1982

Effect of Source of Pig, Housing System, and Receiving Diet on Performance of Purchased Feeder Pigs

M. C. Brumm
University of Nebraska-Lincoln, mbrumm@hickorytech.net

E. R. Peo, Jr.
University of Nebraska-Lincoln

S. R. Lowry
University of Nebraska-Lincoln

A. Hogg
University of Nebraska-Lincoln

Journal of Animal Science 55 (1982), pp. 1264-1271.

EFFECT OF SOURCE OF PIG, HOUSING SYSTEM AND RECEIVING DIET ON PERFORMANCE OF PURCHASED FEEDER PIGS[1,2,3]

M. C. Brumm[4], E. R. Peo, Jr.[4], S. R. Lowry[4] and A. Hogg[5]

University of Nebraska Northeast Station, Concord 68728

Summary

An experiment was conducted to determine the effect of source of pig, housing system and receiving diet on performance of purchased feeder pigs. Pigs purchased from distant auction markets (DM) gained slower for the first 13 d post-arrival (P<.01, trials 1 and 2) than pigs of similar size purchased from local, one-owner sources (LS). In trial 1, LS feeder pigs gained faster (P<.01) from purchase to 93 kg than DM pigs. In trial 2, the DM pigs were more efficient in feed conversion than LS pigs (P<.01). The DM pigs required more medical treatments than LS pigs (P<.01). In trial 1, pigs housed in mechanically ventilated, partially slatted-pen facilities gained faster (P<.1) than those in nonmechanically ventilated facilities whereas in trial 2, the reverse was true (P<.05). Pigs housed in the nonmechanically ventilated facilities had a higher incidence of scours (P<.01, trials 1 and 2) than those housed in the mechanically ventilated facilities. Death loss was less (P<.01) for pigs in the nonmechanically ventilated facilities (trial 2). Pigs fed a 16% crude protein receiving diet for 13 d containing 20% oats had a poorer (P<.01) feed efficiency than those fed a corn-soy basal diet or a diet containing 20% oats plus 5% lard (trial 1). At the termination of both trials, there were no differences in rate of gain or feed to gain ratio between the three receiving diets. Feeding diets containing 20% oats had no effect on the incidence of post-arrival scours but death loss was less (P<.1) for pigs fed the receiving diet containing 20% oats (trial 1).
(Key Words: Feeder Pigs, Receiving Diets, Housing Systems.)

Introduction

Approximately one-fifth of the market hogs slaughtered in the United States come from units finishing purchased feeder pigs (VanArsdall, 1978). Movement of feeder pigs through public markets (terminal and auction) exposes the pigs to numerous diseases and other stresses. Transportation of animals results in tissue shrinkage, even when transported a relatively short distance (Hails, 1978). In addition, movement of pigs often involves mingling, thereby creating fighting and other social stresses. Sherritt et al. (1974) concluded that mixing of pigs, in conjunction with other stresses, adversely affected pig growth. Other researchers (Richards and Fraser, 1961; Stevens, 1963; Palmer and Hulland, 1965; Thomlinson, 1969) have postulated that changes in environment and(or) diet are predisposing factors to coliform enteritis of weaned pigs.

Recommendations for management of newly purchased feeder pigs are many and varied (Giesler et al., 1978; Albrecht et al., 1979; Tracy, 1979) and research with feeder pig receiving programs to reduce stress is limited. Fritschen and Moser (1979) demonstrated that limit feeding a diet containing increasing amounts of ground whole oats (0, 25 and 50%) for 10 d delayed the onset and severity of diarrhea of 12.5 kg purchased feeder pigs.

The objectives of this study were to evaluate the effects of source of pigs, housing system and receiving diet on feeder pig performance and survival.

Materials and Methods

Four hundred and eighty crossbred purchased feeder pigs were used in two trials

[1] Journal paper no. 6653, Univ. of Nebraska Agr. Exp. Sta.

[2] The authors acknowledge the assistance of Mr. Tim Anderson with animal care and Mr. Dave Pankaskie with statistical analysis.

[3] Funded in part by a grant from the National Pork Producers Council, Des Moines, IA.

[4] Dept. of Anim. Sci.

[5] Dept. of Vet. Sci.

at the University of Nebraska Northeast Station Swine Research Facilities at Concord, starting in April and September.

Source of Pigs. In each trial, 240 select feeder pigs were purchased from a local one-owner source (LS) as near the research facility as possible (150 and 200 km). Pigs were transported in a covered trailer from the producer's nursery unit to the test facility immediately after loading. Pigs were without water for a maximum of 5 h from the LS.

The other 240 pigs in each trial were purchased at distant feeder pig auction markets (DM) in Northern Arkansas (1000 km) and Southern Missouri (850 km) and were transported by enclosed truck to the research facility. In trial 1, these pigs were on the truck for 23 h and in trial 2, 15 h. In addition to transport time, pigs were without feed and water at the auction markets for an unknown length of time. Pigs from each source arrived on consecutive days and were penned by source adjacent to each other.

Housing Systems. Two types of growing-finishing housing facilities were evaluated. The facilities were either a mechanically ventilated and environmentally regulated building (ERB) or a nonmechanically ventilated, modified open front building (MOFB). Two buildings were utilized in both systems. Each consisted of 12 partially slatted pens (1.4 × 4.9 m) with 10 pigs/pen. Each pen was equipped with a similar three-hole self-feeder. Pens in the MOFB were equipped with recirculating cup waterers while the pens in the ERB were equipped with nipple waterers.

Waste collection in all buildings consisted of a 1.2 m deep pit under slats with overflow storage to an anaerobic lagoon. Pit fans ran continuously in the ERB.

Management and Diets. On arrival, all pigs had immediate access to drinking water containing a commercial sulfa-electrolyte solution[6] and remained on the solution for 5 d. Pigs were immediately weighed, sexed, tagged on arrival and randomly assigned to the experimental treatments on the basis of sex and weight outcome groups.

Dietary treatments for the first 13 d post-arrival were: 1) a 16% crude protein corn-soybean meal basal grower diet (CS), 2) the CS basal diet with 20% ground whole oats (0) and 3) the CS basal diet with 20% ground whole oats and 5% lard (OL). The composition of the diets is presented in table 1.

All pigs were limit-fed the experimental receiving diets for 10 d on the solid floor area of their pen twice daily. Feed was limited to the amount of feed a pen of 10 pigs would consume in a 60 min period. After the 13 d receiving period, all pigs were fed a common commercially prepared 16% crude protein corn-soybean meal grower diet and at approximately 57 kg, the pigs were switched to a 14% crude protein corn-soybean meal diet until slaughter. On d 6 after arrival pigs were treated for worms with levamisole hydrochloride[7] in the drinking water. Pigs were retreated approximately 3 wk later with dichlorovos[8]. All pigs were sprayed with a lindane[9] solution for control of lice and mange within 3 wk of arrival.

Each pen of pigs was rated daily by three persons for 21 d for the presence and severity of diarrhea (scours). In trial 1, a scale of 1 to 4 was used with 1 being a normal stool and 4, severe diarrhea. In trial 2 the scale was expanded 1 to 5.

All pigs that died during the trials were necropsied by a veterinarian to determine cause of death. Pigs were individually weighed 13 d post-arrival and biweekly thereafter. Intermediate pig performance was determined at 41 and 55 d post-arrival for trials 1 and 2, respectively. Trials were terminated when the average pig weight was approximately 90 kg.

Statistical Analysis. As shown in table 2, both trials were analyzed as a split-plot design with housing system as the main plot and the pen of 10 pigs as the experimental unit (Steel and Torrie, 1960). Source of pigs and receiving diets were replicated within each building within each housing system. Numbers of animals treated and death loss were evaluated by Chi-square analysis.

Results and Discussion

Source of Pigs. The main effect of source of pig on pig performance is presented in

[6] Zole-Lite ™M, International Multifoods, Mineapolis, MN 55402.

[7] Tramisol, American Cyanamid Co., Princeton, NJ 08540.

[8] Atgard, Diamond Shamrock Corp., Cleveland, OH 44114.

[9] Roberts Laboratories, Rockford, IL 61103.

TABLE 1. COMPOSITION OF FEEDER PIG RECEIVING DIETS

Item	Diets (%)		
	Corn-soybean meal (CS)	20% oats (O)	20% oats + 5% lard (OL)
No. 2 corn (IFN 4-02-931)	72.60	54.50	48.20
Soybean meal, 44% (IFN 5-04-604)	21.00	19.10	20.40
Alfalfa (IFN 1-00-025)	2.50	2.50	2.50
Oats (IFN 4-03-309)		20.00	20.00
Lard (IFN 4-04-790)			5.00
Dicalcium phosphate (IFN 6-01-080)	1.00	1.00	1.00
Limestone (IFN 6-01-069)	1.30	1.30	1.30
Salt	.50	.50	.50
Trace mineral mix[a]	.05	.05	.05
Vitamin-antibiotic mix[bc]	1.00	1.00	1.00
Selenium mix[d]	.05	.05	.05
Calculated analysis			
Protein, %	16.13	16.02	16.03
Lysine, %	.85	.85	.84
Ether extract, %	3.16	3.33	4.67
Fiber, %	3.19	4.83	4.77
Metabolizable energy, kcal/kg	2,999	2,865	3,148

[a]Provided the following minerals in the complete diet (ppm): Zn, 100; I, .165; Fe, 100; Cu, 10, and Mn, 27.5.

[b]Provided the following vitamins/kg of complete diet: vitamin A, 3,300 IU; vitamin D, 550 IU; riboflavin, 2.2 mg; niacin, 17.6 mg; pantothenic acid, 9.9 mg; choline chloride, 220 mg; vitamin E, 11 mg; vitamin K, 2.2 mg, and vitamin B_{12}, .022 mg.

[c]Provided the following per kg of complete diet: 110 mg chlortetracycline, 110 mg sulfamethazine and 55 mg penicillin.

[d]Provided .1 ppm supplemental selenium in the complete diet.

table 3. While an attempt was made to purchase pigs of identical weight from both sources, in trial 1, the on-test weight of the DM pigs was 2 kg less than the LS pigs. Therefore,

TABLE 2. ANALYSIS OF VARIANCE FOR FEEDER PIG PERFORMANCE

Source	df
Housing system (HS)	1
Houses (H)/HS	2
Receiving diet (D)	2
Source (S)	1
D X S	2
HS X D	2
HS X S	1
HS X D X S	2
H X Subplot trt/HS	10
Pens/H X Subplot trt/HS	24[a]

[a]H X Subplot trt/HS and Pens/H X Subplot trt/HS were pooled and used as error B to test all effects in the subplot on the basis of a statistical test to determine if they were estimating the same variance components.

when analyzing the data, starting weight was used as a covariate.

In both trials 1 and 2, LS pigs weighed more than DM pigs, 13 d post-arrival. In trial 1, LS feeder pigs gained more than the DM pigs during this period (.19 kg/d). This difference approached signifiance. In trial 2, the .06 kg/d increase in rate of gain for LS pigs was highly significant.

From purchase to the intermediate weighing, LS pigs gained faster (P<.01) than the DM pigs (.67 vs .52 kg, trial 1; .59 vs .56 kg, trial 2). Overall in trial 1, the LS pigs gained faster (P<.01) than the DM pigs. However, in trial 2 there was no difference in gain.

Average daily feed intake for the initial 13-d post-arrival in both trials was greater for the LS pigs compared with the DM pigs (P<.01). Feed to gain ratio during this period was also poorer for the DM pigs. However, in trial 1, despite the early initial poorer feed to gain ratio, by 55 d post-arrival the DM pigs had an improved (P<.01) feed to gain ratio compared with LS pigs (2.72 vs 2.81). At the

TABLE 3. EFFECT OF SOURCE OF PIG ON PERFORMANCE OF PURCHASED FEEDER PIGS (LEAST-SQUARE MEANS)

	Source[a]				SE[b]	
	One owner (LS)		Distant auction (DM)			
Item Trial:	1	2	1	2	1	2
Pig wt, kg						
Initial	27.1	17.5	25.1	17.5		
13 d	33.1[d]	22.3[f]	28.6[e]	21.5[g]	.2	.1
Intermediate[c]	54.8[d]	50.0[f]	46.8[e]	48.1[g]	.4	.4
Final	93.5[f]	93.7	86.0[g]	93.3	.7	.5
Daily gain, kg						
13 d	.45	.37[f]	.26	.31[g]	.05	.01
Intermediate[c]	.67[f]	.59[f]	.52[g]	.56[g]	.01	<.01
Final	.68[f]	.68	.62[g]	.68	<.01	.01
Avg daily feed intake, kg						
13 d	1.07[f]	.89[f]	.86[g]	.80[g]	.01	.01
Intermediate[c]	1.83[f]	1.66[f]	1.53[g]	1.51[g]	.01	.02
Final	2.23	2.31[f]	2.02	2.19[g]	.08	.02
F/G						
13 d	2.43	2.43[d]	3.64	2.73[e]	.25	.09
Intermediate[c]	2.73	2.81[f]	2.93	2.72[g]	.03	.02
Final	3.31	3.38[f]	3.27	3.21[g]	.02	.02

[a]Two hundred-forty pigs per source in each trial.

[b]Standard error of the mean, trial 1 and trial 2.

[c]Forty-one days, trial 1; 55 d, trial 2.

[d,e]Means in rows for same trial with different superscripts differ (P<.05).

[f,g]Means in rows for same trial with different superscripts differ (P<.01).

TABLE 4. EFFECT OF EXPERIMENTAL TREATMENTS ON SCOUR SCORES FOR 21 D POST-ARRIVAL

	Trial[a]		SE[b]	
Item	1	2	1	2
Source of feeder pigs[c]				
One-owner (LS)	1.43[f]	1.59[f]	.04	.06
Distant auction (DM)	1.90[g]	2.08[g]		
Housing system[d]				
Nonmechanical ventilation (MOFB)	1.79	1.92	.04	.06
Mechanical ventilation (ERB)	1.54	1.73		
Receiving diet[e]				
Corn-soy (CS)	1.67	1.89	.05	.06
20% oats (O)	1.71	1.79		
Oats + lard (OL)	1.62	1.79		

[a]Trial 1-scale of 1 to 4 with 1 being a firm stool. Trial 2-scale of 1 to 5 with 1 being a firm stool.

[b]Standard error of the mean, trial 1 and trial 2.

[c]Two hundred forty pigs • $source^{-1}$ • $trial^{-1}$.

[d]Two hundred forty pigs from two sources • $system^{-1}$ • $trial^{-1}$.

[e]One hundred sixty pigs from two sources • $diet^{-1}$ • $trial^{-1}$.

[f,g]Means in main effect columns for each trial with different superscripts differ (P<.01).

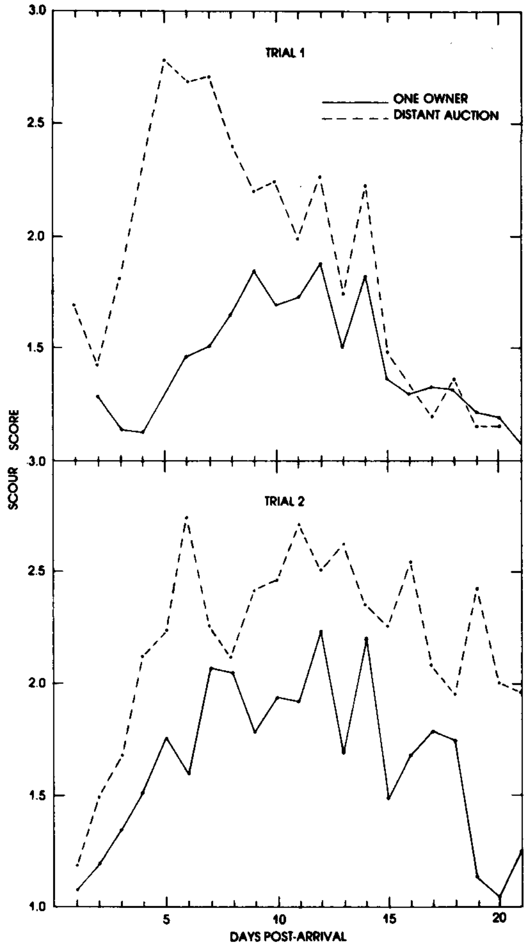

Figure 1. Effect of source of feeder pigs on scour scores for 21 d post-arrival.

conclusion of trial 2, the advantage (P<.01) remained (3.21 vs 3.38).

Pigs from the DM gained more slowly and less efficiently than LS pigs for the first 2 wk but apparently compensated by the time they reached market weight. The results indicate that from purchase to market, equal performance (rate of gain and feed efficiency) can be expected with pigs purchased from either a distant auction market or one-owner source.

Pigs purchased from distant feeder pig markets and trucked for 15 to 24 h had more severe scours (P<.01) than pigs from the one-owner source trucked only 3 to 5 h (table 4 and figure 1). In addition, in both trials, the DM feeder pigs had an earlier peak (P<.01) in the severity of scours. Health treatments were also greater (P<.01) for the DM pigs in both trials (table 5). Treatment of pigs included scour medication on veterinary prescription and medication for coughing, injuries and general malaise. Death losses by source of feeder pigs were not significantly different in trial 1 but more pigs (P<.01) died when purchased at a DM compared with LS pigs in trial 2 (5 vs O).

Deaths were diagnosed as being due to a variety of causes and included bleeding ulcer, heart attack, salmonella, haemophilus pleuropneumonia and pneumonia. The average time of death of the pigs was 8.5 wk post-arrival for all treatments.

Three possible explanations for the poorer initial performance and higher incidence of

TABLE 5. RELATIVE HEALTH OF PURCHASED FEEDER PIGS

Variable	Pigs treated		Pigs dead	
Trial:	1	2	1	2
Source of pigs[a]				
One-owner (LS)	0[f]	3[f]	5	0[f]
Distant auction (DM)	17[g]	18[g]	6	5[g]
Housing system[b]				
Nonmechanical ventilation (MOFB)	5	12	6	0[f]
Mechanical ventilation (ERB)	12	9	5	5[g]
Receiving diet[c]				
Corn-soybean (CS)	10	7	6[d]	3
20% oats (O)	2	6	0[e]	1
Oats + lard (OL)	5	8	5[d]	1

[a]Two hundred forty pigs $\cdot$ source^{-1} $\cdot$ trial^{-1}.

[b]Two hundred forty pigs from two sources $\cdot$ system^{-1} $\cdot$ trial^{-1}.

[c]One hundred sixty pigs from two sources $\cdot$ diet^{-1} $\cdot$ trial^{-1}.

[d,e]Means in the same column for each variable with different superscripts differ (P<.1)

[f,g]Means in the same column for each variable with different superscripts differ (P<.01).

health treatments for the DM pigs compared to the LS pigs are: (1) There is the possibility of a climate effect. In both trials, the DM pigs were trucked from near the Missouri-Arkansas state line to Northeast Nebraska. (2) The DM pigs were mixed and sorted by size prior to sale at the auction market whereas the LS pigs were taken directly from an environmentally regulated nursery pen and trucked to the finishing facility. The LS pigs came from a common management and genetic background while the DM pigs originated from a variety of genetic and management backgrounds. (3) The amount of time the DM pigs were trucked and were without feed and water; LS pigs were without water for only a maximum of 5 h while pigs from the auction market were without feed and water a minimum of 23 h in trial 1 and 15 h in trial 2. It was observed that upon arrival, the DM pigs appeared to have increased water consumption. A combination of water deprivation and distance traveled probably added up to a severe stress on the young animal. This stress is probably reflected in a weight loss because Hails (1978) concluded that in pigs, loss in weight increases with an increase in distance traveled.

Housing System. In both trials it appeared that pigs housed in the ERB grew faster and gained more efficiently than those housed in the MOFB (table 6). At the intermediate weighing (trial 2) pigs in the ERB showed an improvement ($P<.025$) in feed conversion compared with the pigs in the MOFB (2.71 vs 2.83). At the conclusion of both trials, this significant advantage in feed conversion disappeared although there was a tendency for a slightly improved efficiency in the ERB. In trial 1, pigs in the ERB gained faster ($P<.1$) than those in the MOFB (.67 vs .63 kg) while

TABLE 6. EFFECT OF HOUSING SYSTEM ON PERFORMANCE OF PURCHASED FEEDER PIGS (LEAST-SQUARE MEANS)

	System[a]					
	MOFB[b]		ERB[b]		SE[c]	
Item / Trial:	1	2	1	2	1	2
Pig wt, kg						
Initial	26.1	17.5	26.2	17.4		
13 d	30.3	21.7	31.4	22.1	.4	.3
Intermediate[d]	50.1	49.6	51.5	48.5	.7	.5
Final	87.7	95.1[e]	91.8	91.9[f]	1.0	.6
Daily gain, kg						
13 d	.32	.32	.39	.35	.03	.02
Intermediate[d]	.58	.58	.61	.56	.01	<.01
Final	.63[e]	.70[g]	.67[f]	.67[h]	.01	<.01
Avg daily feed intake, kg						
13 d	.95	.83	.98	.85	.01	.02
Intermediate[d]	1.67	1.66	1.69	1.52	.06	.03
Final	2.10	2.34	2.15	2.17	.06	.05
F/G						
13 d	3.40	2.67	2.67	2.50	.38	.10
Intermediate[d]	2.88	2.83[i]	2.78	2.71[j]	.06	<.01
Final	3.35	3.34	3.23	3.25	.02	.05

[a]Two hundred forty pigs from two sources • $system^{-1}$ • $trial^{-1}$.

[b]MOFB - nonmechanically ventilated; ERB - mechanically ventilated.

[c]Standard error of the mean, trial 1 and trial 2.

[d]Forty-one days, trial 1; 55 d, trial 2.

[e,f]Means in rows for same trial with different superscripts differ ($P<.1$).

[g,h]Means in rows for same trial with different superscripts differ ($P<.05$).

[i,j]Means in rows for same trial with different superscripts differ ($P<.025$).

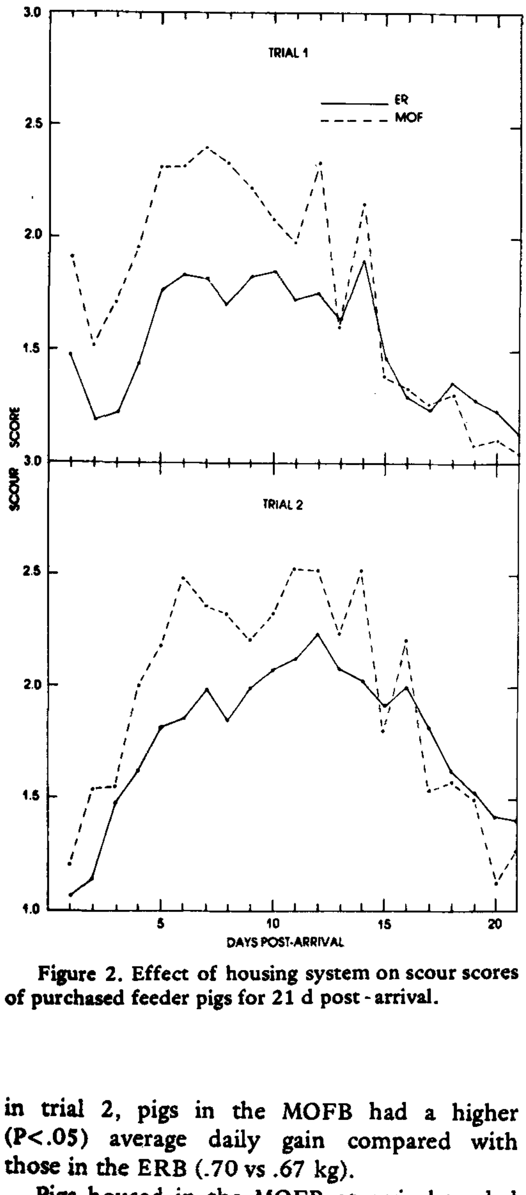

Figure 2. Effect of housing system on scour scores of purchased feeder pigs for 21 d post-arrival.

in trial 2, pigs in the MOFB had a higher (P<.05) average daily gain compared with those in the ERB (.70 vs .67 kg).

Pigs housed in the MOFB at arrival tended to have higher scour scores than those housed in the ERB. There was a day × housing-type interaction (P<.01) in both trials (figure 2) with the MOFB-housed pigs more severe in their scours sooner than the ERB pigs. Numbers of pigs treated were not significantly affected by housing system. In trial 2, more deaths (P<.01) occurred in the ERB than the MOFB (5 vs O).

There was essentially no difference in pig performance between housing systems from purchase to market. This agrees with earlier research of Fritschen (1973) who reported no difference in performance between MOFB and ERB for purchased feeder pigs.

Receiving Diet. In trial 1, pigs fed the O diet had a poorer (P<.01) feed to gain ratio than those fed the CS or OL diet for the first 13 d (3.45 vs 2.91 and 2.75, respectively; table 7). A similar trend was observed in trial 2 (2.73 vs 2.57 and 2.45). In trial 1, pigs fed the O diet also tended to gain less weight for the initial 13 d. Pigs fed the OL diet in trial 2 gained faster (P<.01) than those fed the CS or O diet (.36 vs .30 and .33 kg/d, respectively).

By the time of the intermediate weighing there were no significant differences in pig performance due to receiving diet fed for either trial. There were also no significant differences in overall animal performance regardless of the receiving diet fed for the first 13 d.

The addition of 20% ground whole oats, with or without 5% added lard did not influence scour scores in either trial. While not significant, in both trials pigs receiving the O diet required fewer health treatments. In addition, in trial 1, death loss was lower (P<.10) for pigs receiving the O diet than for those receiving the CS or OL diet (O vs 6 and 5). In trial 2 death loss was again lowest for the O diet.

Lowering the metabolizable energy content of the receiving diet and increasing the fiber with the addition of 20% ground whole oats did not alter rate of gain or feed efficiency from purchase to slaughter in either trial when compared with the CS or OL receiving diet. Also diet had no measured effect on scour score in either trial which is in contrast to the research of Fritschen and Moser (1979) who reported that 25% ground whole oats limit-fed for 10 d delayed the onset and severity of scours in purchased feeder pigs.

When the metabolizable energy of the 20% oats diet was increased by the addition of 5% lard, animal performance improved. For the 13 d receiving period, pigs fed the OL diet gained faster and were more efficient than those on the CS diet. Data on health treatments and death loss indicate that with the increase in energy there was a higher incidence of health problems, as indicated by the larger number of animals treated, even though the fiber level remained nearly the same as in the O diet. However, the incidence of health treatments for pigs fed OL

TABLE 7. EFFECT OF RECEIVING DIET ON PERFORMANCE OF PURCHASED FEEDER PIGS (LEAST-SQUARE MEANS)

	Receiving diet[a]							
	CS		O		OL		SE[b]	
Item Trial:	1	2	1	2	1	2	1	2
Pig wt, kg								
Initial	26.2	17.5	26.2	17.5	26.2	17.5		
13 d	30.9	21.7[d]	30.5	21.7[d]	31.2	22.2[e]	.3	.2
Intermediate[c]	51.1	49.2	50.5	48.9	50.9	49.1	.4	.5
Final	90.8	94.2	89.2	93.3	89.2	93.0	.7	.6
Daily gain, kg								
13 d	.35	.32[d]	.33	.33[d]	.38	.36[e]	.02	.01
Intermediate[c]	.60	.58	.59	.57	.60	.57	<.01	<.01
Final	.65	.69	.65	.68	.65	.69	<.01	<.01
Avg daily feed intake, kg								
13 d	.97	.82[d]	.96	.85[e]	.96	.87[e]	.01	<.01
Intermediate[c]	1.69	1.59	1.67	1.60	1.67	1.59	.01	.02
Final	2.11	2.26	2.14	2.25	2.12	2.25	.03	.02
F/G								
13 d	2.91[d]	2.57	3.45[e]	2.73	2.75[d]	2.45	.30	.11
Intermediate[c]	2.83	2.74	2.86	2.79	2.79	2.78	.04	.01
Final	3.28	3.28	3.31	3.30	3.27	3.30	.03	.02

[a]One hundred sixty pigs per diet from two different sources/trial; CS = corn-soybean meal, O = CS + 20% oats, OL = CS + O + 5% lard.

[b]Standard error of the mean, trial 1 and trial 2.

[c]Forty-one days, trial 1; 55 d, trial 2.

[d,e]Means in rows for same trial with different superscripts differ (P<.01).

was not as severe as for those fed the CS receiving diet.

Conclusions. In these experimental trials, there were no differences in feeder pig performance (rate of gain and efficiency) due to source of pig. However, because of the differences in death loss and health treatments, future studies are indicated to define which variables that comprise source (distance, market, breed, et cetera) are responsible for these observed differences in health. There was no interaction of source of pig with either housing system or receiving diet for the traits measured. Future research is also indicated on the specific effects of receiving diet on the health of purchased feeder pigs.

Literature Cited

Albrecht, J. E., W. G. Brown, E. Wright, D. E. Goodman and C. W. Ackerman. 1979. Swine Management Handbook to Reduce Diseases and Parasites. Circular 523. Clemson Univ., Clemson.

Fritschen, R. D. 1973. Confinement production of growing-finishing swine. Feedstuffs 45(11):17.

Fritschen, R. D. and B. D. Moser. 1979. Nutrition management important. Nebraska Swine Report EC 79-219 pp 3–4. Univ. of Nebraska, Lincoln.

Giesler, F., N. Dahlke, W. Luce and P. Schink. 1978. Management of newly purchased feeder pigs. PIH-20, Coop. Ext. Service, Purdue Univ., West Lafayette.

Hails, M. R. 1978. Transport stress in animals: A review. Anim. Regul. Stud. 1:289.

Palmer, N. C. and T. J. Hulland. 1965. Factors predisposing to the development of coliform gastroenteritis in weaned pigs. Can. Vet. J. 6:310.

Richards, W.P.C. and C. M. Fraser. 1961. Coliform enteritis of weaned pigs. Cornell Vet. 51:245.

Sheritt, G. W., H. B. Graves, J. K. Gobble and V. E. Hazlett. 1974. Effects of mixing pigs during the growing-finishing period. J. Anim. Sci. 39:834.

Steel, R.G.D. and J. H. Torrie. 1960. Principles and Procedures of Statistics. McGraw-Hill Book Co., New York.

Stevens, A. J. 1963. Enteritis in pigs – A working hypothesis. Brit. Vet. J. 119:250.

Thomlinson, J. R. 1969. Post-weaning enteritis and dysentery. Vet. Rec. 85:298.

Tracy, J., Jr. 1979. Management of purchased feeder pigs. Pub. 814, Agr. Ext. Service, Univ. of Tennessee, Knoxville.

VanArsdall, R. N. 1978. Structural characteristics of the U.S. hog production industry. USDA Agr. Econ. Rep. No. 415.