

University of Idaho

Agricultural Experiment Station

Department of Agriculture.

-
- 1.— CATTLE FEEDING.
 - 2.— CROP TESTS.
-

BY

HIRAM T. FRENCH.

*"An husbände cannot well thryve by his corne without
he have other cattell, nor by his cattell without corne, for
els he shall be a byer, a borrower, or a beggar."*

— Fitzherbert, 16th Century.

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Bulletins.

The regular bulletins of the Station are sent free to all who request them.
Bulletins issued since the close of the fiscal year, June 30th, 1898:

16. The San Jose Scale in Idaho.
17. Construction and Management of Hotbeds.
18. Sugar Beet Investigations in 1898.
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20. Apple Scab in the Potlatch.
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Cattle Feeding.

In a country where wheat is the principal crop, and we might say the only crop from which much revenue is expected, the feeding of live-stock is too often neglected.

This seems to be the prevailing condition throughout a large portion of Northern Idaho. Wheat has been a paying crop, and will undoubtedly continue to be, in this section, for the natural conditions—such as soil and climate—are wonderfully well adapted to the production of wheat. In other words wheat can be produced here at less expense and with greater certainty than in other portions of the country.

As more attention is given to stock raising and feeding wheat will cease to be the only cash crop: and while the farmers will grow practically as much wheat as before, it will be done under a more intensive system of farming. Less land will be summer fallowed than under present methods, and more grasses and forage plants will be introduced to cover the now bare fields.

That this section will ever become noted for stock feeding, as we look upon the middle western states, may be doubtful; but there is no better country for breeding and raising good stock than many portions of Idaho, both north and south; and a much larger number of animals might be fitted for the shambles than are now grown for that purpose. Much of the stock sold as butchers' stock, from this portion of the state, is not prime beef. We should learn to feed more of the grain products out on the farm, and in this way prepare cattle, sheep, and hogs for better prices. The demand for better quality in meat products is increasing very rapidly; and this demand is not confined to the large eastern trade as we might be led to suppose. Quite as good prices have prevailed on the coast this season as in

the East, and taking transportation into account the prices have been exceedingly favorable.

When grain is cheap and meat products are high, as under present conditions, more grain should be fed to animals; but this is only possible where a sufficient amount of stock is raised to consume the grain. This has been the difficulty in this section during the past season.

The wheat farmer finds himself with a lot of grain on hand and nothing to which he can feed it. The price of stock is so high he can hardly afford to buy, or he thinks he can not take the risk; and so his grain brings very meager returns, if any at all, above cost of placing it in the warehouse.

On the other hand if grain is bringing a good price, cattle, sheep, and hogs can be shipped to the corn states where feeders are always in demand. Many stock shippers, who have come west, looking for feeders to consume the immense corn crop of last year, have been disappointed in not finding a supply of such stock for sale, even at very tempting prices. During the past year many of these buyers have returned to their homes empty handed and of course taken their gold back with them which they would have gladly exchanged for cattle and sheep, and which many of the wheat raisers would have been glad to get to tide them over the period of low prices.

Naturally under present conditions much has been said regarding diversified farming in this region. Diversified farming means more stock and more grass; less naked summer fallow and more forage plants. We believe in this being possible for many portions of Idaho, as it has been for many of the wheat growing sections of the Mississippi basin.

It is for the purpose of throwing some light on the possibilities of profitable cattle feeding that the following experiment was undertaken; and it may not be out of place to say that while this is the first experiment in stock feeding carried on at the Idaho Station, we hope to continue this line of investigation touching the matter of sheep and pig feeding as well as that of cattle feeding. While much has been done along this line in other states, and while we may duplicate other work, it seems to us necessary to perform the work under the conditions which prevail in this

section. We hope at the same time to be able to draw some lessons from the work which shall apply to every portion of the state, and to parts of other states where the conditions are similar.

Object of this Experiment.

In this particular experiment the chief object was to determine what profits, if any, might be realized by stall feeding a bunch of steers picked up in the fall of the year from the farms in this section; and, by carrying the cattle through the winter on such foods as can be produced here, determine what gains in live weight may be expected under ordinary conditions. While this was the chief aim, it was also of interest to vary the kind of food fed to different groups of animals, and thus gain some information as to the best combinations of food products to get the best results. In this the conditions for feeding were not as complete as we would like, hence little stress will be given at this time to this phase of the work. When we begin to say that this or that food will give the best results, all of the conditions, or a large proportion of them, must be under complete control. This we were unable to do with present facilities.

Another object in the feeding was to test the utility of the silo as a means of storing feed for stock in this section. There are very few silos in this state. In fact we know of none within its borders, although there are a few in eastern Washington, not far from the Idaho line.

We built a small stave silo last season filling it with corn, making about forty tons of silage. This was used in the feeding test. If a portion of the cultivated land can be made to produce corn, which, when placed in a silo, can be successfully fed to cattle and sheep, then we shall have helped to solve the question of stock feeding in a grain growing section.

Conditions Surrounding the Experiment.

It is often said by practical farmers that the work of the Experiment Stations is of no value to them for they have not the facilities for carrying on the work, so that similar results might be obtained. Such an excuse will not apply to the work under discussion, for our facilities are not as favorable to such work as

those possessed by many farmers in this state and in this locality.

We have no stock barn, hence twelve stanchions were improvised in a small grain or tool barn located on the station farm. The space was so limited that a man could not pass in the rear of the animals when they were in their stalls. The stalls were three feet wide, separated by short partitions, and provided with separate mangers so an animal might not suffer from the more voracious appetite of his neighbor. This is a very important matter in feeding stock for we have seen cattle almost completely robbed of their rations when they were being fed in mangers with no partitions. The old saying that "The eye of the master fattens the ox" is only another way of saying that the intelligence of the one who feeds stock must understand and control the conditions, as far as possible, which surround the animal, and make these conditions contribute to the greatest comfort of that animal.

The animals were turned out and driven to water at nine o'clock in the morning, and upon returning were placed in small yards where they remained until one o'clock p. m. There were four steers in each group and the animals in each group were kept together throughout the experiment. This was done for convenience in weighing and feeding. The only exercise the animals received was in going to water and in the yard after returning. This was quite enough however for it is our experience that such stock will do better when kept very quiet. In fact we would not care to have them leave the stable if a supply of good water could be furnished them in the stall. However this requires a more comfortable tie than that furnished by a stanchion. We prefer a chain tie about the neck which will give the animals more freedom and ease in the stall. We have always found range cattle very hardy in constitution, and possessing vigorous appetites, so that with proper care in not overfeeding, and in giving a mixed ration, containing a good supply of succulent food, there is no need of exercise.

The water supply is a very important consideration. In our own case the steers were compelled to go nearly a quarter of a mile for water and most of the time waded through mud and slush up to their knees. The water was often very muddy from heavy rains and melting snow, and never clear from mud. When cold

weather prevailed they were compelled to drink through broken ice. We speak of these conditions for we are satisfied that much larger gains in live weight can be made than we were able to produce.

The animals were well bedded with straw each day, thus adding to their comfort, and at the same time converting a good sized straw stack, during the feeding period, into barnyard manure.

Kind of Stock.

The animals used in the feeding were two-year-old grade Short Horns, with a little Hereford blood in one or two, and some Holstein, judging from the black and white markings. None of them were high grades. They were such animals as we were able to find on the farms and ranges not far from Moscow, and would be considered an average lot of common-stock feeders.

The steers were delivered at the farm December 1st and were permitted to run in the fields during that month. Some green corn was fed to them from the field where it had been shocked a few weeks before. All except one, which had lost his horns when a calf, were dishorned after reaching the farm.

At first the animals were loth to take their places in the stalls; but after confining them a few times, they gave very little trouble. This was brought about largely by having the feed in the manger when the animals were turned into the stable. It will not do to have the feed there one day and none there the next. A disappointment in not finding the feed in the manger makes the animals angry and disturbs them for some time. A good feeder never disappoints his animals.

The animals were fed three times daily; at six in the morning, and at one and at half past five o'clock in the afternoon.

Kinds of Food.

The experimental feeding began January 1st, and during this month the entire lot was fed the same kind of food, varying in amount to meet the needs of each animal. The animals were weighed in separate groups of four steers each.

The following average daily ration was fed during January: 30 pounds of silage; 10 pounds of grain, made up of 4 parts

chopped wheat and 6 parts bran; and 5 pounds of chopped oat hay. The ration was divided into three feeds and weighed out to the animals at each feeding time. A portion of the time there was two or three pounds for each animal to weigh back each day as waste. On the whole the animals ate up the feed very well. Even of the silage, which was new to them, there was not much waste.

This ration is a little richer in carbohydrates than the standard generally recommended, being about 1:7.5 while the German standard is 1:6.5. An effort was made, throughout this feeding test, to maintain this standard as nearly as possible with the food material at hand. The silage contained very little grain, for the corn was killed by frost before the ears were formed.

While an effort should be made to maintain as nearly as possible the standards of feeding established by the digestion experiments in this country and in Germany, it will nearly always be found necessary, in practical feeding operations, to vary the standard according to the cost and supply of the various kinds of food stuffs available.

During February, we determined to withhold the silage from four of the steers in Lot 1 and feed roots as a succulent food, thus comparing them with the silage fed the remaining eight.

The ration for the steers fed on roots, in place of silage, consisted of the following: 20 pounds of roots, mangel wurtzels; 10 pounds of grain, and 12 pounds of chopped oat and pea hay. The grain was made up of 6 pounds of chopped wheat, 2 pounds of bran and two pounds of O. P. oil meal. This ration is richer in protein than the January ration, and gave better results as shown by an increase in the gain in live weight. The gain was not as great as that made by the other eight steers however. The weights will be found in table II. Lots 2 and 3 were fed on silage, hay, and grain as follows: 30 pounds of silage; 12 pounds of grain, and 6 pounds of hay. The grain consisted of two parts chopped wheat, one part bran, and one part chopped oats.

This ration is still wider than the one fed during January, being 1:7.8, and wider than that fed to steers in Lot 1. The ratio in Lot 1 is about 1:6.1, somewhat narrower than the standard. In Lots 2 and 3, we endeavored to get the animals to

consume as much coarse food as possible, especially of the silage, for this represented the cheapest food material at hand.

The same general plan of feeding was followed during the month of March, except that 10 pounds of roots per steer was added to the ration for Lots 2 and 3, and the silage decreased the same amount. This made the ratio a little narrower by reducing the carbohydrates. It will be noted in table III, that Lot 1 made a relatively larger gain than during the preceding month, and Lots 2 and 3 fell a little under that of the former month. However, there was only 1.9 pounds difference in the gain per steer for the entire month.

Our object in reducing the silage fed to Lots 2 and 3 was to induce the animals to eat with greater relish; as they had been fed rather heavily on silage and did not eat it as readily as during the preceding month. If the silage had been richer in grain it undoubtedly would have been eaten with greater relish, and would have required less of other grain to make up a ration. While the silage was sweet, and of very good quality of its kind, it would not be considered rich silage.

Results.

The steers were sold to a local butcher April 1st, for 5c. per pound live weight. Their average weight when the feeding began was $861\frac{2}{3}$ pounds, and when the feeding test closed, March 26th, the average weight was $983\frac{1}{3}$ pounds, showing an average gain of $121\frac{2}{3}$ pounds or a daily gain of 1.4 pounds. This is not as large a gain as we might expect under more favorable conditions.

By consulting Table IV, giving summary of results, it will be seen that the total cost of food exceeds the value of gain in live weight. This, at first thought, would preclude any profit; but we must not lose sight of the fact that there is a profit on the original weight of the cattle. Steers sold as feeders do not command as high a price as the finished product, hence one can expect a reasonable profit on the original weight of the animals.

While we paid a good price for the animals, \$30.00 apiece delivered at the farm, or an average cost of \$3.48 per hundred, there is still a profit of \$1.52 per hundred on the original weight.

This, taken with the value of increase in weight, makes \$228.10 increase in value above cost. Taking cost of food, \$77.82, from this, leaves a net profit of \$150.28 or \$12.52 per head, for the feeding period of eighty-five days. In this we have not reckoned the cost of labor nor the interest on the investment. The value of the manure is an important item and will offset the labor in caring for the stock.

On the whole, the steers fed on silage throughout the entire period made the largest gains and at less cost than those fed on roots. The steers fed on silage consumed less grain. The roots fed in this experiment were carrots and mangel wurzels. The mangels were relished better than the carrots.

There was a larger amount of grain weighed back as waste in Lots 2 and 3, than in Lot 1, and this explains why there is less total grain charged up against Lots 2 and 3, as shown in Table IV.

The dressed carcasses were carefully weighed thus showing the per cent. of shrinkage in dressing. The average dressed weight was a little above 61 per cent. This would indicate a fairly well finished product. The steers were weighed 16 hours after feed and water.

The quality of meat was all that could be desired in cattle of this kind. The meat was well marbled and there was comparatively little fat on the outside. The fat was light in color and evenly distributed.

Other experiments in stall feeding cattle will be undertaken in the future, with a view of encouraging the industry, and demonstrating, if possible, that this feature of stock farming is entirely feasible for this portion of the state, at least. If by this experiment, and in others which the Station hopes to carry out, we can assist in showing how corn and other forage crops may be utilized in producing a revenue to the farm, we shall have accomplished our object, and the Station will become of greater practical value to the farmer.

Conclusions.

1. While the average daily gain was not wholly satisfactory,

it will compare favorably with that made by cattle fed in the corn states.

2. The results are sufficiently encouraging to warrant more stock feeding in this section.

3. That two-year-old steers can be matured on the grains and fodders produced in this section.

4. That there is a profit in keeping steers for winter feeding instead of selling an inferior and cheaper product in the fall.

5. That corn silage can be successfully used in feeding steers in this locality.

Tables Showing Gains by Periods of Two Weeks Each.

TABLE I.

	Weight Jan. 1.	Weight Jan. 15.	Gain 1st Period.	Weight Jan. 29th.	Gain 2nd Period.	Total Gain for month
Lot 1.....	3420	3452	32	3560	8	40
Lot 2.....	3435	3492	57	3660	138	195
Lot 3.....	3485	3560	75	3655	95	170
Totals.....	10340	10504	164	10845	241	405

TABLE II.

	Weight Jan. 29th.	Weight Feb. 12th.	Gain 3rd Period.	Weight Feb. 26th.	Gain 4th Period.	Total Gain for month
Lot 1.....	3560	3600	40	3670	70	110
Lot 2.....	3630	3730	100	3835	105	205
Lot 3.....	3655	3710	55	3800	90	145
Totals.....	10845	11040	195	11305	265	460

TABLE III.

	Weight Feb. 26th.	Weight March 12.	Gain 5th Period.	Weight March 26.	Gain 6th Period.	Total Gain for month
Lot 1.....	3670	3730	60	3830	100	160
Lot 2.....	3835	3935	100	4020	85	185
Lot 3.....	3800	3850	50	3950	100	150
Totals.....	11305	11515	210	11800	285	495

TABLE IV.—SUMMARY.

	Lot 1.	Lot 2.	Lot 3.	Total weight.	Average weight.
Weight Jan. 1st.....	3420	3495	3485	10340	861 $\frac{3}{4}$
Weight March 26th.....	3830	4020	3950	11800	983 $\frac{3}{4}$
Total gain.....	410	585	465		
Grain eaten.....	2846	4592			
Hay eaten.....	3115	3910			
Silage eaten.....	3266	16972			
Roots eaten.....	3360	3150			
Average daily gain.....	1.20	1.72	1.37		
*Cost of food.....	\$28.22	\$ 49.60			
Value of gain.....	20.50	52.50			
Total value above cost.....	71.80	156.30			
Net profit.....	43.58	106.70			
Total profit.....		\$150.28			
Profit per head.....		12.52			

*Grain valued at \$10.00 per ton; hay \$5.00; silage \$1.50 and roots \$2.50.

Field Crop Tests.

Potatoes.

In taking charge of the work in the Agricultural Department of the Idaho Experiment Station, September 1, 1898, we found a large number of varieties of potatoes growing on the farm, having been planted under the direction of acting agriculturist, Prof F. A. Huntley. A sample of each variety was carefully stored, when harvested, with a view of planting again the following season. Last season these varieties were planted in small plats, and observations were made during the season on nature of growth, date of maturity, yield, etc. The results of this work are here briefly given in tabular form.

Method of Planting.

The potatoes were planted in furrows three and one-half feet apart, on a well prepared piece of high land. The seed was cut into pieces having two or three eyes, and one piece planted in each hill. The seed was covered to a depth of five inches with a clod-masher drawn crosswise of the rows. This is a very convenient and rapid way of covering the potatoes, and, at the same time, leaving the ground in good condition for the harrow which we used later in keeping the weeds from starting. A second harrowing was given the potatoes just as the plants appeared above the ground. The ground was cultivated twice during the season with a Planet Junior, one horse cultivator. It was necessary to go over the crop once with a hand-hoe to cut the weeds out of the rows. This is all the cultivation the crop received.

August 1st the vines were attacked by a blister beetle, which necessitated spraying with Paris Green and water. A single application was sufficient to destroy the pest. This pest is quite common, but does not often appear in sufficient numbers to require extermination.

Each variety of potato occupied a row sixty feet long. Larger plats could not be used on account of not having sufficient area of uniform land. Date of planting, date of harvesting, date of maturity, yield of plat, and estimated yield per acre are given in the table. Results obtained in testing vegetables and farm crops in small plats experiments are sometimes misleading, and

are not always verified by practical results in the field. Hence to obtain a more extended trial of the most promising varieties we have distributed over three hundred samples to farmers in various parts of the state for field tests. The results of this co-operative work will be published later from the department in bulletin form.

Climatic and soil conditions have much to do with the successful growth and maturing of the various kinds of farm crops. Experiments in one locality do not prove that under certain other conditions the results might not be quite the reverse of those first obtained. This is especially true as to the yield.

In sending out the samples which have been distributed this season, it is expected that average results will be obtained which shall be more reliable than those reached by a single test. At the same time, these co-operative experiments will be the means of introducing some varieties which may prove superior in quality to those already grown in this state. Another very important reason for co-operative experiments in this state is due to the widely different conditions in soil and climate. There is no state where there is greater diversity of soil and climatic conditions than is found in Idaho. It is the intention of the Experiment Station to extend this co-operative work as rapidly as possible, thus increasing the usefulness of the station, to those whom it was intended to benefit.

No fertilizer was used in growing the potatoes tested in this experiment. Level cultivation was practiced in caring for the crop. It is not considered wise to ridge up potatoes. This fact has been demonstrated by numerous experiments, and by men who made potato-growing a specialty.

Credit is due Mr. Chas. Fisher, a member of the Sophomore Class, who kept the notes on growth of crop.

Name of Variety.	Date of planting.	Date of harvesting	Yield of plat.	Estimated yield per Acre.	Date of maturity.	Remarks.
Original Peachblow.....	May 20.	Oct. 14.	lbs. 72	bu. 246		Killed by frost Oct. 14.
Empire State.....	"	"	72	246	Oct. 14	
Burbank.....	"	"	81	277		Did not mature.
Pride of Ireland.....	"	"	55	188		" "
New Seedling.....	"	"	73	247	Oct. 14	
Hamden Beaut.....	"	"	54	185	"	
Uncle Sam.....	"	Oct. 21.	75	257	"	
Matchless.....	"	"	50	171	"	
Wil-on's Stray Beauty.....	"	"	66	226		Did not mature.
Cream City.....	"	"	112	384	Oct. 1.	
Spanish Beauty.....	"	"	58	198	Oct. 14.	
Valley Queen.....	"	"	69	236	"	
Burpee's Surprise.....	"	"	59	201	"	
Orphan.....	"	"	68	233	"	
Morning Star.....	"	"	41	149	"	
Mt. Carbon.....	"	"	66	228	"	
Wood Hull.....	"	"	64	219		Did not mature.
Brownell's Winner.....	"	"	72	246	"	" "
Lake's Early.....	"	"	31	106	Oct. 1.	
Red Star.....	"	"	25	85	Oct. 14.	
VanOrman's.....	"	"	72	246	"	
Early Dawn.....	"	"	45	154	Sept. 15	
Cambridge Prolific.....	"	"	100	342	Oct. 14.	
Early Minnesota.....	"	"	63	215	Sept. 20	
May's Late.....	"	"	50	151		Did not mature.
Pride of Seneca.....	"	"	44	150	Oct. 14.	
Jersey Peachblow.....	"	"	21	72		Did not mature.
Arizona.....	"	"	84	288	Oct. 14.	
Ford's No. 1.....	"	"	104	356	"	
Genesee Rose.....	"	"	50	173	"	
Cornon No. 1.....	"	"	98	336	"	
North Pole.....	"	"	60	255		Did not mature.
American Wonder.....	"	"	80	274	Oct. 14.	
Ohio Fairy.....	"	"	51	174	Oct. 1.	
Early Market.....	May 13.	Oct. 14.	60	205	"	
Irish Cobbler.....	"	"	86	294	Oct. 14.	
Vick's Champion.....	"	"	46	158	Sept. 12	
Cohen's Pride.....	"	"	57	195	"	
Polaris.....	"	"	60	205	Oct. 10.	
Morgan.....	"	"	59	202	Oct. 14	
Great West.....	"	"	57	198	"	
Albright's Seedling.....	"	"	56	196	"	
Pullman's New Rose.....	"	"	67	229	"	
Mammoth Pearl.....	"	"	62	212	"	
Thorburn.....	"	"	45	154	"	
Puritan Rose.....	"	"	30	102	Sept. 14	
Early Puritan.....	"	"	52	178	Sept. 12	
Early Rose.....	"	"	33	113	"	
Paris Rose.....	"	"	42	144	"	
Crane's June Eating.....	"	"	41	140	"	
Maggie Murphy.....	"	"	41	140	Oct. 14.	
White Star.....	"	"	44	150	Oct. 1.	
New Queen.....	"	"	33	113	Oct. 14.	
Monroe Co. Pride.....	"	"	63	216	Oct. 7.	
Everett Rose.....	"	"	47	161	Oct. 14.	
Cornish Seedlin.....	"	"	39	133	"	
New Standard.....	"	Oct. 7.	49	168	Oct. 1.	
Deleware.....	"	"	77	265	Oct. 7.	
Vermont Champion.....	"	"	50	173	Oct. 1.	
Early California.....	"	"	77	264	Sept. 12.	
Garfield.....	"	"	54	186	Oct. 7.	
Napoleon.....	"	"	58	198		Hardly mature.
Thorburn's Early.....	"	"	31	116	Sept. 12.	
Early Sunrise.....	"	"	58	198	Oct. 1.	
Early Vermont.....	"	"	66	226	Sept. 15.	
Freeman.....	"	"	74	240	Oct. 1.	
White Lilly.....	"	"	61	209	"	

(Continued.)

Name of Variety.	Date of planting	Date of harvesting	Yield of plat.	Estimated yield per Acre.	Date of maturity.	Remarks.
Mills' Pride.....	May 13	Oct. 7.	lbs. 71	bu. 244	Oct. 7.	
Clark's No. 1.....	"	"	52	180	Oct. 1.	
Early Northern.....	"	"	64	219	"	
Vaughn.....	"	"	45	156	"	Hardly ripe.
Burt.....	"	"	52	178	"	Did not mature.
Mayflower.....	"	"	20	68	Sept. 15	
Crown Jewell.....	"	"	77	264	Oct. 7.	
Early Washington.....	"	"	60	205	Sept. 12	
Signal.....	"	"	44	150	Oct. 7.	
Ideal.....	"	"	50	171	Oct. 1.	
Marshall's White.....	"	"	72	246	Oct. 7.	
Chautauque Seedling.....	"	"	73	233	"	
Rugert's Perfection.....	"	"	62	212	Oct. 1.	
Wisconsin Rose.....	"	"	56	193	"	
Summit.....	"	"	62	214	Oct. 7.	
Badger State.....	"	"	52	178	"	
Rochester Rose.....	"	"	72	246	"	
Telephone.....	"	Oct. 14.	68	233	Oct. 14.	
King of Roses.....	"	"	55	188	Oct. 1.	
Snow Flake.....	"	"	53	182	Oct. 14.	
Great Divide.....	"	"	63	216	"	
Beauty of Hebron.....	"	"	44	150	"	
Early White Prize.....	"	"	54	185	Sept 12.	
Early May.....	"	"	35	120	"	
Chas. Downing.....	"	"	47	161	"	Did not mature.
Chicago Market.....	"	"	60	205	Oct. 1.	
Wilson's Rose.....	"	"	63	216	"	Did not mature.
R. N. Y. No 2.....	"	"	88	301	Oct. 1.	
Watson's Seedling.....	"	"	63	216	"	
Morton's White.....	"	"	29	99	"	
Early Hebron.....	"	"	45	154	Sept 15.	
Ohio Junior.....	"	"	39	135	Oct. 1.	
State of Maine.....	"	Oct. 7	49	168	"	
Peerless.....	"	"	39	117	Oct. 7.	
Stone's Seedling.....	"	"	19	65	Oct. 1.	
Iowa Beauty.....	"	"	44	150	"	
Ohio Fancy.....	"	"	30	102	"	
Dictator.....	"	"	48	164	"	
Irish Daisy.....	"	"	30	102	Oct. 7.	
American Giant.....	"	"	50	171	"	Did not mature.
Ontario Red.....	"	"	48	164	Oct. 7.	
Advance.....	"	"	"	"	"	Complete failure.
Early Six Weeks.....	"	Oct. 7.	61	209	Sept 12.	
Early Oxford.....	"	"	61	209	"	
White Elephant.....	"	"	36	123	"	Not entirely ripe
Early White.....	"	"	79	264	Sept 15.	
Prairie Farmer.....	"	"	43	147	Oct. 7.	
White Imperial.....	"	"	60	205	"	Hardly ripe.
Vick's Perfection.....	"	"	60	205	Oct. 1.	
Nebula.....	"	"	60	205	"	
Early Essex.....	"	"	60	205	Sept 15.	
Gov. Foraker.....	"	"	74	253	Oct. 1.	
Extra Early Vermont.....	"	"	77	265	Sept 12.	
Carman's Beauty.....	"	"	65	222	Oct. 1.	
Northern Spy.....	"	"	59	202	"	Did not ripen.
Alexander.....	"	"	35	120	Oct. 7.	
June Eating.....	"	"	42	144	Sept 12.	
Alexander's Prolific.....	"	"	63	216	Oct. 7.	
White Rose.....	"	"	62	214	Oct. 1.	
Harbinger.....	"	"	32	103	"	Did not mature.
Gem.....	"	"	66	226	Oct. 1.	
Burpee's Extra Early.....	"	"	50	171	Sept 15.	
Early Walton.....	"	"	40	137	"	
Geo. B. McClellan.....	"	"	40	137	Oct. 7.	
Wood's Early.....	"	"	28	96	Oct. 1.	
Star Beauty.....	"	"	53	181	"	
Large Puritan.....	"	"	102	349	"	

Millet.

Several varieties of Russian Millet, received from the Department of Agriculture last season, were sown in one eighth acre plats on the Station farm. These varieties are known under the name of broom-corn or hog millets. The seed is borne in a loose branching head. They are called hog millets on account of their adaptability to hog pastures. When used for this purpose the seed is sown broadcast or in drills, and when the seed begins to form, hogs are turned in to pasture the crop in the field.

In our experiments the seed was sown broadcast June 16th, and covered with a smoothing harrow. Seed came up in ten days and made a very rapid growth. Millet should not be sown until the ground is thoroughly warm. The plants require warm weather to make the most rapid growth.

There were two distinct varieties of the millet sown; one a dark seeded variety, and the other producing a light-brown colored seed. There was little difference in their habit of growth. Both grew very rapidly, reaching three feet in height by September 20th. Heads first appeared August 5th. Portions of the plats were cut September 20th and cured for hay. The yield was three and one-half tons of well cured hay per acre. This yield is not as large as it would have been had the seeding been better. There was not sufficient moisture at the time of putting in the crop to germinate all of the seed.

Experiments with this forage plant will be repeated on a larger scale this season. We believe millet is one of the promising forage plants for many portions of Idaho, and especially for this region. Considerable seed has been distributed from the Station, to farmers in the state, for further trial. If this plant can be grown on the summer fallow, and we see no reason why it may not be, and thus furnish pasture for hogs, sheep and cattle, it will be a valuable acquisition to the list of stock foods grown in this region. Future work will determine this point. As a hay plant we are not prepared to state its value, leaving this point until further tests may be made.

Rape.

Dwarf Essex rape is becoming quite commonly grown in many parts of the west, for sheep and hog pasture. It has long been used for this purpose in Canada, Wisconsin, Minnesota, and other middle western states.

Last season an acre plat was sown to rape with a view of pasturing sheep upon it; but there were no sheep available at the time the crop was ready for use, hence this part of the work was not carried out. The seed was sown in drills eighteen inches apart. It germinated very quickly and the plants made rapid growth. Six weeks from the date of sowing, June 19, the crop was large enough to pasture. Just about this time the crop was attacked by a small green larva, (*Plutella Cruciferaum*,) and later by the cabbage louse. The first insect was destroyed with a spray of kerosene emulsion. A portion of the plat was mowed with a scythe, and where the tops were thus cut off the larvae did very little damage. This would indicate that pasturing with hogs and sheep would be an advantage when attacked by this insect.

The cabbage louse is the most serious pest, and may make the growing of rape, in this section, practically impossible. The season has much to do with the successful operations of the louse, and we may confidently expect that not every season will the crop be destroyed. In some localities where the louse is very bad the crop has been saved by pasturing closely, and thus starving the louse. A cool moist season is best adapted to the rapid growth of the rape plant.

The soil and climate of this section are well suited to the growth of this crop, and we see no reason why more attention should not be given to its culture. The Station will make further trials this season in growing rape for a forage crop.

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Agriculturist.