MANAGEMENT OF FARMED FALLOW DEER

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FEEDING MANAGEMENT

Feeding management of farmed fallow deer is basically similar to that of red deer as described by other speakers at this session. Fallow deer are about half the size of red deer and their individual daily feed intakes are also approximately half those of red deer. Seasonal growth patterns and "feed intake: carcass output" ratios appear to be similar for the two species. However, the overall size difference may influence the types of pastures that are suitable for the two species. Our experience suggests that fallow deer favour sheep-type pastures and have a poor ability to utilise long, rank sward.

MANAGEMENT OF THE REPRODUCTIVE HERD

During the initial establishment phase of fallow deer farming, where overall productivity is limited by the number of breeding does on farms, it is not surprising that females are of high value relative to the meat producing units, yearling bucks. At present mature does are fetching about $900 each. This is about 4-5 times the meat value of the yearling bucks. It is, therefore, obvious that maximising reproductive performance of fallow does is of paramount importance. The major objective is to obtain the maximum number of weaned fawns each year. This involves 2 main components: (1) maximising the fawning rate and (2) minimising the fawn mortality rate. I will discuss these points in detail following a general introduction to fallow deer reproduction.

Control of reproductive seasonality

Fallow does will only exhibit oestrus (heat) and fertile ovulation during the autumn and winter months. Likewise, bucks are fertile only during this period. The onset of reproductive competence in autumn is undoubtedly governed by *photoperiod*, the amount of daylight within each 24 hour period. Fallow deer are, therefore, short-day breeders.

Optimising conception rates

Infertile fallow does are very rare. However, failure of does to produce fawns in any one year could relate to one of several factors:

— failure of the buck to adequately cover does
— extremely poor nutrition before and during the rut
— pre-natal abortion

As first oestrus in does is highly synchronised, it is possible that a single buck may be confronted with more than one oestrus doe at any one time than he can mate. Fallow bucks **do not** have the high libido of rams, therefore, buck:doe ratios must be considered carefully. Furthermore, young bucks become sexually exhausted earlier during the rut than older bucks. With this in mind, the following ratios are given as a guideline.

Buck age	Number of does to mate
16 months	10
27 months	15-20
39+ months	25-35

If single-sire mating is practiced, then bucks should be removed after the first oestrus (i.e. about 15 May) and replaced with a fresh buck. Mating groups should be separated by a paddock width as bucks will fight through fences, accelerating the onset of exhaustion.

If multi-sire mating is practiced, similar ratios of bucks:does will still be effective if large paddocks are used. It is particularly important to allow individual bucks enough area to establish non-overlapping territories. Some tree cover is an advantage in these cases. Multi—sire mating is still the most common practice on fallow deer farms in New Zealand.

The effects of poor nutrition before and during the rut upon doe reproduction have not been studied. It is possible however, that emaciated does may not cycle during the rut. During dry summers, supplementary feeding of lactating does may reduce this problem. The present high price obtained for weaners means that any benefits obtained through increased weaning weights of fawns and subsequently increased conception rates in the does will more than offset the cost of supplementary feeding.

On a number of northern New Zealand farms, up to 10% of does have aborted between August

Table 1:

Onset of rutting activity in bucks:	15-20 April
Period of first oestrus:	15 April-10 May
Ovulation rate of first oestrus:	1 (very rarely 2)
Conception rate at first oestrus matings:	85%
Returns to second oestrus:	15%
First oestrus cycle length (± sd):	21.0 ± 0.6 days
Potential number of oestrus cycles:	6-7
Complete cessation of cyclic activity:	Sept-Oct
Gestation length (± sd):	234 ± 2.7 days
Onset of fawning season:	1-5 December
Duration of peak fawning season:	85% born between 1-25 December

and November in some years. There is ample evidence to suggest that some of the abortions were related to leptospirosis. Subsequent treatment of does by annual vaccination has been followed by an apparent reduction of abortions on these farms.

Reducing farm mortality rates

Peri-natal fawn mortality is the major source of reproductive wastage on New Zealand fallow deer farms. Mortality rates vary between 8-20% of all fawns born. The major causes of fawn deaths are listed below, as determined from postmortems on retrieved carcasses.

Table 2: Fallow fawn mortality.

Cause of death	% of total deaths
Non-viability	25%
Starvation	19%
Dystocia	14%
Misadventure	11%
Gut infection	10%
Throat and jaw infection	7%
Lung infection	4%
Other causes	10%

Table 3: The influence of birth weight of fawn mortality.

Birth weight (kg)	<3.0	3.0-3.9	4.0-4.9	5.0+
Mortality (%)	60	16	11	11

Non-viability (undersized fawns that failed to walk) accounted for a quarter of recorded deaths. This was further reflected in the relationship between birth weight and fawn mortality.

Further investigation of the problem has shown that first fawning does (2 year olds) tended to produce lighter fawns at birth, relative to their own liveweight, than older does. Mortality of fawns from first fawners was as high as 35%.

It is possible that the level of nutrition offered to does during the last third of gestation may influence birth weight. It is therefore, *not* recommended to restrict doe feed intakes during this period. While this is sometimes done with red hinds to reduce dystocia problems, it does not appear to be necessary for fallow does, which have a considerably lower dystocia rate.

Fawn deaths through starvation may be partly due to disturbance, although the starvation rate was considerably lower than for red deer herds monitored at the same time. It is likely that a proportion of starvation deaths are due to poor mothering ability of some does. If these does can be identified they should be culled from the herd.

Deaths of fawns through misadventure are invariably due to poor fencing materials, resulting in "hang-ups". By fawn-proofing all fawning paddocks, a significant contribution can be made to reducing fawn mortality.

Increasing fawn weaning weights

Weaning weights of fawns reflect the lactational status of their dams. Supplementary feeding of lactating does during droughts will have positive effects on fawn weaning weights. Most types of supplements, especially grains, are readily accepted by fallow deer.

HANDLING TECHNIQUES

Fallow deer have a reputation for being timid, flighty and intractable. This reputation has undoubtedly arisen from abortive attempts to yard and restrain individuals during the earlier phase of fallow deer farming. The yarding systems employed were invariably designed for red deer and were completely unsuitable for fallow. More recently systems have been developed specifically for fallow deer. These have taken into account particular behavioural characteristics of the species and have proved to be very successful.

There are four major components of successful handling of fallow deer:

- Correct placement of gates between individual paddocks and the raceway.
- Central or peripheral raceway leading to the handling facility.
- Covered handling facility.
- Mechanical device for restraining individual deer.

Each of these components will be discussed separately.

Gate placement

The ability to move groups of fallow deer quickly and quietly through gateways and into other paddocks or into the raceway is clearly vital if the deer are to be yarded. In most cases, the deer will soon learn to move through most gateways on the farm. However, there are invariably some gateways that always seem to present a problem, particularly if they are near buildings or are placed centrally along a fenceline rather than at corners or angles. Some thought must be given to the placement of gates relative to topography.

Gates should be 3-4 metres wide and swing back flush with the fence. Small gaps between the gate and fence can often be a trap for individual animals, particularly weaners.

Do not push fallow deer through a gateway. Simply manoeuvre them towards the gateway and then wait for them to decide to go through. If an individual cuts back behind the musterers, it is advisable to allow others to join it before attempting to bring it back as individuals often panic in the absence of herdmates. Generally, when one deer decides to go through the gateway, the rest will soon follow.

Raceway

A central or peripheral raceway should be at least 3-4 metres wide. As it will take considerable pressure at times, it will need to be erected well.

The final 30 metres leading into the yards requires special attention. Fallow deer do not like an abrupt transition from netting material to wooden yards, consequently, this part of the raceway will receive the most pressure. A gradual transition from deer netting to chain mesh, to wooden rails, to a completely board holding pen will facilitate a smooth flow into the yards. Some farmers further heighten the fence to 3 metres at this point.

The final gate at the start of the transition zone into the yards should be fully boarded. Once this is shut behind the deer, they are as good as yarded.

For smooth flow into the covered handling shed, a series of blind corners, where deer think they are escaping from the musterers, is useful.

At all times while moving fallow deer along a raceway, do not apply too much pressure. As they move forward, then also should you. When they stop, then do so yourself, but always let them know you are there. In this way they will progressively move towards the yards.

Covered yards

There is no law that states that fallow deer yards must have a roof. However, covered yards have many advantages, including allowance for controlled lighting and freedom from the constraints of inclement weather.

Once contained in the yards, the fallow should be split into manageable groups by quickly drafting into small pens. Lighting should be dimmed at this point and drafting can usually be done without physical contact with deer.

The walls of the pens should preferably be of solid ply construction with no projections or gaps that may injure the deer. Doors should open out flush with the wall and not show any hinge gaps when closed.

All holding pens should ultimately lead to a light controlled pen that acts as a reservoir for feeding individual deer into a lighted tunnel. When the deer are held in this pen, the lights should be on. Immediately prior to moving individuals into the tunnel, the lights in the pen are switched off, and a door into the lighted tunnel opened. In many cases, 1 or 2 deer will volunteer to walk into the tunnel. In some cases they may have to be coaxed in. If there is a need to go in with the deer, ensure that the lights have been recently switched off and it is completely dark inside the pen.

Once held in the tunnel, deer can be moved one by one into a mechanical restraining device.

Restraining individual deer

A mechanical restraining device is an essential piece of equipment on every fallow deer farm. There are three basic designs.

Bale — This is the simplest and cheapest restraining device. It consists of a box construction (approximately 1.2 metres long, 0.30 metres wide and 0.8 metres high) with a hole at the end or on the side through which the deer's head emerges. The animal is restrained simply by holding the head and neck at a slight angle. An animal is released by opening a panel in the front.

While this design allows for rapid immobilisation for drenching and vaccination etc., there is limited access to other parts of the body (e.g. feet, rump). Furthermore, antler velvet is frequently damaged within the bale.

Crush — A crush is essentially similar to a bale except that it incorporates a movable wall or panel that forces the deer against another fixed wall. This restricts movement of the deer, often allowing for a larger working area and more leisurely treatment of the animal.

Some crushes utilise hydraulic rams to hold the wall in place. These tend to be rather expensive devices. As with the bale design, there is often limited access to certain parts of the animal, particularly the feet.

Cradle — The cradle is often a more complex design than other devices. It consists of a box construction with bevelled walls. As the floor is released from beneath the deer, the animal's torso becomes suspended on the bevelled walls and the feet protrude below. A cradle is necessarily suspended above the floor of the shed, requiring a ramped tunnel as a lead-in.

The deer is released onto the yard floor by swinging out an entire wall of the cradle. Access to the deer in the cradle is via panels on the wall. Also, access to the feet is possible from below.

Handling of bucks

Hard antlered fallow bucks are generally aggressive towards other deer during yarding. This often leads to serious injuries, particularly to does. Removal of hard antler does not completely alleviate this problem, as antler stubbs can also cause serious bruising and puncture injuries.

Fortunately, bucks are not aggressive while growing velvet antler (October—February) and may be safely yarded during this time. However, bucks occasionally need to be yarded in autumn and winter, when they are most aggressive.

Complete removal of pedicles and antlers reduces the amount of aggression shown and the severity of injuries. However, removal of the pedicle of a mature buck will not prevent the annual regrowth of antler, although it undoubtedly affects the ultimate shape of the new antler. Pedicle cauterisation at 5 months of age will successfully and permanently poll fallow bucks, eliminating the need for annual antler removal. The technique requires complete removal of primordial pedicle tissue in the young animal and should be performed under local anaesthesia, using a calf-dehorning cauterising iron.

Polled bucks have been successfully used as sires on Ruakura. They have shown little aggression towards does during yarding. It does not prevent sparring in the paddock during the rut season, and such fighting can still lead to occasional deaths of bucks, particularly in large bachelor herds.