

## Studies Being Made On Lean-to-Fat Ration in Hog Breeding

How fast and how much can you change the lean-to-fat ratio in hog carcasses through selective breeding? This is being answered through basic studies at USDA's Agricultural Research Center, Beltsville, Md.

In three generations of selection in Duroc hogs, choice for low fat decreased backfat thickness by 11 per cent, while selection for high fat increased backfat thickness by 14 per cent. Animals chosen with significantly less backfat than herd average transmitted about 41 per cent of that advantage to their offspring. On the other hand, animals chosen with more backfat than herd average transmitted about 57 per cent of that disadvantage. Thus, selection, was somewhat more effective in increasing backfat than in decreasing it.

Carcass samples of third-generation Duroc hogs bred for leanness gave 3 per cent more in yield of trimmed hams, loins, and shoulder butts than the hogs bred for fatness. At the same time, the specially bred fat-line Durocs averaged 0.6 per cent higher in bacon yield and 5 per cent higher in percentage of other fat cuts.

This means that for every 200-pound Duroc marketed, third-generation lean-line pigs averaged 6.2 pounds more lean cuts and 10 pounds less fat cuts than fat-line animals. The latter yielded 12 pounds more bacon.

These differences are large, of course. But progress in separating the lean-to-fat ratio in succeeding generations of the two lines may not be as rapid.

Selection in the Yorkshire breed is giving similar results. But more data are needed on the Yorkshires to tell just how effective selection will be in this breed.

Tests of lean tissue for fat dis-

tribution and flavor showed that fat Durocs — with 15 per cent more intramuscular fat-produced roast pork with more tenderness, flavor, and juiciness than did lean Durocs. Carcass and flavor data for these tests are being provided by ARS food technologist R. L. Finer and his associates.

ARS geneticist H. O. Hetzer is developing by selection a line high in fatness and one low in fatness in each of two breeds. Primary criterion of selection is backfat thickness at a live weight of 175 pounds. Only secondary consideration is being given to such traits as litter size, growth rate, and conformation.

The average difference in backfat thickness between the lean-line and fatline Durocs was 0.4 inch in the first generation, 1.9 in the second, and 3.7 in the third. Average backfat thickness in the foundation stock was 1.49 inches. This increased to 1.70 inches in third-generation fat line Durocs, and decreased to about 1.33 inches in third-generation lean-line Durocs.

Researchers believe that the difference in lean-to-fat ratio will become more pronounced as selection continues. Results also show that selection for low backfat has tended to increase length and height and decrease body width, while selection for high backfat has generally resulted in shorter, lower, and wider bodied hogs.

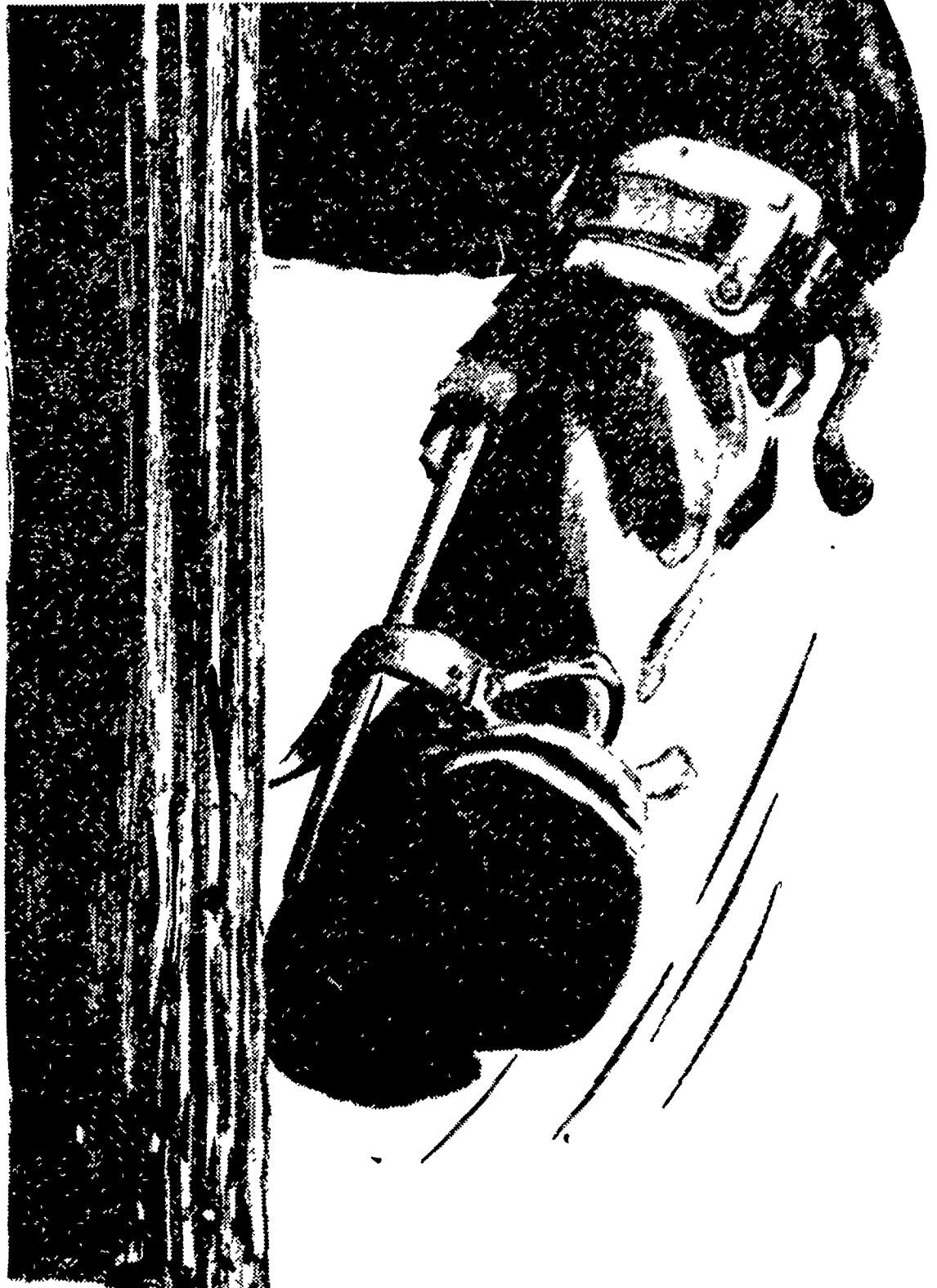
State agricultural experiment stations and private breeders, as well as USDA, have been working for years to improve purebred hogs and develop superior cross-breeds for efficient pork production. Selection for carcass quality in swine based on backfat thickness was started at Beltsville in 1954, an outgrowth of increasing interest in the meat-type

hog. The Beltsville studies, part of this overall plan, are providing useful data on the value of selective breeding in producing meat-type hogs.

These studies will be continued as long as selection is effective in changing the lean-to-fat ratio.

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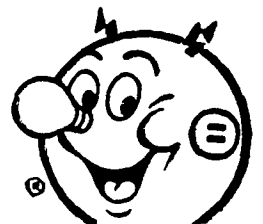


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