Penn State Beef Research Presented at Livestock Day

Several hundred cattlemen visited the Penn State University Campus on Thursday, March 22 to hear and discuss the results of current research by the Animal Science Department of Penn State. The 1973 Animal Science Research Summary contains 22 research reports within the beef cattle area. Some of the most timely topics are summarized below.

Acid Treating Grains and Forages

The Animal Science and Agronomy Departments reported on several research trials in which corn and sorghum were harvested, and then either dried, stored as high-moisture grain, or treated with different chemicals (acetic and-or propionic acids). These acids are applied in relatively small amounts, but the research results indicate that essentially no mold will result on the grains if the acids are properly applied, even though the acid-treated grains are stored in conventional storage facilities. The efficiency (pounds of animal weight gain per pound of feed) of using acid-treated grains is usually superior to dried corn, and equal to or slightly better than using high-moisture corn, without acid treatment. The results reported were with beef cattle and sheep.

There were some indications that acid-treatment would increase sorghum intake more than it would corn intake. Non-bird-resistant sorghum was equal to or superior to corn in protein and energy digestibility, but the intake of this type of sorghum was less than observed for corn.

Influence of Harvest Maturity on Crownvetch and Alfalfa

Penngift crownvetch and DuPuits alfalfa were harvested at late-bud and full-bloom stages and then each maturity of each forage was preserved as low-moisture silage and hay. The digestible energy values of crownvetch and alfalfa were similar at late-bud stage, but the digestible energy of alfalfa was higher at full-bloom. Digestible energies for both forages preserved as hay were higher than when either was preserved as low-moisture silage. The digestible protein percent of crownvetch was greater than that of alfalfa at both stages of maturity and for both preservation methods. Difficulty was encountered in drying the crownvetch for hay.

Feeding Large Hay Stacks and Round Bales to Cattle

The new hay stackers and balers which make large (one-half to one ton) bales are attracting lots of interest. The bales or stacks may be left in the field without shelter and grazed in the field during late summer, fall or during the winter. The bales or stacks may also be moved to a winter feeding area and fed one or several at a time. These kinds of systems seem to be real labor-savers. The hay can be made more rapidly, thereby lessening the danger from hay being ruined because of bad weather. There is less hand labor compared to handling conventional square bales. The cattle graze in the field or in wintering areas where there is no necessity for hauling manure. Apparently the quality of hay stored in the fields is quite high. The main consideration in determining total efficiency of using such systems is in devising methods to feed the hay without undue wastage.

Several Implants Increase Growth

Five different commercially available growth stimulants (used as implants in the ear) were compared on heifers and steers. The least effective implant increased gain by at least seven percent in both heifers and in steers. Certain implants tended to have longer-lasting effects than others; however the differences between implants were relatively minor. Implanting with a combination of two different types of implants did not further increase weight gains. Effects of the various implants on carcass characteristics were also minor from the standpoint of both carcass quality and meatiness.

Penn State Registered Beef Cattle Program

The Animal Science Department maintains registered cow herds of Charolais, Polled Herefords, and Angus. Approximately 30 cows of each of the three breeds are maintained. The main use of these cow herds is to provide animals for teaching and training of students. The Department of Animal Science's beef cattle herd over the years has accomplished perhaps more than any other university-owned registered herd. The herd is carefully selected for modern beef characteristics, particularly growth rate and other characteristics included in most progressive beef cattle breeding programs. Breeding stock from the herd is also available for sale to other purebred and commercial breeders.

Crossbreeding Programs

Well-planned crossbreeding programs can increase net profit by 20 percent or more when compared to programs using the same breeds in straightbred herds. Most of the desirable effects of crossbreeding result from the use of crossbred cows. This is because calving percent, or other measures of fertility, are usually improved more than other beef characteristics. The breeds going into a crossbreeding program should be selected so as to complement each other, and to cover up each other's weaknesses. Effective crossbreeding programs can be devised for either small or large-sized herds. One of the biggest mistakes commercial producers make in crossbreeding is that they do not continue to select outstanding bulls in the breeds they use. It is very easy to lose any improved performance by not selecting performance-tested bulls with high within-herd performance indexes.

Angus-Holstein Cows Continue High Production

As a part of a continuing cooperative program between the Department of Animal Science and the State Correctional Institution at Rockview, a herd of about 210 Angus-Holstein crossbred cows are maintained The increased milk production of the Angus-Holstein cow results in heavier 205-day weights than from most straightbred beef cows. First-calf Angus-Holstein heifers produced calves only 24 pounds lighter in weight than did mature Angus-Holstein crossbred cows. This is less difference than usually observed with cows of beef breeding. Although the Angus-Holstein crossbred cow has been productive in this program, it has been learned that these kinds of cows have to be fed about 25 percent more than other kinds of cows during the rebreeding season. This is necessary because all cows have to be gaining weight in order to rebreed within a short period of time. However, after the breeding season, the energy requirements of the Angus-Holstein cow seem to be about the same as those of other cows.

Live and Carcass Characteristics of Holstein Bulls, Cryptorchids and Steers

Average slaughter age of the cattle was 402 days. At this age bulls, cryptorchids (partially castrated) and steers weighed 1078, 995, and 961 pounds, respectively. Steers had significantly more fat thickness, but bull and cryptorchid carcasses had larger loin-eye-areas, higher cutability, and slightly more desirable lean flavor and total acceptability scores. It should be emphasized, however, that these cattle were fed a high concentrate ration from birth to slaughter. If a ration using less grain had been used, the results may have been different. However, these results indicate that liberally-fed Holstein bulls can produce carcasses of acceptable quality. The cryptorchids developed many of the male characteristics which may cause behavior problems in the feedlot, and a staggy appearance. Cryptorchid cattle are apparently not as desirable as cryptorchid lambs, although even cryptorchid lambs have to be fed fairly well in order to produce quality lean and still perform efficiently.

Testing Program Shows There's Room for Improvement

Over 300 head of cattle have been tested in the past six years in the Meat Animal Evaluation Center, sponsored by the Pennsylvania Department of Agriculture. These cattle have been from 48 sires. The cattle are consigned to the station at weaning time and fed until slaughter by sire groups. Accurate feed records are kept, and all the cattle are slaughtered through the Penn State Meats Laboratory. Although there have been three sires which achieved an excellent rating based on live and carcass characteristics, none of the sires has met all the requirements for superior sire classification. The results of the program are used by the owners of the bulls to evaluate the genetic ability of their sires. Next year, in order to be of more usefulness to more beef cattle breeders in the state, there will also be a program for consigning individual bulls to be tested during the post-weaning period.

Only a few of the research studies are summarized above. The 1973 Animal Science Research Summary Book, which contains all the reports on beef cattle, sheep, swine and other projects in which the Department of Animal Science is involved, is avialable by writing to Animal Science Research Summary, 324 Animal Industries Building, University Park, Pennsylvania 16802 and enclosing $2.00.