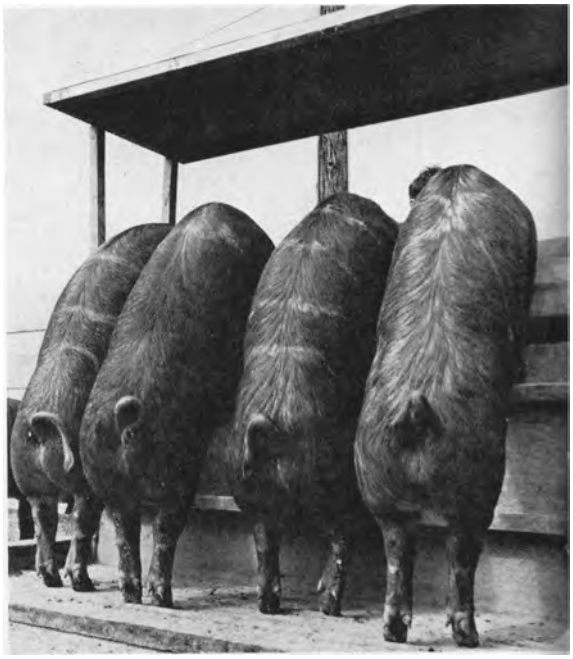
Percentage of Ham and Loin Increases When Pigs Stand to Eat



Pigs standing to eat from elevated troughs in feeding trials at Davis.

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Forcing pigs to stand on their hind legs to feed may decrease their weight, but increases the percentage of ham, or ham and loin, according to recent tests at Davis.

EFFECTS ON THE CARCASS value of swine forced to eat while standing on their hind legs were studied in a recent environmental project at Davis in cooperation with USDA. Pigs were fed from elevated troughs to investigate the possibility that the departure from their normal eating position would exercise more of the higher-priced muscles of the ham and possibly the loin.

Two troughs, each 6 feet long, were constructed with the upper edge of the front lip of the feeding compartment about 38 inches from the ground, as illustrated. Trough height could be changed by raising or lowering the pigs' feeding platform or raising the feeder up or down the fence. The feeding compartment was so constructed that feed tended to stay along the front edge. The compartment could be rotated to change the height of the feeder, as well as the slope of the bottom of the compartment. Control pigs were fed in conventional troughs placed on the ground or with 1 by 4-inch runners under them.

Four groups of six Duroc barrows each were randomized by sire from a group of 24 barrows. Two groups were assigned at random to the control pens and two groups to the standing treatment.

The pigs were trained for 6 days by placing small amounts of feed on the step rail and floor in front of feeders. This induced pigs to stand and eat from the feeding compartment. Table 1 shows changes made in the feeder height. The pigs, which weighed 125 pounds each, would not try to stand until feeder height was reduced to 26 inches. In the experiment, feeder height was raised as the pigs became larger, and was 32 inches high at market weight.

Start difficulties

At the start of the experiment, pigs had difficulty standing at the troughs. It was necessary to keep troughs oversupplied to make sure they would eat their daily ration. Feed for control pigs was limited during training to keep their weight near that of the test pigs. The controls had no trouble eating from the conventional troughs.

After the training period, one pig was removed at random from each pen to leave ample room at the trough as the pigs grew larger. Hogs were then fed for 49 days from an average initial weight of 120 pounds to market weight. At the conclusion, all hogs were slaughtered and carcass measurements were made. Standing pigs and control pigs were combined for analysis as recorded in Table 2.

The standing pigs ate 94% of the feed recommended by the National Research Council, as compared to 104% for the controls. Even though feed figures could not be individually analyzed, because the animals were group fed, there was a significant decrease of about 16% in amount of weight gained. It is not known whether the reduction in feed was due to exercise, the difficulty in eating erect, or improperly designed feeders. Hard rains during part of the first trial also interfered more with the erect pigs, because they took longer to eat when the feed became wet. Feed conversion appeared poorer in the standing pigs.

Carcass studies

Carcass studies indicated no significant differences between treatments as to yield, carcass length, backfat thickness, eye muscle area of the tenth rib cut, carcass specific gravity, and percentage of the loin, shoulder, or belly of the carcass. Backfat thickness, eye muscle area, and specific gravity favored the standing pigs, but differences were small and variable.

The percentage of ham, or ham and loin, of the carcass was greater in the standing pigs; however, the actual weight of the hams was the same, as shown in Table 2. The standing pigs weighed about 9 lbs. less than the control pigs at slaughter, making the percentage of ham greater.

Feeders with modified design are being

TABLE 1. EXPERIMENTAL FEEDER HEIGHT

Day number of height change		Feeder height inches*	Approx. pig weight lb.
Preliminary period	Experimental period		
0		38	115–130
2		34	115–135
3		26	115–135
	21	30	150–170
	32	32	165–180

* Measured from the surface on which the hind feet of pigs rest while eating to the top of the front feeding lip of the feeding compartment.

used in a second trial now in progress. Pigs weighing 60 to 70 lbs. each stood to eat from these modified feeders the first day. Further research is expected to more clearly define the relationships involved in these preliminary findings.

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TABLE 2. RESULTS, STANDING PIG EXPERIMENT
(49 day period, 10 barrows per group)

	Controls	Standing pigs
Initial weight, lb.	118.4	123.6
Average daily gain, lb.	1.83	1.54**
Average daily feed, lb.	7.39	6.64
Feed per unit of gain	4.04	4.31
Ham, % of carcass	17.9	18.9**
Ham, lb.	28.7	28.9
Ham and loin, % of carcass	31.9	33.0*

* Difference statistically significant ($P < .05$).
** Difference statistically highly significant ($P < .01$).

"Confined" hogs given 20 square feet of space each, gained weight more rapidly than those allowed 5 or 10 square feet each, in recent tests at Davis. However, the cost of extra space must be balanced against net returns for optimum profit.

Space Allowances for Hogs Grown in Confinement

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Space allowance tests for confinement hogs at Davis included pens with 5 sq ft, to left; 10 sq ft, center; and 20 sq ft per head in photo below (with pigs taken outside for picture in simulated test space).

"CONFINEMENT" HOGS are fed on a dry-lot basis in a small area and have no access to pasture. At one extreme of this growing system, hogs may be held in a pen with minimum shelter, while at the other extreme, they are restricted to an enclosed, insulated building with complete environmental control. Production of market animals is rapidly changing toward confinement production of one degree or another. Recommendations for space allowances per pig have been based largely on opinion, and only recently have formal tests been conducted to relate space to rate of gain or feed utilization.

Space allotment can be varied by changing the physical size of pens of equal-size groups of hogs or by varying the number of hogs per group in equal-