

# FALLOW DEER FARMING : HISTORICAL PERSPECTIVE

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## Summary

- Although fallow deer have a long association with man, the intensive pastoral husbanding of the species for venison, and to a lesser extent, velvet antler production dates back only 30-40 years.
- Deer farming represents an alternative pastoral enterprise to more traditional livestock farming, much of which has become entrenched because of changes in consumer dietary attitudes, over-production through subsidisation and low financial returns per unit area of land.
- Fallow deer account for 7% (70 000 individuals) of farmed deer in NZ and >50% (>50 000 individuals) of farmed deer in Australia. They are the predominant farmed deer species found in USA and Canada, although actual numbers are unknown.
- The species is also farmed in UK, Germany, France, Switzerland, Italy, Spain, Austria, Denmark and Sweden.

## Introduction

While fallow deer have been in close association with man for several thousand years, intensive husbanding of the species within a pastoral environment is a relatively recently established enterprise. Fallow deer have been a feature of the parks of European nobility for 400-500 years. However, their role in sustainable agriculture probably dates back only 30-40 years, and stems largely from initiatives of German pastoral farmers seeking alternative, and more profitable, land use (Reinken, 1979). There is little doubt that many of the more traditional forms of animal product based pastoral farming have become entrenched through changes in consumer dietary attitudes, over-production through government subsidisation and decreasing financial returns per unit area of land. This is a world-wide phenomenon and has been a major incentive for diversification in agriculture. Fallow deer farming represents one such form of diversification that aims to produce a high revenue earning, consumer acceptable product; namely venison (and, to a lesser extent, velvet antler). This chapter will attempt to provide a brief history of fallow deer farming around the world.

## New Zealand

(a) **Present status:** According to official statistics, fallow deer account for 7% of the farmed deer in New Zealand, with the largest concentrations of farms being situated in regions of the North island (eg. Kaipara, South Auckland, Bay of Plenty, Waikato and Wanganui). In recent years there has also been a rapid movement into fallow deer farming in the South island (eg. Nelson, Golden Bay, Canterbury).

The New Zealand deer farming industry has grown dramatically in the last 20 years, such that there are now about one million deer on farms (Fennessy *et al.*, 1991). However, about 93% of farmed deer in New Zealand are red deer (*Cervus elaphus scoticus*), wapiti (*Cervus elaphus nelsoni*) or their hybrids. This indicates a present population of about 70 000 farmed fallow deer within the country. [It should be noted that this figure is in excess of current estimates of 30 000-40 000 fallow deer often quoted by industry sources].

**Historical perspective:** The native fauna of New Zealand was devoid of land mammals except for two species of bats. However, European immigrants in the late nineteenth and early twentieth centuries viewed the country as an antipodean version of their homeland and proceeded to naturalise various northern hemisphere animals, including deer. Between the years 1864 and 1900, fallow deer were liberated at various localities throughout New Zealand in attempts to establish populations for recreational hunting purposes. Of about 25 known releases, involving over 130 fallow deer derived mainly from English park stock, 14 viable wild populations became established (Wodzicki, 1950; Christie and Andrews, 1966; Challies, 1985). The mean rate of dispersal of wild fallow deer in New Zealand has been estimated at 0.6 and 0.8 km per year (Caughley 1963; Clarke, 1976), which contrasts markedly with mean rates of 1.6 to 11 km per year for red deer (Caughley, 1963; Clarke, 1971). Consequently, fallow deer have colonised only those areas close to the point of original liberation and have retained discrete population boundaries (Wodzicki, 1950; Challies, 1985).

During the early colonisation phase leading up to the late 1920's various regional acclimatisation societies enforced laws protecting deer from indiscriminate hunting (Donne, 1924). Consequently, some fallow deer herds attained very high population densities and, following the complete removal of protection from all deer in 1930, many thousands of animals were destroyed by Government hunters (Wodzicki, 1950). In more recent years, commercial harvesting of fallow deer, either by shooting for venison recovery or by live-capture for stocking deer farms, has drastically reduced wild deer numbers throughout New Zealand (Challies, 1985).

The development of fallow deer farming during the 1970's was a progression from range harvesting. Efficient game recovery techniques utilising helicopters rapidly depleted wild deer numbers, such that high venison yields could not be sustained from wild populations alone. Deer farming, therefore, was conceived as a means for maintaining venison yields to fulfil market quotas.

From the early 1980's surplus fallow bucks were generally harvested by shooting in farm paddocks and processed subsequently as range-harvested wild deer. This restricted the export of the venison to countries which accepted "game" products lacking documentation of ante-mortem inspection. However, it was apparent that the financial returns for venison from farmed fallow deer were likely to be higher if such documentation was provided. This, along with the greater degree of quality control applicable to farmed products, would permit the entry of farmed fallow venison into lucrative markets hitherto unattainable for wild game products (Yerex, 1981).

The establishment of export-licensed deer slaughter premises (DSPs) in 1982 provided both ante- and post-mortem inspection documentation for venison from farmed deer and indeed has opened up lucrative export markets. It also heralded a new era in fallow deer farming. The lure of high financial returns from fallow deer venison was ample incentive to instigate appropriate management regimens to maximise venison production and reproduction rates, and to develop systems for successfully handling and transporting fallow deer. Thus fallow deer farming has moved rapidly from the extensive ranching systems of the 1970's to an intensive form of pastoral farming utilising controlled grazing regimens, selective breeding practices and judicious animal health programmes.

**Industry structure:** The formation of the New Zealand Deer Farmers Association (NZDFA) in 1975 provided a focus which stimulated interest in deer farming. Various regional sub-branches of the NZDFA provide a more local focus. However, in recognition of the fact that the NZDFA was dominated by members who were red deer farmers, and the feeling that fallow deer issues were largely ignored, the fallow deer farmers themselves established the New Zealand Fallow Deer Society in 1987. This society is now a sub-branch of the NZDFA, being species oriented rather than regionally oriented. The Society meets for an annual forum to discuss issues of politics, marketing and research.

**Research:** In recognition of the future prospects of fallow deer farming, the Invermay Agricultural Centre (Mosgiel) established a small fallow deer unit in 1976. The founding stock of 20 does were derived from South Island herds at Queenstown and Fairlie, and were maintained as a single breeding nucleus until 1982. While it was demonstrated from this herd that farm-reared fallow deer can exhibit a high level of reproductive productivity (i.e. >90% weaning rates per annum) the herd received little scientific attention due to very high research inputs into other, more regionally important, cervid species such as red deer and wapiti. Indeed, during this time, fallow deer farming in the southern regions of the South Island was virtually non-existent.

However, fallow deer farming was progressing rapidly in the North Island, particularly near the large herds of wild fallow deer in South Kaipara Heads and Wanganui. In 1980, scientists at the Ruakura Agricultural Centre (Hamilton) initiated an investigation into the productivity performance of farmed red and fallow deer in the northern regions (Asher and Adam, 1985). One outcome of these studies was the decision to establish a deer research unit on the then Ruakura Animal Research Station. In 1982, the fallow deer at Invermay were transferred to Ruakura and further deer were purchased from local farms. Thus, the Ministry of Agriculture and Fisheries (MAF) fallow deer research effort was relocated to the northern regions, in closer proximity to the majority of commercial farms.

Considerable research has been applied to various aspects of fallow deer farming within the last 10 years, much of which is presented in this book. The principle studies have been focused on reproductive physiology and artificial breeding technology.

## Australia

Deer farming in Australia has followed closely the patterns occurring in New Zealand, with considerable interchange of ideas, philosophies and, recently, of livestock. The first commercial deer farm was established in Victoria in 1973 (Taylor 1984), with farms occurring in most states by 1978 (English 1984). The total number of farmed deer in Australia in 1984 was estimated to be about 20 000 (English 1984) and by 1990 this had grown to 103 000, with about half (i.e. ~50 000) being fallow deer (Coombs 1990).

The Australian industry is based on farmer organisations in each state, each of which appoints delegates to the national body, the Deer Farmers' Federation of Australia (DFFA). There has been a degree of disunity over the years, with both New South Wales and Tasmania withdrawing from the DFFA for a period. However, all states are presently represented, and the activities of the DFFA have been strengthened by the appointment in 1990 of an executive director (English, 1991). A further initiative in the last two years has been the formation of breed societies; one of these is the Australian Fallow Deer Society (AFDS). These societies send delegates to DFFA meetings.

Fallow deer breeding stock have largely been derived from a number of small feral populations scattered around Australia. Competition to obtain this stock has occasionally been quite strong, as the resource was always very limited or highly regulated by government authorities. In particular, Tasmania is recognised as having the largest feral herd of fallow deer in Australia. However, the capture of breeding stock for farming has been highly controlled by wildlife authorities. There is considerable pressure from the various hunting organisations to restrict live capture of deer. It is clear, therefore, that the perceptions people have of wild fallow deer in Australia are somewhat different from those of New Zealand, even though they are not native to either country.

In Australia, fallow deer can be slaughtered officially in licensed meatworks. In 1988, 4153 deer were slaughtered (not all were fallow deer), representing only 6% of the national herd (English 1991). The official figures for venison produced in Australia were 193 tonne in 1988 and 168 tonne in 1989. Interestingly, 161.8 tonne and 246.4 tonne were imported from New Zealand in those same years respectively (Coombs 1990). The production of farmed raised venison in Australia has been largely geared towards local consumption, although there has been considerable recent discussion about the establishment of export markets.

**Research:** The Deer Research Unit at Sydney University was established in 1979 with strong support from the New South Wales Deer Farmers' Association. Since this time, researchers at the University has invested considerable effort into detailed research of fallow deer production, particularly in relation to reproductive performance and velvet antler production. The Deer Research Unit also has a major role in education, and is used in the training of veterinary students in deer management techniques. The Australian government and the Australian deer farming industry in general provide little financial support for deer farming research.

## North America

The farming of fallow deer in North America (USA and Canada) is a new agricultural enterprise arising within the last 10-12 years, but really only gaining momentum since 1985.

In USA, the first fallow deer farm was established in upstate New York in 1979 (von Kerckerinck, 1987). The formation of the North American Deer Farmers Association (NADeFA) in the early 1980's saw a very rapid increase in the numbers of people entering into deer farming. It is likely that by 1990 there were about 40-60 fallow deer farms in USA, with a total of about 10 000 stock. These figures are only guesstimates, as there are no reliable records of stock numbers in this country. Many of the original foundation stock were derived from small feral or captive populations scattered around North America, with a proportion derived from Texas hill country ranches. More and more stock are now being bred on existing farms, and the demand for feral captive stock is diminishing.

The main concentration of fallow deer farms in USA appear to occur in the north east (New York, Vermont) and mid west (Iowa, Minnesota), with some large farms occurring in other states, notably Texas. Some states presently do not allow the farming of deer, while some others will allow some species of deer only. This may partly account for the erratic distribution of fallow deer farms in USA. However, climate is probably the biggest factor, as much of continental USA suffers from major water deficit, making intensive pastoral farming an unrealistic proposition without resort to irrigation. However, where climate is favourable or irrigation provided, it is quite obvious that fallow deer production in USA has been on a par with other deer farming countries.

In Canada, fallow deer farming is, by provincial legislation, restricted to the provinces of British Columbia, Saskatchewan, Ontario, Quebec and New Brunswick. The largest populations, representing about 8000-10 000 animals in total, are found in British Columbia and Ontario. The total pool of fallow deer in Canada has been expanded greatly by importation of several thousand breeding does from New Zealand since 1988.

The deer farming industry in North America (including the farming of red deer and wapiti) has encountered considerable opposition from a number of political groups, including hunting organisations, animal welfare lobbyists and environmentalists. Furthermore, recent discovery of a low incidence of bovine tuberculosis on some deer farms in USA and Canada has created political opposition from a number of traditional agricultural groups, as well as providing a platform for others opposing deer farming. Opposition to deer farming/game ranching is particularly intense in Canada, where the recent discovery of tissue worm (*Elaphostrongylus cervii*) type larvae in the faeces of recently imported New Zealand red deer has created an additional lever for opposition groups.

However, deer farming industry groups within North America (eg. NADeFA; Ontario Deer Farmers' Association, etc) have lobbied strongly against the arguments of opposition groups. In particular, considerable advancements have been made in educating wildlife groups on the ecological consequences of farming exotic deer species, establishing codes of practice to appease wildlife authorities and animal welfare groups, and establishing national frameworks for disease surveillance/elimination within farmed deer herds. The NADeFA recently established a full-time national executive in Washington DC, a move that is seen to provide political strength to a rapidly growing agricultural industry.

Fallow deer have a unique status in North America. They are one of the few exotic cervid species that offer little ecological threat to native wildlife populations. Of utmost importance, they are not capable of hybridising with any North American cervid species, therefore, do not present a "genetic pollution"

threat. Secondly, wild fallow deer have ecological preferences quite distinct from other North American cervids, in particular the white-tailed deer. It is highly unlikely that the two species would compete seriously for food resources, given a penchant for grazing amongst fallow deer and browsing amongst white-tailed deer. For these reasons, a few states in USA (eg. Utah) and at least one province in Canada (BC) allow fallow deer farming but not the farming of any other exotic cervid species.

## Europe

Fallow deer farming has been practised in Europe for 30-40 years. In Germany alone, there are estimated to be about 30 000 fallow deer farmed across 4000 farms. This indicates that the average herd size is very small (<10 animals) and that the industry is very much geared for local consumption. Fallow deer farming is gaining some popularity in Switzerland, Austria, Italy, France, Spain, Denmark and Sweden. In Britain, where large herds of park fallow deer exist, there have been recent attempts to instigate intensive husbandry practices, along similar lines to more established red deer farming techniques. In comparison to Australasia and North America, however, there does not seem to be the explosive expansion of fallow deer farming in Europe. The reasons for this are unclear, but may relate to such factors as public/legal perception of deer and market returns for venison.

## References

- Asher, G.W. and Adam, J.L. (1985). Reproduction of farmed red and fallow deer in northern New Zealand. *Biology of Deer Production*. Bulletin 22: 217-224.
- Caughley, G. (1963). Dispersal rates of several ungulates introduced into New Zealand. *Nature (London)* 200: 280-281.
- Challies, C.N. (1985). Establishment, control, and commercial exploitation of wild deer in New Zealand. In *Biology of Deer Production*. The Royal Society of NZ; Bulletin 22: 23-26.
- Chapman, D.I. and Chapman, N. (1975). *Fallow deer: their History, Distribution and Biology*. Terence Dalton Ltd; Lavenham, UK.
- Christie, A.H.C. and Andrews, J.R.H. (1966). Introduced ungulates in New Zealand (d) Fallow deer. *Tuatara* 14: 82-88.
- Clarke, C.M.H. (1971). Liberations and dispersal of red deer in northern South Island districts. *New Zealand Journal of Forestry Science* 1: 194-207.
- Clarke, C.M.H. (1976). Fallow deer in the north of the South Island. *New Zealand Wildlife* 7: 5-13.
- Coombs, R. (1990). The Australian Deer Farming Industry. *Australian Deer Farming* 1:
- Donne, T.E. (1924). *The Game Animals of New Zealand*. John Murrey, London, UK.
- English, A.W. (1984). The Australian deer farming industry - progress and prospects. *Deer Refresher Course*. University of Sydney Post-Graduate Committee in Veterinary Science 72: 533-540.
- English, A.W. (1991). The Australian deer Farming Industry - issues and prospects in 1991. *Proceedings of a Deer Course for Veterinarians*, Deer Branch NZVA, Deer Branch Course No.8, Sydney 1: 1-7.
- Fennessy, P.F., Drew, K.R., Mackintosh, C.G. and Pearse, A.J. (1991). Prospects and issues of deer farming in New Zealand. *Proceedings of a Deer Course for Veterinarians*, Deer Branch NZVA, Deer Branch Course No.8, Sydney, 8-13.

von Kerckerinck, J. (1987). *Deer Farming in North America: the Conquest of a New Frontier*. Phanter Press, Rhinebeck, NY.

Reinken, G. (1977). Grün-und Brachlandnutzung durch Damtiere. *Anregungen für Produktion und Abstaz* 10. [English translation]

Taylor, P. (1984). Twelve years with "Deer Farmers", *Deer Refresher Course*. University of Sydney Post-Graduate Committee in Veterinary Science 72: 575-593.

Ueckermann, E. and Hansen, P. (1968). *Das Damwild*. Verlag Paul Parey; Hamburg and Berlin, Germany.

Wodzicki, K.A. (1980). *Introduced Mammals of New Zealand*. Department of Scientific and Industrial Research, Bulletin 98, Wellington, NZ.

Yerex, D. (1981). Deer farming prospects. *Proceedings of the 33rd Ruakura Farmers Conference*, 91-93.