

DEER FARMING MANAGEMENT CALENDAR

and

ANIMAL HEALTH GUIDELINES

for

NORTH AMERICA

- I Part A: Red deer and hybrids**
Part B: Fallow deer
- II Recording and selection parameter**
- III Stock identification**

A NOTEBOOK - JULY 1995

**Alternative Livestock Conference
Center for Alternative Plant and Animal Production
University of Minnesota**

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The following notebook summaries important events throughout the year for deer farming management presented for each class of stock -

- Red deer - Birth-weaning (fawns)
- Weaning
- Weaning - 15 months age
- Breeding females
- Adult stag management

Fallow deer

Recording and selection and animal identification systems

It is intended as a detailed guide only. Individual forms and different areas of farming may have specific requirements in veterinary treatments or management systems to satisfy local conditions and the deer's adaptability to them. Notes have been produced with experience on Minnesota, Iowa and Wisconsin deer farms in particular.

Individual problems or concerns should be fully discussed with veterinarians and other experienced agricultural professionals.

PART A. RED DEER & HYBRIDS

A. CALVES/WEANERS

Born: North America; May-June-July

Gestation: 234 days (238-243 hybrids) \pm 4 days

Generally single births only

Cycle length 19 days. Birthweight males 9 kg (21 lb); females 7.5 kg (17 lbs)

1 Birth to weaning management

Birth requirements

- a) *Cover* - deer calves are natural hiders for the first 1-5 days and seek cover until up to 2 weeks old before running with the hind. If no natural cover occurs in pasture, consider:
- constructing shelters from hay bales, windfall branches, tree trunks or timber.
 - leave unmown strips of pasture in corners of paddocks or unmown areas in middle or quiet areas of pasture.
 - tie branches of trees to fence lines or hay feeders in easily accessible areas for cover in open pastures.
 - leave round hay bales in calving pastures.
- b) *Shade* - (if possible) individual specimen trees or areas of woods.
- heat exhaustion is becoming a problem with farm raised deer which become so docile they don't seek protection as readily as they do in the wild.
 - construct shade shelter with snow fence light batten, light trellis timber or synthetic shade cloth supported on poles.
- c) *Observation* - it is recommended that until farmers are familiar with their stock and with normal calving behaviour and have a real need to record and identify at birth, the no disturbance policy be followed. If multi-sire mating is used, or hinds are in calf to unknown stags consider observing hinds from a distance to get an estimate of birthdate (\pm 4 days). Match up calves later in the season.
- establish a regular timed routine for observing calving hinds, preferably from outside the paddock. Before entering the paddock carefully assess what is happening.
 - usually hinds calve early morning prior to dawn. 8.30-10.00 am is a quiet time for the herd and suits observation or calving runs.
 - binoculars can be your most important tool.
 - avoid disturbing resting fawns as they can panic and will often charge off in the opposite direction to the herd and stop only when they hit the fence. Injury or deaths can result.
 - if tagging calves try and avoid very newly born - tag and handle at 24 hrs to ensure calf-hind bonding is not disturbed. Calf age can be guessed by seeing if the soft covering on the hooves is worn off which occurs in the first 24 hours after birth.
 - no dogs, stray visitors, unfamiliar events.

- the practice of tagging at birth for accurate identification must be carefully weighed against the advantages of no disturbance.

d) *Good feeding*

- hind feed requirements increase approximately two and a half times over their winter feed maintenance ration once lactation begins. Good green leafy pasture will provide all the nutrients and quantity for milk production. Pastures can be prepared in advance by mowing, or be regrowth from hay and silage production.
 - regrowth hay pasture 4-6" high, or controlled pasture growth using rotational grazing and mowing to remove rank grasses is ideal. Good clover and alfalfa production should be encouraged as deer preferentially feed on these legumes.
 - balanced alfalfa, red and white clover, timothy, brome and prairie grass pastures are ideal, but well managed clover/rye grass pastures provide all the nutrients for growth.
 - in summer drought or feed shortages, high energy supplements (corn, barley, oats, pelleted rations) should be fed rather than bulky hay supplements. Consider haylage rather than hay if there is a need for total supplementation).
 - simple intake/requirements equation. High energy diets are required. Bulky feeds cannot be eaten in sufficient quantity to provide full rations for lactation.
 - every kg the calf gains while on the mother gives an advantage at weaning that allows the deer to reach its full growth potential before 15 months of age. Good feeding during lactation is the most cost effective growth phase of the young deer. Late summer introduction to supplements restores hind liveweights and familiarises young stock with grains, etc.
- e) Monitor calves for ill-health, scouring, mismothering (usually from pushing through or under poorly erected fences) and seek advice if concerned. Fresh dead calves should be post-mortemed to check disease concerns if the numbers are unusually high (>2%).
- f) Good clean water supply. Contamination can yield some fatal protozoan linked diseases. Lack of drinking water can cause serious health problems for lactating hinds.

Calf death checklist (in order of most likely causes)

Note: Discuss with your veterinarian.

a) *Dead at birth*

- i) Large calf - dystocia or birthing difficulty. Calf may be licked; birth membranes still around head and mouth; hooves still soft. Underside will not be cleaned. May have swollen head, protruding tongue.

Birth problems:

- first calving hinds
- overfat, unfit hinds
- poor presentation (one or both front legs caught)
- disturbance during birth process
- very large hybrid calves
- backwards presentation (although this is relatively common and often non-complicated)

- ii) Still born - dead in uterus. Found with placenta still attached, often very smelly. Deserted either caused by disease (leptospirosis, clostridial) or mishandling prior to calving death.
- iii) Small calves - survival is markedly influenced by liveweight. In bad weather, eg, heavy rain, thunderstorms or cold wet conditions, calves may have breathed by birth, but are not viable to stand and feed. Most frequently found after wet weather. Red deer calves weighing less than 4.0 kg (9 lb) are rarely viable. Calves at 6-7 kg have at least a 90% survival chance.

Severe restriction of hind feeding within four weeks of birth can unnecessarily reduce birth weights. If hinds are overfat at the end of winter then some exercise programme could be considered (regular running up and down laneways or quiet mustering - or if possible shift to open hilly pastures with limited pasture.

Hind weight can be stabilised over winter by controlling feed intake. Aim to have hinds only 4-6 kg heavier if overfat at mating, than mating weight at mid October.

- b) *Dead 2-4 days after birth* - calf found dead, often no sign of hind, no apparent injuries, often very thin.
 - i) Mismothering and starvation - desertion, caused by disturbance, often in young hinds; overcrowding of hinds in paddocks or calf has wandered off and may not be in the correct paddock. May be found in unexpected areas. Commonly up to 24% of calf deaths. Overcrowding in calving paddocks is probably the greatest cause.
 - ii) Heat stress - calf found in open paddock, no cover, apparently well fed by other standards; dehydrated. Rare <5%.
 - iii) Navel infection; pneumonia - often some days after bad weather in muddy, dirty paddocks with little cover. Visible signs of sickness, foam around mouth, rapid loss of condition, blood infections. Rare, 2-5%, reduced by pre-calving vaccination of hinds, or ensuring calving pastures are well grassed and sheltered.
 - iv) Injury, misadventure - beaten by rogue hinds; caught in fence. Generally obvious physical signs, fawns lost in next pasture or outside perimeter fence. Starvation is the primary cause. Up to 18% of deaths. The majority of cases occur after bad handling or disturbance of stock.
- c) *Older calves - scouring/death*
 - i) Protozoal infection - contaminated water supply - continuing deaths in other calves.
 - ii) Clostridial disease (bacterial).
 - pulpy kidney in large fast growing calves
 - tetanus - (ear tagging infection)
 - iii) Accidental - deserted in paddock as mob is shifted; injury in paddock, gateway, laneways; "collectables death", chewing and ingesting plastic (baling twine, plastic wraps), wire.

2. Weaning (1st - 2nd week September) - Ideally

(Pre-rut weaning (14-20 days prior to introduction of breeding stag))

Advantages - Adults

- a) Allows preferential feeding of hinds to regain lost body condition, "flushing" effect will increase ovulation/conception in the first breeding cycle, although does not increase overall calving %.

- b) Allows sorting and drafting of hinds for age, condition. Sorting into single sire mating groups, selection/cutting stock for sale/disposal, hinds for AI programmes, etc.
- c) Occurs often in more favourable weather conditions and reduces stress due to cold and lack of available green feeds.
- d) Allows pre-mating animal health treatments - selenium, annual yearling and booster vaccinations and drenching.

Advantages - Weaners (early weaning allows):

- a) The introduction of animal preventative health programmes. (Lungworm control critical for growth. Yersiniosis vaccination possible, Clostridial disease prevention)
- b) Selection of stock for sale or location (weighing and assessment).
- c) Weaning while good autumn pasture is available, begin supplementary feeding for weight gain. This encourages good growth production planning for target growth.
- d) No handling of mating groups and stags in late rut for worm drenching or for selection of sale stock, etc.
- e) Weather conditions are generally warm and favourable.

Disadvantages

- a) Separation stress can be higher as calves are young and there may be several very late born calves.
- b) Smaller or late born calves may be penalised.
- c) Accidents/damage in yarding and handling.

Note: small and late born calves should be separated and given preferential treatment. Below 24-28 kgs (red deer) may be better unweaned.

- d) Small properties (less than 25 hinds, 5 acres) may have problems keeping hinds and calves separate. Consider indoor housing or post-rut weaning.
- e) Risk of grain overload if supplements introduced for the first time. Care is required with any grain or pellet introduction.
- f) Requires good internal fencing subdivision and stock control.

Note: Reduce stress; minimise handling; don't wean in bad weather; provide shelter and good pasture/hay and water.

Post-rut weaning (mid November-December)

Advantages

- a) Reduced separation stress; no loss of growth rate through mating.
- b) Hinds can teach weaners to eat supplements.
- c) Reduced labour/workload during harvest/pre-winter preparation.

- d) May suit small units, or extensive properties.

Disadvantages

- a) Extends calving concentration pattern. More late births result, or if stags are limited to an eight week mating season, dry hinds may result.
- b) Hinds may have little chance to regain body condition prior to winter.
- c) Lungworm control in vulnerable weaners is compromised.
- d) Does not allow easy selection of mating groups, etc., unless calf-dam pairing has been done prior to rut.
- e) Higher risk to exposure from yersinosis, parasitism and stress related conditions and bad weather conditions.

Note: Accumulating evidence suggest elk and elk weaners gain a productive advantage at 15 months and two years old if left unweaned until post-rut, or even naturally at end of winter (later maturity and prolonged peak milking ability of elk cows). Supplementation to maintain cows condition in autumn and through mating is important. Hybrid can be treated the same as red deer.

Management of weaners and weaning

- a) Check yards, laneways, gates, etc., for potential foot traps or sources of injury as physical damage is the most common source of loss.
- b) Do not overcrowd hinds and weaners in yards as the young stock are very easily trampled. Keep group sizes small for first yarding.
- c) Separate adults as soon as possible after stock are yarded.
- keep numbers of weaners in pens relatively small. Sudden noises, voices, gates opening without warning, etc, will create panic in weaner pens.
 - in keeping weaners in yards for a prolonged period, check gate hinges/locks for foot traps (especially top hinges) as weaners will jump in pens and can readily catch front legs and become hung up. Consider, especially if barn feeding is used, using a quiet old dry hind, or rising yearling, pet deer, etc., as a focus point in a pen of weaners to promote calmness.
 - be aware of good ventilation needs. Deer can generate hyge amounts of heat with stresses involved in yarding and weaning. Heat stress can easily result particularly in traditional barns converted to handling facilities or winterised for comfort.
 - keep visitors to a minimum.
- d) Use grain supplements with great caution by slow introduction. The best option is by offering free choice hay and good pasture with a slowly increasing grain ration (say 0.5 kg of ration to every 8 deer at first, then increasing to .4-.8 kg/head over 10-14 days).

Health, treatment programme

- a) Take veterinary advice for your area.
- b) Have everything you need on hand in advance.
- c) Treatments:
 - i) Lungworm (prevention programme, or if a known problem exists)
 - Oral or injectable clear drenches (ivermectin and moxidectin). Ideally the first dose should be administered 3-4 weeks before weaning. Dosage on a body weight basis. (Injectable Ivomec cause a pain reaction in deer and can be difficult to administer - oral or pour on anthelmintics are recommended).
 - Pour-on drenches have some use in deer reduce the stress of application and are seemingly effective. **Not** all are yet licensed for use in deer, but trials show they are safe at doseages recommended. Check withholding periods.
 - Repeat at 4 weeks if advised and on continuing 4 weekly basis until early winter if pasture is still available. After drenching use "safe pasture", ie, regrowth hay crop of paddock last grazing by older stags or non-lactating hinds.
 - Any of the 5th generation white drenches are also very acceptable in red deer at the recommended liveweight doses. Advice should be sought in problem areas. indications are they may not be appropriate for wapiti or hybrids.
 - ii) Clostridial vaccination "insurance policy", 5-7 or 8 way Clostridium, 2 mls standard dose subcutaneous (depending on area and use in cattle), Chauvoci - Septicum, Novyi - Sordellii, Perfringens, Bacterin. Inject subcutaneously in the neck area with care, on the opposite side to site for Tb testing.
 - Gives protection against pulpy kidney, malignant oedema, blackleg, tetanus, blood poisoning, general bacterial attack
 - Sensitising dose for females, protection for slaughter males.
 - Require a booster dose at 4-6 weeks later, and recommend an annual vaccination.
 - iii) Leptospirosis vaccination if recommended - 5 way dose. Effective against all common strains (Hardjo, etc., common to milking cows and swine).
 - Veterinary recommendation - 2 mls subcutaneous.
 - Sensitivity doses for females.
- d) Optional treatments (Rabies vaccination etc)
 - i) Trace element doses - on veterinary advice
 - Selenium - if deficient and dietary supplementation is not feasible. Most important mineral for deer growth and fertility. Can be administered via oral drench with Ivomec, or 5th generation white drenches (Synanthic, etc).

- Copper - injectable (can create a reaction to adjuvant used).
- Copper needles - (cupric oxide wire in 4 grain gelatin capsule) or oral drench.
- or Marginally, via salt lick or loose mix. Deficiencies cause loss of production, hind leg ataxia, loss of condition, brittle bones, wasting. Veterinary advice required.

ii) Supplementary vitamins - (ration booster)

Note: For an efficient animal health programme, deer should all be identified, the treatment, date, dosage and any abnormal physical signs recorded and an annual diary of events built up.

Stock weight and change in weight between treatments are useful indicators of performance and effectiveness of the treatment programme.

- In early years post mortem analysis of deaths and frequent involvement of local veterinarians is important.

3. Weaning - to 15 months (Stud stock, potential breeding stock)

Good feeding is critical during late fall, winter and spring and good growth can be achieved by feeding high quality hay and haylage, balanced with either pelleted formulated rations, or a mixture of grains, corn, pelleted rations. A typical weaner ration for growth might be:

1.6 lbs whole grain corn and/or	} these can be interchanged	8	MJ/ME feed units
.7 lbs oats/barley			
1.0 lbs deer formulated ration	} depending on cost/availability	2	MJME as feed units
2.5 lbs high quality lucerne or/clover hay		4.5	MJME as feed units
		<u>12.5</u>	MJME as feed units
		26.5	= feed units offered
		19.0	= feed units needed for maintenance requirements

Approximate cost = \$0.45¢-\$0.52¢ per day for 200 days

Appetite - intake kick will occur from 3rd week in February - early March. Increase supplementation until spring pasture can support feed requirements. Requirements increase 10% per week during this period. To achieve top spring growth this appetite increase must be met.

- if possible preferentially feed and separate smaller and later born calves.
- weigh to monitor growth and feeding at monthly and 6 weekly intervals.
- booster vaccination 4-6 weeks post weaning.
- spring drench for lungworm prior to pasture feeding (optional, determine by faecal monitoring), plus minerals.
- record pedicle initiation and spike growth in males.
- May/June/July, remove spikes, either as velvet antler (veterinarian required) or early August, once stripped.
- separate hinds and stags at 12 months of age.

For venison production, weaners on good pasture conditions can be successfully managed on rotation grazing of autumn saved pasture with top up supplementation from available grains. Pastures should be 75-100 mm high if possible and either grazed to ~ 20 mm before shifting, or ideally only reduce sward height by 50-60% before moving on to ensure best growth. In wet or muddy conditions weaners should be shifted more frequently as they do not like fouled grasses.

Increasingly quality silage or balage is finding a strong role in supplementation.

Notes: HAY QUALITY

While many cervids have dietary capacity for large amounts of browse (elk, moose), fallow deer, and to a lesser extent red deer because of their digestive anatomy and behaviour, are known more as selective grazers and tend to select grasses and legumes (alfalfa, clovers) in order of preference and are more suited to pasture than browse. Wintering rations must reflect that preference in the supply of relatively low fibre, high quality rations.

In terms of hay quality, while typical North American dairy pastures are ideal in species make up, ie,

balanced red and white clover	≈ 20-25%
alfalfa	≈ 15-25%
bromes, fescue, timothy	≈ 60%
annual ryegrasses, etc	5-10%

converting these pastures to high quality palatable hay requires a different approach to feed conservation. With small numbers of stock, round bales are not necessarily ideal.

If stored outside considerable wastage and spoilage can result in wet conditions, risking fungal contamination and dramatically lowered feed quality. Deer should not be offered spoilt or mouldy hay; listeriosis has been reported in New Zealand where deer have been fed poorly prepared silage.

Deer selectively eat hay by stripping leaves, flowers and palatable seed heads from plants and will actively reject bulky stalky material.

Cutting date and handling can greatly improve hay quality.

Recommendations are:

a) Pure alfalfa hay

- If possible select second cut alfalfa where stalk length is greatly reduced, or cut first cut at 10-12" length at 10-15% blue flower stage.
- If weather conditions are favourable, consider cutting and roller crimping - conditioning of hay to speed drying.
- Hay should be handled as gently as possible to preserve maximum leaf and not baled under very dry hot conditions if leaf fall and excessively hard stalks are risked.
- By "animal preference" consider 45-50 lb square bales rather than round "big bales" with baler tension at medium setting rather than high for close packed heavier bales.

Wastage of up to 50% can be reported in alfalfa that is excessively stalky, or baled before fully conditioned and allowed to heat, creating white mould and fungal deterioration.

b) Pasture hay

Preferably meadow hay should be cut at the same stage as suitable for wilted pasture silage or quality haylage, ie, 10% seed head emergency in grasses, or 60% red clover, white clover flowering stages. As for alfalfa, leaf loss from clover is the major source of quality reduction apart from rain and weathering or rot.

A mower conditioner could be contemplated to speed drying, and small square bales are favoured for ease of feeding out and maximum utilisation.

Pasture length should be as short and as leafy as is practical to cut and bale. The advantages of fewer bales of high quality, and a rapid regrowth of pasture for later use in lactating does with young at food are considerable (8-12").

If pasture is overgrown, or weather conditions are unfavourable - this probably termed "cattle hay" should be used for that, and high quality hay bought in to replace it.

In summary:

- Cut at an early stage 10-15% seedhead or flower emergency (alfalfa) or in early flowering for clovers.
- Cut short green leafy pasture.
- Consider mower conditioner to speed drying and minimise leaf loss.
- Use small bales medium tension for fallow and red deer.
- Feed in raised feeders.

Protein requirements for maintenance in deer are between 14-16%. Young stock will utilise, before wasting, up to 18%. Good leafy young pastures plus a balanced concentrate ration should provide all these dietary requirements, plus trace minerals on veterinary advice.

4. 15 months - Young stock management - Peak growth point

a) *Weigh stags* - select for venison production, velvet potential and future breeding stags.

b) *Weigh hinds* - and record 15 month weight.

- vaccinate for Leptospirosis.
- vaccinate for clostridial protection if previous history unknown.
- mineral boost (selenium and copper).
- sort into mating groups and join stags:

1:30 2 & 3 year old stags

1:40 older stags

1:6 spiker stags (or 5:30)

B. BREEDING FEMALES - Hinds 85-105 kg (200-250 lbs)

1. Hind management

a) *Mating* - 20th September - 26th October, introduce stags (primary sires). Mate for 2 cycles (38 days at 19 days per cycle). Replace with secondary sires for 3 weeks (21 day maximum).

Note: If multi-sire mating, ensure mating pasture has as large an area as possible and broken by terrain or cover to allow dominant and subordinate stags to mate as efficiently as possible and to reduce fighting and injury. Remove all stags by 25th October for a definite end to calving season. Weigh and record lean winter weight (annual hind weight).

b) *Winter feeding* - feed maintenance ration - free choice hay and supplements.

• 1.8 lbs corn, (if no pasture available barley, oats	10.6	MJME (feed units)
• .6 lb formulated ration	2.4	MJME, (feed units)
• 2½-3 lbs hay (alfalfa/pasture)	<u>11.0</u>	MJME (feed units)
Total	24.0	
• Maintenance requirement =	24.0	MJME/day

Increase ration through bad weather. Monitor for hinds being deprived of feed through competition (remove and feed with weaners if a problem persists). Vary grain ration if hinds gain too much weight.

c) Tb, brucellosis test if in accreditation programme. **Avoid any contact with pregnant sheep during late winter, over lambing, etc. (at least ½ mile) (if possible) - malignant catarrhal fever danger**

d) Pre-calving management

- restrict intake during early spring if overfatness in hinds appears a problem.
- keep hinds on a tight paddock rotation - provide frequent exercise (via laneways or paddock exercise).

Note: The growing calf gains most weight in the last 6 weeks of gestation. Restriction of calf growth in the last 3 weeks can affect viability at birth. The object in reducing hind fatness is to achieve that during late winter by ration control without risking cold stress/storm underfeeding.

e) 3 weeks→7 days prior to calving. Note - any handling of pregnant hinds must be done with care. Avoid over crowding.

- yard and sort into mating/calving groups for easier calf/dam/sire identification.
- udder check (observation rather than "groping") to remove dry/late calving hinds.
- vaccinate - 5, 7, or 8 way clostridial protection (for calf protection via antibody transfer). Annual hind drench (on indications from faecal monitoring) for "safe paddock" - calf protection. Mineral (Selenium, Copper etc) supplementation.
- shift to calving paddocks 4-7 days before first calf is due. Calve first calving hinds separately if possible.

Notes: Hinds in late pregnancy, not surprisingly, are often irritable and may be aggressive with poor handling. Avoid overcrowding in yards, long periods of holding in pens and rough or excitable handling. Check yards for projections that can physically injure abdomen and avoid forcing a number of hinds through narrow gateways or chutes.

2. Calving management

a) Feed high quality leafy green pasture.

- b) Observe - establish a consistent routine.
- c) If calving problems are suspected - **act early, seek veterinary advice** (hinds should calve in 30-40 minutes from the first sign of a water bag, anything over 2½ hours indicates difficulty, 5 hours of problems is a **must** to assist. Hinds in trouble will generally separate from the herd and fence pace. However, if greater disruption in the calving mob is feared by trying to yard, time and discretion may be a safer approach.

Backwards presentation (both hind legs) is relatively common in deer and not necessarily a problem.

Assisted calvings - hind and newborn calf should be kept inside in a secluded darkened pen for at least 24 hours, until hind and calf are observed suckling. A shelf/or protection for the calf should be provided along with clean straw bedding. On release, the calf should be removed first and placed in laneway or open pen for the hind to collect before releasing into calving paddock or preferably a separate small paddock near yards to monitor.

- d) Drought/feed shortage - supplementation during late lactation ensures maximum growth rates, prevents hind losing excessive condition prior to mating and allows young calves to become familiar with supplementary feed prior to weaning.

3. Weaning - 2-3 weeks prior to mating

- a) Udder check hinds, record:
 - dry dry (non-pregnant)
 - wet dry (lost calf)
 - wet (milking hinds)
- b) Select hinds for size, condition, age and determine mating groups.
- c) Leptospirosis and annual vaccination. Worms and mineral drenches if required. - particularly copper levels.
- d) Separate from calves as far as is practical. Supplementary feed if pasture is poor or in short supply. Hinds should be on a rising plane of nutrition during mating and for 2-3 weeks after mating before settling in to a winter feeding routine.
- e) Ultrasonic pregnancy scanning in late December. (34 days after last stags removed can greatly assist management by determining likely calving periods (early - lates) and identifying dry hinds.

C. 2 YEAR AND ADULT STAG MANAGEMENT

1. Pre-mating

- a) Select primary herd sires based on age, velvet antler production, annual mid-winter liveweight, bloodlines and breeding potential. Run separately pre-mating.
- b) Introduce stags to mating groups mid-September.

- 1:30 2½-3½ year olds
- 1:40 4½ year olds
- 1:50 Older stags

- c) Observe for "sexual behaviour" - herding, harem collection and protection, roaring (may not roar in absence of other stags), mating (rarely observed).

Notes: Stags at this time of year can be extremely belligerent and aggressive, particularly against dogs, strangers, vehicles and people on foot. If stags of equal rank are confined in a mating multi-sire situation continual fighting and aggression may result, if space is limited. Use primary sire for 2 cycles, then replace with backup stags, either top well grown mature spikers or top 2 year olds. Hinds can be mobbed together and mating ratios of 1:50-1:90 can be used.

Late November: remove all breeding stags, and preferentially feed high quality high energy diets immediately post-rut and continuing into winter. Concentrates (grains, etc.) should be introduced slowly to avoid grain overload. Stag energy requirements for winter sharply increase after the rut/post-rut inappetence and weight loss. Stags cannot be maintained safely on bulky feeds alone: Introduction to a concentrate ration must be done slowly.

Ration: - (Whole diet)

- Grains 3.0 - 4 lbs 20-16 MJME
- Mature breeding stags formulated ration 1.8 lbs 7 MJME
- High quality pasture
- Meadow hay/alfalfa 5 lbs 19 MJME
- Offer 50 MJME
- Requirements 46-48 MJME
- Luxury feed by increased grain (oats, barley 1 lb, or formulated ration with free choice hay).
- Drench poor conditioned stags (Ostertagia and intestinal worms).

Note: Underfeeding will risk stress-related disease and can adversely reduce velvet antler production.

Provide shelter to avoid wind-chill and combination of wet and cold conditions.

Test: To stags and adult hinds

- Brucellosis
- annual winter lean liveweight for stags performance recording.

2. Velvet production

Under feeding can severely restrict velvet growth, but luxury feeding will not consistently enhance. If stags can be supplemented immediately following the rut, any regain in body condition late November - early December seems to have a carry over effect in velvet production. Stags should be offered a high energy high quality diet three weeks pre casting and drafted into velvet mobs on button casting date for management ease. If practical groups of 25-30 are ideal.

February-April Record antler (button) casting dates. Continue supplements until grass growth is abundant.

Spring drench for worms and minerals

April-June Velvet growth monitoring - velvet harvest at 55-70 days growth. Daily or every 2 days watch required for optimum harvest. Record harvest date, velvet weight, style and grade.

Cull and select stags on performance.

July-September Stags in slow rotation used for cleaning up pasture.

Regrowth, spike growth removed after velvet cleaning, but before behaviour and aggression changes.

2 year old stags - peak weight condition for slaughter.

Breeding stags - sale and transport.

Protein requirements for Deer

Much is made of the protein content of feed offered stock and while this is important deer require 14-16% over the ration for growth and production. Gains are low in protein so quality protein supplements - Alfalfa - 22-24%, soyabean in meal (38-40%) can be added to balance rations.

Extra protein will be under utilised by deer, and is expensive to include just for the sake of it. Pasture plus a balanced ration to give 16% protein overall will allow for good growth and antler production.

PART B. FALLOW DEER

Does	35-50 kg	80-120 lbs
Bucks	70-100 kg	150-250 lbs

* Most comments applicable to red deer also apply to fallow. The following are important additional management factors or animal differences that must be considered.

SECTION I

A. YOUNG STOCK - FALLOW FAWNS AND WEANERS

Birthdates: Early June-July (232-233 day gestation)

Birthweight: 8-10 lb, generally singles

1 Fawning to weaning management

Poor reproductive performance in fallow is attributed to losses at fawning rather than poor conception rates. Fawning losses are predominantly due to lack of viability at birth because of low birth weights. Underfeeding does in the last 6 weeks of pregnancy (as is common in red deer to reduce the risk of dystocia (difficult births due to size) has been attributed to much of this loss. Management of fallow does is in contrast to red deer management at this time, ie, *feed does to appetite* during late pregnancy. In the heat of the North American summer, shade and shelter are critical; there must be ample clean fresh water supplies available at all times.

Note: Fallow deer are noted for the lack of fawning problems, ie, those that require veterinary intervention. Problems are more likely in first fawning does, or may be induced through mismanagement, ie, an over-involvement of farmer with fawning does. *Do not be too anxious to assist.*

Doe behaviour at fawning is one of the few times she prefers solitude and disassociates from the mob to a carefully selected fawning site. During birth, and for the 3-5 hours afterwards, disturbance by man, or by other does can disrupt the bonding process of doe-fawn, ie, establish a definite routine in observation in approach and in timing, either outside the pasture with a non-intervention approach, or if close fawning, prepare a wheelmark, or mowed strip through the pasture to assist in the routine, and to avoid running over fawns that may hide in long grass.

A routine feeding of some supplements in a prepared area can assist in maintaining a relationship with the herd, *but* in early fawning, does should not be dependent on supplementation for the majority of the daily diet.

Overstocking is sometimes unavoidable. Behavioural observations suggest 5-6 does to the acre is ideal, with disturbance, cross-mothering, increased starvation in fawns and bullying or fawn beating more noticeable at above 8 per acre. Natural cover, trees, and an uneven terrain all reduce this behavioural upset at higher stocking rates, as deer can more easily establish their own territory.

Fawn death checklist

Unlike red deer, low birth weights causing non-viability will be the major cause of wastage. If possible, dead fawns should be weighed as a check. If significant numbers are in the 7-8½ lb range or less, then factors are most likely to be poor doe body weights at mating and poor late winter-spring nutrition. First fawning does are likely to be more susceptible to all forms of fawn wastage. Misadvantage commonly occurs with lack of cover in fawning pasture with fawns seeking shelter outside the fence and becoming hooked in fence wire, or simply lost. A cleared mown strip around the perimeter of fawning pastures may prevent this (8-10' in width), as will the newer 17 line hi-tensile netting fences.

Doe feeding

As deer numbers are generally less than required to efficiently manage pastures in the early phases of farm development often pasture grasses and clover becomes overgrown and rank. Food value decreases with the ground clovers and leafy portions of pasture being eaten while pasture cover remains visually as being abundant and of quality. Drought conditions can also contribute. It may pay to be prepared to feed supplements during mid-late lactation if quality is poor.

Feed quality during lactation is the primary determinant of good weaning weights. Strategic supplementation not only allows this, but also can allow familiarisation of fawns to grain based concentrates without risk with a doe/fawn "teaching experience" and minimal risk of grain overload in newly weaned fawns.

2 Weaning

Mating patterns in fallow are very predictable in timing annually and generally very condensed, initiating in mid-October\early-November. Weaning can be contemplated from late September, and certainly should be completed well before the rut. This allows a rapid regain in doe condition, an increase in conception percentage to the first cycle, ie, primarily a management advantage.

During the first years of fallow farming it may be as well to consider post-rut weaning, particularly if late summer\fall greenfeed is abundant, does are in good condition and multi-sire mating is contemplated (see notes Red deer, 2. Weaning). If drought conditions exist it is pointless to extend lactation prior to mating. At weaning, food requirements for the doe drop dramatically allowing her to regain condition for mating and wintering.

Weaning process (end of September - early October)

This is the most difficult time of the year to yard and handle groups of deer, particularly with does and fawns at food.

- a) Yard in small groups if possible.
- b) If weaning prior to mating, shift fawns/does into pasture that fawns will be weaned onto 4-5 days in advance to promote familiarity with the territory.
- c) Check fenceline, laneway approaches for loose, broken wires, projections, broken boards in yards, depressions under gateways, gatecatches.

In pressure areas, consider reinforcing approaches in high tensile netting by covering with plastic mesh, wooden breast boards, or in narrow separation vertical boarding (1/2" separation leading into holding yards).

- d) Ensure that entry yards are large enough for the size of the group and that a flow through or circulating pattern is allowed. It has been fatal in past experience to allow groups of deer to move into small dead-end pens/yards.

Note: Deer with their tendency to move with speed in a group can exert huge pressure on gates, catches or fence if panicked or put under pressure. Encouraging deer to flow using their tendency to move around curves, corners, and letting the herd make its own movement decision rather than being forced, reduces injury and stress and encourages routine and familiarity with the operation. Time pressure should not be a consideration in this activity.

- e) Weaning is *not* the time to introduce your deer to a small army of assistants to help muster and yard. Treat the stock with quietness and confidence as if they were no more than being shifted and that this is part of the routine.

- f) Consider weather. Very hot conditions are not advisable with heat build-up in stock requiring excellent yard ventilation. Sudden or anticipated bad weather changes again promote stress, particularly in weaned stock; either delay, or consider keeping weaned stock in carefully prepared pens inside yards.
- g) Keep handling of weaners at this time to a minimum. Either pre-wean yard (2-3 weeks prior) for animal health treatments, eartagging, etc, and merely yard, *OR* handle 2-3 weeks after weaning for intensive treatment.

Separation and weighing may be sufficient events to minimise stress at the time of weaning.

On separation does can be grouped into a single mob (within reason) and moved as far as possible from weaners into a secure and preferably relatively bare pasture with adequate water for 48 hours before beginning feeding build-up by supplementation, or on saved pasture.

- h) In advance, take veterinary advise for routine animal health remedies, ie, selenium and other trace elements (copper?), annual vaccinations. Be prepared to deal with broken limbs on first yarding. Keep groups to a small size if possible and avoid holding large numbers in yards for prolonged periods.

3 Feeding - weaning to 15 months

In general the same principles as red deer feeding apply. Young deer are under strong seasonal influences in growth rate but good feeding practices ensure target weights and puberty weights are achieved as early as possible.

On zero-grazing, a ration for growth might be: (under winter conditions) - spiker buck (rising 1 year)

- ¾ lb whole grain com
- ¼ lb oats or barley
- ½ lb formulated deer ration pellets
- 1 ½ lb high quality alfalfa/clover hay

Female rations are 90% of these.

Cold windy or extreme weather can increase feed requirements by 20% and as a practice rations should be increased in anticipation of bad conditions.

In practice under zero grazing conditions free choice, high quality hay should be on hand and a balanced concentrate ration offered to suit the conditions and available feed supplies.

As a general rule no more than 60% of the diet (by energy value) should be offered as grains or supplements, although deer can tolerate higher levels. All introduction or changes in grain diet should be gradual and cautious taking 8-12 days to bring to full quantities.

It is not necessary to have a variety of grains, ie, whole com or barley/oats can be used. A pellet ration is however advised to provide minerals and vitamins. Prolonged grain feeding requires some sodium and calcium balancing (ie, 1% by weight crushed rock salt and 0.5% powdered lime mixed with grain after 3 weeks feeding is advised in the absence of other dietary supplements or salt licks).

Note: Sire bucks and selected rising 2 and 3 year old bucks should be luxury fed from the end of rut through winter and into the period of velvet antler growth.

Suggest: free choice quality alfalfa/or clover pasture hay,
= approximately 2 x the weaner ration.

Up to 2 lb grain based ration

1 lb formulated ration (variable according to residue left)

Does can be maintained on the recommended weaner growth ration:

1 lb grain based supplement
½ lb formulated ration
free choice hay (up to 2 lb/day)

If rapid weight gains are obvious and does appear to be too fat vary grain ration.

Note: These figures may err on the generous side, but account for high wastage, ie, unless the hay is of excellent quality, wastage will be considerable.

Corn silage (or pasture silage) can readily be substituted for hay, or part of the grain ration, although some difficulties in acceptance can be had. Grain mixed in with the silage ration can speed up acceptability. In all feeding there is no substitute for quality of ration as deer are generally meticulous in their likes and dislikes. A doe ration might be:

1 lb grain
2 lb corn silage
1 lb hay
¼-½ lb formulated ration

B. BREEDING DOES

Mating: Early October-November
21 day cycle
1st oestrus, 15-20 October

Similar management to red deer calendar, but feed to appetite in late pregnancy.

Vaccination, animal health programmes should be taken in concert with local veterinary advice (particularly the need for leptospirosis vaccination). Mid winter tuberculosis testing programmes are recommended as the most suitable time. If comparative cervical tests are indicated (CCT) a minimum of 90 days is required from time of first testing until retest. This should be timed at least 4 weeks before fawning.

C. BUCK MANAGEMENT

The issue of sensible management of antlered males both young and old presents some challenges for fallow and red deer farmers.

Fallow bucks in the spike stage can use these sharp weapons on each other under the pressure of the unnatural situation of yarding or when confined prior to slaughter, or if new individuals/groups are introduced to a stable group.

Spike growth is related to the onset of puberty, and directly related to liveweight at 15 months; spikes as they grow and develop can be removed in velvet growth stage, or more practically immediately on stripping in end June/early July or as individual animals are ready. There will be some variation in the timing so a commitment to a regular programme is required. Once in the rut at 16 months and older bucks remain aggressive for most of the fall-winter period.

Adult bucks are ideally yarded for antler removal at the point of antler stripping when growth has been maximised, regrowth is not a concern and the bucks are relatively quiet. To avoid damage risk adult bucks should be separated from yearling bucks prior to velvet growth.

In time techniques such as surgical polling/or castration may be realistic alternatives in farm management. Effects on venison quality due to castration,, ie, increased fatness, etc, are not fully documented as yet.

PART C | RECORDING AND SELECTION PARAMETERS

Weaning weight - record weight as soon as possible off pasture, record date at weaning

- Measure of lactational ability in dam
- General indicator of potential top and bottom rankings tend to be maintained
- Heavily influenced by spread in birth date, but if intensive husbandry is practised and birth dates are known, weaning weights should be corrected for days of growth to weaning.

15 month old weight

- Males: peak live weight for age for slaughter. First major selection point for future sire if size/liveweight is the objective.
- Females: indicator of growth, size and reproductive ability at first mating.

A weight (or series) taken between weaning and 15 months, provides valuable information on growth rate and seasonal variation, a check on management and feeding strategies. However, variation in farmed deer is not genetically great and it is important therefore to standardise weighing procedures - if possible weigh immediately off pasture without prolonged waiting in the yards.

Mature does

Annual liveweight. Preferably mid winter, or at the time of Tb testing. Weights are not influenced by pregnancy, overfatness or lactation. Commonly hinds will be weighed at weaning for evaluation of lactation management, and breeding success in the forthcoming year.

2 year old peak liveweight

- Stags: prior to the rut, possibly best at the time of antler removal. Most appropriate age for selection of lean heavyweight sires.

Antler weight if harvested

- Days since previous antler (buttons) shed.
- Age of stag.

Carcass weights

- Fat cover (if given) per breeding stag for slaughter lines. (GR measurement)
- Dressing % (Hot Carcasses weight : off paddock weight/should be 56-58% at 15 month, 57-59% at 2 year old

Temperament (subjective)

Record aggression, extreme nervousness and relate to breeding programmes - whether there is a sire of family influence. Continued recording; culling of this, while not always genetically based, may identify breeding lines that through quietness and easiness of handling, ultimately produce quality venison carcasses or premium breeding stock.

PART C II STOCK IDENTIFICATION, TAGGING SYSTEMS

Management eartags

Eartags offer an opportunity to represent a limited amount of "management" information, ie, age (year of birth), sex (important in weaner stock), breed or breed cross - bloodlines, unique management number (for weighing, etc), disease status.

Techniques

Deer should have numbered plastic tags both in front and back of ear, particularly for pasture observation

Consider: If 10 colours available, 1 colour for each year, or use colour to indicate bloodlines or breed types - mixtures of colours can be used in hybrid crossing programmes.

Computer programmes can record colour as a coded digit, ie, Green 123 may become 1123, etc, or Green x Yellow 123 may become 12123

If colour becomes breed identification, first digit in tagging sequence becomes the year of birth, zeros (ie, 1990, etc) should be recorded, ie, Green 001.

Year of birth will become important in QA programmes verifying age.

Three digit tag sequences can handle up to 99 progeny of each sex, and still be relatively easily read in the field situation. Four digits, and use of "sheep tags" limits that capacity.

Sexes should be uniquely identified by tagging in a uniform ear. Suggest left ear (from behind) for females, right ear for males.

As Tb testing programmes are incorporated into routine farm events, MAF departments (and private veterinarians) may require an "official" tag as part of a test protocol. This is generally a small metal (brass or aluminium) tag placed close to the head on the leading edge of the ear and can utilise a sequence of digits and letters - perhaps farm name abbreviation and a running sequence. It is recommended for any recording system that a double tagging option be used.

Neck collar identification tags are proving very successful for fawn-dam identification where remote observation allows match up. These are generally used for a specific task, rather than permanent identification, because of cost largely.