

## RECORDING SCHEMES AND DEERPLAN

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### SUMMARY

Recording schemes and software packages for the farm computer can be very valuable aids to management of a deer herd. However, it is essential that the basic purpose for purchasing software or being involved in a scheme is first clarified.

Generally schemes or software packages can be divided into 3 broad groups, namely -

1. Animal management
2. Business, accounting etc
3. Breeding and genetic improvement

Brief examples of the usefulness of such recording schemes are given together with a discussion of 'Deerplan', an example of a centrally operated breeding and genetic improvement scheme.

### INTRODUCTION

The proliferation of cheap home and small business computers over the last few years has been followed by a variety of software for all manner of farm recording. Packages targeted specifically to deer farmers have not been far behind. However, prior to investing, it is essential to first consider the purposes for which the software or recording scheme is required.

Generally for the deer farmer there are 3 broad groups of schemes or packages -

1. Animal management
2. Business accounting, ownership, etc
3. Breeding and genetic improvement

Rather than look at the specific details of the various schemes or packages, I will discuss the general principles relating to the 3 groups before discussing the particular scheme with which I am familiar, 'Deerplan' a breeding and genetic improvement scheme. Of the numerous schemes and packages available, some are designed for individual farmers and others for group use (with a central operation) while some can be used both ways.

#### ANIMAL MANAGEMENT

This type of information is essential in any development of PAHAPS type schemes. Specifically data on animal live weights, product sales, animal health procedures, reproductive performance, etc are collected and collated for each individual farm.

For advisers running these schemes, some of the greatest value comes from comparisons between farms, often enabling the adviser to pinpoint specific problem areas or those where changes are likely to be particularly rewarding.

As an example, comparison of weight for age data across farms and the setting up of target liveweights are situations where profitable

improvements in management can often be highlighted. While the targets for daily gains will vary among different parts of the country, the basic principles are the same. Taking the New Zealand red yearling hind, the target minimum live weight for individuals is 70 kg in March at 15 months of age. Consequently allowing for within mob variation the target for the average weight of a mob is 80-85 kg at this time. The times of opportunity to attain good growth rates are the first 5-6 months of life, prior to the first winter and then in the following spring from 9-12 months. Winter is a time of lower growth rates, due primarily to the physiology of the deer while during the second summer of it's life, there may be problems with feed supply for these animals where farmers are giving priority to lactating hinds. From the practical point of view the year for managing deer can be divided into 4 parts -

Autumn: March to May - 65 days

Winter: May to August - 100 days

Spring: September to December - 100 days

Summer: December to March - 100 days

Establishing target liveweights for the various classes of stock at the end of each of these seasons can be a great help in later identifying management problems, particularly with young animals.

#### BUSINESS ACCOUNTING

These packages need to provide simple stock reconciliations, records of ownership, sales of deer, etc for accountants and sharefarmers. Although

they are basically designed to produce records for accounting purposes, where sharefarmers are concerned, some basic productivity information is often valuable (e.g. reproductive performance, velvet antler weight).

#### BREEDING AND GENETIC IMPROVEMENT

Such schemes incorporate both recording and statistical packages, the aim being to record and analyse input data to come up with some sort of genetic ranking for the individual animals in a herd. While pedigree or stud book information usually forms a valuable part of these packages, it is virtually useless without comparative production information from which to assess true genetic merit of individuals.

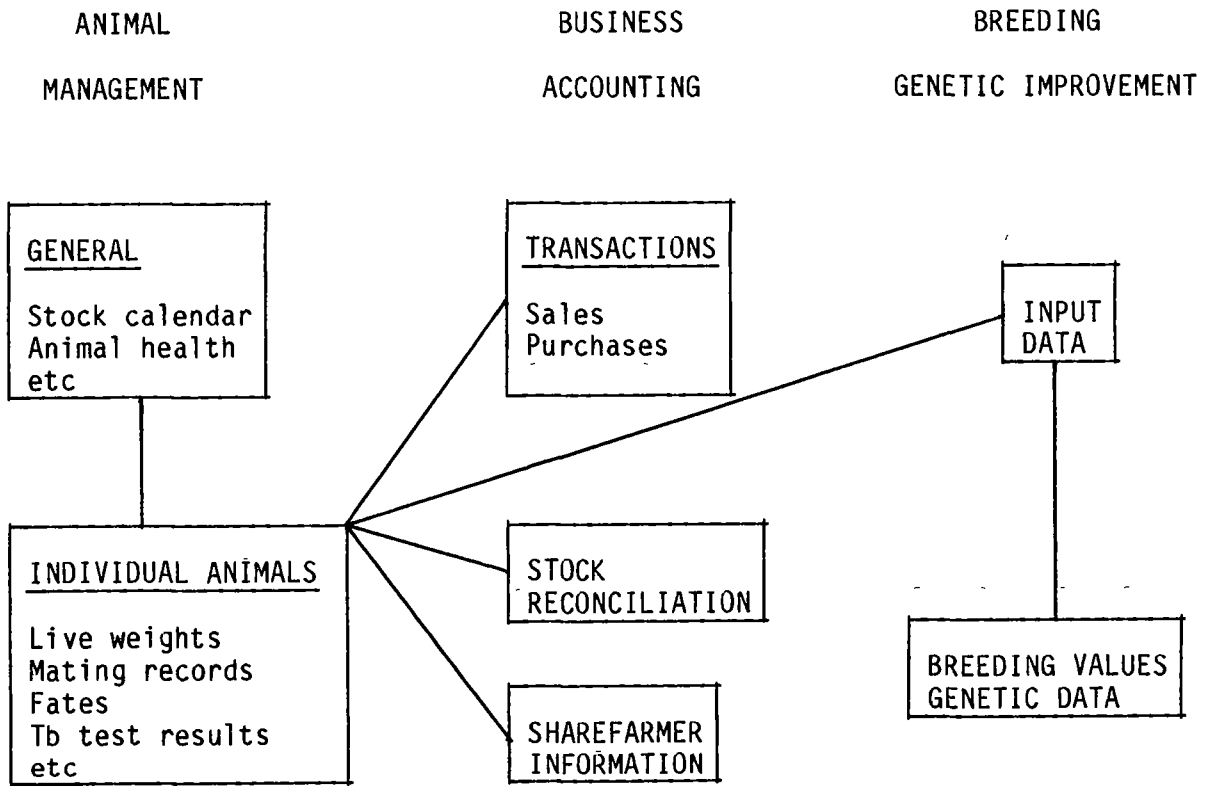
#### COMMON FEATURES

The 3 groups of packages or schemes outlined all have a great deal of basic data in common. It is mainly the way in which the information is used which highlights the differences between them. Figure 1 illustrates some of these relationships.

#### DEERPLAN

'Deerplan' is the most widely - known of the breeding and genetic improvement schemes, operating centrally rather than through the farm computer alone. In the longer term it is virtually certain that telephone line links from farm computers to the central computer will be available to speed up the processing and return of data to the breeder. The real advantages of a central scheme are that a common system is available for

Figure 1 General outline of some relationships between various recording schemes and software packages



all breeders and that the large data base allows considerable confidence in the derivation and use of adjustment factors in the calculation of the genetic data.

'Deerplan' has actually been set up by the New Zealand Deer Farmers' Association in order to make a positive contribution to the genetic improvement of our deer herds. The scheme is run through Beefplan with the group responsible for it including members of the NZDFA Council, deer farmers, farm advisers, Beefplan representatives and scientists. It is a scheme designed to enable practical deer farmers to improve their herds by

selecting the more efficient animals based on easily recorded measurements. However, 'Deerplan' is going to take time to develop and get going and for this reason, it is useful to think of it as developing through 3 stages -

1. Recording scheme
2. Ranking scheme
3. Breeding scheme

#### RECORDING

Currently we are at this first stage which involves collecting basic data. Breeding hinds were first recorded from calving in the 1984-85 season, with about 2000 hinds having been recorded in each of the first 2 years. Their 1984 born female offspring are now coming into the scheme as they are first mated as yearlings. Similarly yearling stags are now entering the scheme in their own right.

The information required is described below -

CALF - Pedigree (sire and dam)

Birth date (as accurate as possible)

Weaning or March weight

15 month weight

Weaning mob

HIND - Stag to whom mated (gives the pedigree of the offspring)

Annual liveweight during autumn or winter

STAG - 2 year old casting and velvet harvest dates

Antler weight and characteristics for stags of all ages

Annual liveweight, probably either pre-rut or mid-winter

At this *recording stage*, the farmer will simply have returned a computer printout of the data sent in. However, it is this information which is absolutely essential for the development of the scheme. In addition to the basic information, the farmer can also record other characters of interest such as temperament which need to be considered when selecting breeding animals.

#### Ranking

Now that there is a considerable amount of basic information available from the recording scheme, it is being analysed by Catherine Rapley at Massey University, the aim being to estimate the mathematical adjustments required to assess all hinds within a herd on the same basis. These adjustments are likely to include the sex of the calf, the age of its mother, birth date of the calf, etc. In order to speed up this stage and to obtain more data for analysis, backdata are being collected from breeders who have been recording for some years. These backdata are particularly important to estimate genetic parameters (heritability factors, etc).

By using the various calculated adjustments on the farmers' records, animals will be given a *ranking* as to their position within the herd. These rankings will be very useful and will enable a breeder to identify

the top hinds. Also by comparing the progeny of the various stags used in the herd, some idea of their comparative genetic merit will also be available - effectively this will provide a progeny test of the stags used.

It is hoped, that from late 1987, 'Deerplan' will be running as a *ranking scheme*. This will mean that data returned to the breeder will also include rankings for those hinds recorded in 1984 and 1985.

#### Breeding Scheme

This stage will require a vast amount of data, as it involves the calculation of important genetic parameters such as the heritability of weaning weight and 15 month weight. The genetic relationships between various characters such as weaning weight and velvet weight will also be calculated. This could mean that the breeder will be able to identify those hinds which are likely to leave good velvetting stags.

Once this stage is reached, the farmer will get back from Deerplan, estimates of the BREEDING VALUES of the animals in the herd (Sheeplan currently provides breeding values). These breeding values will give the breeder an estimate of the likely superiority of the offspring of a particular hind or stag compared with the average.

#### The Information

Pedigree is the first requirement in that it is essential that the parents of the calf be known. This means single-sire mating and hind-offspring pairing are absolutely vital. Practical experiences of methods for pairing have been described (Cowie *et al* 1985; Cowie 1985).



Birth date is important simply because a calf born earlier in the season is older at weaning and is likely to be heavier having had more time to grow. Although we would expect early calves to be much heavier, we have no idea just how important birth date actually is. Certainly calves born in January are lighter than calves born in November when weighed at weaning but it may be that a 1 or 2 week difference has little effect. Therefore the information is required in order to find out just how important birth date is and to work out any appropriate adjustments needed. Another possible benefit of birth date information is the scope it may offer for genetic selection for an earlier calving.

Weaning mob is important as it allows the calculation of paddock effects. It is well known that there are variations between groups of animals run in different environments - the same thing occurs within farms. Therefore it is important that hinds be run together for as much of the year as possible and especially during lactation to avoid confounding genetic and environmental effects. In practice, this means that suckling hinds and calves should not be run together in their sire groups but need to be mixed up with hinds mated to other sires to enable adjustment for these paddock or mob effects. This does not prevent the farmer from having several different mobs but simply means that for accurate genetic information, the various sire groups need to be spread through these mobs.

Weaning weight is required to assess the mothering ability of the hind. If calves are to be weaned post-rut, then this weight should be

taken in March and not at weaning. A post-rut weaning weight can be heavily influenced by the sire of the calf and hide information about the hind's value as a mother.

The 15 month weight is very important. This is the age when hinds first go to the stag so it is a good time to select replacements. With stags it is the first real opportunity to look out for potential sire stags.

We know that 15 month weight is a good indicator of ultimate body size. However, selecting only on 15 month weight would mean producing bigger and bigger animals so that we would all end up with deer more like wapiti than red deer. If the breeder really wants wapiti-sized deer then the easiest thing to do is start with wapiti now. However, the real objective of the whole scheme is to select the more efficient animals (Dratch and Fennessy 1985). Big is not necessarily better and the annual hind weight is intended to be used as a base to compare the progeny of different hinds.

The annual hind weight is recorded sometime during the autumn or winter and is intended to give an estimate of the mature weight of each hind. Relating the weight of her offspring to her own weight will give some idea of efficiency. For example suppose there are 2 daughters of the one sire, each from a different hind, one of which reaches 90% of its mother's weight at 15 months, and the other which reaches only 70% of its mother's weight at the same age. It is logical that the first is a better

bet. The real objective behind the annual hind weight is to bring the information on all animals back to some common base. Obviously it is going to take a lot of data from farmers to develop the best way of using the offspring - hind weight relationship.

Stag recording will be very simple and involve little more than most farmers are doing now. Although the information collected will be simple, the benefits to the user should be considerable.

With the stag scheme, an annual liveweight and antler characteristics will be recorded. The antler characteristics will probably include a stage of growth scale to overcome variations in grading of velvet antler between various buyers. However, 2 year old velvet weight can be a good predictor of subsequent velvet production provided we know the period of growth. Therefore for 2 year olds, both casting and harvest dates need to be recorded. The weights can then be adjusted to a standard growing period to allow meaningful comparisons between stags.

#### REFERENCES

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