TEXTURE PREFERENCES IN A BABY PIG CREEP FEED RATION

by

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INTRODUCTION

Creep feeding of suckling pigs is used by many progressive swine producers throughout the state of Oregon. The addition of a creep feed to supplement the sow's milk has proved economically feasible and resulted in early marketable hogs of excellent carcass quality. These factors are of economic significance as, based on the national average of pork consumed per person, Oregon produces approximately only one-third of the pork and pork products consumed in this state. It appears that the finding of a method or methods of producing marketable hogs more rapidly and cheaply, in order to take advantage of existing marketing conditions, should be found.

Various research has been conducted to investigate a suitable complete ration or rations for the creep feeding of baby pigs. The major emphasis of this research has been on a ration that is not only nutritionally well balanced but one that is highly palatable. However, a ration that is nutritionally well balanced does not mean a ration that the animal will consume. It has been shown that in mature animals, palatability of a feedstuff is one of the most, if not the most important factor in feed consumption. If this is the case of the mature animal, how much more important is this factor of palatibility to the young

suckling animals?

There are many factors, such as taste, smell, and vision, concerned with the palatability of a feed. Also, fast growing pigs started to eating early will wean at heavier weights and continue to gain rapidly to an early market age of five to six months. With these factors in mind, recent feedstuffs have been developed in many different sizes, shapes, forms, colors, and flavors. The purpose of this study is to present different textured feeds, of the same composition, and to observe the effects these textures have on the feed preferences of baby pigs.

REVIEW OF LITERATURE

Animals, like people, show individuality by different tastes and appetites. Philips (16, p. 665-660) on his observations of wild pigs in South Africa, noted that pigs in seeking food, snout the soil to a depth of several inches. This enables them to obtain supplies of buried seeds, roots, rhizomes, and insects. They also feed on forest tree fruits or follow in the wake of elephants, feeding on their feces.

Braude (2, p. 24) observed that food habits of the pig showed more fastidious selection than is usually thought to be the case. In self-selection dietary experiments the pigs were capable of maintaining a balanced ration, and showed pronounced individual differences in food preference. There was also a suggestion that the reaction of pigs to thiourea, which is bitter tasting, may show genetic differences of the same order demonstrated by humans to phenylthiourea.

These observations on pigs in the wild and domestic state clearly show a marked preference for many different textured foods.

Most of the nutrition studies of food selection have been made with laboratory animals. However, these have been centered upon the natural selection of feed to see if an animal can provide itself with a well balanced diet.

Pilgrim, and Patton (17, P. 345) state in their experiment of patterns of self selection of dietary components, that patterns of selection were variable and gave abnormal frequency distributions. They concluded that appetite for dietary components are not always determined by nutritional or physiological needs.

Young and Chaplin (22, P. 1-45) further concluded that there is a difference between palatability and appetite. They stated that palatability of food, detected by the head receptors, is a test of food preference. Appetite, determined by organic needs is a test of bodily needs affecting preference.

The results of these findings and others have led researchers to investigate the head receptors of taste, smell, and vision and to measure their effects on the self-selection of diets. Harlow (7, p. 437) found that the selection of foods by rats was not affected by the elimination of smell or vision, or both together. Ericksen (5, 177-182) later confirmed these findings for vision.

The senses of taste and smell have been more recently investigated in preference studies with baby pigs.

Lewis, et al (9, p. 1103-1115) conducted three experiments to study the effect of sugar in baby pig starters. To study the pigs preference as to placement of the sugar,

three pelleted starters were offered that contained 20 per cent sugar inside, 10 per cent sugar inside, plus 10 per cent sugar coated, and 20 per cent sugar coated. The consumed ratios were 11:2:1. In all three experiments, there was an indication of improved gains and feed efficiency with the inclusion of sugars.

Sibbard and Bowland (18, p. 25) offered a basal creep feed ration composed primarily of small grains containing 10 per cent granulated white sucrose and an average of 1.5 gms/ton of natural riboflavin. Of the suckling pigs tested, twice as much of this ration was consumed as compared with 2 gms/ton riboflavin and a prepared pig feed flavor mix.

Spatrisano (20, p. 1-30) used three different flavors and a normal unflavored check ration to study the effect of flavor on the preferences of baby pigs. The results showed little difference in flavor preference as compared with the check or normal ration.

The results of these and other studies have led to the present conclusion that taste seems to be the most important sense essential for food preferences and that the possibility of smell may play a minor, but essential role.

Having exhausted all sources of available literature, there does not appear to be any information on the

use of textured feeds as a factor in the food preferences of baby pigs. However, the factor of tactile stimulation, or touch and its affect on palatability deserves mention. The tactile stimulation of a particular textured feed, in part, affects palatability. In our human diets we sometimes prefer a particular food because the texture feels agreeable. It may also be that this sense of touch plays a major role in the preferences of feeds for not only baby pigs, but for all forms of livestock.

It has been postulated that feeding habits or preferences, at the early stage of life, may persist into the adulthood of an animal. Beach and Jaynes (1, p. 262) state that later or adult animal behavior is possibly affected by: 1) persistence of habits formed in early life, 2) early perceptual learning, and 3) critical periods in development. We assume that all behavior is learned and that heredity, environment, and maturation are the contributing factors of the behavior of an animal. So far, we have concerned ourselves with the heredity, and the anatomical and physiological maturation of baby pigs. Although, outside of recommended management and feeding practices, we have overlooked the total picture of environment and its affects on the development of suckling pigs.

The purpose of this study is to determine if the use of textured feeds creates a more favorable environment

for greater feed consumption, at an early age, by baby pigs.

PROCEDURE

Twelve Berkshire sows, with a litter average of 6.75 pigs per litter, used to secure the data for this study were supplied by the hog barn, Department of Dairy and Animal Husbandry, Oregon State College.

The sows and their litters were placed in the experimental pens three days after farrowing and remained there until weaning at 56 days of age. Each pig was ear notched, Oregon State College system, for proper identification. The feeding of the sows and the application of Armidexan to the suckling pigs, for the prevention of anemia, was under the supervision of the herdsman. The suckling pigs had access to the creep feed pens as soon as they were placed in the experimental area. No water was placed in the creep feed pens, but the baby pigs had access to their sow's drinking trough.

The creep feed pens were cleaned and bedded with shavings daily between the hours of 7 and 9 a.m. After bedding, the feed boxes were weighed and additional feed added, in even pounds, where needed. Four pounds of feed was the maximum holding capacity of each feed box. Each of these boxes were rotated daily in order to prevent placement from becoming a factor in selection. An additional creep feed unit, containing four feed boxes, was

placed in each creep pen three weeks before weaning. These were added to allow more baby pigs to have access to their preferred textured ration and to eliminate additional daily feedings. Even with the additional creep feed units, some textured rations had to be replenished daily the last two weeks prior to weaning. This second daily feeding took place at 11 p.m.

Each week the litters were weighed at approximately the same time and in the same consecutive order. When a litter reached 56 days of age the sow was removed. The litter was weighed and then returned to the experimental pen. The remaining experimental ration was weighed and the feed boxes were removed from the creep area. The weaner pigs were then fed the normal weaner ration used at the hog barn. Three to four days later the weaner pigs were then placed in another experimental area for additional feeding trials.

Figure 1 shows one experimental unit with the creep pen accommodating two litters. Three of these units, all of the same dimension, were used in this study.

The creep pen (Figure 2) was especially designed to be inexpensive, easily constructed, and readily accessible to the baby pigs.

The individual feed boxes (Figure 3) were constructed for easy removal, accessibility, and to contain

approximately four pounds of feed. The boxes were numbered in order to affect daily rotation and to designate the texture of the feed contained.

Figure 4 shows the experimental area, in the southeast wing of the hog barn, which contains a total of nine pens used to accommodate six litters at a time.

Figures 5 and 6 picture two experimental creep pens with the additional feed box units not in use.

Figures 7 and 8 picture two experimental creep pens with both feed box units in use.

FIGURE 1

DESCRIPTION

Each pen, containing a sow and her litter, was equipped with a brooder area and guard rails for the protection of the baby pigs. Water and an exercise yard were readily available to the sow and her litter. Straw was the material used for bedding. The creep pen was especially designed to accommodate two litters of pigs each separate from the other. The entrances to the creep pens were of the same dimensions and readily accessible to both litters of pigs. The brooder lamps were suspended approximately in the center of the creep pens and shavings were used for bedding. The dimensions, illustrated, were approximately the same for all pens used in this experiment.

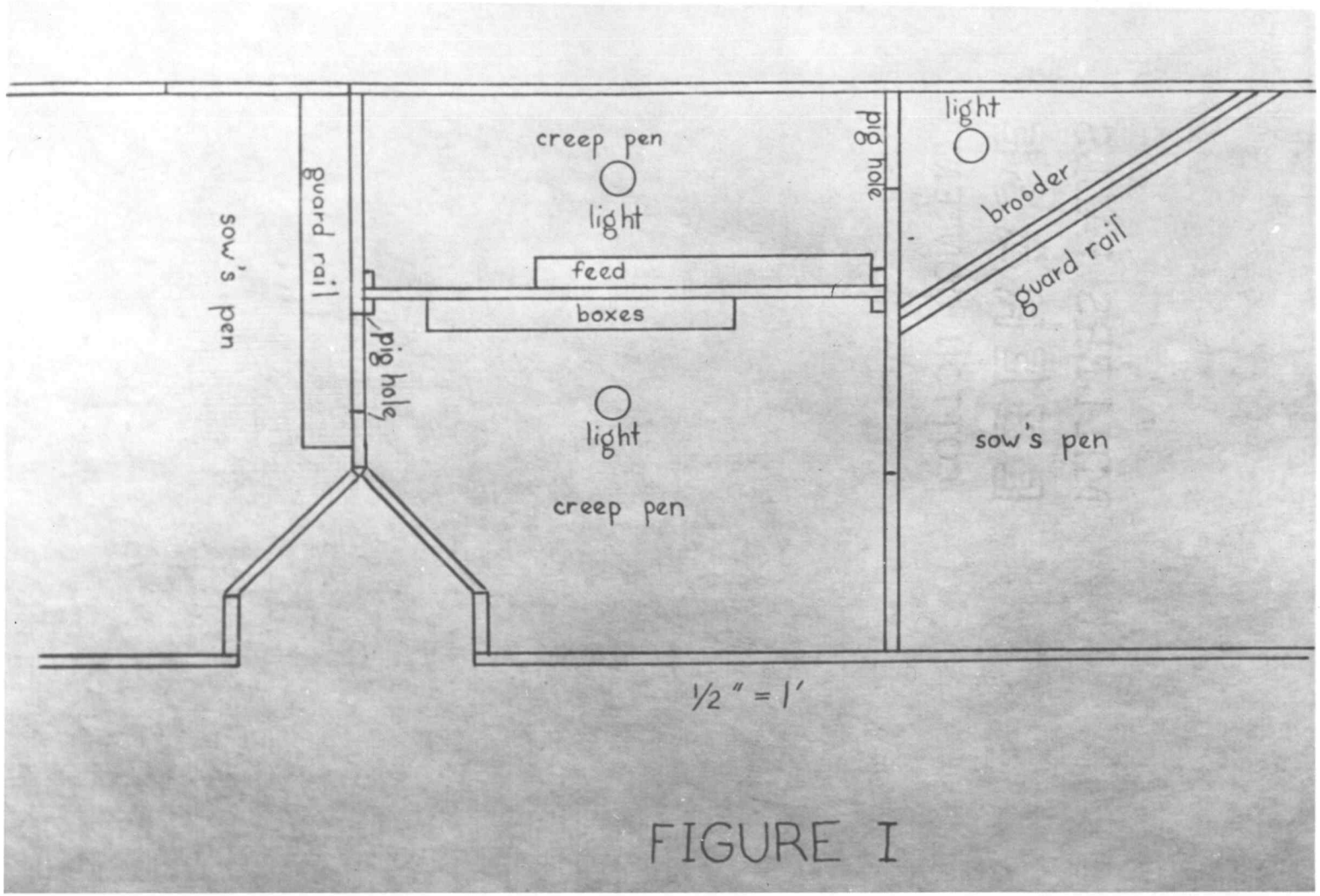
creep pen
light
pig hole
light
brooder
guard rail
guard rail
sow's pen
feed
boxes
pig hole
light
sow's pen
creep pen
½" = 1'

FIGURE I

FIGURE 2

DESCRIPTION

The creep pen was especially designed and constructed to accommodate two litters of pigs. The total area of the creep pen was the same for each litter. The brooder lamps were placed in approximately the middle of the pens. The container for the feed boxes was anchored to the creep pen divider wall. The individual feed boxes were numbered and easily removed. Each entrance to the creep pens had the same dimensions and shavings was the material used for bedding.

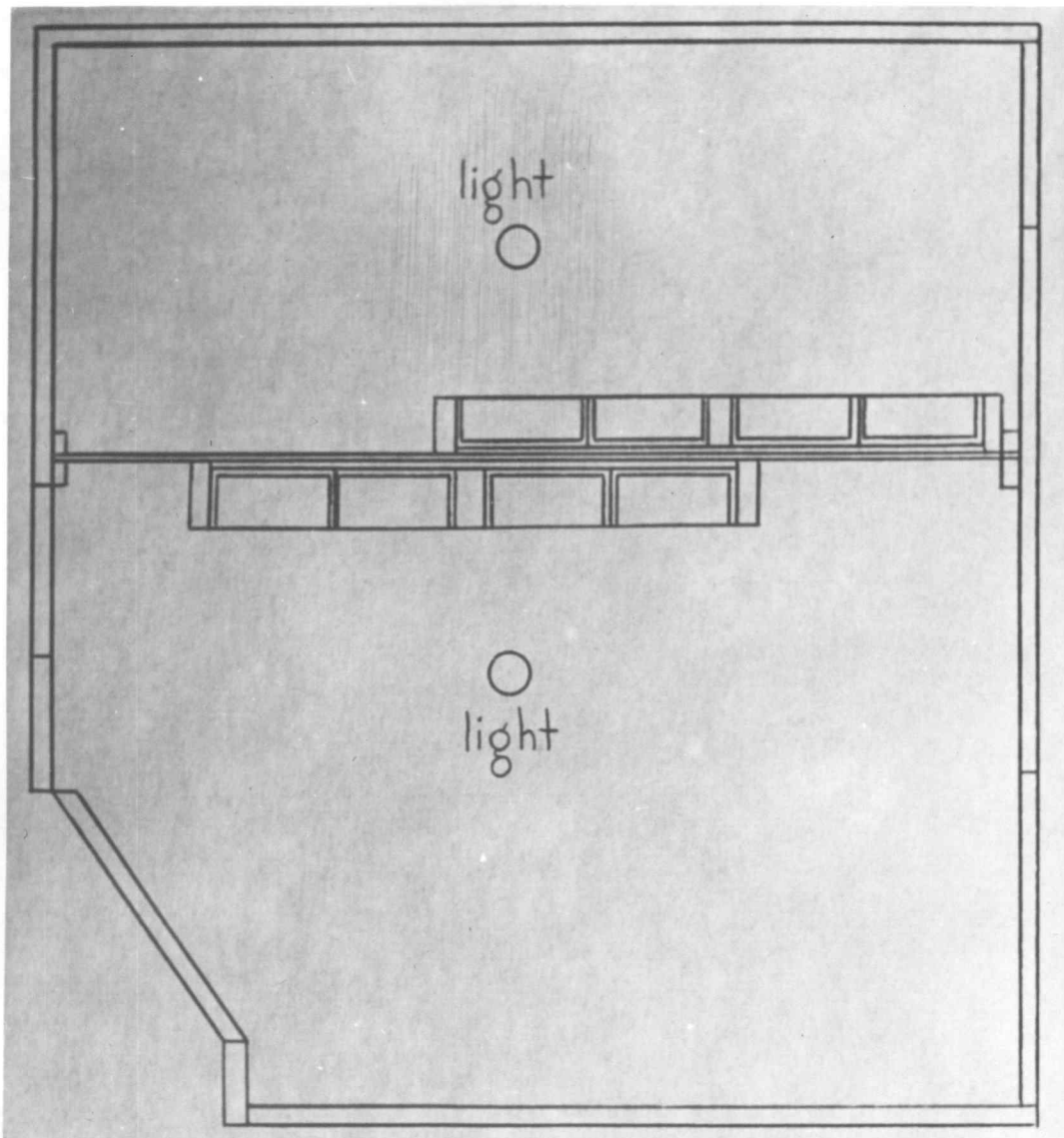

FIGURE 2

FIGURE 3

DESCRIPTION

The individual feed boxes were designed for easy construction and removal. The four boxes were numbered and placed in one container that was anchored to the creep pen divider wall. The materials used were 22 gauge sheet metal and one inch pine boards.

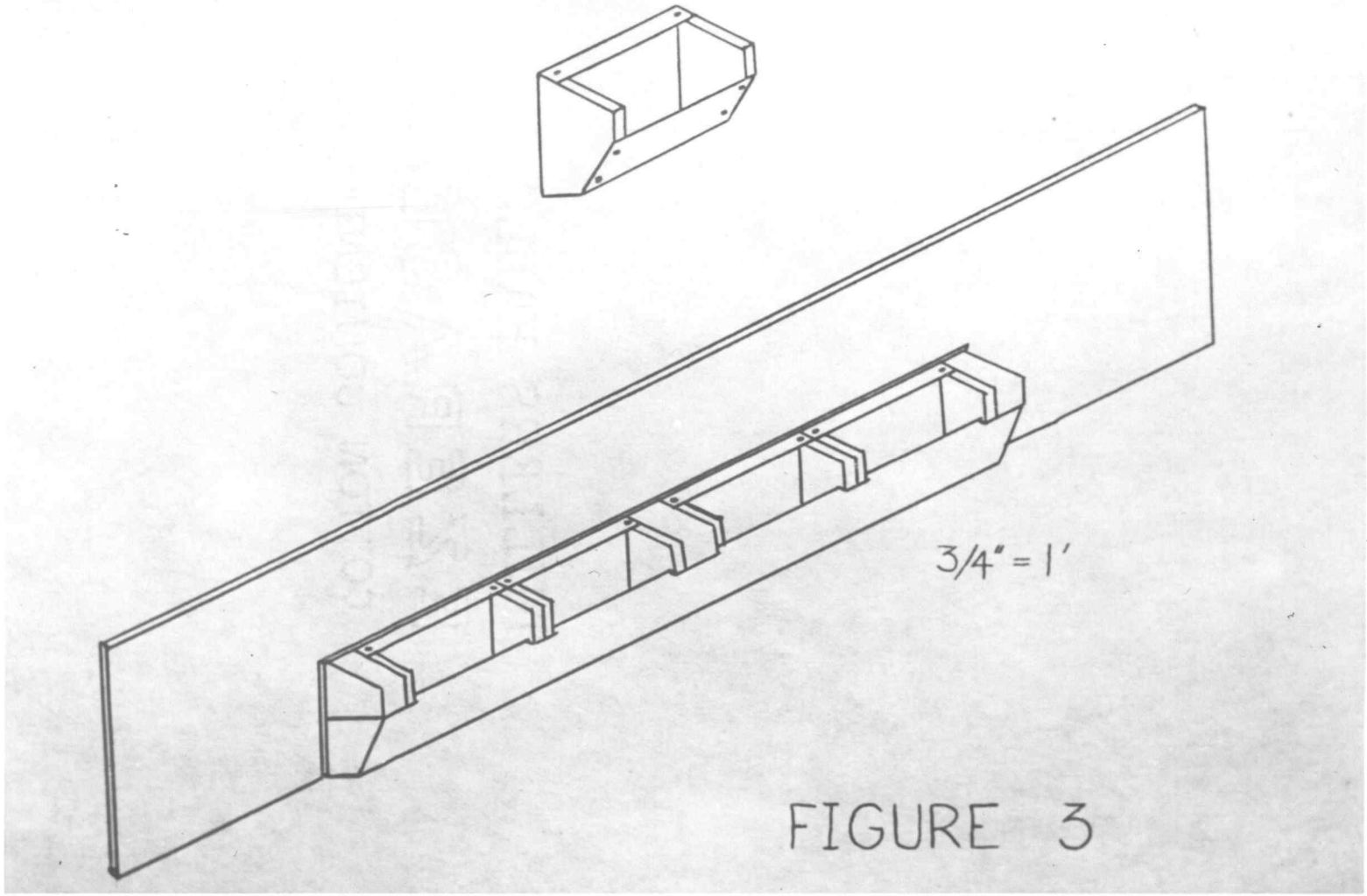

FIGURE 3

FIGURE 4

DESCRIPTION

The nine pens comprise the experimental area used for this study. The creep pens accommodate two litters per creep. Six litters at a time were housed in the experimental area.

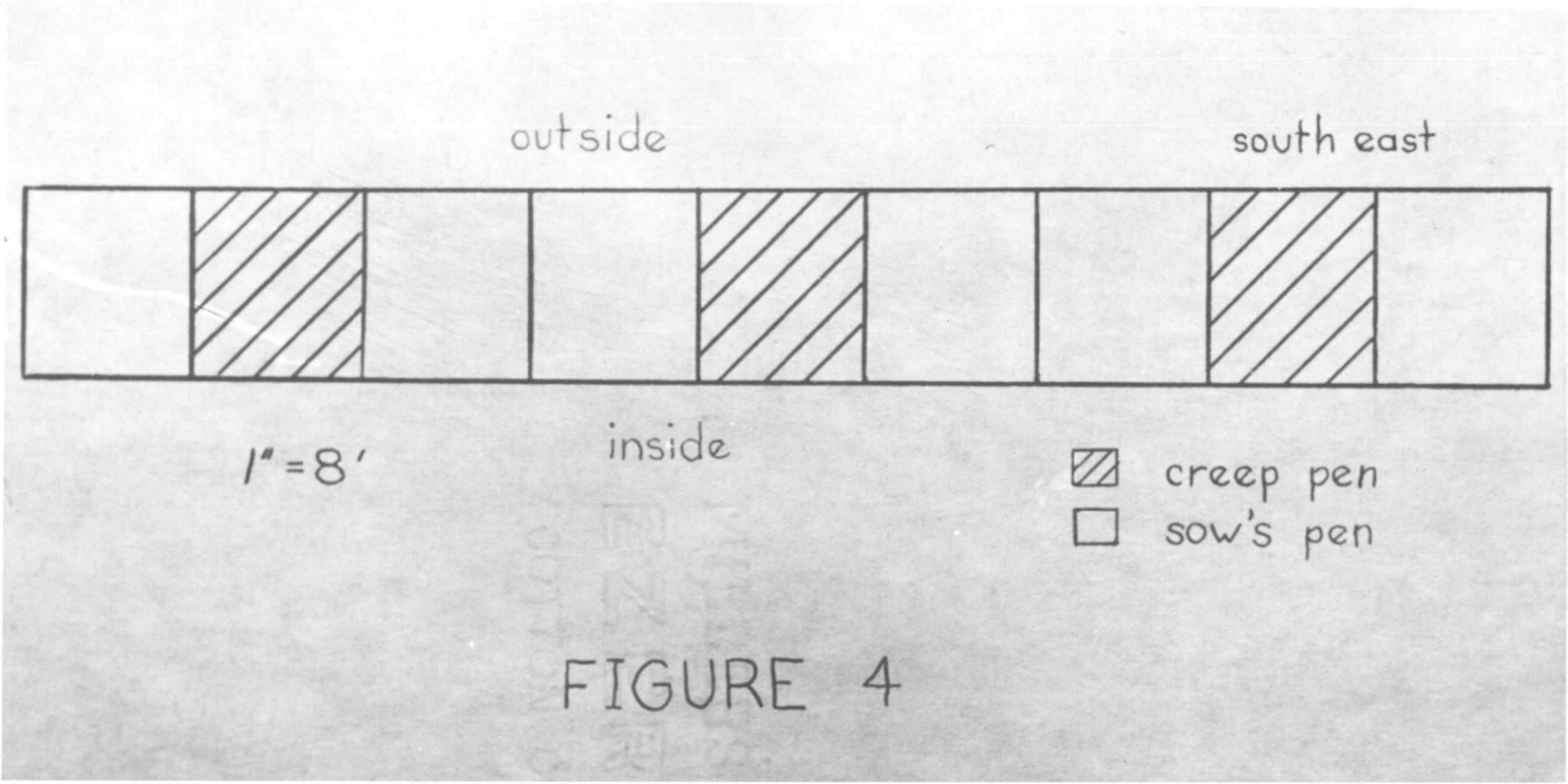

FIGURE 4

Figure 5

Figure 6

Figure 7

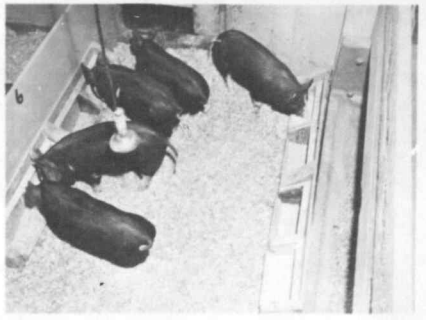

Figure 8

The complete ration used, in a rolled, ground, crumbled, and pelleted form, contained the following feedstuffs.

Yellow corn	900
Feed wheat	300
Barley	400
Soybean oil meal, 44%	200
Fish meal, good quality, 74%	70
Oystershell flour	20
Iodized salt	10
Vitamin pre-mix	10
Total	2,010

This ration was thoroughly mixed and ground before pelleting or crumbling. The corn, wheat, and barley were rolled and then the remaining five ingredients were added to comprise the rolled ration. The rations were sacked in new feed bags to prevent possible contamination from other feed sources.

The analysis of the feed was determined (12, p. 587-600) by taking a representative sample of feed from each sack.

TABLE 1

FEED ANALYSIS

Average %*	Ground	Rolled	Pelleted	Crumbled
Dry matter	86.50	85.50	86.50	88.39
Crude protein	16.28	15.36	16.11	16.76
Crude Fibre	3.65	3.82	3.16	3.56
Ether extract	1.06	1.72	1.38	.93
Ash	4.27	4.83	4.87	5.83

*Two samples of feed, from each texture, was used to determine chemical analysis. The average % of these two samples is given.

RESULTS AND DISCUSSION

Due to the existing facilities, only six litters of pigs could be tested at one time. The first six litters were summer farrowed and fed the experimental ration from July 13 to September 25. The feed consumption of these first six litters by texture, was as follows:

	lbs.	oz.
Rolled ration	877	12½
Crumbled ration	251	13½
Ground ration	314	05¼
Pelleted ration	182	14

In these first six litters a marked texture preference for the rolled ration was demonstrated.

The six litters used in the second phase of this study were fall farrowed and fed the experimental ration from September 29 to December 6. The feed consumption of these second litters, by texture, was as follows:

Rolled ration	535	15
Crumbled ration	18	½
Ground ration	220	08
Pelleted ration	68	13

Here again a marked texture preference for the rolled ration was demonstrated.

Figure 9 illustrates the total pounds consumed, by texture, by the twelve litters of suckling pigs used in this study.

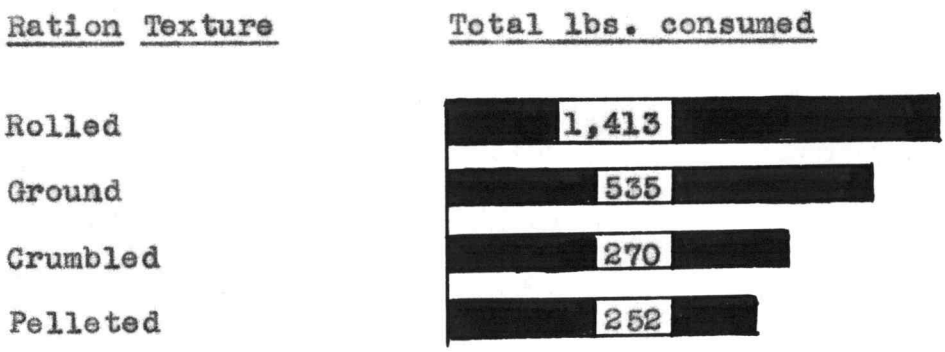

FIGURE 9
TOTAL POUNDS OF TEXTURED FEED CONSUMED BY ALL LITTERS

The total consumption of the rolled ration was 1,413 pounds, as compared to 535 pounds of the ground ration; 270 pounds of the crumbled ration; and 252 pounds of the normal or pelleted ration. Prior to this study pelleted feeds were thought to be highly palatable for creep feeding. However, in this study, the pelleted ration was the least consumed. Crumbles are roughly a pellet that has been shattered into much smaller pieces. As the crumbled ration was next to the lowest in consumption, the overall texture of the crumbles may be similar to that of the pellets. The ground ration was of the same texture as the sow's ration. Under natural conditions, the first solid food a suckling pig receives is probably obtained by the mother and contains a great deal of her saliva. This flavor or smell of the saliva on the food may be the origin of food preferences of baby pigs

in the wild state. Toward the end of the suckling period it was observed, in many of the litters, that some of the suckling pigs would be wallowing and eating in their mother's feed trough. This factor of the sow's saliva on the same textured feed as used in the creep, may in part, account for the fairly high consumption of the ground ration. However, further investigation is warranted along these lines.

All the litters, with the exception of litter 12, showed a specific preference for the rolled ration. Litter 12 consumed 113 pounds of the ground ration, as compared to 104 pounds 10 ounces of the rolled ration. Litter 11 showed the greatest preference in their selection of a specific texture by consuming 92 pounds of the rolled, 1 pound of the crumbled, 1 pound 2 ounces of the ground and 1 pound 11 ounces of the pelleted ration. Litter 2 showed the least preference in their selection by consuming 115 pounds 14 ounces of the rolled, 48 pounds 2 ounces of the crumbled, 61 pounds 15 ounces of the ground, and 57 pounds ½ ounce of the pelleted ration.

In all of the litters there was some variation demonstrated in their selection of the textured rations. Several factors may have contributed to this variation in selection or preference. The size of the feed boxes may partially be responsible for this variation in preference. Only two pigs at a time could comfortably eat out

of one box. The remaining pigs were observed to be either fighting for the preferred ration or eating from the adjoining feed boxes. The addition of four creep feed boxes of the same construction to each litter, at approximately three weeks prior to weaning, helped to partially alleviate this situation. A feed box constructed to accommodate four pigs at a time could be used for future research.

The daily rotation of the feed boxes, in order to prevent placement as a factor in selection, may be another contribution factor. On not finding the desired textured feed in its previous location, the pigs may have moved on to each feed until the desired one was located.

The change in the microclimate of the creep pens may have prompted some of the pigs to eat from the ration or rations closest to or furthest away from the brooder lamps. Also, some of the litters urinated and defecated in one end of the creep pen. Swine will usually eliminate body wastes in one area of a pen and eat or sleep in another area. The feed box or boxes located in this area of bodily wastes may have been undesirable to eat out of.

There is also the possibility that the texture preferences of baby pigs may vary from feeding to feeding, or from day to day, in much the same way as our preferences do. We know that most of us enjoy variation in our diets. We readily prefer differently flavored and textured foods

in place of a steady diet of one particular type of food. It may be that baby pigs have this same preference and like variety in their feedstuffs.

There is also the suggestion that the preference of a textured feed may change with the age of an animal. It could result from the baby pigs learning to prefer a texture based on eating their sow's ration or again it could change just as human preferences do. As children we liked or disliked different foods but as we matured these likes and dislikes changed.

All of these factors mentioned may or may not completely or even partially explain the variations in the selection of the textured feeds by the suckling pigs. Further research on some of the contributing factors of this variation in selection could be considered.

The baby pigs had access to the creep pens at three days of age but there was no actual consumption of any feed until the pigs reached the ages of three to four weeks. From that period consumption started slowly and seemed to increase overnight.

As previously stated, the texture preferences of the last six litters were the same but the feed consumption and weaning weights were lower. The summer farrowed litters, averaging 7.6 pigs per litter, had an average weaning weight of 272.1 pounds per litter. The fall

farrowed litters averaged 5.2 pigs per litter with an average weaning weight of 226 pounds per litter. Sibbald and Bowland (18, p. 25) in their experiment using two types of feed, stated that a significant seasonal variation in both creep feed consumption and weaning weight was obtained. Twenty-two per cent of the variation in weaning weights, of individual pigs, was associated with creep feed consumption, irrespective of which ration was being consumed. As the last six litters were fall litters, their lowered weaning weights may have been due to seasonal variation. However, the development of anemia, in these litters, which caused the death of three pigs may be a strong contributing factor.

Due to the original construction of the hog barn, some litters had access to the creep pens through their brooder area and others under their guard rails. Also, toward the end of the feeding trials, some of the larger pigs had trouble entering the creep. However, these obstacles did not appear to affect feed consumption.

Toward the end of the weaning period the pigs spent a great deal of their sleeping time in the creep pens. This could mean that for optimum swine production, pigs might be able to use more space than ir ordinarily recommended. On several occasions when the pigs had to be fed at night, there was considerable eating going on

in all pens.

As previously stated no water was placed in the creep pens, but the pigs had access to the sow's drinking trough. The addition of a watering tank in the creep pens would probably aid in increasing feed consumption. This may be a factor considered in additional research.

Several litters from this study were used in feeding trials after weaning. It was commented that their consumption of feed was outstanding. This appears to suggest that the early feeding experience of these litters was carried on into adulthood.

There seems to be a correlation between the birth weight of a pig and its weight at weaning. In most cases the pigs that were heavier at birth remained the heaviest at weaning time. It appears that these heavier pigs had a definite natural advantage over their litter mates.

Carcass quality was unable to be determined as the litters were used for additional feeding trials.

It was felt that the creep arrangement was excellent for experimental trials but highly impractical for farm conditions. However, cost analysis and the practicality of using this type of creep pen was not determined.

Due to the outstanding results shown by all but one of the litters for the rolled textured ration, statistical analysis was felt to be unnecessary.

CONCLUSION

The baby pigs used in this study showed a marked preference for differently textured feeds. It appears that the texture of a feedstuff has a definite affect on palatability and therefore consumption. We know that baby pigs develop at an expremely fast rate during the suckling period. By using a palatable supplementary creep feed ration we can possibly increase this fast rate of gain that the baby pigs possess. Under the conditions of this experiment the rolled ration was the textured feed most desired by the baby pigs. However, it should be stressed that texture is not a cure-all for maximum feed consumption, but only another factor in presenting a more palatable creep feed ration to suckling pigs.

Over a period of years the average weaning weight per pig at the Oregon State College hog barn has been 36 pounds. Results of weekly weighing of the baby pigs used in this study showed the average weaning weight to be 40.5 pounds. Based on weight along, the experimental litters made above average gains for suckling pigs. As far as present nutrition of baby pigs is known, this seems to indicate that the experimental ration used was of good quality.

It is felt that more research should be conducted on the behavior patters of baby pigs in order to formulate

more positive facts on their preferences not only for feedstuffs but also for their environmental conditions.

Lastly, an important factor in this type of experiment is that all environmental conditions, such as the construction of the creep pens and the regularity of feeding, should be consistently maintained for more conclusive results.

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A P P E N D I X

TABLE A

WEEKLY FEED CONSUMPTION OF TEXTURES BY LITTERS
(Phase 1)

Litter No. 1	2	3	4	Weeks 5	6	7	8	Wt. Back	Totals
	lbs.oz.	lbs.oz.	lbs.oz.	lbs.oz.	lbs.oz.	lbs.oz.	lbs.oz.		lbs.oz.
Rolled		2.09¼	14.	29.12½	40.	30.07	18.	3.08	131.04
Crumbled		¾	.01	1.09	10.	11.10	6.	6.11	22.09 ¾
Ground			.	1.02	14.	31.	34.	2.11	77.07
Pelleted			2.	5.03	8.	11.	22.	2.05	45.14
Litter No. 2									
Rolled		½	13.	31.12½	42.	43.	29.	2.15	155.14
Crumbled			1.13	4.12	14.	15.	18.	5.07	48.02
Ground			.01	1.01	10.	27.	29.	5.03	61.15
Pelleted			2.	3.14½	12.	21.	22.	3.14	57. ½
Litter No. 3									
Rolled			10.	20.13	48.	52.	54.		184.13
Crumbled			2.	4.	10.	13.	15.	3.05	40.11
Ground			2.	3.14	12.	36.	46.	6.14	93.
Pelleted			2.	.11 ¾	10.	5.	4.		21.11¾

TABLE A (Continued)

WEEKLY FEED CONSUMPTION OF TEXTURES BY LITTERS
Phase 1 (Continued)

Litter No. 4	2	3	4	Weeks 5	6	7	8	Wt. Back	Totals
		lbs.oz.	lbs.oz.	lbs.oz.	lbs.oz.	lbs.oz.	lbs.oz.		lbs.oz.
Rolled				12.06½	28.	35.05	62.	1.03	136.08½
Crumbled				.15	4.	8.	20.	1.11	31.04
Ground				.04 3/4	4.	14.	38.	1.05	54.15 3/4
Pelleted				.07	4.	6.	9.	6.08	12.15
Litter No. 5									
Rolled				14.08¼	24.	31.	55.	4.03	120.05¼
Crumbled				.03	8.	19.	40.	.07	66.12
Ground				.03	4.	3.	12.	7.01	12.02
Pelleted				.02	4.	3.	15.	6.06	15.02
Litter No. 6									
Rolled				10.11 3/4	34.	47.	58.	1.12	147.15 3/4
Crumbled				.03 3/4	5.	13.	30.	5.13	42.06 3/4
Ground				.08½	5.	7.	10.	7.11	14.13½
Pelleted				.04 3/4	3.	11.	20.	5.02	29.02 3/4

TABLE A (Continued)

WEEKLY FEED CONSUMPTION OF TEXTURES BY LITTERS
(Phase 2)

Litter No. 7	2	3	4	Weeks 5	6	7	8	Wt. Back	Totals
		lbs.oz.	lbs.oz.	lbs.oz.	lbs.oz.	lbs.oz.	lbs.oz.		lbs.oz.
Rolled		2.	3.	10.	31.	44.	45.	.06	134.10
Crumbled			1.		4.5		2.	4.02	2.03
Ground			1.	3.	6.15	10.	20.	3.	37.15
Pelleted					4.09	15.	15.	2.	32.09
Litter No. 8									
Rolled			1.	6.	13.	29.	34.	1.14	81.02
Crumbled					4.02½			3.13	.05½
Ground					13.08	21.	28.	4.12	57.12
Pelleted					4.02	5.	12.	4.13	16.05
Litter No. 9									
Rolled		2.		1.04	4.	11.	30.	2.11	45.09
Crumbled		2.		1.		1.	3.	3.13	3.03
Grouhd		2.		1.			3.	4.05	1.11
Pelleted		2.		1.			6.	4.02	4.14

TABLE A (Continued)

WEEKLY FEED CONSUMPTION OF TEXTURES BY LITTERS
Phase 2 (Continued)

Litter No. 10	2	3	4	5	6	7	8	Wt. Back	Totals
		Weeks							
		lbs.oz.	lbs.oz.	lbs.oz.	lbs.oz.	lbs.oz.	lbs.oz.		lbs.oz.
Rolled		2.				28.	44.	.11	73.05
Crumbled		2.				3.		2.14	2.02
Ground		2.				3.		4.09	.07
Pelleted		2.				5.		4.08	2.08
Litter No. 11									
Rolled			2.			44.	46.		92.
Crumbled			2.			3.		4.	1.
Ground			2.			3.		3.14	1.02
Pelleted			2.			3.		3.05	1.11
Litter No. 12									
Rolled		2.			32.	33.	38.	.06	104.10
Crumbled		2.		2.	3.			3.11	3.05
Ground		2.	3.	16.	18.	36.	38.		113.
Pelleted		2.			3.		3.	5.10	2.06

TABLE B

WEEKLY WEIGHTS OF SUCKLING BERKSHIRE PIGS
(Phase 1)

Litter No. 1 Pig No.	Sex	Birth Wt.	2	3	4	5	6	7	Weaning Wt. (56 days)
		lbs.							lbs.
132	B	2.9		6.	10.	13.05	19.	26.05	38
133	B	3.1		9.	15.	21.	27.5	36.5	53
134	B	2.4		6.05	11.05	16.05	21.	28.05	43
135	B	3.3		8.	13.	18.	23.	32.	46
136	S	3.4		11.	16.	21.	28.05	38.	55
137	S	2.7		7.05	10.	12.05	17.	25.05	38
138	S	2.2		6.	11.	15.05	22.05	30.	46
Totals				54	86.05	118	158.05	217	319
Litter No. 2									
149	B	2.7		7.	8.08	13.	19.	27.	40
150	B	2.9		12.25	15.	21.	30.	40.	53
151	B	2.4		5.75	7.04	13.05	19.	28.	42
152	B	2.2		8.	10.04	16.	24.	37.	50
153	B	2.5		7.	8.09	14.	19.	28.05	42
154	S	3.1		10.	12.05	20.05	28.	38.05	51
155	S	2.6		8.	10.02	16.	23.	32.05	47
156	S	1.8		7.05	9.03	13.05	21.	30.05	43
Totals				65.50	81.50	127.05	183	262	368

TABLE B (CONTINUED)

WEEKLY WEIGHTS OF SUCKLING BERKSHIRE PIGS
Phase 1 (Continued)

Litter No. 3 Pig No.	Sex	Birth Wt.	2	3	4	5	6	7	Weaning Wt. (56 days)
139	B	3.4		9.	11.01	16.05	22.05	31.	46
140	B	3.		9.	11.	15.	22.	30.	44
141	B	3.		9.05	11.06	17.	23.	31.05	47
142	B	3.4		9.	11.02	18.	24.	33.	48
143	S	3.5		10.05	12.09	20.	26.	35.	50
144	S	3.4		10.	12.01	19.	25.	32.	47
145	S	3.1		9.	11.03	16.	22.	30.	44
146	S	3.3		11.	13.04	19.	25.	33.05	46
147	S	2.9		9.	11.01	18.	23.05	31.	44
148	S	2.5		7.05	9.09	14.05	20.	28.	40
Totals				93.05	114.60	173	223	316	456
Litter No. 4									
157	B	3.2		7.25	11.05	15.	20.05	28.05	45
158	S	3.2		10.	15.04	21.	27.	35.	55
159	S	2.9		8.05	12.09	17.05	23.	31.05	52
160	S	2.6		8.05	12.09	16.05	21.	27.	43
161	S	2.5		9.	14.02	19.	23.05	30.05	52
162	S	2.1		6.	9.03	12.	16.	23.	39
				50.25	76.02	101	131	175.05	286

TABLE B (CONTINUED)

WEEKLY WEIGHTS OF SUCKLING BERKSHIRE PIGS
Phase 1 (Continued)

Litter No. 5 Pig No.	Sex	Birth Wt.	2	3	4	5	6	7	Weaning Wt. (56 days)
174	B	3.4		8.	13.06	18.	25.05	34.	57
175	B	2.8		7.05	12.02	17.	23.	29.	49
176	B	2.3		5.05	8.08	12.05	18.	25.05	45
177	B	2.3		6.05	9.08	11.05	16.	22.	35
178	S	3.3		7.25	11.4	16.	21.05	26.	49
179	S	2.3		6.05	9.09	12.	16.05	21.05	Died
180	S	2.		6.	9.08	13.	18.	26.	45
181	S	1.7		5.05	8.01	11.05	15.	20.	35
Totals				52.75	83.06	111.05	153.05	204.	315
Litter No. 6									
163	B	2.7		6.05	11.01	16.	21.05	29.05	51
164	B	2.9		8.05	12.06	18.	24.	35.05	56
165	B	3.2		5.05	8.07	13.05	18.	25.05	42
166	B	2.9		8.05	13.02	18.05	24.	32.	46
167	B	2.5		5.05	8.08	11.	15.	20.	36
168	S	2.7		7.	9.08	12.05	17.05	23.05	40
169	S	2.7		7.05	12.	18.	24.	29.05	53
Totals				49.	76.02	107.05	144.	195.05	324

TABLE B (CONTINUED)

WEEKLY WEIGHTS OF SUCKLING BERKSHIRE PIGS
Phase 2

Litter No. 7 Pig No.	Sex	Birth Wt.	1	2	3	4	5	6	7	Weaning Wt. (56 days)
232	B	2.6		11.5	14.	17.5	21.	25.	28.5	31.5
233	B	2.8		16.	19.5	22.	25.5	27,	30.	32.
234	B	2.4		9.	11.5	14.	17.5	20.5	23.	25.
235	B	2.1		10.5	14.	17.5	21.	25.	29.5	31.
236	S	2.1		14.5	19.	23.5	29.	34.5	39.5	43.
237	S	2.6		13.	17.5	20.	25.	29.5	33.	36.5
238	S	2.6		10.	12.5	15.	18.5	22.5	26.5	29.5
Totals				84.5	108.	129.5	157.5	184.	210.	228.5
Litter No. 8										
240	B	3.	14.5	21.	27.5	34.	40.	44.	49.5	54.
241	S	2.9	13.	19.	26.	31.5	37.	41.5	47.	52.
242	S	2.7	10.3	14.	18.5	23.	27.	29.5	34.5	40.
244	S	2.8	13.2	18.	22.5	27.	31.	37.	42.5	48.
245	S	2.1	13.	18.5	24.	29.5	35.	38.5	44.5	50.
Totals			64.2	90.5	118.5	145.	170.	190.5	218.	244.

TABLE B (CONTINUED)

WEEKLY WEIGHTS OF SUCKLING BERKSHIRE PIGS
Phase 2 (Continued)

Litter No. 9 Pig No.	Sex	Birth Wt.	1	2	3	4	5	6	7	Weaning Wt. (56 days)
261	B	3.2	6.5	10.	14.	18.5	22.	25.	30.5	42
262	B	3.0	7.5	11.	14.5	16.	20.5	21.	24.	29.5
263	S	2.6	6.5	10.	13.5	17.	20.	23.5	28.	37.
264	S	2.6	7.	9.5	11.	14.	17.5	20.	22.	31.5
Totals			27.5	41.5	53.	65.5	80.	89.5	104.5	140.
Litter No. 10										
253	B	2.6	5,5	8.	10.5	14.	17.5	20.	22.	30.
254	S	2.6	4.	7.5	11.	15.5	20.	23.	28.5	44.
256	S	2.6	4.	5.5	7.	9.	11.5	13.5	15.	22.
257	S	2.5	4.5	6.	9.	11.5	14.	16.	19.5	27.
258	S	2.3	5.5	7.	9.5	13.	15.5	17.	19.	Died
259	S	2.2	5.	8.	11.5	15.	16.5	19.	21.5	31
260	S	1.8	3.5	6.	8.5	11.	13.	14.5	16.	Died
Totals			32.	48.	67.	89.	108.	123.	141.5	154.

TABLE B (CONTINUED)

WEEKLY WEIGHTS OF SUCKLING BERKSHIRE PIGS
Phase 2 (Continued)

Litter No. 11 Pig No.	Sex	Birth Wt.	1	2	3	4	5	6	7	Weaning Wt. (56 days)
246	B	3.	7.	11.5	15.	19.	22.5	25.	30.	40
247	B	2.8	6.	10.	13.5	18.5	21.5	23.5	28.	37
249	S	3.1	5.5	9.	12.	15.5	19.	21.5	25.	Died
250	S	2.8	6.5	11.	15.5	21.	25.	28.	31.5	39.5
251	S	2.8	6.5	11.	15.	18.5	21.	25.	29.	39
252	S	2.8	5.5	8.	11.	13.	16.5	18.	21.5	28
Totals			37.	60.5	82.	105.5	125.5	141.	165.	183.5
Litter No. 12										
265	B	2.4		6.5	10.	13.	21.5	26.	33.	44.
266	B	3.2		7.5	11.	16.5	25.	29.5	37.5	50.
267	S	2.7		6.5	10.5	14.5	22.	27.	35.5	45.
268	S	2.7		6.	10.	13.5	20.5	25.5	35.	45.
269	S	2.2		5.	8.	11.	16.5	21.	30.	41.5
Totals				31.5	49.5	68.5	105.5	129.	171.	225.5