

Characteristics: The tree is vigorous with similar form and foliage shape of its parents. The nuts mature a little later than those of Burkett. The shucks of the nuts are as thick or slightly thicker than those of Burkett. Nut production is usually heavy and filling of the nuts is normally very good.

The nuts are blocky and a little longer than those of the Burkett parent. The shell color and markings resemble those of the Schley. The nut is as large as Burkett, but the shell is thin and the kernel content averages about 60 per cent. Parker (4) concludes that the Apache merits introduction because it combines good production, good tree vigor with desirable nut size, shape and cracking quality and high percentage kernels which do not deteriorate rapidly in storage.

The Apache is recommended for the sandy uplands of Texas and the western pecan areas where it has performed well under tests. It has not been amply tested for scab resistance and since its Burkett parent is scab susceptible, it should not be widely planted in the humid areas of the southeast until its scab resistance and production performance is better known.

Sioux:

Origin: The new Sioux variety tested as 43-4-6 originated from crosses between Schley and Carmichael varieties made in the orchard of H. G. Lucas, Brownwood, Texas, in 1943. It first fruited in 1948 and was propagated for trial in 1949.

Characteristics: The tree is vigorous with similar form and foliage shape of its parents. Strong growing shoots have a pronounced tendency to form lateral branches. Production is usually heavy and the nuts mature at mid-season for pecans.

Parker (4) points out that the nuts are about one-fifth smaller than those of Schley, however, the thin shelled Sioux develops nuts that average 60 to 61 per cent kernel. The kernel has excellent appearance and quality, bright in color, and excellent flavor and does not deteriorate rapidly in storage.

Sioux was introduced because of its exceedingly high kernel quality and its ease of cracking by commercial machinery. It combines good tree vigor and good productions. Sioux is recommended for trial in central Texas and westward, but should not be extensively planted in humid areas of the southeast until its scab resistance and production is better known.

Conclusion

The increasing population of the nation presents a challenge to pecan growers. The sales of pecans to the customer will be in proportion to the desires of the public, to their needs. Therefore, much attention is focused on not only good orchard management, but on the crossbreeding and testing of new varieties to improve production, quality of nuts, and disease resistance. To such a time consuming and rewarding task have the various state agricultural experiment stations in the south vigorously dedicated much time, effort and research.

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Applied Animal Science

Dr. Gordon Stewart, Editor

THE MISSOURI BEEF CATTLE IMPROVEMENT PROGRAM

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The Missouri beef cattle improvement programs are available to beef cattle breeders who may use them to check each animal's performance from birth until it is added to a herd or slaughtered. These programs have flexibility and will be

helpful to both purebred and commercial cattlemen in their selection and breeding of animals. They are most useful in evaluating individual animals within a herd. They are not designed for the purpose of comparing one breed with another breed or one herd with another herd, because the environmental conditions will vary from farm to farm.

The following programs were developed to measure—with greatest precision, in a shorter time—a herd's production or a bull's prepotency for siring high-quality, efficient offspring.

1. Two plans for on-the-farm performance testing—Plan A and Plan B.
2. Central beef cattle testing station.
3. Use of ultrasonics in livestock improvement.
4. State sale of performance-tested bulls.
5. Progeny testing via carcass information.

The foregoing improvement programs became operational in 1963, and are supervised by an advisory committee consisting of beef cattle breeders and/or University of Missouri personnel.

On-farm Testing (Plan A). This program evaluates calving interval (fertility) and mothering ability of the dam, plus preweaning gains and conformation. The procedure is as follows:

1. Enroll all cows in the herd with the County Director.
2. Identify all cows in the herd.
3. Identify and record birth dates of all calves.
4. Use an adjusted or actual birth weight.
5. Obtain weaning weights on all calves and adjust equitably.
6. All calves are scored at weaning and given a feeder grade for conformation.
7. A selection index is figured on all calves. It combines both performance characteristics and conformation.

On-farm Testing (Plan B). This plan evaluates the performance of cattle in the feedlot. The program is a combination of Plan A plus full-feeding calves a standard ration for a minimum of 140 days. This phase of the program is designed to evaluate the upper 50 per cent of the calf crop for postweaning gains, efficiency, and conformation. Plan B can be carried out on the farm by the individual breeder, or he may choose to enter a bull or a bull and a steer from the same sire in the central bull testing station.

Procedure:

1. After weaning, the high-index calves, as selected by the breeder, will be fed. Gains made in the feedlot are better measures of growth potential than preweaning gains. However, preweaning gains are important for milking ability and rapid growth.
2. Full-feed calves a minimum of 140 days after weaning.
3. Feed a standard ration with no hormones or other growth-stimulating additives.
4. Obtain weights at the beginning and the end of the 140-day feeding period.

5. Sex comparisons are made separately.
6. All animals will receive a breeding or slaughter grade at the close of the feeding period.

Missouri Beef Cattle Testing Station. The central bull testing station at Columbia is available to test all breeds at approximately the same age under the same environmental conditions. Two tests are conducted annually. The station became operational at the University of Missouri in the fall of 1960 and to date a large number of bulls and steers have been evaluated for daily gains, feeding efficiency, and conformation. Entries have consisted of all breeds. Briefly, these are the rules developed jointly by cattle breeders through their representatives, and the University of Missouri.

1. **Entry.** One bull and/or one steer or multiples thereof, all by the same sire. The cattle must be eligible for registry in a recognized breed association.
2. **Age.** Calves dropped in February, March, and April are eligible for the fall test period to be initiated in September, October, and November; while calves dropped in August, September, and October are eligible for the spring test period initiated in March, April, and May.
3. **Length of feeding period.** There is a 30-day breaking-in period, followed by an official 140-day feeding period. Cattle are fed individually.
4. **On-farm testing.** Any breeder who has cattle at the testing station is strongly encouraged to conduct an on-the-farm test. This is especially important for all calves of comparable age.
5. **Health regulations.** The health regulations used by the State Fair are used by the station.
6. **Scoring.** A committee from the College of Agriculture scores each animal for type and conformation at the beginning and end of the test.
7. **Carcass evaluation.** Each steer is slaughtered at the end of the official feeding period, and evaluated according to standards development by the Meats Section of the Animal Husbandry Department.
8. **Publicity of results.** Factual information is published on an impersonal basis.
9. **Cost.** Cost varies with the type of entry: one bull, \$150; two bulls, \$300; one bull and one steer, \$200. The supervisor of testing is furnished by the University of Missouri. The cost of feed, bedding, handling, etc. is paid by the owners.

Use of Ultrasonics in Livestock Improvement. Research data indicate that the rib-eye area and the fat covering can be estimated accurately with an ultrasonic instrument, provided the instrument is operated by a highly-trained technician. Beginning June, 1963, the University of Mis-

souri has provided Sonoray service to Missouri livestock breeders.

The ultrasonic instrument (Sonoray) was made available to the University by several organizations within the state interested in livestock improvement.

The ultrasonic instrument is not a cure-all. Instead, it is another tool made available for the use of breeders interested in doing all they can to improve their breeding stock.

Although the rib-eye (or loin-eye) area is positively correlated with yield of prime cuts, the correlation varies among species from medium to high in swine; medium to low in cattle; and there is evidence that sheep may be of the same order as cattle.

This indicates that ultrasonics provide yet another tool which may be added to those now available to breeders. However, obtaining an accurate estimate of the rib-eye or loin-eye area is not sufficient within itself; but should be used to supplement other measures for selection.

The greatest usefulness of this instrument would be in the comparison of animals near the same age and fed under comparable conditions within the same herd. It would probably be of less value in comparing individuals of widely different ages or where they were fed in different conditions in different herds.

What Are the Uses of the Ultrasonic Instrument?

1. The ultrasonic instrument is another tool that will be available to the breeder for more accurate selection of meatier animals.
2. This instrument measures in the live animals the area or size of loin-eye or rib-eye area and the fat covering.
3. It will help purebred breeders make more rapid progress in producing meatier livestock by locating the exceptional animals so that they may be used for breeding.
4. It gives commercial and purebred buyers at sales a better estimate of meatiness of males.
5. The use of the ultrasonic estimate will aid in teaching people to judge meaty animals by demonstrations, short courses, etc.

How Will the Services of the Ultrasonic Instrument (Sonoray) Be Made Available to the Breeders in the State?

1. The producer enrolled in an on-the-farm livestock improvement program will have priority in the use of the instrument.
2. The ultrasonic instrument will be available to all livestock producers in the State of Missouri for identifying outstanding individuals in a herd or flock.
3. Livestock will be measured on a fee basis which will be used to defray the following expenses: travel, salary of technician, repair of all equipment, replacement and de-

preciation, supplies, and administration. Currently, the fees range from \$10-15 per bull, depending on the number to be measured.

4. The information obtained will be recorded as a permanent record at the Animal Husbandry Department, University of Missouri. This will include: (a) registration number; (b) breed; (c) sex; (d) age; (e) weight; (f) estimate of loin-eye area; (g) estimate of thickness of fat over the 13th rib; (h) estimate of overall condition of the animal.
5. The owner of the animal will be furnished a certificate giving the foregoing information.
6. The procedure to get animals measured is to contact your local County Extension Director in sufficient time to facilitate scheduling.
7. The ultrasonic instrument will be available on a first-request, first-served basis; and could require a 15-to 60-day waiting period. However, scheduling will be developed to keep cost at a minimum.

RULES FOR STATE SALE OF PRODUCTION-TESTED BULLS

The second production-tested bull sale, including on-the-farm performance-tested bulls and central testing station bulls, will be made available to the commercial and purebred cattle men November 11, 1964 at the Livestock Pavilion, Columbia, Missouri. The advisory committee of the bull testing station felt a need for a performance-tested bull sale to be held in Missouri in conjunction with the testing station program for beef cattle improvement.

These rules will apply to performance-tested bulls to be sold November 11, 1964, at the University of Missouri. All bulls must meet the following standards to qualify for the sale:

1. The herd in which the bull is produced must be enrolled in the Missouri on-the-farm production testing program or in the testing station.
2. Bulls must have been born in January, February, March, April or May of 1963.
3. The adjusted weaning weight of the bull must be above the average adjusted weaning weight of the herd for the particular season.
4. The bull must grade Choice-Minus feeder grade or above at weaning.
5. A minimum daily gain of 2.25 pounds during the minimum 140-day feeding period or a daily gain of 2.25 pounds for the first 365 days of age.
6. The bull must have a minimum adjusted 365-day weight of 825 pounds off feed or 891 pounds at one year if he does not make a 2.25 pound daily gain on feed.
7. The bull must grade B Minus or above at the end of the feeding period.

8. Entries in the sale will abide by the rules recommended by their respective national breed associations. All horned Hereford cattle sold will be pedigree-clean (breeders may add a footnote to this effect).
9. All bulls must pass a semen test for fertility within ninety days of the sale.
10. Health certificates will meet state health requirements established by the State Veterinarian.
11. All bulls must be free of obvious defects of conformation, etc.
12. The following information will be recorded in the state sale catalog:
 - a. An extended three-generation pedigree.
 - b. Adjusted 210-day weight.
 - c. Adjusted 365-day weight.
 - d. Average daily gain on a 140-day feeding period.
 - e. Actual weight at sale time (optional).

The results of the first sale held at the University of Missouri November 13, 1963, showed an average price of \$649.13 on 40 bulls. See Table I below.

Table I. Results of the first performance-tested bull sale.

	Total	Average
40 bulls	\$25,965	\$649.13
6 bulls from test station	4,450	741.67
22 bulls sonorayed	19,520	887.28
Top Angus		\$1,375.00
Top Polled Hereford		1,000.00
Top Horned Hereford		925.00
Top Polled Shorthorn		1,200.00
Sales expense per head		Approx. 27.00

PROGENY TESTING VIA CARCASS INFORMATION

Progeny testing is most useful in proving the genetic worth of a sire on the basis of the performance of his offspring. Research work is now being conducted by the Meats Division of the Animal Husbandry Department at the University,

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Junior College Section . . .

H. M. McKenzie, Editor

VOCATIONAL TECHNICAL COURSES IN AGRICULTURE TAUGHT IN HINDS JUNIOR COLLEGE H. M. McKenzie

A survey conducted by the Hinds Junior College Agriculture staff showed that many farms in the area were being bought and operated by business men in the cities. It further showed that these farms were being managed by general farm help, which in many cases had very little training as managers.

Some of these farms were operated as general livestock farms, poultry production units, or dairy farms, while some were doing general crop farming.

in co-operation with marketing centers, to study methods of evaluating carcass information. Future plans are to have the meat packing industry, co-operating with cattlemen in Missouri, supplying carcass information on progeny for selection and breeding improvement.

These are the objectives of this program:

1. To identify high-grading, meaty steers and heifers with a minimum of outside fat, which is associated or correlated with the prepotency of their parents.
2. To improve the quality of beef cattle and yield of salable meat, which will be of mutual interest to the producer, feeder, packer, retailer, and consumer.
3. To provide cattle breeders and feeders detailed information on their cattle for selection and culling.

How Can the Breeder Use These Tools in Selection and Herd Improvement?

1. Selecting bulls and replacement heifers on the basis of their own weaning weights, rate of gain, conformation score, and that of their parents when possible.
2. Cull low-producing cows.
3. Compare sire groups if more than one bull is used.
4. Cull low-producing sires.

How Do You as a Breeder Get Started, and What Must You Do to Put Your Herd on One or More of the Missouri Beef Cattle Improvement Programs?

1. Your first step is to contact your local County Director and Agricultural Agent.
2. He will discuss one or all of the foregoing plans in detail with you, enroll your herd, and supply you with the needed record forms.

These programs should be of mutual benefit and interest to the purebred breeders, commercial breeders, cattle feeders, packers, and retailers in supplying our state's and the nation's consumers with an economical and desirable product.

Other potential openings for trained men were discovered in meat processing plants. These jobs were as meat inspectors and plant managers.

There were several calls for workers to fill such positions, so this made it necessary to make plans whereby students could be trained to fill these needs.

Out of a total enrollment of 1200 students at Hinds Junior College, there are about sixty students who enroll in some phase of agriculture. Of these, about fifty percent transfer to senior colleges to finish a degree. Of the remainder some drop out after one year or change to another school. However, about fifteen percent take terminal courses to go into farm work at the end of