lot 3.
Dry matter.	919.5#	392.217#	723.63#
Protein.	55.336#	70.53#	71.637#
Carbonnydrates.	475.524#	463.462#	367.3#
Fat.	19.492#	12.656#	13.05#

Total digestible nutrients per lot per day.

	Lot 1.	Lot 2.	Lot 3.
Dry matter.	13.39#	17.344#	14.454#
Protein.	1.1067#	1.4116#	1.4327#
Carbonnydrates.	9.5105#	9.36924#	7.356#
Fat.	.3396#	.2531#	.361#

Digestible nutrients per head per day.

	Lot 1.	Lot 2.	Lot 3.
Dry matter.	2.627#	2.5492#	2.0643#
Protein.	.1531#	.2017#	.2047#
Carbonnydrtaes.	1.3563#	1.3335#	1.0509#
Fat.	.0557#	.0362#	.0316#

Gains.

	Lot 1.	Lot 2.	Lot 3.
Total gain.	42.5#	21.9#	49.1#
Average gain per head.	6.0712#	3.1233#	6.9372#
Average gain per head per day.	.121#	.0624#	.139#



The results of the total gains at the end of the first part of the experiment were; lot 3 was first with a gain of 49.1 pounds, lot 1 was second with a gain of 42.5 pounds and lot 2 was last with a gain of 21.9 pounds. Thus it showed in every case that the combination of alfalfa hay, silage and oats did better than the other two, yet however the combination of bean pods, corn silage and oats gave a fair result and it was considered nearly as a good ration as alfalfa hay combination in this case.

Feed consumed per pound gain.

Lot 1.	Lot 2.	Lot 3.
Peas pods. 13.553%	Peas pods. 26.3%	Alfalfa hay. 7.123%
Corn silage. 11.762%	Corn silage. 22.32%	Corn silage. 10.13%
Oats. 7.053%	Oats. 4.566%	Oats. 6.11%
	Cull beans. 9.132%	

Owing to the coarser hay of bean pods and low rate of gain of lot 1 and lot 2 the digestible nutrients were much different.

Digestible nutrients per pound gain.

	Lot 1.	Lot 2.	Lot 3.
Dry matter.	21.6349%	40.7405%	14.7339%
Protein.	1.302%	3.2223%	1.4599%
Carbohydrates.	11.1333%	21.3909%	7.4903%
Fat.	.4532%	.5779%	.3676%

Cost per pound gain.

Lot 1.	15.24¢
Lot 2.	25.08¢
Lot 3.	15.02¢

Financial statement.

Lot 1.

Cost of feeds.

573 pounds bean pods.	\$2 @ ton.	\$1.723
500 pounds corn silage.	\$4 @ ton.	\$1.00
300 pounds oats.	\$.40 @ Bu.	<u>\$3.75</u>
		\$6.473

Pounds gain.	42.5
Total cost.	\$6.473
Cost per pound.	15.24¢
Cost per head per day.	1.35¢

Lot 2.

Cost of feeds.

573 pounds bean pods.	\$3.00 @ ton.	\$1.723
500 pounds corn silage.	\$4.00 @ ton.	\$1.00
100 pounds oats.	\$.40 @ Bu.	\$1.25
200 pounds cull beans.	\$15.00 @ ton.	<u>\$1.50</u>
		\$5.473

Pounds gain.	21.9
Total cost.	\$5.473

Cost per pound gain.	25.03¢
Cost per head per day.	1.565¢

Lot 3.

Cost of feeds.

350 pounds alfalfa.	\$15.00 @ ton.	\$2.625
500 pounds corn silage.	\$ 4.00 @ ton.	\$1.00
300 pounds oats.	\$00.40 @ Bu.	<u>\$3.75</u>
		\$7.375

Pounds gain.	49.1
Total cost.	\$7.375
Cost per pound gain.	15.02¢
Cost per head per day.	2.11¢

CONCLUSION.

From the above statement it will be seen that during the period of 50 days all the lambs of the three lots were fed in good condition although the gains varied to some extent. Lot 2 in spite of less gain being made and of greater cost per pound gain, required much less cost per head per day than lot 1 and lot 3. The cost per head per day for lot 1 was 1.35¢, for lot 2 was 1.565¢ and lot 3 was 2.11¢. Thus it can be seen that the alfalfa may cost more than bean pods for wintering ewe lambs. However, alfalfa fed to lot 3 made a larger gain than bean pods



fed to lot 1 and lot 2 and still the combination of bean pods, corn silage and oats made a better gain than that of bean pods, corn silage, oats and cull beans as it was indicated in the above tables. So it is safe to say that the combination of bean pods, corn silage and oats and that of alfalfa hay, oats and corn silage were nearly equally good and the cost per pound gain was nearly the same. During this period it snowed in every case that cull bean is not a desirable grain to feed in ration with bean pods because smaller gain was made and cost per pound gain was great. But the cull beans are good grains when fed with corn silage as it has been proved in the second part of this experiment that corn silage, oats and cull beans fed in combination to lot 2 with a result of large gain being made and low cost per pound gain and low cost per head per day. However, this experiment proved that varieties of feeds are necessary for wintering ewe lambs because poor gain was obtained from lot 2 fed in combination of bean pods, oats and cull beans. Because of high cost of alfalfa hay and high cost of feed per head per day bean pods become a good roughage on farm for wintering ewe lambs when fed with a combination of corn silage and oats for it can make a larger gain and still lower the cost of feed.

PART 2.

Due to the shortage of bean pods to complete this experiment the new rations were fed to the three lots with clover hay, alfalfa hay and corn silage as roughages.

The lambs were weighed individually on March 15 and 16 and an average taken of these two weights as the initial weight for the last part of the experiment. When the feeding started lot 1 had an average weight of 595.5 pounds, lot 2 had an average weight of 591 pounds and lot 3 had an average weight of 595.5 pounds. The 3 lots of lambs started this period nearly the same weight because of different amount of wool sheared.

The new rations were fed on the 16th of March. The lambs were weighed every two weeks from which the gains were based on for the results. The feeding period of this part extended over a period of six weeks.

Lot 1 and lot 3 received exactly the same amount of hay, corn silage and grain, while lot 2 received 20 pounds of corn silage and 6 pounds of grain, However the amount of corn silage was increased to the lot 2 later.

Ration 1 consisted of clover hay, corn silage and oats. During the entire period of six weeks lot 1 received 9 pounds of clover hay, 10 pounds of corn silage and 6 pounds of oats per day with a nutritive ratio of 1:6.3.

Ration 2 consisted of corn silage, cull beans and oats. During the period from March 16th to 30th lot 2 received 20



pounds of corn silage, 4 pounds of cull beans and 2 pounds of oats per day with a nutritive ratio of 1:5.9. Put from March 31st to April 26th it received 35 pounds of corn silage, 4 pounds of cull beans and 2 pounds of oats per day with a nutritive ratio of 1:3.6.

Ration 3 consisted of alfalfa hay, corn silage and oats. during this period of the six weeks lot 3 received 9 pounds of alfalfa hay, 10 pounds of corn silage and 6 pounds of oats per day with a nutritive ratio of 1:5.42.

Third feeding period.

March 12-----April 26.

The daily rations of the three lots as follows:

March 12----March 30.

Lot 1.

Feeds.	Dry matter.	Protein.	Carbohydrates.	Fat.
9# clover hay.	7.898	.711	3.321	.099
10# corn silage.	2.63	.11	1.5	.07
6# Oats.	5.443	.532	3.126	.233
	15.971	1.403	7.947	.397
Total digestible nutrients.	10.24325		Nutritive ratio.	1:3.3

Lot 2.

Feeds.	Dry matter.	Protein.	Carbohydrates.	Fat.
20# corn silage.	5.26	.22	3.00	.14
4# cull beans.	3.433	.732	2.172	.032
2# Oats.	1.516	.194	1.042	.073
	10.564	1.146	6.214	.243
Total digestible nutrients.		7.913	Nutritive ratio. 1:5.9	

Lot 3

9# alfalfa hay.	3.226	.954	3.51	.031
10# corn silage.	2.63	.11	1.5	.07
6# Oats.	5.443	.532	3.126	.233
	11.304	1.646	8.136	.379
Total digestible nutrients.		10.635	Nutritive ratio. 1:5.46	

In the above tables it will be seen that lot 2 received much less digestible nutrients than the other two and the gain during this period was also very low so the ration was changed and corn silage was increased to the lot 2 while the rations of lot 1 and lot 3 remained the same as before.

Daily rations from March 31 to April 26.

The rations of lot 1 and lot 3 fed the same as before.

Lot 2.

Feeds.	Dry matter.	Protein.	Carbonhydrates.	Fat.
35% corn silage.	9.205	.335	5.25	.245
4% cull beans.	3.433	.792	2.172	.032
2% Oats.	1.613	.194	1.042	.076
	14.509	1.311	8.464	.353

Total digestible nutrients. 10.56925. Nutritive ratio. 1:6.6.

The nutritive ratios of the three lots were better than those in the part 1. Lot 3 had a narrowest ration with a nutritive ratio of 1:5.46, lot 2 had a widest ration with a nutritive ratio of 1:6.6 and lot 1 had a ration with a nutritive ratio of 1:6.3. In fact the total digestible nutrients of the three lots were nearly the same and therefore the results obtained were nearly the same except in case of lot 2 which was under fed during the first two weeks of this period.

Digestible nutrients per lot per day.

	Lot 1.	Lot 2.	Lot 3.
	March 16--March 30.		
Dry matter	15.971%	10.564%	12.304%
Protein.	1.403%	1.146%	1.646%
Carbonhydrates.	7.947%	6.214%	3.136%
Fat.	.397%	.246%	.379%

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March 31-----April 26.

	Lot 1.	Lot 2.	Lot 3.
Dry matter.	15.971#	14.509#	16.304#
Protein.	1.403#	1.311#	1.643#
Carbonhydrates.	7.947#	3.464#	3.136#
Fat.	.397#	.353#	.379#

Digestible nutrients per head per day.

March 16----March 30.

	Lot 1.	Lot 2.	Lot 3.
Dry matter.	2.2316#	1.5091#	2.3291#
Protein.	.2004#	.1637#	.2351#
Carbonhydrates.	1.121	.3377#	1.1632#
Fat.	.0567#	.03543#	.0541#

March 31-----April 26.

	Lot 1.	Lot 2.	Lot 3.
Dry matter.	2.2316#	2.0727#	2.3291#
Protein.	.2004#	.1872#	.2351#
Carbonhydrates.	1.121#	1.2091#	1.1632#
Fat.	.0567#	.0504#	.0541#

The digestible nutrients consumed by the various lots varied somewhat, especially during the period from March 16 to 31. However the rations were changed after that time and so the digestible nutrients consumed in the last four weeks somewhat nearly the same by the different lots.

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Gains.

	Lot 1.	Lot 2.	Lot 3.
Total gain.	93.5#	75.9#	97.3#
Average gain per head.	13.375#	10.343#	13.97#
Average gain per head per day.	.313#	.2583#	.3326#

The lambs of all the lots made larger gains during this part than last one. Lot 3 made the largest gain of 97.3 pounds, lot 1 made a gain of 93.5 pounds and lot 2 made a gain of 75.9 pounds. In this case it also showed that alfalfa hay was a better feed for wintering ewe lambs when the same or nearly the same amount of feed used.

Feed consumed per pound gain.

Lot 1.	Lot 2.	Lot 3.
Clover hay. 4.043#	Corn silage. 16.4#	Alfalfa hay. 3.365#
Corn silage. 4.492#	Cull beans. 2.213#	Corn silage. 4.223#
Oats. 2.695#	Oats. 1.107#	Oats. 2.577#

Cost per pound gain.

Lot 1.	6.69¢.
Lot 2.	6.32¢.
Lot 3.	6.96¢.

The cost per pound gain was much less during this period

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in financial reporting and compliance with regulatory requirements. The text notes that organizations should implement robust internal controls and audit trails to ensure the integrity of their data.

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than the first one, due to the largest gains being made during this period of 42 days.

SUMMARY.

Average daily rations for the six weeks.

Lot 1.	Lot 2.	Lot 3.
Clover hay. 9#	Corn silage. 29.6429#	Alfalfa hay. 9#
Corn silage. 10#	Cull beans. 4#	Corn silage. 10#
Oats. 6#	Oats. 2#	Oats. 6#

Feed consumed per lot.

Lot 1.	Lot 2.	Lot 3.
Clover hay. 375#	Corn silage. 1245#	Alfalfa hay. 375#
Corn silage. 420#	Cull beans. 165#	Corn silage. 420#
Oats. 252#	Oats. 34#	Oats. 252#

Digestible nutrients consumed per lot.

	Lot 1.	Lot 2.	Lot 3.
Dry matter.	670.732#	550.203#	684.763#
Protein.	53.926#	52.537#	69.132#
Carbohydrates.	333.774#	321.733#	341.712#
Fat.	16.664#	13.251#	15.918#

Feed consumed per pound gain.

Lot 1.	Lot 2.	Lot 3.
Clover hay. 4.034#	Corn silage. 16.4#	Alfalfa hay. 3.365#
Corn silage. 4.492#	Cull beans. 2.213#	Corn silage. 4.223#
Oats. 2.965#	Oats. 1.107#	Oats. 2.577#



Digestible nutrients per pound gain.

	Lot 1.	Lot 2.	Lot 3.
Dry matter.	7.1741#	7.3492#	7.0017#
Protein.	.6302#	.6923#	.7063#
Carbonhydrates.	3.5297#	4.2339#	3.4901#
Fat.	.1732#	.1743#	.1627#

From the above tables it will be seen that lot 1 required 3.535 pounds of roughage and 2.965 pounds of grain to produce one pound of mutton, lot 2 required 13.4 pounds of corn silage or roughage and 3.32 pounds of grain and lot 3 required 3.033 pounds of roughage and 2.577 pounds of grain. The digestible nutrients consumed per pound gain produced were also low. When these three rations compared it is also found that alfalfa hay gave a larger and quicker gain but as a whole the three rations did very well throughout the entire period of the six weeks.

Financial statement.

Lot 1.

Cost of feeds.

373 pounds of clover hay.	\$12.00	@ ton.	\$2.263
420 pounds of corn silage.	\$ 4.00	@ ton.	\$0.34
252 pounds of oats.	\$00.40	@ Bu.	\$3.15

			\$6.253



29.

Pounds gain.	93.5
Total cost.	\$6.253
Cost per pound gain.	6.69¢
Cost per head per day.	2.12357¢

Lot. 2.

Cost of feed.

1245 pounds of corn silage.	\$ 4.00	@ ton.	\$2.49
34 pounds of oats.	\$00.40	@ Bu.	\$1.05
168 pounds of cull beans.	\$15.00	@ ton.	\$1.26

			\$4.80

Pounds gain.	75.9
Total cost.	\$4.80
Cost per pound gain.	6.32¢
Cost per head per day.	1.63265¢

Lot 3.

Cost of feed.

373 pounds of alfalfa hay.	\$15.00	@ ton.	\$2.335
420 pounds of corn silage.	\$ 4.00	@ ton.	\$.34
252 pounds of oats.	\$00.40	@ Bu.	\$3.15

			\$6.325

Pounds gain.	97.3
Total cost.	\$6.325
Cost per pound gain.	6.96¢
Cost per head per day.	2.13¢

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for ensuring transparency and accountability in financial reporting.

2. The second part of the document outlines the various methods and techniques used to collect and analyze data. It highlights the need for consistent and reliable data collection processes to ensure the validity of the results.

3. The third part of the document focuses on the analysis and interpretation of the collected data. It discusses the various statistical and analytical tools used to identify trends, patterns, and correlations in the data.

4. The fourth part of the document discusses the implications and conclusions drawn from the analysis. It highlights the key findings and their potential impact on the organization's operations and decision-making processes.

5. The fifth part of the document provides a summary of the overall findings and conclusions. It emphasizes the importance of ongoing monitoring and evaluation to ensure the continued effectiveness of the implemented measures.

6. The sixth part of the document discusses the challenges and limitations encountered during the research process. It highlights the need for further research and development to address these challenges and improve the overall quality of the data and analysis.

7. The seventh part of the document provides a list of references and sources used in the research. It includes books, articles, and other relevant documents that provide additional information and context for the study.

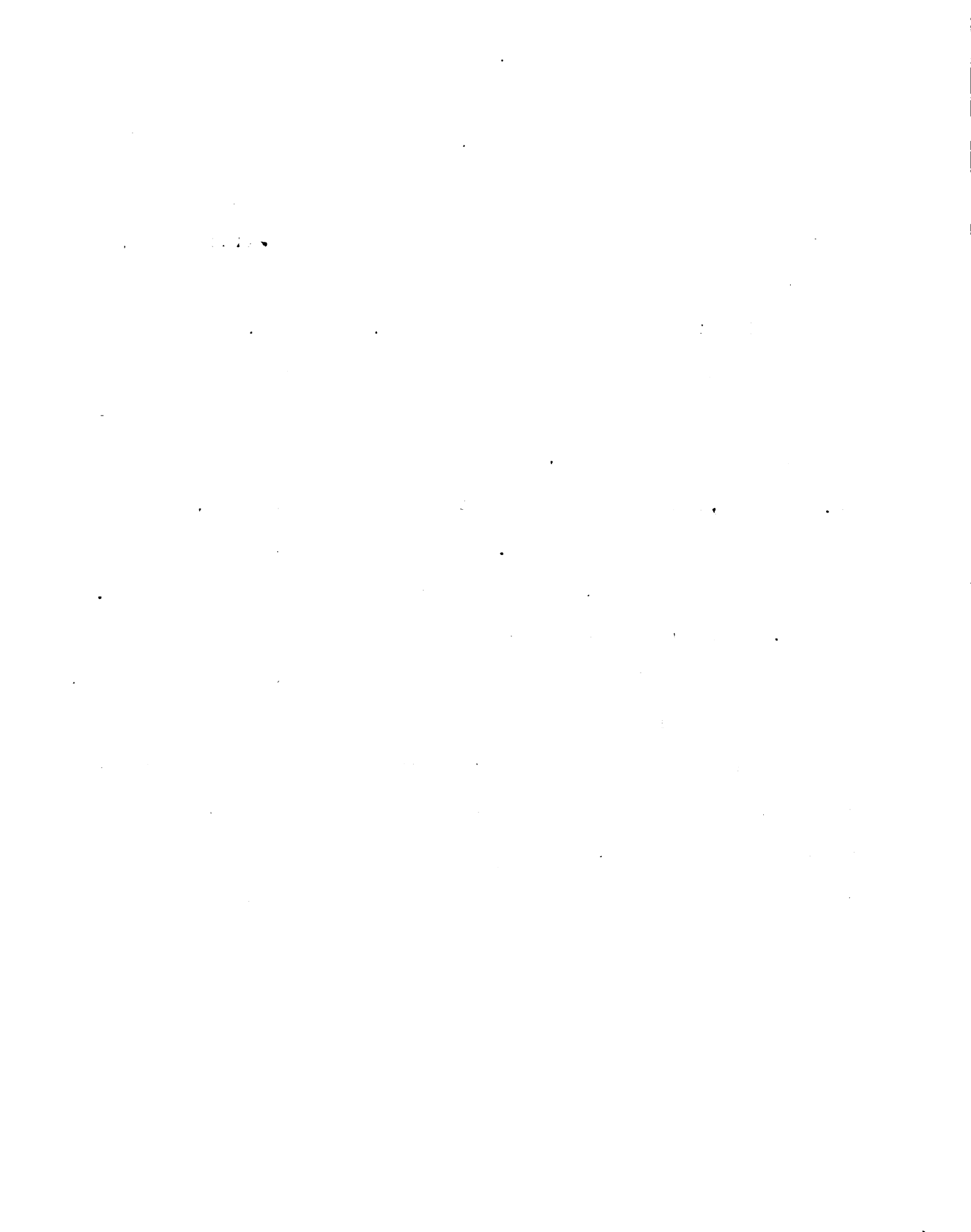
8. The eighth part of the document provides a list of appendices and supplementary materials. These materials include additional data, charts, and tables that provide further detail and support for the findings and conclusions.

9. The ninth part of the document provides a list of acknowledgments and thanks. It expresses appreciation to the individuals and organizations that provided support and assistance throughout the research process.

10. The tenth part of the document provides a list of contact information and a disclaimer. It includes the author's name, affiliation, and contact details, as well as a statement of responsibility and liability.

CONCLUSION.

For wintering ewe lambs it will be seen in the above statement that the three kinds of roughages of alfalfa hay, clover hay and corn silage are all satisfactory and doing very well during this period of the 42 days. However, alfalfa hay and clover hay made a better gain than corn silage as it was shown by the results during this period that lot 1 fed a combination with clover hay, corn silage and oats made a gain of 98.5 pounds, lot 2 fed a combination with corn silage, oats and cull beans made a gain of 75.9 pounds and lot 3 fed a combination with alfalfa hay, corn silage and oats made a gain of 97.3 pounds. Thus it can be said that clover hay and alfalfa hay are better feed for wintering ewe lambs than corn silage alone. Since larger gains were obtained from the lots fed with clover hay and alfalfa hay so that corn silage should not be fed exclusively to wintering ewe lambs as it was indicated by the result of small gain. Therefore corn silage should be fed in ration with some kind of hay to make a larger gain with a cheaper cost for wintering ewe lambs.



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