

THESIS

on

"Kale, as a Winter food for Swine".

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## "Kale, as a Winter Food for Swine."

Pig raising in Oregon has as a general rule not been considered a very profitable branch of the live stock industry, especially is this true of the methods employed on the farm, and up to within the past few years the growing of more pork than was just used on the farm was an exception. But since creameries, cheese factories, and the growing of the Thousand Headed Kale have come into vogue in this state, especially in this Willamette valley, the pig industry has made a healthy growth.

The creameries and cheese factories create a large by-product of skim-milk and whey both of which when properly used make cheap and valuable pig foods.

Since the acreage of corn in this state is small, grain of all kinds is usually too high priced for Oregon farmers to feed their pigs through the winter months and compete successfully in pork production with the pork producing farmers of Nebraska and Iowa.

The pork producing problem of Oregon necessarily resolves itself into wintering pigs with a minimum amount of grain and a maximum amount of skim milk, whey and kale, or other cheap foods. Some dairymen have solved this problem by giving skim milk and whey

as the cheap maximum ration and adding just enough grain, usually bran or shorts, to give the best results. This combination of food stuffs is generally fed in the proportion of one pound of grain to three pounds of skim milk or six pounds of whey.

The skim milk or whey and the grain feeding problem as indicated above has been pretty well solved and is demonstrated by the fact that some succulent food is highly necessary if the pigs are to be made to do their best through the winter months in growing and remaining healthy.

The Thousand-Headed Kale has been introduced as a substitute for this long needed, cheap food. It is a very succulent, nutritious forage plant, much grown in England and France, but of late years it has been found admirably adapted to the moist, mild climate of the northern Pacific coast region, and is likely to be of much wider adaptation, especially where the winters are not too severe. It is closely related to rape, but the plants are much taller and the leaves longer and broader. It does not head-up like cabbage. The name thousand-headed refers to the numerous branches the plants have when given plenty of room to grow in.

This variety of kale is used chiefly for feeding green to dairy cows, for which purpose it is of high value. It will in all probability be an excellent winter feed for hogs where the winters are not too cold.

It will not survive freezing weather.

Kale contains according to analysis made of the green plant, about 2.52 per cent protein. The protein content varied slightly during the winter being a little less in the month of December than it was found to be in October, but it was hardly sufficient to warrent any consideration being taken of it.

The kale plant does well on well-manured, deep, rich laams and sandy soils and yields from fifteen to thirty tons of green matter per. acre.

The seed should be sown on well-prepared and well-drained soils as soon after the first of March as the season will permit. This will furnish good plants for transplanting in June or July. The land used for the young plants should be well manured, plowed two or three times between the first of March and the first of June, and put in thorough condition by disking and harrowing.

Some plow again, about the first of June, using a twelve inch plow and drop the young kale plants two and one-fourth to three feet apart in every third furrow; placing the roots so that the next furrow will cover them sufficiently, being careful not to cover the tops. Others transplant kale the same as cabbage, instead of plowing in, and still others prefer to sow the seed in hills and thin to single plants. The land planted during the day should be well rolled the same evening. Two or three cultivations are all that can usually be

given, for the plants will soon touch between the rows if they do well.

The time of transplanting must be determined largely by the size of the young plants in connection with the condition of the soil. It may be delayed until after the first of July if the land is wet and subject to overflow; if well drained the work may be done earlier than the first of June.

Kale does not make much of a growth until the fall rains appear and the cool nights come on, then it starts to grow very rapidly and continues to grow through the whole winter, if it does not become frozen. A frost will cause the leaves of the plant to wilt and droop down but if not too severe they will return to their original condition without harmful effects.

The kale plant is a heavy feeder on the potash content of the soil, owing to its large number of broad leaves, and if grown successively, potash must be added to the soil to get good results.

The feeding of kale is an item that seriously hampers its being grown. To be fed green, it has to be gathered from the field as needed from the first of October to the first of April. This necessitates the going out into the fields when it is wet and muddy and makes its harvesting very undesirable. If the ground becomes so soft that it is harmful to it to draw a wagon and load over it, a sort of hammock can be constructed so

that two men can carry it out to the wagon without much added expense.

The kale may be fed fresh or allowed to wilt before feeding, but pigs appear to eat it with more relish when fresh. It should not be cut more than four or five days before it is fed, nor should it be thrown in heaps, as it heats readily. Kale should not be fed while it is frozen. On the approach of freezing weather a supply sufficient to last several days should be gathered and placed in the barn.

Kale does not produce seed until the second year. The plants vary considerably, and thus afford excellent opportunity for the selection of desirable types. These selections should be made the first year. Those plants that begin spreading close to the ground and that have many narrow leaves should be chosen, as this type of plant yields better and is less injured by frosts. These selected plants should be transplanted in February to some clean field as it is believed they will cross-pollinate with rape, cauliflower, wild-mustard, or other closely related plants. It should be harvested as soon as the first seeds turn brown and can be thrashed either by hand or by machine.

For the purpose of ascertaining the value of kale as a winter food for hogs, an experiment was conducted from the first of December to the first of March. Nine pigs were selected and placed in two lots. Lot I. consisted of three matured hogs and lot II. consisted of



six young shoats weighing about ninety three pounds each.

First Period, 31 Days.

Lot	Weight	Food Consumed Lb: Grain		Food Consumed 1 lb Grain.	
	Lbs.	Kale	Chopped Wheat	Lbs.	Chopped Wheat
I.	1265	1020	90	15	68 6
II.	558	1375	186	92	14.94 2.02

Second Period, 15 Days.

I.	1280	560	45	30	.....
II.	650	750	95	10 loss	75 9.5

One sow in lot I. farrowed pigs about the middle of the second period and hence was taken out, thus accounting for the loss. The remaining two finished the period in good condition.

Lot I. was taken out of the experiment at the end of the second period and Lot III. was added which consisted of six young pigs of Berkshire crosses and weighing about sixty two and one half pounds each. They were fed all the kale they would eat up clean and given skim milk and whey to drink instead of feed-

ing chopped wheat as in Lot II.

Third Period 15 Days.

Lot	Weight	Food Consumed Lbs.					Gain	Food Consumed for 1lb.				
		Lbs	Kale	Wheat	Milk	Whey		Lbs	Kale	Chopped Wheat	Skim Milk	Whey
	Jan. 1											
II	660	900	90				55	16.4	16.4			
III.	376	535		650	325		69	7.7		9.4	4.7	

Fourth Period, 15 Days.

	Feb. 1:											
II	715	1200	90				60	20.	1.5			
III	445	700		400	75		55	12.7			7.27	1.3

Fifth Period, 15 Days.

	Feb. 15											
II	775	1500	90				35	42.8	2.57			
III	500	900		300			65	13.8			4.6	

In lot I. the pigs did not seem satisfied during the experiment and it was difficult to get them to eat the kale up clean. At first they would not eat



it at all. But later they became accustomed to it, and ate it up fairly clean.

Lots II. and III. took to eating it very readily and cleaned up all that was given them. They seemed to be more satisfied, were in better condition, and made better gains than lot I.

Lot III. fed very evenly on the amounts of kale from day to day and seemed to do fairly well. The combination of the kale and skim milk made a rather watery feed and the pen was continually wet and sloppy. The combination was lacking in crude fiber but, for the short period, the pigs did well without it.

In conclusion it may be said that kale is almost a winter maintenance ration for swine, but when fed in addition with a little grain or skim milk, good growths will be made. Especially is this true of young pigs as is denoted by the tables. Taking all in all, the feeding of kale to swine will be a cheap method of carrying pigs through the winter months.

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