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## Forage Crops for Lambs

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# **FORAGE CROPS FOR LAMBS**

**ANIMAL HUSBANDRY DEPARTMENT  
AGRICULTURAL EXPERIMENT STATION  
SOUTH DAKOTA STATE COLLEGE OF  
AGRICULTURE AND MECHANIC ARTS  
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## FORAGE CROPS FOR LAMBS

James W. Wilson

Arthur H. Kuhlman

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### Introduction

This bulletin includes the results of two experiments in "lambing-off" annual forage crops. It also includes some of the results of former experiments on lamb feeding reported in bulletins of this station, the editions of which are entirely exhausted.

According to the annual report of the tax commission, South Dakota had nearly one-sixth more sheep in 1919 than in 1922. This reduction was probably caused by the comparatively low prices for sheep in 1921. The latest estimate by the Bureau of Statistics, United States Department of Agriculture, shows that on January 1, 1923, there were a few more sheep in the state than on the same date in 1919.

The production of wool and mutton has been and is now a comparatively profitable industry providing one is properly equipped and understands the business. There are two main incomes during the year; i. e., the sale of wool in the summer and the sale of lambs in the fall or winter. The prices received for these two products, during the past few years, have been in keeping with prices received for other farm products.

The sheep has been termed the "plant scavenger" of the farm. In fact there are only a few of the weeds he will not eat during the early stage of their growth, and yet, the cured grasses must be of choice quality to secure the best results in feeding operations.

Less permanent pasture is required for the sheep during the season than for any other farm animal. After grain is cut and stacked or threshed the stubble field furnishes a choice pasture. If rape has been sown with grain in the spring it will furnish the best of pasture until the hard freezes late in the fall.

### Object of Experiment

The object of the experiment was to ascertain the value of different forage crops for the lamb in the fall of the year when the pasture grasses become partially dried and the ewes lessen in their feed for the lamb. The condition of the lamb at marketing time is governed chiefly by the kind of feed it and its dam have received since birth of lamb, and anything that can be done to increase its growth and condition must be considered an advantage. We consider it a good practice to wean the spring lamb in early fall when pastures begin to dry up so the ewe will have time to "build up" before cold weather.

### The Experiment

In the spring of the years 1922 and 1923 different forage crops were sowed in one acre lots to ascertain the value for "lambing-off" in the fall. There were 72 lambs in the 1922 test, and 96 in the 1923 test. These lambs were pure-breds and crossbreds of both early and late lambing. The first year they were divided into lots of 12 head each to the acre and the second year into lots of 16 head to the acre. After they were put into the fields they did not receive anything in addition to what the crop furnished except salt and water.

In the second year test a lamb in each of the corn and corn plus soybeans lots died shortly after they were put in. We believe this loss might have been avoided had we cut some corn and given it to the lambs before turning into the fields, so as to get them used to the green feed gradually.

### List of Crops

There were nine lots sowed each year as follows:

	1922	1923
Lot I	Millet	Cornfield
Lot II	Sudan Grass	Cornfield plus Rape
Lot III	Sudan Grass plus Soybeans	Cornfield plus Soyb'ns
Lot IV	Sorghum	Sorghum
Lot V	Cornfield, Soybeans plus Rape	Sorghum plus Soyb'ns
Lot VI	Cornfield plus Soybeans	Sorghum plus Rape
Lot VII	Cornfield plus Rape	Rape
Lot VIII	Cornfield	Sudan Grass
Lot IX	Rape plus Oats	Sweet Clover

The lambs in the sorghum, sudan grass, and rape lots with the exception of 1922 lot of rape and oats, and there were not enough oats to last through the 30 days, did not receive grain of any kind. This probably is the reason why they did not make as large gains as the other three lots. Perhaps the gains might have been larger if lambs could have been put on these forage crops during the early stages of growth.

Of these nine lots, we are reporting on but six of them at this time. The lambs were put in lots August 26 and August 18 respectively.

For the first year's test the soybeans were checked in with the corn and the rape was sown in corn after last cultivation. For the second year's test the soybeans were put in one box of the planter and corn in the other. By this system two rows of corn alternated with two rows of soybeans. Our object in planting in this manner was to be sure to provide sufficient soybean forage for the lambs and also to give the soybean a chance to grow. A good growth of both soybeans and corn were secured, yet the average gains per head daily for lambs in the second or 1923 test were not as large as gains for lambs in the first or 1922 test. In the first year's test the Chestnut variety of soybeans was planted, while in the second year's test the Manchurian variety was grown.

The first year the sudan grass was sown broadcast and the second year it was planted in rows. The average gain for these two lots is not unusual; in fact, not more than might be expected on any pasture. There was a big waste in the second test as the lamb, being a delicate feeder, did not eat all of the coarse stalks, but confined himself to the leaves and finer parts.

### Cornfield

For the 1922 trial the Wisconsin White Dent was used and for the 1923 trial the Minnesota No. 13 was used. These are medium tall growing varieties of corn and are well suited to many sections of this state.

	1922	1923
Number of days in cornfield .....	30	30
Average weight of lambs at beginning.....	61	52
Gain per head .....	15	13
Average gain per head daily.....	0.49	0.42

When the lambs had been in the cornfield for two weeks the following notes were taken:

The silks have been picked and also the husks from many of the ears. There are a few ears where the lambs have shelled corn from the cob. Lambs are in good thrifty condition and full. No shelled corn on ground.

### Cornfield plus Rape

The rape drilled in the cornfield after last cultivation made a comparatively small growth in the Wisconsin White Dent variety of corn used the first year. The second year the rape was sown outside of cornfield so we would be sure the lambs had all the rape they wanted with the corn. The average gains per head daily for lambs for both years were the largest gains received, or 0.53 of a pound daily. The lambs ate both the corn and the rape. This is .08 of a pound increase daily over average made by lots that received cornfield alone. In fact it is an extra good gain for lambs of this weight to make.

	1922	1923
Number of days in cornfield and rape.....	30	30
Average weight of lambs at beginning.....	66	52
Gain per head.....	16	16
Average gain per head daily.....	0.53	0.53

Notes taken September 9, 1922, two weeks after lambs were put in the field, are as follows:

Many of lower leaves of cornplant, the silk of the ears, the husks of the ear, have been picked. In some cases lambs have begun to shell kernels from ears. A few tall weeds growing in field have been stripped of their leaves as high as lambs can reach.

The rape in this lot, because of the dry weather, was only from six to eight inches high and lambs have eaten practically all of it.

### Cornfield plus Soybeans

In the 1922 experiment the soybeans were planted in with the corn but for the second year to be sure the lambs had all the soybeans they wanted with their corn, every

other row of the acre was planted to soybeans. Two varieties of soybeans were planted; the Chestnut with the corn the first year, and the Manchurian variety the second year.

	1922	1923
Number of days in cornfield and soybeans.....	30	30
Average weight of lambs at beginning.....	59	51
Gain per head.....	16	14
Average gain per head daily.....	0.54	0.46

Notes taken two weeks after first experiment was started are as follows:

Practically all of the leaves of the soybeans planted in hills with corn have been picked and the stems of the soybeans remain. The silks of ears have been picked and a few ears have been shelled. In some cases all shucks have been stripped off of the ears and all lower leaves of corn plant have been picked.

It was noticed with both lots of lambs receiving soybeans that after the lamb ate off the leaves of the soybean it did not grow a new leaf as does the rape plant, but the plant evidently died.

### Sorghum

The Black Amber variety of sorghum was drilled in rows and cultivated both years.

	1922	1923
Number of days in sorghum field.....	30	30
Average weight of lambs at beginning.....	64	52
Gain per head.....	14	13
Average gain per head daily.....	0.46	0.43

The sorghum produced seed and the lambs ate the seeds but the coarse part of the stalk was not consumed.

Notes taken Sept. 15, 1922, on this lot are as follows:

At this time the lambs are eating the sorghum seed. The plant is from five to seven feet high. By crossing from one row to the other the lambs have knocked down the sorghum so the heads of plants are easily reached. The sor-

ghum has many green leaves at this date while with the corn plant the leaves are practically all dried. None of this lot of lambs are scouring and all seem to be full and doing well.

### Sudan Grass

The sudan grass was sowed broadcast for the first year test and for the second year it was planted in rows and cultivated. When the lambs were put in the grass it was from four to five feet high. The lambs stripped it of its leaves as high as they could reach and then broke down the stalks and ate the finer portion of the stalks and tops of the plants.

	1922	1923
Number of days in sudan grass field.....	30	30
Average weight of lambs at beginning.....	73	52
Gain per head.....	5	10
Average gain per head daily.....	0.17	0.35

### Rape Pasture

The dwarf Essex variety of rape has been used in all of these experiments. It is a rapid grower, requires a good soil and growth is not materially checked by early frosts. For an annual pasture it ranks among the best.

Bulletin 119 of this Station (edition exhausted) reports an average gain on lambs in a two years' experiment pasturing lambs on rape, of .34 and .37 of a pound daily. The average gain per head of the 23 lambs that received rape pasture alone, was seven-tenths of a pound greater than for an equal number of lambs that received shelled corn while on rape pasture. The gains for both years where barley and oats were fed were larger than for corn and rape, no doubt due to the unpalatability of the hard condition of shelled corn in the fall of the year. Of course, the money value of an acre of rape for pasture depends on the value of other commodities.

In this experiment, by mistake, a small quantity of oats was sown with rape for 1922 test but not enough so it would be considered an ideal field of rape and oats. How-

ever, these oats probably had an influence on gains of lambs on rape for 1922.

	1922	1923
Number of days in rape field.....	30	30
Average weight of lambs at beginning.....	64	52
Gain per head.....	10	8
Average gain per head daily.....	0.35	0.27

The following table No. I gives the number of lambs in each lot, weight of lambs at beginning, weight at close, gain for lot, and average gain per head daily for both years:

TABLE NO. 1

1922—30 Days					1923—30 Days					Average for two experim'ts
No. lambs	Weight at beginning	Weight at close	Gain	Av. gain per head daily	No. lambs	Weight at beginning	Weight at close	Gain	Av. gain per head daily	
					<b>Cornfield</b>					
12	734	911	177	.49	15	781	974	193	.42	.45
					<b>Cornfield plus Rape</b>					
12	790	981	191	.53	16	835	1093	258	.53	.53
					<b>Cornfield plus Soybeans</b>					
12	719	915	196	.54	15	777	988	211	.46	.50
					<b>Sorghum</b>					
12	774	942	168	.46	16	835	1045	210	.43	.44

				<b>Sudan Grass</b>						
12	878	941	63	.17	16	835	1007	172	.35	.26
	<b>Rape and Oats</b>						<b>Rape</b>			
12	769	895	126	.35	16	835	965	130	.27	.31

The record of the three lots receiving cornfield plus forage is given in table No. II. This table shows the number of lambs in each lot, weight at beginning, gain per lot for first 30 days and average gain per head daily for 30 days, for each lot each year. It also shows weight, total gain and average gain per head daily for each lot during the entire period for each lot each year.

Attention is called to the gains made the second year by lambs in the cornfield and rape lot. The short growth of rape the first year, as before stated, was no doubt responsible for the difference in the gains for the total period.

The best gains ever made in feeding lambs at this station were secured in 1908 with 10 grade lambs from eight to ten months of age, when fed on a grain ration, consisting of a mixture of 100 pounds of shelled corn, 100 pounds of oats, and 25 pounds of oilmeal with alfalfa hay as a roughage. These lambs were fed for 60 days and made an average daily gain per head of .51 of a pound.

Results reported in Bulletin No. 80 of this Station (edition exhausted) show that where ten different grain rations, with prairie hay, were fed to lambs for the purpose of fattening, the average gain per head daily ranged from .22 to .29 of a pound.

With six different breeds for six years results reported in Bulletin No. 127 of this Station (edition exhausted) show the average gain of the lambs per head daily varied from .25 to .36 of a pound.

TABLE NO. II

1922								1923							
No. lambs	Wt. at beginning	Wt. at 30 days	Gain	Av. gain per head daily	Wt. at 52 days	Gain	Av. gain per head daily	No. lambs	Wt. at beginning	Wt. at 30 days	Gain	Av. gain per head daily	Wt. at 61 days	Gain	Av. gain per head daily
<b>Cornfield</b>															
12	734	911	177	.49	969	235	.37	15	781	974	193	.42	1125	344	.37
<b>Cornfield plus Rape</b>															
12	790	981	191	.53	1010	220	.35	16	835	1093	258	.53	1256	421	.43
<b>Cornfield plus Soybeans</b>															
12	719	915	196	.54	981	262	.42	15	777	988	211	.46	1085	308	.33

By table No. II results show that the cornfield plus the rape produced the most rapid gains. This is not only true for the 30 day period but also during the entire period of 52 days and 61 days respectively.

It should be remembered that if rape is to be sowed in the cornfield after the last cultivation a ranker growth will be secured if the corn is not a tall growing variety. Results reported in Bulletin 157 of this Station, "Rape Pasture for Pigs in Cornfield" (edition exhausted), show that of the three varieties of corn grown, the gains of pigs were one-fourth more in the low growing varieties of corn than in the tall growing variety of corn.

## SUMMARY

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1. Lambs do a good job of picking in the cornfield.
2. They not only picked the silks of ears, leaves of corn and shucks on ears, the parts of the corn plant that are usually wasted, but they made a tour of the field to find weeds for variety.
3. Results do not show that the soybean is superior to rape as a forage plant. When planted in the cornfield the mixture, however, is superior to cornfield alone.
4. The feed the lamb secured for himself in the cornfield is evidently highly nutritious since the gains made are above the average reported for experiments.
5. The average of the gains made by lambs in sorghum lots was nearly as large as the average of the gains made by lambs in corn lots, but the waste in pasturing sorghum was greater than the waste in pasturing corn.
6. For rapid gains both the rape and corn and soybean and corn lots proved superior to corn alone, showing the value of a forage of this kind with cornfield for lambs during a short feeding period.
7. A larger growth of rape can be secured in the short growing varieties of corn than in the tall growing varieties of corn, hence the importance of the lamb feeder in furnishing an abundance of the best forage for "lambing-off" purposes.

**LIST OF AVAILABLE PUBLICATIONS**

Circular No. 1, Nitrogen from the Air.

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| <p><b>Annual Reports</b>, 1917, 1918, 1919, 1920, 1921, 1922, 1923.</p> <p><b>Bulletins</b></p> <p>132. Effects of Alkali Water on Dairy Products.</p> <p>147. Effect of Alkali Water on Dairy Cows.</p> <p>158. Proso and Kaoliang for Table Use.</p> <p>159. Progress in Plant Breeding.</p> <p>161. Winter Grain in South Dakota.</p> <p>162. First Annual Report of Vivian Experiment and Demonstration Farm.</p> <p>164. Making Butter and Cheese on the Farm.</p> <p>165. Corn Silage for Lambs.</p> <p>166. Factors Affecting Milking Machines.</p> <p>167. Transplanting Alfalfa.</p> <p>168. Breakfast Foods and Their Relative Value.</p> <p>169. Flax Culture.</p> <p>170. Quack Grass Eradication.</p> <p>171. Cream Pasteurization.</p> <p>173. Sugar Beets in South Dakota.</p> <p>174. Sorghums for Forage in South Dakota.</p> <p>175. The Role of Water in a Dairy Cow's Ration.</p> <p>177. The Sheep.</p> <p>179. Emmer in South Dakota.</p> <p>180. Root Crop Culture.</p> <p>182. Corn Silage for Steers.</p> <p>183. Barley Culture in South Dakota.</p> | <p>184. Yields from Two Systems of Corn Breeding.</p> <p>185. Ice on the Farm.</p> <p>186. Corn Families of South Dakota.</p> <p>187. The Influence of Length of Wheat Heads on Resulting Crops.</p> <p>188. Relative Values of Feed Proteins for Dairy Cows.</p> <p>189. Corn and Millet Silage for Fattening Cattle.</p> <p>190. The Webspinning Sawfly of Plums and Sandcherries.</p> <p>191. Water as a Limiting Factor in the Growth of Sweet Clover.</p> <p>192. Rations for Pigs.</p> <p>193. Soybeans in South Dakota.</p> <p>194. Acme Wheat.</p> <p>195. Feeding of Dairy Cattle.</p> <p>196. Potatoes in South Dakota.</p> <p>197. Milk Testing in Practice.</p> <p>198. The Influence of Purebred Dairy Sires.</p> <p>199. Sunflower Silage for Steers.</p> <p>200. Winter Wheat in South Dakota.</p> <p>201. Some Experiments with Spring Wheat in South Dakota.</p> <p>202. The Chinch Bug.</p> <p>203. Pasteurization of Market Milk in the Glass Enameled Tank and in the Bottle.</p> <p>204. Varieties of Corn for South Dakota.</p> <p>205. Some Tentative Statements Concerning Fowld's Hulless Oats.</p> <p>206. Purebred Dairy Sires.</p> |
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Editions of all other Bulletins are exhausted.

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