



Goat Herd Improvement Through on-Farm Testing
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Standardized performance testing and on-farm testing programs have been in existence for over 40 years. They have been highly successful in increasing performance of economically important traits in cattle and sheep. They have evolved and changed over time but started with simple data collection and evaluations. These types of programs will work for goat producers as well as they have for beef and sheep producers, goat producers simply need to get started collecting data.

The principle behind performance testing is that economically important traits are heritable. The heritability of the different traits varies but selection can result in improvements in these traits. It is also well established that we can adjust performance data for known environmental effects resulting in a more accurate measurement of performance traits. This makes the use of standardized performance data more valuable than individual weights when selecting for improvement in these traits.

The rate of genetic improvement in any one trait is dependant on several factors including the differences in individual performance and the herd average, level of heritability, and genetic correlations between traits. These factors make progress slow for some traits and difficult for others. The more information that is available the better the records are, the more progress can be made.

The impact of selection is often dependant on the quality of the information put into the system. To insure good results from on-farm performance testing it is important to follow the following guidelines:

- All animals in a group must be given an equal opportunity to perform.
- Data is reported on all animals in the group.
- Records are adjusted for known environmental influences such as age of dam, age of kid, sex, type of birth, and type of rearing.

Once you have a good data set, performance and weight ratios can be calculated for individuals in a group to increase ease of using the data. This also helps moderate some of the group differences when comparing between contemporary groups. These ratios should be used to identify animals that have above average or below average performance within their group. The ratios and performance data are most effectively used when selecting within a herd and group of animals. They should not be used to compare animals from different herds.

What traits should you measure and select for? This is a question often asked by producers considering starting any performance program. The answer is simple, those that will make you money. These are often referred to as the economically important traits. These traits contribute to efficiency of production and desirability of your product.

They are not always the ones most people think about when starting a selection program or setting goals for the farm.

Reproduction has been found to be the most economically important trait in all types of livestock. Only in stocker and feedlot operations is this not the case, this is because they purchase the animals in their systems. The second most important for commercial producers and many purebred producers is growth. Producers that sell strictly for the show market may find that breed or body type may be important as well. At this time carcass traits have little economic value to goat producers but that may change in the near future. Health traits are also very important to many goat producers but have not been evaluated in this manner in the past. Ultimately you must determine which traits to focus on in your herd but reproduction, health, and growth will be the ones that create the greatest returns.

The most effective way to start utilizing performance data and on-farm performance testing is to participate in a program that can calculate the adjusted data and performance ratios for you. This gives you access to adjustment factors and support through the program. It also provides a level of standardization in the program.

There are several such programs being offered from different universities and by different breed associations. If you are a purebred breeder, contact your breed association to see if they are collecting performance data on animals, if not encourage them to start. At this time there are at least two programs available to producers from universities. Alburn University and Kentucky State University both offer a on-farm performance test programs. Both programs differ some in how they are run so contact the people involved to learn more about the programs. Information on the Kentucky State Program is provided below.

The Kentucky State University program is called the Goat Herd Improvement Program and is open to producers from around the country. It is designed to help producers start and continue to utilize performance data in their herds. The program centers around on-farm data collection, with the data being submitted to Kentucky State University for processing. The producer receives adjusted performance data and performance ratios in summaries for their animals. This program is not part of any breed association or organization at this time and encourages both purebred and commercial producers to participate in the program.

To participate, producers need to contact Ken Andries by e-mail at kenneth.andries@kysu.edu or phone at 502-597-5094. He will send information related to the program and a basic set of spread sheet data forms that are being used in the program. The preferred method of communication is e-mail because it allows for easier data submission. Any producer can participate at this time. The program is not limited to producers from any single state, region, breed type, or herd size. There are producers from 18 states as of January, 2010.

The producers that participate are asked to provide kid performance data from birth through weaning for each kidding group they manage. If producers have more than one kidding group per year they can submit multiple sets of data. With each year of data a new cumulative record for the breeding herd is produced increasing the strength of the data set.

The performance data is divided into four basic summaries for ease of use by the producer. The first two are the doe and buck kid summaries. These list the kids in individual sex groups for ease of selection. It makes it quicker to look over performance when looking to select replacement does. If some buck kids are castrated than they are included in a separate summary sheet as well.

The next summary is a dam summary. This list the performance of each doe that kidded in the group. It provides her total number of kids born and weaned, the total adjusted birth and weaning weight and performance ratios for each doe. This makes it easier to see the does that do not perform to help with culling. If you provide a dam weight taken at weaning, an efficiency ratio is also calculated to help you select those does that are more efficient in their production.

The final summary sheet is the sire summary, if you provided sire ID with the data set. This helps identify which sires are producing the best kids and will allow you to eliminate sires that are not moving your herd in the direction you would like.

For goat herds, it is important to remember which traits improve your profitability. Commercial meat goat herds need a doe to raise twins to have a chance at being profitable. However, single born doe kids often look better at weaning and are retained for replacements and their dams generally look better so they are not culled after weaning. Only with some type of record and performance data collection process will you be able to move your herd forward. Without records most producers find it difficult to verify what they believe is happening and often miss trends that become easy to spot with good data.

Resources and Suggested Reading:

Historical Perspectives -

Animal Breeding Plans. J.L. Lush. Third Edition. The Iowa State College Press, 1945.

Breeding Better Livestock. V.A. Rice, F. N. Andrews, and E. J. Warwick. McGraw-Hill Book Company Inc. 1953.

Modern Perspectives –

Selection Index and Introduction to Mixed Model Methods. L. D. van Vleck. CRC Press. 1993. ISBN 0-8493-8762-0

Manual of Quantitative Genetics. W. A. Becker. Fifth Edition. Academic Enterprises. 1992. ISBN 0-931399-11-4

Others –

Cow/Calf Analysis: Key Indicators of Profitability. D. Boggs and E. Hamilton.
Proceedings: Range Beef Cow Symposium XV 1997 p. 233.

Breeds and Production traits of Meat Goats. J-M. Luginbuhl. North Carolina State
University Extension Bulletin ANS 00-603MG.

Selecting Foundation and Replacement Goats. M. Chappel. T. Hutchens. University of
Kentucky Extension Service.