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Info-pack

Guidelines for small stock performance testing

SCOPE: This Info-pack provides a brief description of the guidelines for small stock performance testing for wool sheep
KEY WORDS: Selection objectives, economic traits, indices, breeding values, production, reproduction.

Recommended citation: Olivier, W.J., 2016. Guidelines for small stock performance testing. Info pack ref. AP2016/001 Grootfontein Agricultural Development Institute.

Introduction

Performance testing is the most important selection tool for producers to be used when replacement sires and dams are selected. It is based on the measurements of economic important traits. These measurements are used to generate phenotypic indices or the estimation of breeding values. The objectives of the performance testing plan for a breed are to create a record keeping system and to increase production and reproduction efficiency.

Performance testing can be divided into three parts. The first part is the accurate collection of pedigree information and the recording of production and reproduction traits. The second part is the capturing and storage of all the data on `n centralised database for each small stock breed. These databases are kept on the INGERGIS according to the Animal Improvement Act. The third part is the manipulation of the data of each breed to generate indices and breeding values that producers can use for selection of replacement animals.

Selection objectives

The first step of performance testing is the identification of the selection objectives and criteria. These objectives give direction to the genetic progress of a flock and should be achieved through the selection of replacement animals. The lack of clear objectives will have a detrimental effect on the genetic progress of a flock.

Data recording

The corner stone of performance testing is the accurate recording of pedigree, production and reproduction data. The recording of inaccurate data will have a detrimental effect on the indices and breeding values that are generated in the end. Data recording start with recording of the pedigree information at mating. The following information must be recorded:

- During mating
  - Create a complete mating list
  - Ewe identification number, Sire identification number, Color code, Mating date (AI date), Mating weight of ewe
- During lambing
  - Identification number of Lamb and Ewe
  - Birth date (within 7 days), gender, birth weight, birth status, birth remarks, contemporary groups

The collection of this information is the most expensive part of data recording, but it is essential for the generation of production and reproduction information.

The following production traits need to be recorded:

- Growth traits
  - Weaning weight
  - Weaning status
  - Post weaning weight (meat breeds)
  - Post shearing weight (wool breeds)
  - Date of weighing
- Wool traits
  - Fleece weight
  - Midrib fleece sample for analysis of the following fleece traits:
    - Clean yield percentage
    - Fibre diameter
    - Staple length
    - Coefficient of variation of fibre diameter

    - Previous and present shearing dates
- Subjective traits (Merino sheep)
    - Wool and conformation score

The measurements of the body weights must be recorded accurate to the nearest 0.5 kg and for fleece weight to the nearest 0.1 kg. The groups in which the animals are managed should be noted, as these will be used to create contemporary groups that will be used to correct the weights for contemporary group effects. It is important to note that contemporary groups should contain a minimum of five (5) animals per group of the same sex, status and year / season of birth. Only the breeder can give the information to create these groups and accuracy is of the utmost importance.

Both the parents of at least 75% of the animals must be known and that a minimum of 75% of the ewe lambs and 45% of ram lambs undergo complete progeny testing. Genetic links must be established to another stud through the progeny of at least two rams (25 or more of progeny per ram in both studs undergo complete progeny testing). It is important to ensure that links between years / seasons within the stud are also established. The age difference within a group should also not be greater than 60 days.

The first data of an animal is submitted to the INTERGIS after the weaning weight has been recorded. The data can be submitted on paper or via an electronic file created with the Shepherd or SheepPro software. This data file should be based on the mating list and should include all ewes that were mated, including ewes that did not lamb. Information on all the lambs born, dead or alive, during the lambing season, a service code (natural mating or artificially inseminated), birth remark, birth date, sex, birth status, dam age, weight code, environmental code, management group, rearing status, weaning weight and weighing date for weaning weight, as well as full pedigree information, if available, should be included.

These data will firstly be used to add the pedigrees of the new animals to the national database for the specific breed, if the pedigree is known. A growth report will be generated from the weaning weights of the individual animals, which will include the corrected weight and an index for each animal. If the sires are known, a sire summary will also be generated.

A reproduction report will be generated if the dams of the animals are known. The reproduction data of the current lambing season will be added to the data of previous lambing seasons for each dam to get the lifetime reproduction. The information included in this report are the number of productive years, times lambed, lambs born, lambs weaned, ewe productivity index (EPI), EPI deviation, mean lamb index, age at first lambing, inter lambing period and date of last lamb. The EPI value is calculated within productive year groups and because it is a phenotypic value, it can only be used to compare ewes within a group.

The next data that must be recorded for mutton breeds are post weaning weights. This weight must be recorded between eight (8) and nine (9) months of age. This weight is submitted to the INGERGIS, together with the contemporary group and weighing date. A report is generated that include the weaning and post weaning weight, as well as a selection index that is a combination of the two weights.

For the wool breeds the next data will be recorded at shearing. This will include a post shearing body weight, fleece weight and midrib fleece sample of at least 30 g. It is very important to ensure that the average age of the group to be tested should be 10 months or older and the youngest animal in the group should be older than 280 days. Furthermore, the wool growth should be more than 180 days. The average body weight of the ewe lambs should preferably be more than 31 kg and that of the rams lambs more than 39 kg.

The body weight, weighing date, fleece weight, previous shearing date, present shearing date and the grade according to the breed should be submitted to the INTERGIS. The wool sample should be submitted for analysis of the wool characteristics. This information will also be submitted to the INTERGIS by the ARC or Studbook to be linked to the shearing data. A report will be generated from these data that will include the corrected body and fleece weights, as well as the wool characteristics. The report will also include indices for body weight, clean fleece weight, fibre diameter and staple length.

After the wool data were captured on the INTERGIS, a BLUP analysis will be performed to estimate breeding values for the respective economic traits according to each small stock breed's guidelines. A report will be generated that include all the respective breeding values, as well as the selection index as defined by each breed.